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Risk identification techniques for international contracting projects by construction professionals using factor analysis

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ABSTRACT

Globally, managing political risk is an essential component of international contracting and project management. Due to political unpredictability and volatility in most nations, there could be a substantial influence on the successful completion of any construction project. To mitigate this, contractors employ a systematic strategy for risk management, including expropriation, civil disturbance, and shifts in governmental policies taking into consideration all the political risks connected to global projects. As a result of the political volatility, there is a need for political risk management (PRM) approaches by the International Construction Corporation (ICC). This study investigates the risk identification techniques for international contracting professionals in the construction sector. The methodology for conducting this investigation is based on data collection through questionnaires from construction sector professionals in both academia and industry. The tools were used to develop essential components from the factors established. This was then analysed using quantitative techniques to examine identified risk factors and make study deductions. The findings of this study identified the crucial PRM-related implications for global initiatives and various risks that were considered in typical construction projects. The political environment should be thoroughly examined, prospective risks should be noted, and risk-reduction tactics should be included in this plan. Thus, a successful project is achievable when contractors can identify the risks, preserve their investments, minimize project delays, handle disruptions, and boost project success rates. Additionally, political risks are invariably associated with construction projects, and this is considered a concern for foreign contractors. Thus, good identification techniques will ensure project preparedness, which is required by expatriates and foreign contractors. This is necessary as they need to ensure that their projects are successfully handled and that there are alternative plans to handle any unexpected event on the project.

Abbreviations: APM, Association of Project Management; ASCE, Association of Civil Engineers; BOT, Build Operate and Transfer; CIC, Chinese International Contractor; CHINCA, China International Contractors Association; DBO, Design, Build and Operate; EPC, Engineering Procurement Construction; EU, European Union; FDI, Foreign Direct Investment; HM Treasury, Her Majesty Treasury; ICC, International Construction Corporation; ICPR, International Construction Project Risk; IJV, International Joint Ventures; IPRA, Integrated Project Risk Assessment; ISO, International Standardisation Organisation; JV, Joint Venture; KMO, Kaiser-Meyer-Olkin; MNC, Multinational Corporation; MOR, Management of Risk; MS, Mean Score; PLC, Project Life Cycle; PMBOK, Project Management Body of Knowledge; PMI, Project Management Institute; PPP, Public-Private Partnership; PRAM, Project Risk Assessment and Management; PRM, Political Risk Management; RAMP, Risk Analysis and Management for Project Methodology; RBS, Risk Breakdown Structure; RM, Risk Management; RMP, Risk Management Process; S.D, Standard Deviation; TRM, Technology Road map; UK, United Kingdom; WTO, World Trade Organization.

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1. Introduction

In contractual practices globally, different construction companies are welcome to bid for projects. However, developing nations have a different approach to bid considerations and risk management of construction projects (Hong & Chan, 2014; [77]. Due to globalisation, there is co-existence between the national and international construction companies within the construction sector globally. Thus, whilst some of these construction projects are carried out by domestic enterprises, a huge amount of construction projects was conceded out to foreign companies and Joint ventures[17,29,66]. Construction projects carried out by foreign companies in another country are called international construction projects[61]. As per reports published by the World Trade Organization (WTO), the world is leading the trend of globalization by signing bilateral or multilateral agreements by removing trade barriers between countries or regions[79,80]. For construction companies, this means speaking outside the political boundaries of residence and participating in construction work[61].

In addition to the lack of mediation resulting from political risk, it was also felt that political risk was difficult to assess and implement because of its precise and qualitative environment[69]. Political risks have various effects on international construction projects as it leads to business disruptions, contract variations, project damages as well as the outcomes of numerous negative consequences[2]. Construction risks can be gathered in a variety of methods because there is no commonly fixed risk classification[5,17,42]. However, Shen et al., [66] categorized risks as commercial, management, lawful, marketplace, strategy, and political risks. These items are more likely to be split between the inside and the outside. External risk processes that it will be externally sourced to avoid risks outside of the organisation, while internal risks can be avoided inside the organization. Despite the scope of any project, there is the need for good planning and risk evaluation to ensure smooth running of the project (Amaechi, Reda, et al., 2022; [39,34,83,1]. Moreso, the recent political events globally make the selection of the study's subject to be current, given the implications of the period following COVID-19 pandemic, the ongoing conflict in Ukraine, and the complex geopolitical environment towards political risks (Amaechi, Amaechi, et al., 2022; [15]; Z. Li et al., 2023). These studies undertaken on political risk management in the construction sector that were conducted did not include risk identification techniques, thus the need for the present study. Another issue is that the competitiveness of international construction companies, such as the Chinese companies, require political stability, economic stability, sustainable technology adoption and dispute resolutions, as they operate largely within developing countries like Nigeria, Ghana, etc., thus also contribute towards political risks[6,22,35,62].

However, construction projects cannot be systematically managed by risks due to their complexity in the construction industry[38,57]; Zhen-Yu Zhao & Lin-Ling Duan, 2008). Poor project performance is related to cost, progress, poor quality or poor planning capabilities [40,65]). Research has shown that despite the significance of risks, political risk is more complicated for international initiatives. Researchers believe that international construction does not appropriately manage these political concerns[72], 2021). Over the past two decades, political risks in literature have received increasing attention, with internationally accepted definitions. In the political crisis, most education is directed at foreign direct investment (FDI)[3]. Political risks were considered in a very short amount of time, but market and project levels are still low[42]. These study intentions are to understand how political risks disturb international construction projects, plus how to accomplish them at the project level, and how they are implemented, likely, designed and developed during the project phase. Starting with how the fundamental idea of political risks is defined, various studies have shown how controlling political risks is complicated (Al Khattab; [37]. Despite this misperception, businesses nevertheless need to prepare for political change and consider this information when developing their strategy to assist managers in accomplishing project objectives. Identifying key risks and integrating the necessary solutions is an integral part of the International Construction Corporations (ICCs), and related businesses[9,52,60]. Some other scholars have identified risks based on critical infrastructures and risk assessment for various construction projects (H. Li et al., 2023; H. [56,82,56]. Despite that there are international project management standards, each company within any nation only manages the market risk and project risk. Although the international establishment of the foreign countries require various procedures, they must ensure that best practices are followed within the ICCs, but the presence of the political risk is the most conspicuous. However, political risk has not been covered in current guidelines of Association of Project Management (APM) Guide [10]and Project Management Body of Knowledge (PMBOK) Guide (Project Management Institute (PMI) 2017), thus the need for this study.

The goal of the study is to identify Political Risk for International Contracting Projects by construction professionals using factor analysis and find the techniques to proffer political risk solutions for international construction projects. The paper is outlined in the following order: Section 1 presents the introduction, while Section 2 gives the Literature Review and Conceptual Framework. Section 3 gives the study's methodology while Section 4 gives the Results. Section 5 gives the Discussion as the study culminates at the Section 5 giving the Conclusions.

2. Literature review and conceptual framework

This section focuses on the literature review on the relevant data sources and the conceptual framework adopted for this study.

2.1. Literature review

The examination of the ability of ICCs to conduct operations effectively and lucratively on a global scale, despite the existence of various risks, such as political risk, has garnered increasing interest in recent years[19,28]; Deng, Pheng, et al., 2014; [58]. Political risk refers to the potential impact of government choices or events within any political environment that may hinder the ability of foreign investors to successfully attain their commercial objectives in a different political setting[45]. In contrast to the Chinese markets, African markets generally exhibit greater political volatility. Developing nations experience higher levels of political instability, resulting in more frequent fluctuations in government policy compared to developed ones (Al Khattab).

[58] have observed in their prior research that the impacts of political risk vary across different African markets and have a significant influence on the selection of international strategies by enterprises. This implies that each regional market possesses distinct political risks that distinguish them from one another, hence generating varying scenarios for ICC assessments [5]; Deng, Low, et al., 2014; [58]. The region of Sub-Saharan Africa is commonly perceived as having a high level of risks. However, it is important to note that there are notable variances in the perception of risk amongst different countries within this region, as compared to the actual level of risk there. Similarly, international corporations possess distinct attributes that result in their varying perceptions of political risk[5]; Deng, Low, et al., 2014; [58]. Hence, it is imperative to integrate a comprehensive political risk assessment (PRA) framework inside a given regional market, encompassing all pertinent political risk elements.

The utilisation of techniques is crucial for businesses aiming to gather information about a specific regional market to evaluate the impact of political risk on their investments. This can only be accomplished through a comprehensive assessment of said risk. According to [44], the primary rationale for the practise of PRA is to ascertain and predict losses and factors contributing to poor investments, with the aim of mitigating and preventing failure. The field of PRA has undergone a significant evolution, shifting from its initial purpose of identifying political risks and evaluating the profitability of economic ventures, to a

more focused approach centred around the management of political risk [5,30,58]. The assessment of political risk holds significance in determining the appropriate investment type, entry strategy, and ownership structure for ICCs as they expand into any specific regional market.

Nevertheless, the examination of political risk in several regional markets has been somewhat neglected until recent years, with a limited number of empirical research done in comparison to more industrialised nations[5,30,58]. Most analyses pertaining to African marketplaces have predominantly relied on singular occurrences within a certain country. The study conducted by [58]highlights the necessity of examining the potential association between the various PRA procedures employed and the resulting assessments, due to the dichotomization of regional marketplaces, such as the African markets. The inclusion of inherent biases, a prominent critique of risk analysis just before the worldwide economic downturn in 2007, would enhance the depth of understanding. The construction sector was significantly impacted by the global economic recession, which has been recognised as one of the highlighted financial risks cum political risks. While the PRA approaches were highlighted in earlier study by[58], this present study aims to examine the political risk identification techniques employed by ICCs operating in regional marketplaces, taking into consideration the constraints they face using the data gathered from respondents and analysing the factors. Another aspect that was considered in literature is the use of modelling tools, such as analytic network process (ANP) and fuzzy TOPSIS methods, in assessing risks in construction projects[19,70].

These studies enabled the understanding on risk identification conducted in this study. To achieve this, the literature search was conducted to synthesise the data, provide some checklist on the variables considered and enhance this study in addressing the research gap that has been identified. Thus, this literature review was conducted to categorize our study's observations and previous research given in the Table 1.

2.2. Conceptual framework

In recent years, several discussions have focused upon international construction and political risks, which are deliberated unjustified political measures (Pahud [63], Political risk assessment of their respective countries is almost never covered. Therefore, it is essential to accurately assess and make judgements regarding the political risks related to global building projects. A significant amount of the research emphasises the political risks related with multinational corporations (MNCs), International Construction Corporations (ICCs), international joint ventures (IJVs) and foreign direct investments (FDIs) that are conformed internationally or industrially through cooperative international action, identification, assessment, review, and management [81].

In the international expansion of multilateral institutions, political risk has been an inevitable warming problem. It is dependent on the setting and leverage of political risk and has been shown to reduce political risk. Further variables, including Internationalization[5], Infrastructure Awareness[38], and contractor misconduct, are also considered in previous investigations. Political events ascend by political risks (such as transformations, riots, internal conflicts), social occasions (such as attacks by terrorists, remonstrations) and administrative activities. Various social organisation actions (such as trade union protests, conservational fortification administrations, and exploitation) and legal changes and processes have caused changes in industry. Political risk is unnecessary change, and the expected importance of international corporate political events[23], and pose a severe risk to the overseas procedures of international contractors[11]. Insecurity has a very high potential impact on earnings and negative impacts.

Prevailing political risk studies are mainly related to international common affairs (Deng, Pheng, et al., 2014). Research on political risk in Central Asia is relatively scanty[25,54]. Coalitions of interested parties (such as unions, communities, businesses, and local authorities) can employ high observation strategies on political risks. However, there are gaps in literature on political risk management despite that different scholars have presented different frameworks on risk management in construction[59,71]; S. Q. [77]. Thus, this study is conducted by proposing a conceptual framework on political risk management, as illustrated in Fig. 1.

2.3. Technology Roadmap (TRM) of political risk management

Technology Roadmap is multipurpose implementations that come with applications that depend on the goals you choose (e.g., project management, deficit detection, ranking, forecasting, action plans). However, regardless of the objectives selected, [55,74,51] contend that the primary benefit of applying the tool is to promote communication inside the organisation. Technology Roadmap should be considered as an instant or initial document thus it requires to be current and updated to maintain its relevance.

The technology roadmap was launched more than three decades ago by Motorola to support invention improvement with its business

Table 1
Variables identified from literature on political risk events.

Political Risk Events		[5]	[17]	[30]	(Deng, Pheng, et al., 2014)	[67]	[13]	[14]	[58]	[18]	(S. Q. [77]	[23]	[19]	[70]
E1	Currency inconvertibility and non-transfer	Yes	No	No	No	No	No	No	No	Yes	No	No	Yes	Yes
E2	Breach of contract	No	Yes	No	No	No	No	No	No	Yes	No	No	No	No
E3	Expropriation	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No	No	No
E4	Political violence	No	No	No	No	No	No	Yes	No	No	No	No	No	Yes
E5	Change in law, regulation, and policy	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	Yes	Yes
E6	Restrictions in construction business	No	No	Yes	No	No	No	No	No	No	No	Yes	No	No
E7	Issuing approvals and consents	No	Yes	No	No	No	No	Yes	No	No	No	No	No	Yes
E8	Bribery and corruption	No	No	No	Yes	No	Yes	Yes	Yes	No	Yes	No	Yes	No
E9	Import restriction	Yes	No	No	No	No	No	No	No	No	No	No		No
E10	Unexpected currency re/devaluation of non-floating currencies	No	Yes	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
E11	Delays in profit repatriation	No	Yes	No	No	No	No	No	No	No	No	No	No	No
E12	Currency inconvertibility	Yes	No	No	No	No	No	No	No	No	No	No	No	No
E13	Terrorism	No	No	No	No	No	No	No	No	No	No	No	Yes	No
E14	Unfair tax laws	No	No	No	No	No	No	No	No	No	No	No	No	Yes
E15	Labour strikes and trade union power	No	No	No	No	No	No	No	No	No	No	No	No	Yes
E16	Production or export restrictions	Yes	No	No	No	No	No	Yes	No	No	No	No	No	No
E17	Contract repudiation	Yes	No	No	No	No	No	No	No	No	No	No	No	No
E18	Restrictions on local market access	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No
E19	Nationalization	Yes	No	No	Yes	No	No	No	No	No	No	No	No	No
E20	Confiscation of property	Yes	No	No	No	No	No	No	No	No	No	No	No	No
E21	Restrictions on information flow	No	Yes	No	No	No	No	No	No	No	No	No	No	No

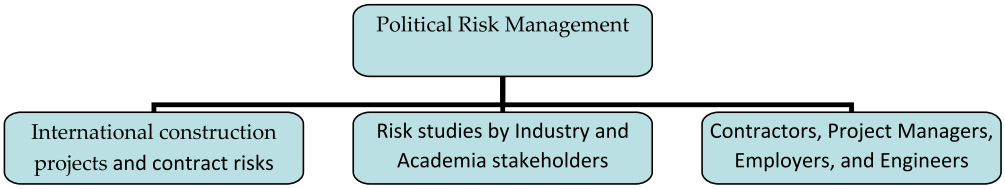

Fig. 1. Conceptual framework for Political Risk Management.

approach[20]. Even in the case of unexplained issues since 2011, little research has been done on important areas (e.g., Project Management, Technology Road map (TRM) Process and its Implementation). Technology Roadmap is used by companies, organizations and managers around the world who want to adapt their projects and technology development to their long-term strategies.

This methodology shall be used to highlight political risks with appropriate technology and approaches considered. The methodology for assessing political risk falls into two comprehensive groups: qualitative and quantitative (science) methods (Pahud [63]. The qualitative method can be classified into non-systematic and qualitative structure method. There is evidence that managers use more technology than scientists in political risk prediction (Al Khattab; [53].

The APM resource called the Project Risk Assessment and Management (PRAM) Guide contains a discrete, well-adjusted examination of both the qualitative and quantitative risk analysis approach (see Fig. 2). Although, this guide does not place emphasis on the stages of the political risk management process. However, most of the suggested quantitative approaches are based on probabilistic and statistical methods.

2.4. Political risk classification for international construction

Political Risk ratings are imperative tasks, starting in advance, as they may be risks that are sensitive to similar political risk management approaches and are therefore easier to work together. According to [17,43], for locating duplicate themes, risk, or exposure, all of which are widely known for efficient risk management processes, are commonly rated using the Risk breakdown structure (RBS), which is a prominent trend. While risk ratings are important, this classification is not the world's agreed approach[17]. As a concern, international construction risks are divided by different standards and obtainable in altered forms,

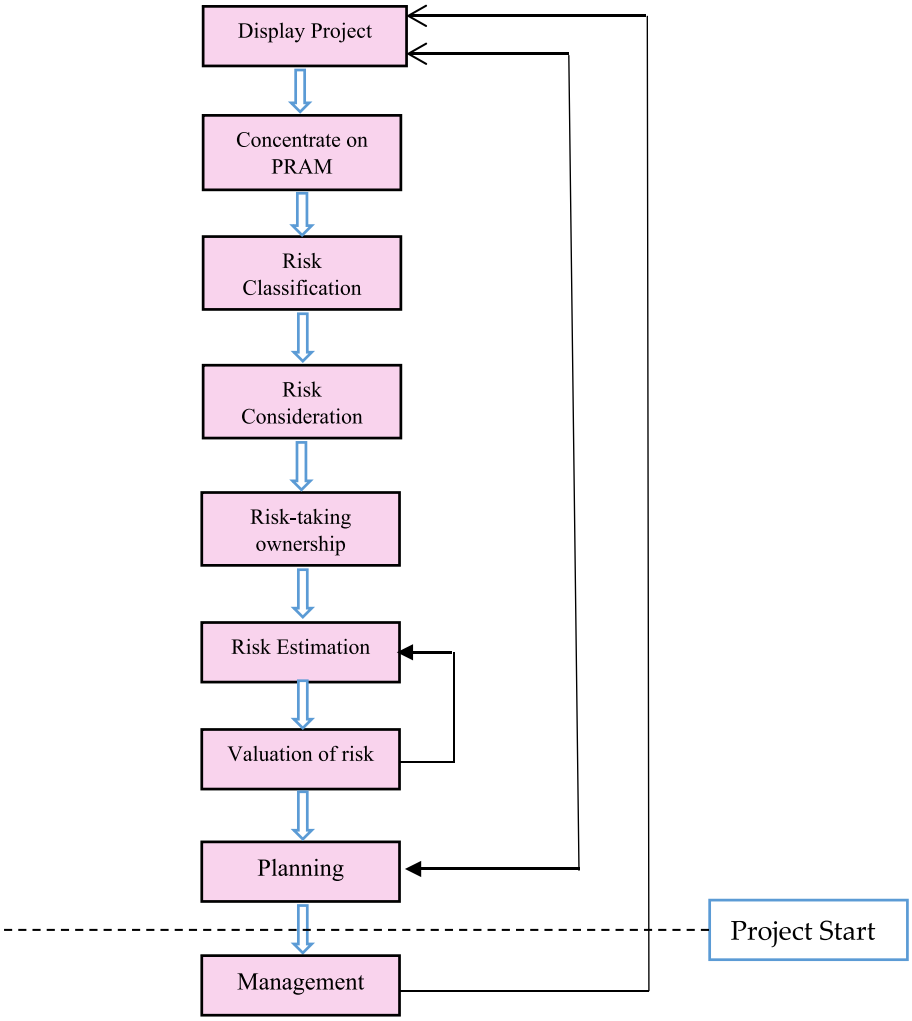

Fig. 2. Project Risk Assessment and Management (PRAM)'s flowchart by APM[10].

for example tables, lists, or RBSs[41,42,66,85].

Although there was no agreement, the risk was based on four aspects of the classification plan: stage/factor, source of events, influence, and association with the project (interior and exterior), most ratings seem to be based on events or risks [31,33,86]. A risk breakdown structure (RBS) is a chart that organises risks associated with a project in a hierarchical fashion, beginning with higher-level categories and proceeding downward into sub-levels of risk. The design of RBS is based on the type of project and various forms are available in literature[19,70]. Fig. 3 depicts the hierarchical risk breakdown structure (RBS) for international construction project risk (ICPR) considered in this study.

Relatively limited categorizations are established on the project level, or risk impact, or relationship to the project, or a combination of these (D. W. [21,68,78,84]. The Integrated Project Risk Assessment (IPRA)'s tabulated framework, represented in Table 2, is a common pattern of numerous configurations based on the early results of the event and project phase.

The IPRA's tabulated framework in Table 2 gives a portion of many installations funded by the Construction Industry Institutions. The item was industrialised specifically for international construction projects and is intended for use by many Risk Management leaders. As amount of the platform, a risk-related baseline impression was conventional to facilitate the immediate use of equipment and to narrow the knowledge gap. The structure consists of three categories: sections, categories, and elements: each category defined in the data page provides devices at each level. In this research, the usage of political risk variables offers as a clear basis for cataloguing. For analysing political risk, this study compares the impact values of IPRA devices.

2.5. Political risk management in projects

It is a strategic procedure for overseeing project risk by achieving an acceptable balance between risk and emerging risk. Although risk management was common practise in the financial and protection sectors a few years ago, project risk management was only developed in the 1980 s[27]; James [49]. This delay may be the reason why researchers discovered that field workers in the construction sector can't or do not correctly apply operational risk management to projects, preventing construction projects from fully realising the advantages of risk management [4,7,8].

In addition, Hwang & Chen, [46] also assert that it is detrimental for leaders in the construction business to lack formal administrative training. Risk management is employed during the project life cycle, commencing using the grouping of ideas and continuing until the next stage to optimise project benefits. In accordance with the project life cycle (PLC), Fig. 4 depicts an example of an implementation via the adoption of IPRA.

It is advised to adopt the PLC technique, and the IPRA tool is a model of it. An additional benefit of the PLC method is that when all participants manage risk according to their objectives, they can avoid dispersing and ignoring other project participants [78].

Risk management must be conveyed into detailed outlines during the earlier phases within the project life cycle (PLC), thus some justifications are provided in this literature. To this end, there are merits of applying

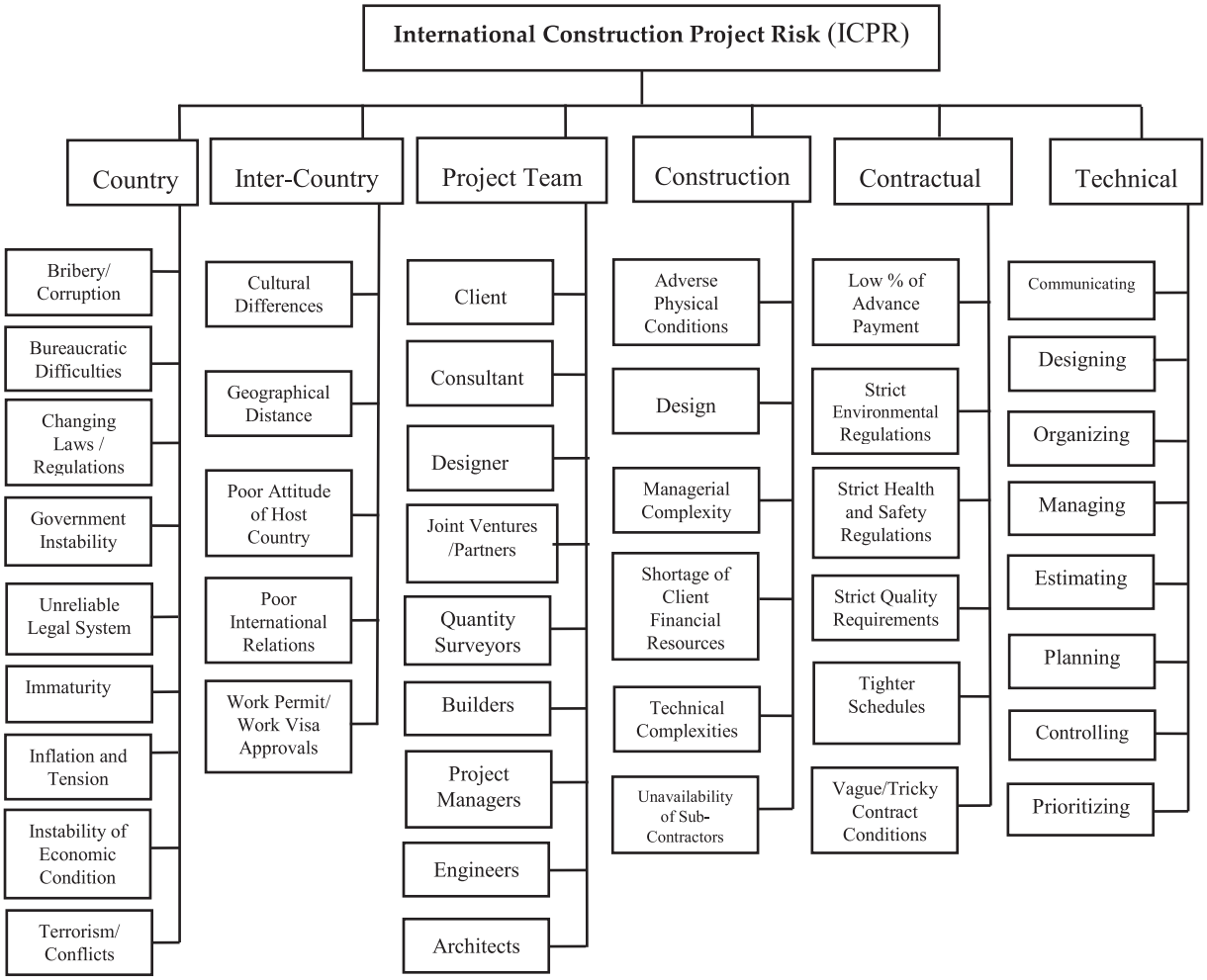

Fig. 3. Risk Breakdown Structure (RBS) for International Construction Project Risk (ICPR).

Table 2
IPRA's tabulated framework[24].

SECTION I – COMMERCIAL	II.D. Legal
I.A. Business Plan	II.D1. Legal basis
I.A1. Business case	II.D2. Legal standing
I.A2. Economic model/feasibility	II.D3. Governing law/contract formalities and
I.A3. Economic incentives/barriers	language
I.A4. Market/product	II.D4. Contract type and procedures
I.A5. Standards and practices	II.D5. Environmental permittingII.D6. Corrupt business practices
I.A6. Operations	**SECTION III – FACILITIES**
I.A7. Tax and tariff	**III.A. Project scope**
I.B. Finance/funding	III.A1. Scope development process
I.B1. Sources & form of funding	III.A2. Technology
I.B2. Currency	III.A3. Hazardous material requirements
I.B3. Estimate uncertainty	III.A4. Environmental, health, and safety
I.B4. Insurance	III.A5. Utilities and basic infrastructure
SECTION II – COUNTRY	III.A6. Site selection and clear title
II.A. Tax/tariff	III.A7. Approvals, permits, and licensing
II.A1. Tariffs/duties	**III.B Design/engineering**
II.A2. Value added tax	III.C1. Design/engineering process
II.A3. Legal entity establishment	III.C2. Liability
II.A4. Application of tax laws and potential	III.C3. Local design services
changes	III.C4. Constructability
II.A5. Technology tax	**III.C. Construction**
II.A6. Personal income tax	III.D1. Workforce availability and skill
II.A7. Corporate income tax	III.D2. Workforce logistics and support
II.A8. Miscellaneous taxes	III.D3. Climate
II.B. Political	III.D4. Construction delivery method
II.B1. Expropriation and nationalism	III.D5. Construction permitting
II.B2. Political stability	III.D6. General contractor availability
II.B3. Social unrest/violence	III.D7. Contractor payment
II.B4. Repudiation	III.D8. Schedule
II.B5. Government participation and control	III.D9. Insurance
II.B6. Relationship with government/ ownerII.B7. Intellectual property	III.D10. Safety during construction
II.C. Culture	III.D11. Communication and data transfer
II.C1. Traditions and business practices	III.D12. Quality
II.C2. Public opinion	II.C3. Religious differences

the risk management at an earlier phase, as follows:

- The risk management requires many of the customs and practices that are most disruptive to the project's success to be identified.
- Early on, the risk control is prioritised to save costs and prevent risks.
- The risk management facilitates the cost-profit evaluation of real risk management situations.
- By avoiding unneeded occurrences, the risk management enhances the deployment of project assets on critical risks to produce the satisfactory outcomes.
- As risks are outlined, the risk management makes cost estimation more straightforward and accurate.

2.6. Methodologies for managing political risks

Aside from institutional procedural purposes, there are alternative risk management systems. The latest clusters include PMBOK's PRM segment, Management of Risk (MOR) of the Trade Office (UK), Project Risk Assessment and Management (PRAM) of the Association of Project Management, Association of Civil Engineers (ASCE)'s Project Risk Assessment and Management (PRAM), International Standardisation Organisation (ISO)'s RM-Principles and guidelines, Risk Analysis and Management for Project Methodology (RAMP) financed through the HM Treasury and other community as European Union (EU).

Following the analysis in another research[50], some of these components are displayed with the steps included in Table 3. While these frameworks are widely sought to be used, they remain not short of opponents, and their main quarrel is that they perform as a reductionist and consequently do not disclose the causes and consequences of interactions and outcome systems. The framework considered utilises a one-way approach to describe the structure, as well as the consequences, but not the risks [14,73]. In distinguishing the borders of structures and strategies, a risk management process (RMP) should be approach.

Political Risk measures are included in strategies for risk management, treatment strategic planning, implementation, and monitoring. In imperative to come across the directions of the project management organization and ISO, the study used a methodology adopted based on connection with RM[46], like the ISO approach (Cooper et al., 2014). The model proposed by ISO is also comparable to that of other project management agencies. Fig. 5 reveals the many steps in the processes, comprising identification, investigation, assessment, risk monitoring, revision of the information, consultation of the information,

Table 3
Methodologies for risk management [50].

RM Process	Professional Recognition				
	PMI	OGC	ISO	IRM	HM Treasury
RM Planning	X		X		
Risk Identification	X	X	X		X
Risk Analysis	X		X		
Risk Assessment		X	X	X	X
Risk Response	X	X	X	X	
Risk Monitoring	X	X	X	X	
Risk Control	X				X
Risk Review & Reporting		X	X	X	X

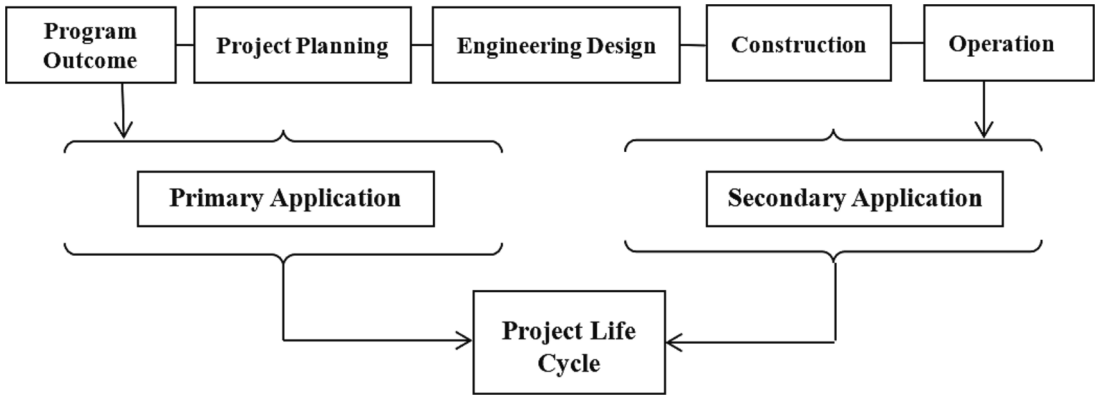

Fig. 4. Adoption of IPRA for the project life cycle (PLC) [24].

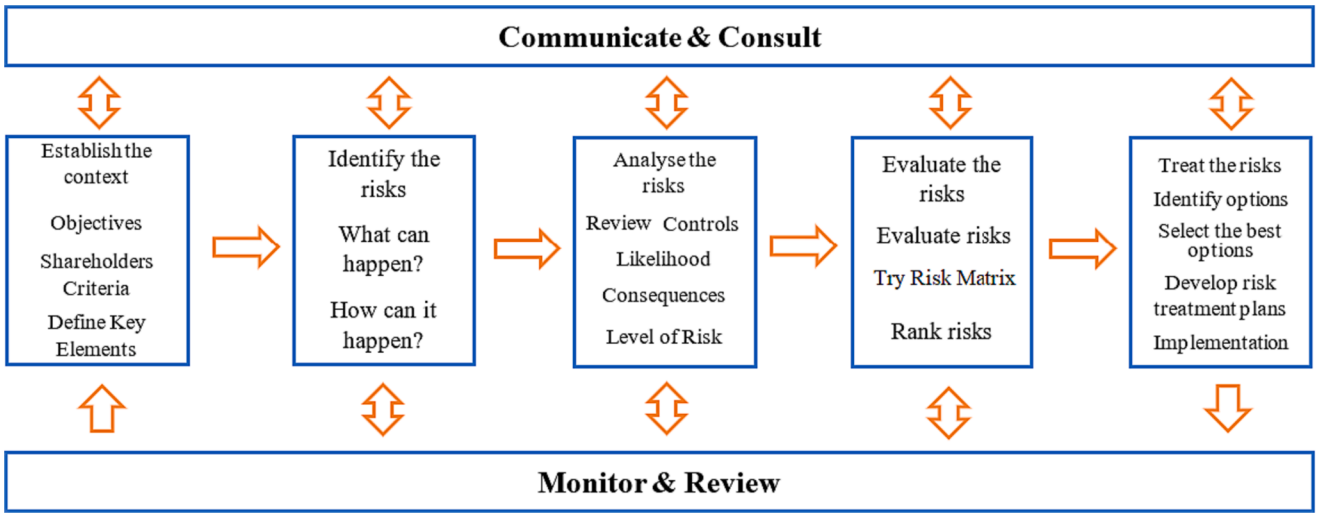

Fig. 5. Flow Diagram for Risk Management Process. Permission was obtained to adapt this image from the first author of the book- Dr Dale Cooper [26]; Cooper et al., 2014).

participation in discussions, and provide recommendations.

3. Research methodology & research design

The study's goal was to investigate the fundamental tasks that ICCs do in actively overseeing international processes. This research's thorough strategy is based on a literature study, pilot tests, questionnaires, and factor analysis to achieve this goal. The research framework for this study is based on research and development. Fig. 6 is the research methodology for this study.

This study uses questionnaires, supplemented by the applicability of this method in previous political risk studies[36,48,75]. The research method discusses the techniques and processes used in the data collection process. This is a fundamental research programme that enables a logically linked approach to research, and all key elements of the research process, such as data collecting and sampling, collaborate to address issues.

According to the research, from a process point of view, it is an observation of modern phenomena in the context of boundaries. Questionnaire design and case studies were vital aspect of the study considered when pursuing the 'what', 'how', and 'why' questions. The study sought solutions to concerns concerning the operation of political risk in international construction projects. Case studies are predominantly essential when revising structures, practices individuals, programmes and activities that affect the personnel of the organization. This study is an occurrence of project political risk, consequently, the case can only be within its own scope, i.e., the construction project itself has been fully considered.

3.1 Research Participants.

The research participants included experienced project representatives from worldwide construction projects, as well as some professionals such as project managers, employers, and engineers. A research strategy was established based on the results of the investigation. Prior to the large-scale investigation, numerous construction professionals supervised pilot surveys to analyse and validate the initial list of factors, as well as to examine the questionnaire's full and consistent

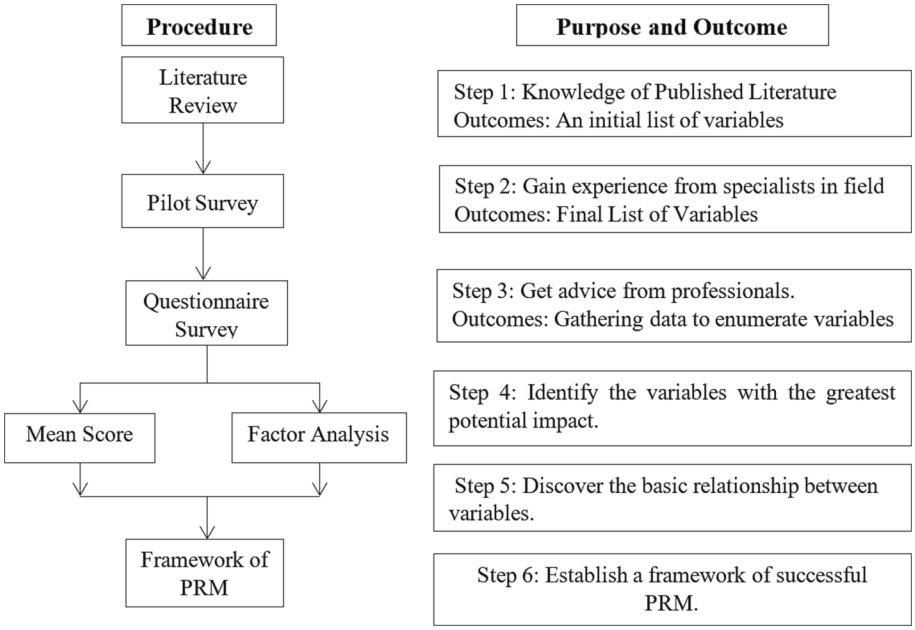

Fig. 6. Proposed Research methodology.

analysis. Five international project managers with over two decades of experience from parent companies were asked to determine variables. Based on the input from the pilot survey, the questionnaire was improved. Based on the responses to the pilot survey, it was discovered that 21 political events contributed to the political risks associated with international construction projects, based on the designated grouping. To process the primary source for the questionnaire, the researchers utilise factors that were coded as the Political Risk Events (E01-E21). Respondents were informed that their data will be anonymous, and they were delighted in their opinions shared for this study. The respondents also gave details on the additional circumstances that were not mentioned in the anticipated list. To gather the factors from cases of political risk from international construction projects, a standardized questionnaire has been designed. This questionnaire survey is based on variables for Political Risk Events.

3.1. Variables: Political risk level and the contributing factors

Political risk managers identify major political risks based on geographical location. The most crucial query at this point is, "How might political performers or incidents openly undermine the goals?" By asking the research questions, political risk managers question partialities within the organization and define whether these political risks are real. If the risk is not acknowledged, the risk cannot be verified, or it can be transferred. Political risk comes from government and society. Public risks may be very specific, such as credits, or may include provisional or negligible risks, such as currency monitors, confined service rules, etc. Political risk management is seen as an on-going phenomenon in all international construction projects.

This information is gathered from reputable political risk advisors, global corporations and partners, members of the public, other enterprises, trade groups, regional organisations, and other sources. Large businesses frequently utilise specialised analytical tools created for the industry. Risk managers can use this set of circumstances as a framework to decide what data they need. Based on the political risk experience of all circumstances, political risk managers should assist them in assessing and controlling risks. They should identify the circumstances that have an impact on each scenario's likelihood. The structure of this task should allow for the elimination of noise and extraneous information, and the data requirements may alter over time.

If the business has a complete political risk plan in place, the Risk Management Group will be able to rank the risks based on how critical they are to the company's operations. According to the situation of Construction Industry, they need some more variables which can identify the Political Risks and its Management. Therefore, newer variables with some tougher variables are included (see Table 1).

In accordance with analysis in an earlier study[35], political risk can be separated into two events such as internal and external risk events. These occurrences can affect the construction market. hazards connected to variables like government regulations or the weather that project managers cannot directly control are referred to as external hazards. In this area, there are numerous risk events. hazards that have an immediate effect on certain initiatives are linked to internal risks. Fig. 6 shows a further division of project's internal risks based on where they originated from.

3.2. Data collection

An overall of 100 questionnaires were dispersed to industry experts with more expertise and having good knowledge about construction industry. The emphasis is now on international construction, and key project team members such as Project Managers, Employers, and Engineers are involved in the project. As they are responsible for the operation and application of any quality control method. In this case, data was obtained from the construction industry for empirical analysis to report the questions rose in the research. The data was collected using an online questionnaire sent to respective Project Managers, Employers and Engineers via email. The survey event produced 60 valid responses from industry. This is an acceptable and appropriate response rate of 60 % for data analysis. Most of the experts have above 20 years of combined experience working in the global construction sector. 71 % of professionals have practised more than 5 political events in their careers. Table 4 indicates the geographic division of respondents. Most of the respondents to the Practitioners were from China International Contractors Association (CHINCA), which were also tangled in the African and Asian construction markets, as literature shows that they account for 90 % of Chinese International Contractor (CIC)'s external business (Zhen-Yu Zhao & Lin-Ling Duan, 2008).

4. Results and discussions

The decisions are originated from surveys, records of information and contribution and surveillance of the researcher. The study participants were the main participants in the Joint Venture (JV) Projects. The study's purpose was to investigate how political risk was assessed and managed in international enterprises. The study's findings shows that the goal of the investigation was achieved. This research found that the implementation phase was more susceptible to political risk, that a qualitative (heuristic) approach was used for special risk assessments, and that collaboration (i.e., JVs) was the chosen risk answer or managing approach.

Different methods for analysing case studies, for this study a narrative approach was used. For quantitative data statistical analysis is used. There are several ways to analyse case studies. According to Rowley, [64], the narrative method is used in this research, because simply expressive statistics are used. Quantitative data required coding Software like SPSS Software as used in this research study to organize it for involvement into an analysis instrument or spread sheet.

4.1. Reliability analysis

To validate the study, statistical approach was undertaken as presented herein. The Cronbach's coefficient was employed in this study to test the reliability of a five-point Likert scale. For alpha to be considered reliable, it must lie between 0 and 1 and be at least 0.7. In this case, the Cronbach's alpha value is 0.781 (Significance level = 0.000), which is greater than 0.70. As a result, all information is trustworthy and generally suitable for factor analysis. All factors keep items that can be deemed to be very important with a load of less than 0.50 to boost relevance. The following two techniques were used to establish the interior trustworthiness of the components, namely the Cronbach's alpha as either 0.70, or 0.30 (item-to-total correlation).

4.2. Ranking technique based on Mean Score (MS)

This approach has shown to be an effective and straightforward implementation in earlier investigations (J. [76]. Probability exhausting the identical practise, the results of the existing questionnaire survey were also examined. The MS of each variable was analysed using the Likert scale (1: Most Likely, 2: Likely, 3: Unlikely, 4: Possible, 5: Rare),

Table 4
Dispersal of the Practitioners Experience.

Constraint	<3%	3–5 %	5–10 %	10–15 %	15–20 %	>20 %
Overall Experience (years)	1.2	3.3	13.1	34.3	41.2	7.9
International Construction Experience	2.7	8.9	27.2	36.9	21.0	3.4
Experienced Political Events	4.3	23.9	43.8	19.7	6.1	1.3

which provided the relative prominence level of each variable. All variables are calculated using MS technique, which displays the variables' relative reputation levels. The relevance of each variable is then defined using the ordinary. Component exploration is a statistical technique used to classify relatively a few factors that can be used to describe the relationships between distinct variable groups (J. [76]. Figs. 7 and 8 present the Mean values and Standard Deviation values for the factors identified on Political Risk Variables, respectively.

4.3. Communalities of the variables

In Table 5, the representative data on communalities from this study can be seen. Communalities refer to the percentage of each variable's variance that the factors can account for, and the communality of a variable goes from 0 to 1. Communality can often be understood as the percentage of shared variance in each variable. The communality of wrote a variable with no distinctive variance at all (that is, one whose variance is entirely explained by other variables) ranges from 0 to 1. Zero is the communality of a variable whose variance cannot be explained by any other variable. The quantity of unique data that can be derived from a shared component and stored in each variable. In other words, more information will be obtained with higher values of communality (closer to 1). A communality of at least 0.40 is a useful metric for factor analysis. Each variable's initial communality value is set to 1.00, or 100 %, by default, because none of these data was retrieved at the start of the factor analysis.

The percentage of variance in observable variables that may be accounted for by the underlying common factors is known as communality in factor analysis. High communality among multiple-choice questions in educational testing provides evidence of a common underlying skill or knowledge area, which helps with test design and assessment. This idea can be applied in real-life scenarios. Like this, a high communality between survey questions about brand reputation, pricing, and product quality in market research suggests strong linkages that guide marketing strategy. Communality is a useful tool for identifying and measuring shared characteristics or aspects within complicated data, and it is applied in a variety of sectors, including psychology, economics, environmental assessments, and human resources.

4.4. Ranking of the variables

In engineering research, the Mean Score methodology is a useful method for classifying related variables[47]. In Table 5, the representative data on rankings from this study can be seen. Based on their mean ratings, we categorised 21 political risk events in the framework of our study. A score of 3.000 indicated a variable of significant relevance. Participants evaluated each variable on a five-point Likert scale. These variables are separated into two separate categories: Project-Specific Variables, with mean scores ranging from 3.4333 to 4.1667, and Political Risk Events, with mean ratings ranging from 3.0333 to 3.7000.

Consider a case study utilising a worldwide infrastructure project to demonstrate how this strategy is used in practise. Along with project-specific factors including project size and complexity, the project team assessed a range of political risk events, such as changes in governmental policies and geopolitical instability. The team received important insights into the relative significance of each variable by assigning mean scores to these aspects, enabling more knowledgeable project management and risk identification methods.

The strength of connections between variables and model size are two important factors to consider when determining whether a dataset is appropriate for factor analysis. It is important to note that, in terms of model size, this research exceeds the limits suggested by Smith & Gannon, [69] in terms of the ratio of model size to variables. This shows that the size of model is appropriate for factor analysis. The strength of the association between the variables should be equal to or greater than the Correlation Matrix.

It also implies that the sample size is sufficient for factor analysis. In terms of the power of the link between variables, the Bartlett's test of sphericity ($p < 0.05$)[16], and the Kaiser-Meyer-Olkin index ($KMO \geq 0.50$) were recommended, and the correlation matrix should be equivalent or greater than 0.3 ($CM \geq 0.3$).

Consider a financial institution that wants to evaluate the elements influencing economic stability in various regions to illustrate the importance of these criteria. They can validate the applicability of their dataset for factor analysis by using Bartlett's test and KMO index. The resulting correlation matrix aids in the identification of factors with high correlations, such as GDP growth and inflation rates, allowing for more precise risk assessments and investment decisions.

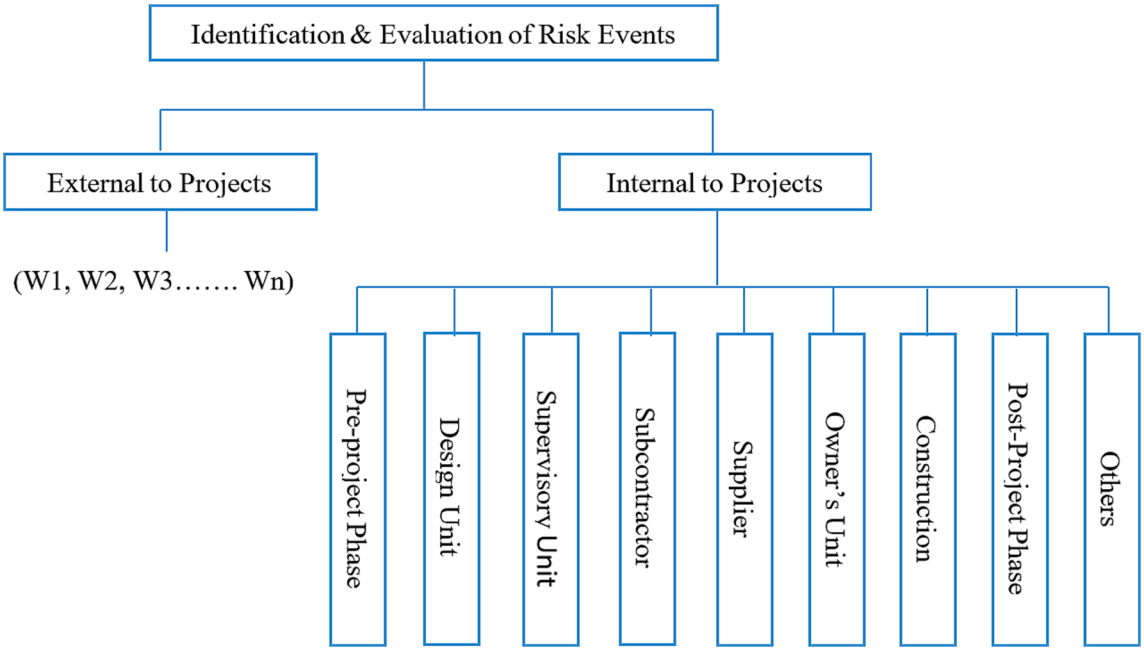

Fig. 7. Identification of risk events. Adapted with permission of the publisher. Source. Fang et al., [35].

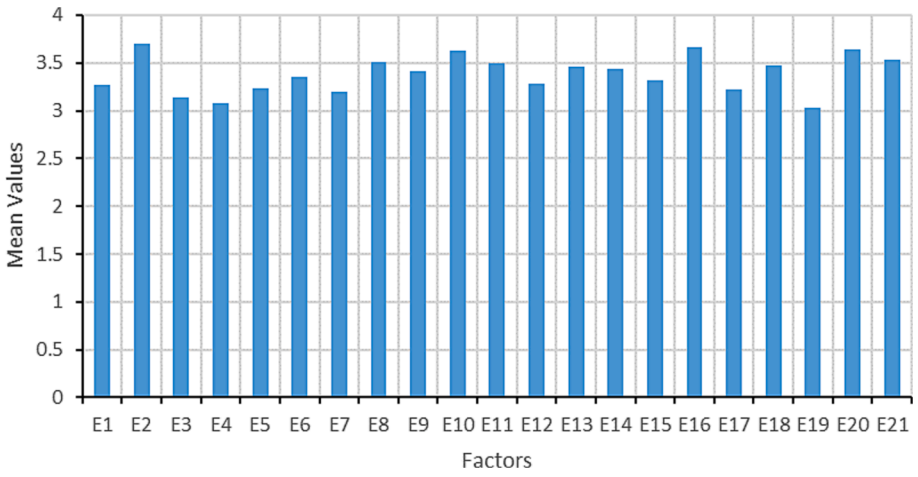

Fig. 8. Mean values for the factors identified on Political Risk Variables.

Table 5
Factor Analysis of Political Risk Variables.

Variables	Mean Value	SD	Rank	Communalities	
E1	3.2667	1.54992	15	0.708	
E2	3.7000	1.40580	1	0.684	
E3	3.1333	1.52345	19	0.706	
E4	3.0833	1.57622	20	0.641	
E5	3.2333	1.45400	17	0.583	
E6	3.3500	1.24635	12	0.790	
E7	3.2000	1.36295	18	0.641	
E8	3.5100	1.51266	6	0.535	
E9	3.4167	1.51032	11	0.719	
E10	3.6333	1.37738	4	0.757	
E11	3.5000	1.38393	7	0.659	
E12	3.2833	1.41531	14	0.576	
E13	3.4667	1.51228	9	0.573	
E14	3.4333	1.51116	10	0.574	
E15	3.3167	1.51257	13	0.657	
E16	3.6667	1.54773	2	0.394	
E17	3.2167	1.59546	16	0.703	
E18	3.4767	1.52345	8	0.628	
E19	3.0333	1.55102	21	0.464	
E20	3.6433	1.50667	3	0.712	
E21	3.5300	1.33404	5	0.636	
Cronbach's alpha					0.781
Eigenvalues					4.032
Variance (%)					19.199
Cumulative Variance (%)					19.199
Kaiser-Meyer-Olkin Measure of Sampling Adequacy					0.565
Bartlett's Test of Sphericity					$\chi 2 = 314.736$
df					210
Significance					0.000

Table 6
Risk impact analysis for Political Risk Level Variables using comparisons on host country vs construction firms.

Political Risk Events		Host Country	Construction Firms
E1	Currency inconvertibility and non-transfer	Yes	No
E2	Breach of contract	Yes / No	Yes
E3	Expropriation	Yes / No	Yes
E4	Political violence	Yes	No
E5	Change in law, regulation, and policy	Yes	No
E6	Restrictions in construction business	Yes	No
E7	Issuing approvals and consents	Yes	No
E8	Bribery and corruption	Yes / No	Yes
E9	Import restriction	Yes	No
E10	Unexpected currency devaluation/ Revaluation of non-floating currencies	Yes	No
E11	Delays in profit repatriation	Yes / No	Yes
E12	Currency inconvertibility	Yes	No
E13	Terrorism	Yes	No
E14	Unfair tax laws	Yes	No
E15	Labour strikes and trade union power	Yes / No	Yes
E16	Production or export restrictions	Yes	No
E17	Contract repudiation	Yes / No	Yes / No
E18	Restrictions on local market access	Yes	No
E19	Nationalization	Yes	No
E20	Confiscation of property	Yes	No
E21	Restrictions on information flow	Yes	Yes

4.5. *Factor analysis of political risk variables*

The next aspect of the analysis is the factor analysis using the survey data. This analysis also enhances an understanding unto the complex dynamics of political risk in the business environment. This process helps us to further process the data gathered through factor analyses of the variables that make up political risk. The factor analysis is used in this study to examine 21 different variables. The further analysis on Table 5 was also conducted which provided the Kaiser-Meyer-Olkin (KMO) Index of 0.565, along with the Bartlett test statistic (314.736, df 210, Sig 0.000) which demonstrate the adequacy of the model for factor analysis. The findings in Table 6 show that the model explains a significant 63.516 % of the variance, exceeding the 60 % cutoff point (Alon & Herbert, 2009). The author uses a factor loading limit of 0.50 to help us classify variables into various factors and streamline the results. The consistency and overall inter-variable correlations have values of 0.429 (less than 0.50) and 0.269 (less than 0.40), respectively, which present interesting distinctions even when the individual variable loadings exceed 0.50.

These findings have practical applications in international business strategies. Consider a multinational firm that wants to grow into a place with unstable political conditions, for example. They can identify the primary risk factors that could have an impact on their investments, such as government stability, regulatory changes, or civil disturbance, by using factor analysis on political risk variables. These perceptions can guide the company's risk management and strategic choices, potentially protecting substantial investments.

In a different context, financial organisations regularly use factor analysis to evaluate political risks when making loans to foreign countries. They can adapt risk management techniques to minimise potential losses by recognising significant risk variables, such as exchange rate volatility, governmental changes, or political instability. The findings of this present study have been validated using earlier works on the factor analysis for political risks in construction (Deng, Low, et al., 2014; [34,81].

This study, which has useful applications in numerous fields of

international business and finance, concludes by highlighting the significance of factor analysis in understanding and addressing political risk elements.

4.6. Risk impact analysis for political risk variables

Understanding the complex dynamics of political risk in the business environment requires doing factor analyses of the variables that make up political risk. For a deeper understanding, factor analysis is used in this study to examine 21 different variables. The first aspect of the risk impact analysis involves a comparative investigation to find the impact of the political risk factors between the host country and the construction firms. Another aspect of this study is the risk impact analysis using comparative data of factors against some selected key determinants in International Contracting Projects. All the variables considered for the comparative analysis of the factors for the Political Events are shown in Table 6.

From the analysis on this study in Table 6, it can be seen that various factors have correlation between host country and construction firms. However, most of the factors had more dependence on the host country than on the construction firms. This study shows that the host nations hold the key to most of the political risk factors, as such it is important that necessary risk identification is carried out to forestall any issues that can lead to project disruption or pausing the project or changing the terms of the contract to become unfavourable when the project is still in progress. This like changes in political government, changes in currency, exchange rate issues, import/export issues, etc., all affect the progress of any construction project and the ICCs. This finding is confirmed by those of recent study by Azad, [14], although it was based in Pakistan construction sector, but the factors reflect similar behaviour on the political risks identified.

4.7. Key political risks

The primary objective of this topic is to categorise the major political risks that faced by international construction endeavours. Data in Fig. 9 shows the percentage of defendants who choose both political risks according on their likelihood of occurrence. Accordingly, 62 % of all these risks are advised to be anticipated as being accepted by all defendants. Expropriation and applications for local property carried a political risk that called for at least a 60 % response rate. Aside from that, the respondents reported corruption as having 100 %, bribery as having 100 %, labour unrest as having 100 %, repudiation as having 97 %, contract problems as having 93 %, permit delays as having 87 %, demonstrations as having 79 %, local ownership as having 57 %, political violence as having 57 %, and the least was change of law as having 46 %. All these factors have high impact on construction projects, and therefore are the identified risks related to political situations. (See Fig. 10.).

Looking at the Corruption risk, it is challenging to find proof of project corruption without supporting documentation. The researchers are aware that the project may have some elements of corruption, which is not expected, although it was discussed based on the feedback provided by an observer. The next issue is the Bribery risk, which is also evident in the construction industry, based on the respondent feedback. Even though there is no documentary or documented evidence to that effect, the researchers cannot ignore the contributor's opinion as each respondent gave unique responses on the key political risks. Also, the research hypothesis assumed that there was the likelihood of bribery on one or two projects. The next issue is on the risk of expropriation, which is also very important in projects. Budgets and funding are key aspects of project management, as such, any expropriation or financial mismanagement could deter the progress of the project. However, there is currently no more proof of the expropriation risk from any source that may be used for the issue, based on this study.

5. Discussions

The literature review conducted found that whilst the national and local companies carry out some of the construction projects, a huge amount of construction projects are conceded out exclusively by foreign companies and joint ventures[22,35]; Hong & Chan, 2014). Also, the recent events surrounding the construction industry revolution have highlighted the importance of political developments in the global market.

The article demonstrates an appropriate conceptualization framework for political risk management in international construction projects. The risk factors identified from this study have been obtained through a thorough analysis. In an event whereby they are frequently outweighed by other risks, contractors working on international construction projects should be careful when deciding how to handle political concerns. Political risk analysis is an active, multifaceted activity that considers a variety of host countries, sectors, planning and solid-related issues, as well as characteristics related to the global location over time. The study identified 21 factors that influence the extent of political risk posed by external entrepreneurs and was established on a massive examination of the literature. To obtain a consensus, key variables have been identified and assessed.

The analysis provides some cautious conclusions:

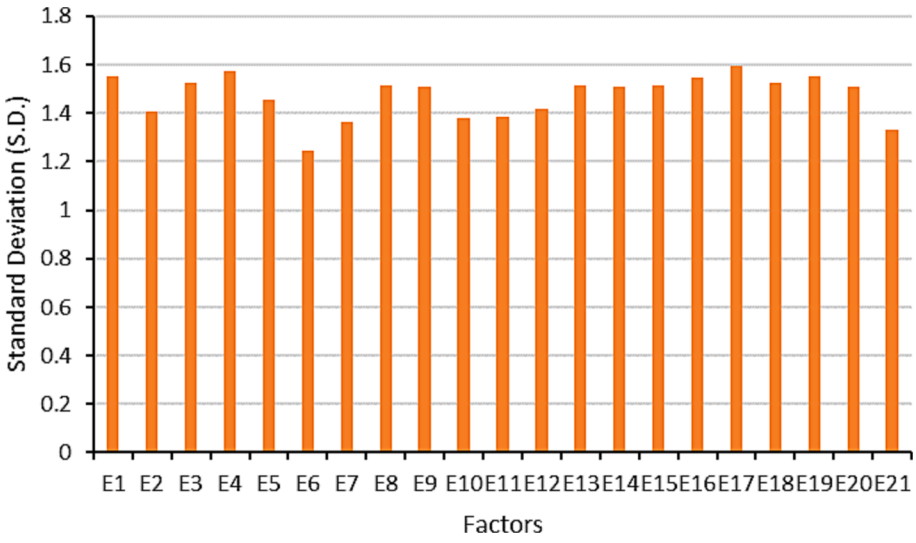

Fig. 9. Standard Deviation values for the factors identified on Political Risk Variables.

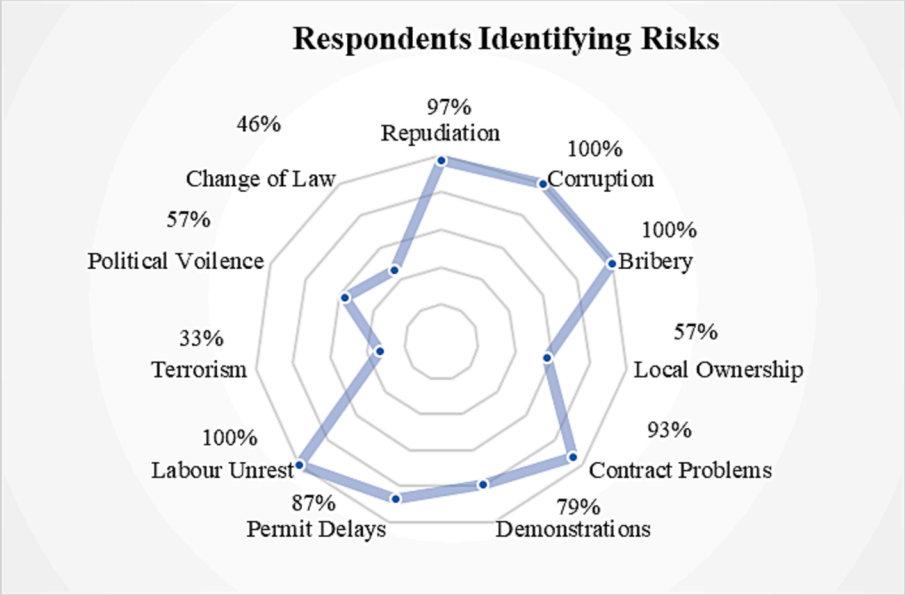

Fig. 10. Percentage of Respondents selecting Political Risk.

(1) respondents between the scientific community and the group of professionals involved in general research agree with the overall ranking of each variable, but do not agree with the classification of groupings. However, with a slightly different view of the variables in the academic community and by experts have different judgment on variables.

(2) The findings indicate that the degree of governmental stability, the viability of host country ventures, political uncertainty, negative views towards foreign firms, etc are the substantial outcomes of political risks in universal projects. Most of the important variables, they discovered, are linked to political risk categories, which was expected. However, further research could be conducted using ANP or similar approach to confirm the connections and influence of the identified risks.

(3) Respondents were rated first in the political risk level variable categories based on the average of variables in the same category, as it was observed that the risk impact analysis showing that the host country has high level impact on the political risk variables.

(4) Changes in host governments and the global environment are the key finds of political risk. The findings include that issues that are related to changes in government, changes in currency, changes in taxation, changes in interest rates, etc., are among the key determinants influencing the ICCs. However, future work should include the use of risk influence matrix to identify the extent of each factor's impact.

Political risks have a greater effect on corporate contracts, including the Engineering Procurement Construction (EPC) turnkeys, Public-Private Partnerships (PPP), Build Operate and Transfer (BOT), and design, build and operate (DBO), as it is more than the effect on other types of projects, due to the scale of the projects. It is advisable that the project risks must consider the type of project for the documentations have peculiar, generic and particular details. Thus, considerations for EPC turnkeys, and DBO/PPP/BOT will have unique details in each of the contracts.

This study provided information on the unfavourable impact of poorly managed political risks on projects, even though it did not explicitly link project performance with risk management. The study demonstrates that the project's goals cannot be met without systematic risk management. Some recommendations were also derived from this investigation. International business owners are urged to pay closer attention to these crucial factors; therefore, project management performance needs to be continually enhanced to meet managing political risks. More research is needed to bring more insight and comprehension of political risk management in the construction industry. A variety of case studies on the management of political risks in multinational building projects are recommended to validate the research findings. In addition, since only participants are utilised as respondents, it is appropriate to investigate the management of political risks in international building projects at every stage of their lifecycle. The findings of the study must be regarded seriously. To better comprehend the political direction of construction risk and global engineering, research of opposing qualitative and quantitative approaches to assess the efficiency of political risk management is being conducted.

5.1. *Managing international construction projects*

The success of any construction project by any international, national, or local company depends on several factors, including time, budget, and scope of the construction. Another important area is having a good plan in-place for executing the project. Thus, managing International Construction Projects requires key areas which start from the identification of the risks in the project phase, to the monitoring in the pre-project then the assessment of the risk in the post-project phase

Since each project is subject to scope, size, budget and time, it is important that adequate planning is made as well as risk identification techniques for any construction project. This will enable good project management practices to be considered and adopted. Thus, a successful project is achievable when contractors can identify the risks, preserve their investments, minimize project delays, handle disruptions, and boost project success rates. Additionally, political risks are invariably associated with construction projects, and this is considered a concern for foreign contractors. Thus, good identification techniques will ensure project preparedness, which is required by expatriates and foreign contractors. This is necessary as they need to ensure that their projects are successfully handled and that there are alternative plans to handle any unexpected event on the project. Table 7 presents a framework developed for identifying risks in international construction projects through PRM.

5.2. *Techniques for risk identifications*

This research would not be complete if there is no mention of the various techniques for risk identification. This would help the project manager, monitoring officer and risk assessor to better understand the

Table 7
Framework for identifying risks in international construction projects through PRM.

1st Phase: Pre-Project Phase	2nd Phase: Project Implementation	3rd Phase: Post-Project Phase
The objective is to identify the potential risks and enhance preparedness as well as attain a more favourable political risk stance.	The objective is to minimise the likelihood, adapt and mitigate the potential consequences.	The objective is to mitigate tangible consequences and amass knowledge through practical application.
A. Political Risk Assessment	**C. Shaping Business Settings**	**E. Political Risk Response**
• Collect information about the hosting nation. Identify the possibility of political eventsAssess the likelihood of such events happening and their impact (s)Analyse the linkages between various events. Establish the causes and effects for the identified risk (s) Establish a comprehensive framework for addressing political risk	• Establishing collaborative connections, partnering with local businesses,cultivating a positive reputation, and image-building process creating an online presence for the business with social media profilesestablishing behavioural guidelines like codes of conduct are initial steps.Reduce mistakes that are unnecessary.	• Put into effect an action plan for political risk; Ensure fairness in the compensation for claims; Demand that the claimant be compensated; Strive to secure support from the home country;Appeal to international bodies.Develop interim management techniques.
B. Developing Suitable Strategies	**D. Monitoring and Preparation**	**F. Post-Response Assessment**
• Strategy for political risk identification Strategy for political risk classification Strategy for political risk mediation Strategy for entry mode selection Strategy for diversification Strategy for internationalizationStrategy for alliance formation and localizationStrategy for involvement in foreign markets	• Continuously monitor the dynamic nature of prevailing circumstances Develop a full action plan to address political risk Assign additional financial resourcesSecure political insurance coverageSecure a guarantee from the hosting governmentAlways ensure prompt reaction and preparedness to changes	• Conduct a re-evaluation of political risks Recognize and acknowledge the accomplishments Assess the necessity for changeGenerate PRM reportsDisseminate insights gained and lessons learnt

essential aspects that impact the level of risk. The process of risk identification holds significant importance in the decision-making process for stakeholders across many domains, encompassing business management, project management, financial management, as well as environmental planning. The process of identifying hazards also plays a crucial role in enabling stakeholders to make well-informed decisions. These are seen in the following areas:

Risk assessment: This is a crucial process that entails the examination and evaluation of potential hazards or uncertainties that have the ability to affect the achievement or consequences of a project, corporate endeavour, or any form of decision-making. This assessment offers stakeholders a complete comprehension of the various issues they can encounter.

Informed Decision-Making: The Importance of Making Decisions Based on Knowledge and Information cannot be over-emphasized. Once risks have been recognised, stakeholders are able to make decisions that are better informed. The individuals possess an understanding of the possible negative consequences and are capable of evaluating the hazards in relation to the anticipated advantages of a specific course of action.

Risk Prioritization: The process of determining the order in which risks should be addressed based on their level of importance and potential impact. Not all risks possess equal levels of significance. Through the process of identifying and evaluating risks, stakeholders are able to assign priority to these risks by considering their probability of occurrence and potential consequences. This enables individuals or organisations to allocate their resources and concentrate their efforts on mitigating the most significant risks as a priority.

Risk identification planning: This involves the identification of potential risks, which in turn allows stakeholders to formulate successful plans and strategies for the purpose of mitigating or managing these risks. Organisations have the ability to take proactive steps to mitigate the occurrence of risks and mitigate their consequences in the event that they do arise.

Contingency planning: This involves the recognition that certain hazards cannot be entirely eradicated. In circumstances of this nature, stakeholders possess the ability to formulate contingency plans in order to adequately address any potential risks that may manifest. The implementation of a carefully devised strategy can effectively reduce the adverse outcomes.

Resource Allocation: The process of resource allocation is enhanced by the identification of risks, as it enables stakeholders to allocate resources in a more effective manner. Organisations has the ability to manage financial resources, human capital, and many other resources in order to effectively handle or reduce the most pressing risks, while simultaneously avoiding excessive investment in risks of lesser significance.

Communication and Transparency: The promotion of transparency and communication is facilitated by the effective identification of risks, hence enhancing engagement among stakeholders. This facilitates the initiation of inclusive and constructive dialogues pertaining to prospective obstacles and ambiguities, hence fostering trust and fostering collaborative dynamics among group members.

Regulation and Compliance: In sectors characterised by regulatory frameworks, the identification of hazards is frequently regarded as a legal or ethical imperative. The exhibition of appropriate vigilance in the identification and management of risks can assist stakeholders in adhering to pertinent rules.

Strategic planning: This involves the utilisation of risk identification as a means for stakeholders to enhance the effectiveness of their strategic decision-making processes in the long run. Individuals have the capacity to contemplate the potential impact of various situations and hazards on their long-term objectives, so enabling them to adapt their plans accordingly.

Continuous improvement: This involves the recognition that the process for discovering risks is not a singular occurrence, but rather an ongoing and iterative endeavour. The aforementioned method necessitates regular reevaluation when identifying risks. Once there is an ongoing assessment of risks, it enables stakeholders to modify their decisions and plans in response to the emergence of new information.

In essence, the process of recognising and evaluating risks is a crucial component of the decision-making process. It allows various parties involved to analyse possible hazards, devise backup plans, allocate resources efficiently, and make well-informed decisions that are in line with their goals, all while minimising any adverse consequences. Responsible and effective decision-making is a crucial component within diverse domains. Table 8 gives a list of 55 risk identification techniques considered in international construction projects.

5.3. Recommendations on risk identifications

This research helps to better understand the essential aspects that impact the level of political risk. Based on these expert judgements, there is a need for a model to evaluate political risks employing crucial

Table 8
55 Risk identification techniques considered in international construction projects.

S/N	Risk Identification Techniques	S/N	Risk Identification Techniques
1.	Work Based Structure (WBS) analysis	29.	Brainstorming
2.	Questionnaires and online surveys	30.	Event tree analysis (ETA)
3.	Case study analysis	31.	Fault Tree Analysis (FTA)
4.	Interviews and qualitative research reports	32.	Failure Mode, Effects, and Criticality Analysis (FMECA)
5.	Focus group discussions	33.	Hazard and operationality studies (HAZAOP)
6.	Checklist approach	34.	Failure Modes and Effects Analysis (FMEA)
7.	Project audits and monitoring reports	35.	Functional Hazard Analysis (FHA)
8.	Using experiential learning by examining previous related project activities from both international and local cases,	36.	Quantitative Risk Analysis (QRA) to identify both safety risks and political risks as well as the impact
9.	Site training and workshop sessions	36.	Risk registers (RR)
10.	Icebreaker activities	37.	Risk Assessment (RA)
11.	Scenario development	38.	Expert Opinion
12.	Intuition and Judgement of Proficient Managers	39.	Delphi technique
13.	Assumption analysis	40.	Constraints analysis
14.	Diagramming technique	41.	Documentation review
15.	Evaluation of other projects	42.	Examination of past risk
16.	Experience in the firm	43.	Examination of weakness /vulnerability
17.	Flowcharts	44.	Incident investigation
18.	Historical data	45.	Influence diagrams
19.	Interviewing	46.	Lessons Learnt
20.	Previous experience	47.	Personal observation
21.	Peer review	48.	Project monitoring
22.	Prompt lists	49.	Prototyping
23.	Stakeholder analysis	50.	Root cause analysis
24.	Structured Interviews	51.	SWOT analysis
25.	Taxonomies	52.	PESTLE analysis
26.	Testing and modelling	53.	Technology readiness level
27.	System analysis	54.	Rendering
28.	Head counts	55.	Simulation analysis

variables, which can be augmented and enlarged in illumination of the outcomes of this research. Additionally, in-depth experimental research can be done to evaluate the model, investigate more efficient identification strategies, and investigate the future of all international start-ups. The result helps international construction companies in assessing the potential political risks and identifying the initial appropriate actions that should be taken to mitigate them.

Furthermore, it offers an insightful information and helpful suggestions for professionals in the field as it explores risk identifcation strategies for International Contracting Professionals in the construction industry. The study effectively identifies key elements and risk factors associated with international contracting based on data gathered from specialists in the construction sector in both academia and industry. International contractors should prioritise proactive risk management measures that handle political risk, particularly in areas with unstable political climates, to improve the practical applicability. When working in such environments, this may entail doing extensive due diligence on the political landscape, creating backup plans, and using political risk insurance. Furthermore, by working together, academia and business can create guidelines and best practises for controlling political risk in construction projects, which will improve project management internationally and make it more resilient and successful. In addition, continuous studies and industry collaborations are urged to modify risk reduction strategies in response to changing political environments. In the end, this study is a useful tool for improving risk management procedures in the global construction contracting sector. It can also provide guidance for the creation of industry-specific policies and cooperative initiatives.

6. Conclusion

This study has investigated the risk identification techniques for International Contracting Professionals in the construction sector. The methodology for conducting this investigation is based on data collection through questionnaires from construction sector professionals in both academia and industry. The tools were used to develop essential components from the factors established. This was then analysed using quantitative techniques to examine identified risk factors and make study deductions. The study is motivated by the challenges which are encountered by various contractors in the construction industry due to changes in political climes. Thus, managing political risk is an essential component of international contracting and project management globally.

This study has found that it is due to political unpredictability and volatility which can have a substantial influence on the successful completion of any construction project. In practice, contractors establish a systematic strategy for risk management that takes into consideration all the political risks connected to global projects. These risks include expropriation, civil disturbance, and shifts in governmental policies. Thus, there is a need for Political risk management (PRM) by the International Construction Corporation (ICC). The findings of this study also identified the crucial PRM-related implications for global initiatives, and various risks that were considered in typical construction projects. The political environment should be thoroughly examined, prospective risks should be noted, and risk-reduction tactics should be included in this plan. Thus, a successful project is achievable when contractors can preserve their investments, minimize project delays, handle disruptions, and boost project success rates. Additionally, political hazards are invariably associated with construction projects, and this is considered a concern for foreign contractors.

Determining the importance of the factors and PRM groups is also crucial. While the concept of Political risk management (PRM) is novel, this study found that it is covered in related literature, with existing gaps in knowledge which this study covers. Moreso, this study presents some evidence that political risks are higher during the implementation stage, thus the need for adequate risk identification. The identified risk factors from this study include project unpredictability, market volatility, and more. This research identified key trends that enable a proactive approach to risk identification by rigorously quantitatively analysing these aspects. The study further highlights the quantitative methods that enable organizations to make smarter decisions in the face of uncertainty and eventually improve their risk management tactics. The study also emphasizes how different risk factors affect the overall risk environment. Decisions made from mitigating these risks can influence policies made for various international construction projects across the world. Also, it is recommended that the governments taken more responsibility in the development of infrastructure projects and their monitoring through professional body towards sustainable development.

CRediT authorship contribution statement

Safi Ullah: Conceptualization, Methodology, Investigation, Writing – Original draft preparation, Data collection, Data curation, Data Analysis, Supervision. **Deng Xiaopeng:** Conceptualization, Methodology, Investigation, funding acquisition. **Diana R. Anbar:** Data Analysis, Data curation, Writing- Reviewing and Editing, visualization, software. **Chiemela Victor Amaechi:** Data collection, Data curation, Writing – Original draft preparation, Writing – Reviewing and Editing, Formal analysis, Resources. **Abiodun Kolawole Oyetunji:** Data collection, Data curation, Writing- Original draft preparation, Writing- Reviewing and Editing, Formal analysis, Visualization, Software, Resources.

Muhammad Waqas Ashraf: Data collection, Formal analysis, Visualization, Software. **Muhammad Siddiq:** Writing- Reviewing and Editing, Formal analysis, Visualization, Software, Resources.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Deng Xiaopeng is a highly accomplished professor and researcher, renowned for his expertise in the field of civil engineering. Currently serving as a professor at Southeast University in China, Deng Xiaopeng has established himself as a respected figure in academia. He previously held the position of assistant professor at The Hongkong Polytechnic University and served as an academic visitor at the National University of Singapore, further expanding his global academic experience. Deng Xiaopeng completed his Ph.D. at Southeast University in China, solidifying his knowledge and research skills in civil engineering. He obtained his Master's degree from Nanjing University and his undergraduate degree from Changsha University of Science and Technology, both in China. With numerous affiliations with different departments around the world, Deng Xiaopeng actively collaborates with various institutions to foster academic exchange and contribute to the advancement of civil engineering. His broad network of affiliations demonstrates his commitment to global cooperation and knowledge sharing.Deng Xiaopeng's expertise is widely recognized, and he serves as a reviewer for several prestigious international journals, including ASCE, Journal of Civil Engineering and Management, Project Management Journal, Automation in Construction, and many others. His role as a reviewer showcases his dedication to maintaining high research standards and ensuring the quality of scholarly publications. Throughout his career, Deng Xiaopeng has received numerous awards and accolades in the field of academics, reflecting his outstanding contributions and impact on the discipline. His research work has been published in over hundreds of research articles, and he has authored several influential books, further disseminated knowledge, and shaped the field of civil engineering.

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Chiemela Victor Amaechi is a postdoctoral researcher who recently concluded his PhD research at Lancaster University, working on the numerical modelling of marine hoses and composite risers for the offshore industry. He uses the software Orcaflex, ANSYS AQWA, ANSYS ACP, ANSYS Fluent, Simscale, SolidWorks, etc. His research interest is developing solutions for marine risers and submarine hoses attached to CALM buoys. It includes mathematical modelling and applications using the Lancaster University wave tank. He has a BEng degree in Civil Engineering from Nnamdi Azikiwe University, Awka, Anambra State, Nigeria, an MSc degree in Civil Engineering from the University of Ibadan; and a PhD at Lancaster University, Lancaster, UK, a top 10 UK institution. He has served on different technical committees, presented at various international conferences, written research papers and review papers in high-impact journals and authored some books. He has also lectured at Lancaster University, UK, and Blackpool and The Fylde College, UK. He is a registered engineer with COREN, NSE, NSBE, ASME, ICE, RINA and IMechE. He is an Associate Fellow of the Higher Education Academy, AFHEA, and the present Secretary of IMechE's North Lancashire Young Members Panel. He is also a Standards Engineer with the Standards Organization of Nigeria (SON), Abuja, Nigeria. He has collaborated in research with some companies. He also lectures Construction Management in a partnership of Bath Spa University and GBS Manchester, UK

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Muhammad Siddiq is a proficient civil engineer with expertise in the field of construction management. Muhammad possesses a robust educational background, having obtained a Bachelor's degree in Civil Engineering from Sarhad University of Science and Information Technology in Pakistan and a Master's degree in Civil Engineering and Construction Management from Huazhong University of Science and Technology in China. Muhammad is currently enrolled in a doctoral program at Southeast University located in Nanjing, China, with a focus on enhancing his proficiency in the field of civil engineering research. Muhammad has flourished in various positions, as evidenced by his track record in the field. As a Building Inspector for the Defense Housing Authority in Pakistan, he supervises construction projects, offers on-site technical advice, and ensures compliance with DHA Peshawar regulations. In addition, as a Planning Engineer for Kwadar Al-Watan Group in Saudi Arabia, he was responsible for managing project schedules, coordinating construction activities, and leading progress review meetings.

Muhammad Waqas Ashraf is PhD scholar at Southeast University China. Currently working on machine learning and deep learning in concrete materials and structures. I have also completed a master's degree in structural engineering from Southeast University as well, and a bachelor's degree in civil engineering from Pakistan.