Failure To Meet Deadlines In The Execution Of Public Works

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The purpose of the study was to specify the factors that affect the execution times of works in an entity. The methodology was based on a qualitative approach, basic type, grounded theory and theoretical triangulation. The objective was to understand, specify, interpret and present solutions to the difficulties faced by public management in State investments. The selected participants were supervisor, resident and construction coordinator, who interact directly and indirectly throughout the entity's works execution process. This study resulted in providing a deeper and more valuable insight into the practices and challenges in the execution of public works, which can be useful for future research and improvements in the management of infrastructure works. Where it was concluded that the actions that make it difficult for the entity to comply with the deadlines established in the execution of works, the main cause of this non-compliance is the existence of serious defects in the planning and execution of works.

Keywords: Non-compliance with deadlines, planning, execution of work, technical file, public management.

Resumen

La finalidad del estudio fue precisar los factores que perjudican los plazos de ejecución de obras en una entidad. La metodología se basó en un enfoque cualitativo, de tipo básica, teoría fundamentada y la triangulación teórica. El objetivo fue comprender, precisar, interpretar y presentar soluciones a las dificultades que enfrenta la gestión pública en las inversiones del Estado. Los participantes seleccionados fueron supervisor, residente y coordinador de obra, quienes interactúan directa e indirectamente a lo largo del proceso de ejecución de obras de la entidad. Este estudio tuvo como resultado proporciona una visión más profunda y valiosa sobre las prácticas y desafíos en la ejecución de obras públicas, lo que puede ser útil para futuras investigaciones y mejoras en la gestión de obras de infraestructura. Donde se concluyó que las acciones que dificultan el cumplimiento de los plazos establecidos en la ejecución de obras por parte de la entidad, la causa principal de este incumplimiento es la existencia de graves defectos en la planificación y ejecución de obras.

Palabras clave: Incumplimiento de plazos, planificación, ejecución de obra, expediente técnico, gestión pública.

1. Introduction

The failure to meet deadlines in the execution of public works is a persistent problem affects numerous countries, including Peru. The causes of this problem are diverse, including

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deficiencies in planning and design, unforeseen events during execution, problems with contract management, errors in cost estimation, and climatic factors. This situation has a negative impact on the state, contractors, and the general population. Moreover, the most prevalent issues are non-compliance with schedules and a lack of control during execution (Chamorro et al., 2022). These issues can even result in delays in the delivery of the works, increased costs, and quality problems. Additionally, control in subcontracting and poor coordination are among the factors contribute to these challenges (López and Vega, 2023). Furthermore, the lack of follow-up and non-compliance with technical specifications are additional factors that contribute to delays in construction projects (Barrionuevo, 2020). In addition, the implementation of effective internal controls and the involvement of civil society in public management are crucial measures to prevent corruption and ensure compliance with deadlines and technical specifications.

The limitations of the public works budgeting process are the efficient supervision and control to prevent corruption and ensure the proper use of public funds (Sandoval et al., 2023). It is crucial to emphasise the significance of accurate budget projections in order to facilitate the necessity for comprehensive training in the budget process and the implementation of tenders that align with established norms (Eslava et al., 2019). It is crucial to emphasise the significance of effective control bodies in preventing corruption and ensuring the proper use of public funds (Solórzano, 2022). Local governments lack the requisite documentation for works, which results in inaccurate projections and suboptimal project management. Consequently, the necessity of an adequate technical file for the execution of works is evident (Copari et al., 2023).

The comprehension of collaborative methodologies in the context of public works is a pertinent issue that pertains to transparency and efficiency in the execution of such works (Huaricallo, 2023). The lack of communication between the supervision, design, and execution offices is a reflection of the limited knowledge of collaborative methodologies in public works (Del Solar et al., 2021). This persistent challenge arises from the reluctance of officials to assume additional responsibilities beyond their current scope, which impairs coordination and efficiency in project execution. Furthermore, the overreliance on municipal administration instruments, such as the manual of organizations and functions (MOF) and regulation of organizations and functions (ROF), impedes the effective implementation of collaborative methodologies, including Building Information Modeling (BIM) and Project Management Office (PMO) (Garcia, 2020). Similarly, a lack of knowledge and the inadequate integration of collaborative tools can result in delays in execution of works, extensions of deadlines, and potential deficiencies in the quality of the projects carried out. The methodology of social control of works to improve works supervision is a necessity in current context of public management, which is based on a social control approach (Calderón and Quispe, 2021). This entails engaging the community in the process of monitoring and oversight of public works projects, through citizen participation and the transparency of public entity accounts.

The implementation of public works is susceptible to a multitude of risks, including corruption, cost overruns, delays, and inferior quality (Gutiérrez and Gutiérrez, 2022). The absence of effective control mechanisms can result in delays in execution of projects, which *Nanotechnology Perceptions* Vol. **20 No. S11** (2024)

in turn can lead to increased costs and uncertainty among the beneficiary population (Huayra, 2023). Inadequate planning and coordination of projects can result in the inefficient use of resources and the inability to meet needs of the population. Public works are a fundamental component of community development. These works facilitate improvement of infrastructure and public services (Almanza, 2019). In addition, public works are investments made by the state to enhance living conditions of the population (Cárdenas, 2021). The successful completion of infrastructure projects is of paramount importance for economic and social advancement of the nation.

The issue of deadline extensions in execution of public works is a recurring one generates controversies between the parties involved. These parties include contracting public entity, the contractor, and civil society (García, 2023). The discrepancies in question can be attributed to a number of factors, including deficiencies in formulation of the technical file and planning, communication and coordination between entity and the contractor, as well as modifications in design or technical specifications of the work during execution. Furthermore, climatic factors, earthquakes, or pandemics that impede the progress of the work, and non-compliance with obligations on the part of the entity, such as delays in delivery of land, payments, or information necessary for the execution of the work, must also be considered (Wagemann and Inostroza, 2020).

The causes that lead to additional and extended deadlines in infrastructure works in execution phase are deficiencies in technical file. These deficiencies may include insufficient materials, heavy rains, or the execution of an additional work concession (Reyna and Quispe, 2022). Infrastructure projects are susceptible to a number of factors contribute to delays and requests for additional allowances. One such factor is management of materials and equipment, which represents a significant cost in work and can cause delays if not properly managed (Medina and Ingaluque, 2022).

Among the causes result in delays in execution of works are failures in technical file, climatic factors, additional work, readjustment calculations, higher metrics, and the impact of the COVID-19 pandemic (Valqui and Yglesias, 2023). Such delays can be compounded by a number of factors, including changes in project scope, coordination problems between teams and contractors, delays in permit approvals, and difficulties in calculating repricing. Delays in construction projects can result in cost overruns, exceed initial time estimates, and have serious consequences such as disputes, legal actions, and project abandonment (Pazmiño and Calle, 2021).

Project management in the entities presents challenges in administration of works in execution stage. It is a complex task that requires the implementation of effective control and planning mechanisms to ensure the timely completion of projects within the allocated budget (Guzmán, 2023). This underscores significance of an efficacious strategic planning process that serves to reinforce a project management plan, commencing with conceptualisation of an initiative and continuing through to its execution. Furthermore, it is a process enables specification of the strategies and actions essential to achieve objectives, and is thus essential for the management of processes in public investment projects (Calderón and Granja, 2021). In the

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context of public administration, the efficient execution of investment projects is of paramount importance for economic and social development of a country. (Medina, 2021). The efficient execution of public projects is fundamental for economic and social development. However, in many cases, these projects are affected by problems of inefficiency in costs and deadlines, which generates cost overruns, delays, and ultimately a detriment to population (Flores et al., 2021).

After a comprehensive examination of the circumstances surrounding the non-compliance with deadlines in the execution of public works, the overarching issue was identified as follows: What are the actions that affect non-compliance with deadlines in the execution of public infrastructure works in an entity? As specific problems, we must consider the following: (a) What are actions in the preparation of the technical file affect non-compliance of deadlines in execution of public infrastructure works in an entity? (b) What are fortuitous events that affect non-compliance of deadlines in execution of public infrastructure works in an entity?

The rationale for this undertaking is the necessity to address a significant issue that impairs efficacy and transparency of management of public infrastructure projects. Similarly, it is necessary to investigate the fundamental causes that lead to non-compliance with deadlines in the execution of works, as this can have negative consequences such as delays in the delivery of services to citizens, economic losses and possible acts of corruption. Furthermore, it is crucial to identify factors that contribute to these delays, analyze consequences of these delays, and develop strategies to prevent or mitigate them.

Subsequently, the overarching objective was: The objective was to identify the actions that affect compliance with deadlines in execution of public infrastructure works in an entity. The specific objectives were as follows: (a) To identify the actions in preparation of the technical file that affect the non-compliance of deadlines in execution of public infrastructure works in an entity. (b) Identify fortuitous events affect the non-compliance of deadlines in execution of public infrastructure works in an entity.

2. Theoretical bases of the research

The national system of multiannual programming and investment management (INVIERTE.PE) represents a system of state administration (Gaviño, 2019). Its primary objective is to direct optimal utilization of public funds allocated for investment (Garcés, 2021). It is an established platform and system for public investment management and programming (Rodríguez and Béjar, 2022). The objective is to promote provision of services and appropriate structure for public development (Chapoñan, 2023). INVIERTE.PE has replaced the national public investment system (SNIP) and seeks to streamline and streamline approval and implementation of investment works for benefit of citizens (Vilca, 2021). The objective of this system is to streamline investment processes, simplify them, and guarantee their effectiveness. This will promote economic development and reduce infrastructure gaps.

The public investment cycle, established and/or managed by INVIERTE.PE, is a methodology that seeks to optimize implementation of investment works in order to promote the country's development (Rodríguez et al., 2023). It is a foundational process for the implementation, *Nanotechnology Perceptions* Vol. **20 No. S11** (2024)

monitoring, and planning of investment works. The system is comprised of four distinct phases: multiannual investment programming (MIP), evaluation and formulation, execution and operation (Cano, 2023). Each of these stages has a specific objective within public investment process, from identifying needs to execution and operation of projects (Tocto, 2023). The process is organized in phases and is designed to ensure the effective programming and execution of public investment works.

The OSCE, which is the supervisory body for government procurement, is a specialized technical body under MEF. Its function is to supervise and promote proper compliance with procurement regulations (Castro, 2022). This body ensures that the entities comply with the parameters established in the Procurement Law and its regulations with regard to effective contracting. The objective of this body is to maximize value of public funds and guarantee satisfaction and possibility of providing services to citizens (Huamán, 2023). It oversees the contracting procedures carried out by public entities, either ex officio, randomly, or at the request of a party (Ascencios et al., 2022). The objective of this supervision is to ensure transparency, legality, and efficiency in government procurement. The entity is required to inform the Office of Comptroller General of Republic (CGR) when there is reasonable evidence of economic damage to the State or the commission of crimes or serious transgressions for functional administrative responsibility (Suca, 2022). Furthermore, the OSCE implements activities and mechanisms to develop competencies and capacities in management and disclosure in public procurement (Delgado, 2019). Furthermore, it issues directives and guidance documents to guide entities and suppliers in the procurement process (Ortiz, 2022). This agency plays a pivotal role in the supervision, promotion, and improvement of government procurement, thereby contributing to efficiency and accountability in the use of public funds.

Risk management is a tool employed by State in the planning of public investment works. Its purpose is to analyze, identify, and mitigate risks may affect the execution of works (Rinaldi and Bergamini, 2020). The objective of risk management is to ensure public investment works adequately consider risks and take measures to mitigate them, thus guaranteeing a successful and efficient execution (Jinez and Salgado, 2021). This Directive establishes guidelines and methodologies for identification, evaluation, mitigation, and monitoring of risks in the different stages of the investment cycle (Flores, 2022). The implementation of risk management in planning of public investment projects can help to minimise occurrence of cost overruns and delays in execution of works (Barton and Irarrázaval, 2016). Such management can help ensure success of works and effective use of state resources.

The State Procurement Law No. 30225, along with its associated regulations, establishes normative framework that regulates acquisitions, works, and services performed by state entities (Soria and Yamada, 2015). The objective is to ensure transparency, effectiveness, and competition in procurement process (Pedreschi, 2015). The document delineates overarching tenets inform procurement process, as well as the procedures and modalities of contracting. The OSCE is responsible for monitoring and ensuring compliance with Law and its regulations (Retamozo, 2018). The law stipulates that these goods, services, and works must meet the requisite standards of quality and technology to effectively achieve stated public objective *Nanotechnology Perceptions* Vol. **20 No. S11** (2024)

(Espinoza and Llique, 2013). The regulation also establishes a number of different contracting modalities, including public bidding, simplified awarding, public tender, price comparison, direct contracting, electronic reverse auction, among others (Terrones and Castillo, 2020). The law stipulates penalties for suppliers, participants, bidders, contractors, and other parties involved in the contracting process who engage in infractions (Hurtado, 2015). This legislation regulates a number of key aspects, including contracting of works, the requirements for subscription of works contracts, contracting capacity of companies, risk management, the supervision of the execution of works, and other related matters.

The duration of a project is defined in bidding or awarding conditions, which are prepared by the entity and form part of contracting file (Gutiérrez, 2020). In event of errors or defects in the technical file, a lack of timely delivery of the land or stakeout of the same by entity, or other unforeseen circumstances, the contractor may request a deadline extension. Additionally, delays in delivery of materials or equipment by suppliers or subcontractors must be duly documented (Aguirre, 2019). In addition, events of nature, such as seismic phenomena, floods, or landslides, affect the fulfillment of contract may also be considered grounds for an extension. Similarly, strikes or stoppages of activities decreed by the government may also be grounds for an extension. The term extension granted to contractor does not affect contract price, unless entity and the contractor agree otherwise (Alvarez and Arapa, 2018). The extension of time does not absolve the contractor of liability for damages resulting from delay in the execution of the contract (Chumbimuni and Soto, 2021). Should contractor fail to comply with the stipulated deadline for contract compliance, the public entity may apply penalties as stipulated in the contract. The most common penalties are fines and the fulfilment of the performance bond.

A technical file is a set of documents describes the technical specifications, budget, and general conditions for the execution of a public work. (Peláez and Iannacone, 2022) The technical file encompasses a number of elements, including descriptive memory, metrics, technical specifications, and execution plans (Hidalgo, 2020). In addition, the construction budget, price analysis, and construction schedule are included (Marín et al., 2020). Additionally, polynomial formulas, soil analysis, geological analysis, and environmental impact analysis are included (Velásquez et al., 2016). The dossier may be prepared by public entity itself or by a third party contracted for this purpose (Salinas, 2015). Prior to commencement of the contracting process for the work, the dossier must be accepted by public entity (Alarcón, 2015). Should the technical file be deemed incomplete or deficient, the entity may reject it and require the responsible party to correct it (Gómez and Rojas, 2022). In event that the responsible party fails to rectify deficiencies, entity is entitled to declare nullity of the contracting process (Álvarez, 2022). The dossier is a compendium of documentation delineating specifications, characteristics, and requirements for the execution of a work. The technical file is a fundamental instrument for correct execution of a public work.

3. Methodology

3.1 Type and design of research

The qualitative approach is defined by collection and analysis of non-numerical data, observations, interviews, documents, and narrative records. The objective of this approach is to gain insight into perspectives, experiences, beliefs, and motivations of the participants, with the aim of generating knowledge (Padilla and Marroquín, 2021). Theoretical triangulation entails employing diverse theoretical perspectives to examine same phenomenon within a given study. This approach allows for enrichment of understanding of problem and acquisition of a more complete and complex vision (Charres, 2018). The fundamental design of a qualitative study delineates the overarching methodology for the collection and analysis of data (Guzmán, 2021). Grounded theory is a qualitative study methodology aims to generate a theory or knowledge from data collected. This methodology is distinguished by systematic data collection, inductive analysis, and constant comparison of data with the emerging theoretical framework (Alarcón et al., 2017).

3.2 Categories and subcategories

The categorization of these issues into distinct categories and subcategories will assist in comprehension of specific challenges encountered by public management in execution of works. The technical file category, which is comprised of subcategories, includes the description of the technical and functional aspects of the project, details of the technical and material requirements, graphic representation of the design, quantification of the materials and resources required, cost estimates, base price for bidding, breakdown of unit costs, financial programming, soil, geological and environmental studies, and other relevant information. The execution of the work category encompasses subcategories pertaining to the specifics of the construction process, including supervision and quality assurance, measures to protect workers, management of human and material resources, and monitoring of schedule. The category of fortuitous events encompasses the impact of weather, changes in regulations, protests, strikes, and other unforeseen circumstances.

3.3 Study Setting and Participants

The study was conducted in infrastructure sector of an entity responsible for execution of public works across all phases. The participants selected for study included a supervisor, a resident, and a works coordinator, all of whom had direct and indirect interactions during execution of works.

3.4 Collection techniques and instrument

The data collection technique, such as interview, is a semi-structured or open-ended conversation with participants, which allows for exploration of their experiences, opinions, beliefs, and motivations (Alegre, 2022). The data collection instrument, namely the interview guide, is a semi-structured or open-ended set of guidelines serve to guide conversation during interview. This allows for exploration of specific topics while maintaining focus on research objectives (Cisneros et al., 2022).

In-depth interviews were conducted as a technique. These were semi-structured conversations with key actors involved in the execution of works, including entity's official, contractor, and supervisor. The interview guide, as an instrument, is a semi-structured set of guidelines allows for exploration of the causes of delays from multiple perspectives, including factors related to *Nanotechnology Perceptions* Vol. **20 No. S11** (2024)

planning, design, project management, the external environment, corruption, and bad practices. Theoretical triangulation was employed to facilitate comparison and contrast between disparate theories and concepts, thereby enabling a more comprehensive and profound comprehension of subject matter.

3.5 Procedures

The initial step is to delineate issue at hand, that is, to comprehend the underlying causes of missed deadlines in the execution of works by an entity. Previous studies, academic literature, and best practices were investigated to provide a solid theoretical framework. A review of previous studies on management of construction projects and factors that impede execution of deadlines was conducted. The key stakeholders involved in execution of works, including construction supervisor, resident, and construction coordinator, were identified. The participants were interviewed and completed questionnaires to collect significant data via Zoom platform. In order to obtain relevant information on determinants of non-compliance with deadlines, a variety of techniques were employed, including interviews, questionnaires, observation, and documentary analysis. The data were subjected to rigorous analysis. Qualitative techniques were employed to identify patterns, trends, and relationships among the factors that affect deadlines. A methodology known as grounded theory and theoretical triangulation was employed. Theories were developed from data collected without any prior theoretical framework. The findings of this study have led to the formulation of recommendations for improvement of management of public works projects and reduction of non-compliance with deadlines.

3.6 Scientific rigor

The study was coherent and adequate in addressing the research question. The study provided support for the rationale behind the chosen approach and the selection of data collection techniques. The selection of participants was conducted in a strategic and representative manner. The inclusion and exclusion criteria were clearly delineated to ensure validity and generalizability of data. The data collection techniques employed (interviews, questionnaires, and observation) were applied with precision and uniformity. We endeavoured to avoid bias and ensure quality of data collected. The methodology was sufficiently detailed to allow other specialists to replicate the study. The study was conducted in accordance with ethical principles govern research in this field.

3.7 Method of data analysis

The qualitative analysis was conducted with objective of exploring and understanding phenomena from a subjective perspective. The objective was to gain insight into experiences, meanings, and contexts of the participants. The qualitative approach enabled identification of emerging patterns and understanding of the factors influence execution timeframes. The study employed grounded theory model, which involved the collection of significant data from verbal or written statements provided by the study's participants. The use of theoretical triangulation enabled the comparison and contrasting of findings derived from disparate techniques and data sources, thereby enhancing validity and reliability of the research. The qualitative approach, grounded theory, and theoretical triangulation permit a comprehensive

examination of challenges associated with public management of state investments related to execution of works.

3.8 Ethical aspects

The participants were provided with clear and comprehensive information regarding nature of the study and their rights as research subjects. The privacy and confidentiality of participants were safeguarded. All personal data were handled in accordance with the principles of confidentiality and were not disclosed without express consent of individuals concerned. The researchers acted with honesty and integrity, avoiding falsification of data, plagiarism, and scientific misconduct. The presentation of results was conducted in an honest and transparent manner. Ethical considerations were paramount to ensure study was conducted in an ethical and responsible manner, with due respect for rights and wellbeing of participants and wider community.

4. Results and discussion

After obtaining, compiling, and examining results through the technique and instrument determined, they have been compared, especially by theoretical triangulation of opinions expressed in interview and questionnaire. This has provided results corroborate theories and studies previously mentioned, in addition to contributing new relevant knowledge. The individuals responsible for conducting interviews and administering questionnaires included a coordinator, a supervisor, and a resident.

By examining the data collected and carrying out the translation of the results in accordance with the general objective, it was possible to identify the following: The objective was to identify the actions that affect the fulfillment of deadlines in the execution of public infrastructure works in an entity. Previous theories have been corroborated, and new findings have been established. This study offers a more profound and valuable understanding of practices and challenges encountered in execution of public works, which may prove useful for future research and improvements in management of infrastructure works.

Specific Objective 1

The objective of this study is to identify the actions in the preparation of the technical file that affect failure to meet deadlines in execution of public infrastructure works in an entity.

Analysis 1

In order to guarantee optimal development of infrastructure works, it is imperative to devise a plan for preparation of technical dossiers. It is crucial to recall that a technical dossier is a compendium of documents assembled by a team of experts from diverse fields. The aforementioned group employs a methodology based on a series of interrelated activities. It is crucial to highlight that any error in one of these activities can have a detrimental impact on entire subsequent process.

In order to guarantee proper execution of the works, all stages that have an impact on the management of the technical files have been meticulously evaluated. It has been determined it is of the utmost importance area to be built has been previously cleaned up. The three *Nanotechnology Perceptions* Vol. **20 No. S11** (2024)

interviewees corroborated this assertion and highlighted execution of works is significantly influenced by the absence of legal physical clearance of the land. One instance observed within entity involved a plot of land designated for a specific construction project extended beyond established property boundaries. This resulted in conflicts with third parties and delays in regular progression of work.

In this context, the resident interviewed indicated physical cleanup of the land does not affect compliance with deadlines. Additionally, coordinator and supervisor asserted within the entity, legal physical clearance of land has not affected the deadline for completion of works, as the documentation of property title is an indispensable prerequisite for the feasibility of work and the contracting of contractor. According to the various perspectives, the majority of conflicts related to ownership originate in areas bordering with third parties. The process of clearing land for construction is a complex issue must be examined in its entirety, taking into account a multitude of factors, including legal, technical, environmental, social, and financial considerations (Taboada, 2020). It is of utmost importance adequate land reclamation is carried out prior to commencement of construction, as this will serve to minimise risks involved and ensure success of project.

All three interviewees have indicated preliminary studies have been conducted effectively within entity. The deficiencies identified in preliminary studies, particularly in soil studies, resulted in challenging conditions during construction of works. The supervisor has indicated this situation has persisted for approximately four years, demonstrating the inefficiency of the entity's project management, which has resulted in delays to the execution deadlines. It is imperative adequate investment be made in the development of complete, accurate, and reliable preliminary studies in order to ensure success of the works and to minimize associated risks (Chichande, 2018). Deficiencies in basic studies represent a significant problem can have an impact on development of works, investment made and well-being of the communities.

The viability of basic services projects is also evaluated. In this context, supervisor and the resident concur suboptimal management of the planning of basic services execution possibilities may impact the execution schedule. In contrast, the coordinator holds a different view, maintaining continuity of basic services projects does not affect the schedule. This is because they believe these services can be implemented after the main work has been completed. The inadequate application of technical standards by designers in formulation of technical files has potential to have serious consequences for quality, safety, and sustainability of public works (Sologuren, 2018). This indicates designers responsible for developing technical files do not adequately apply technical standards, which suggests a lack of professional training. The interviewees unanimously emphasized relevance of professionals being well trained to plan and manage dossiers effectively.

The optimization of deadlines and costs related to execution of works would be achieved through perfection of technical dossiers through an adequate application of the standard. It is crucial to underscore majority of the authors of the aforementioned study concur most prevalent reasons for which deadline extensions are necessitated are attributable to deficient planning of works by the entity in question.

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In regard to risk management program, three interviewees concurred effective risk management allows for appropriate control and mitigation of risks, which in turn directly affects the construction schedule. Similarly, timely identification of risks and implementation of clear measures prevent the impact on deadlines. Risk management is a fundamental tool for success of any project. By integrating risk management effectively throughout the project lifecycle, potential risks can be minimized, use of resources can be optimized, communication can be improved, and the established objectives can be achieved (Córdova, 2020).

Specific Objective 2

The objective is to identify the fortuitous events affect failure to meet deadlines in execution of public infrastructure works in an entity.

Analysis 2

Fortuitous events, also known as force majeure events or force majeure cases, are unforeseeable and unavoidable situations can have a considerable impact on execution of a work. Such occurrences can result in delays, cost overruns, property damage, or even inability to complete the project (Flores, 2021). Fortuitous events are circumstances that are unexpected and unavoidable, and which lie beyond scope of planning and control of works. Such circumstances may include weather conditions or natural disasters, which can affect execution time of the work. Consequently, opinions of a coordinator, a resident, and a supervisor have been sought to express their perspectives on these circumstances that could adversely affect deadline for the work.

It is also important to note commencement of works is often initiated during rainy season, which can impede execution of the works. Furthermore, social conflicts associated with lack of planning and development of projects may also be affected by acceptance of the works. These elements can result in delays to work, which could have a negative impact on overall progress of project and final outcome.

5. Conclusions

Firstly, it is evident entity is encountering difficulties in meeting deadlines established for execution of works. This is due to fact that actions have been identified which make it challenging for the entity to comply with the aforementioned deadlines. The primary reason for this noncompliance is presence of significant deficiencies in planning and execution of works. Furthermore, other problematic activities have been identified, such as deficiency of experience of the individual responsible for management and supervision of works, which is reflected in suboptimal management of consultations and the formulation of additional technical files. These deficiencies in management have resulted in delays in completion of works, thereby demonstrating inefficiency in administration of the entity.

Secondly, inadequate management during the planning of investment projects results in deficient technical files. These deficiencies include a lack of compliance with technical standards, discrepancies between specialties, and defective preliminary studies. This reflects a lack of aptitude on part of the project designers in managing works, which in turn affects the *Nanotechnology Perceptions* Vol. **20 No. S11** (2024)

deadlines and costs of the works. These findings are consistent with previous research indicating that a deficient technical file has a negative impact on execution of work.

Thirdly, with regard to second specific objective, the occurrence of unforeseen circumstances has not had a significant impact on the progress of execution of the works. These occurrences are unusual in comparison to information presented in introductory section, which notes certain construction projects are negatively impacted by weather conditions, particularly those conducted in areas with high precipitation. It is crucial to consider the context and reality of the works executed by different state entities, as some of them, due to their nature, are more susceptible to adverse weather conditions or other unforeseen events may impede the normal progression of works.

6. Recommendations

Firstly, it was proposed entity enhance the planning and development of works in order to optimise management during their execution. For employees, it is recommended clear guidelines, instructions, and directives be implemented in order to facilitate progress. It is recommended training be provided, computer technologies implemented, and adequate equipment procured to enhance efficiency of work execution. It has been determined external factors influence management, including the performance of contractors and supervisors. The selection of these individuals may be inadequate due to the limitations of selection mechanisms. It is therefore recommended these appointments be documented and improvements be made to the legislation on state procurement in order to enhance efficiency, transparency, and quality in the execution of works. It is of utmost importance control entities maintain constant supervision to prevent any illicit activities, delays in execution of works, or the inappropriate use of public resources. Such occurrences can have detrimental consequences. The entity is therefore obliged to collaborate with the internal control body and Comptroller's Office to ensure constant supervision is maintained at all stages of investment process. Furthermore, it is recommended entity investigate potential of utilizing trusts to provide advances to contractors. This would guarantee allocated funds are utilized exclusively for execution of works and are not diverted to other purposes.

Secondly, it was proposed that the entity prioritize training of designers responsible for planning, development, and approval of technical files, with objective of enhancing quality of technical documents. Additionally, it is recommended that new techniques be adopted for the development of works and digitalized tools be acquired in accordance with state regulations encourage the use of web technologies in project management. The BIM methodology, which is supported by State, improves quality of technical files and contributes to collaboration among designers through systematic meetings that are conducted using computerized tools.

Thirdly, the entity was advised to develop contingency plans to be prepared for unforeseen situations may arise during execution of works. Although the entity has not yet encountered any significant unforeseen circumstances, it is prudent to have well-defined contingency plans in place to effectively address any such eventualities may arise. It is of paramount importance to conduct a risk assessment during the planning phase in order to anticipate and control potential challenges and ensure the success of works.

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