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Managing Complex Investment Procedures: The Corporate Strategy to Address Uncertainty Construction Policies in Indonesia

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Abstract

This study aims to obtain notice, knowledge, and practical experience to help guide investors on how to anticipate and deal with complicated investment procedures in Indonesia. As a developing country, Indonesia is well known for applying complicated and overlapped procedures. This study aims to get preliminary notices for investors and how they should prepare everything better at the earliest time as soon as possible. The methods presented are based on mixed interdisciplinary analyses. In preliminary, we enhanced the initial data using case studies. In the next phase, we validate through an exploratory study combined with an analytical hierarchy process. The result has addressed five stages that must be carefully handled: the preparation phase, procurement stage, groundbreaking and construction period, commissioning time, and the scheduled closing ceremonies. The most attention is addressing the preparation stage. This study demonstrated better building governance for societies and Nations and would be beneficial to improve the fairness climate for the Government of Indonesia. This study will benefit the Government of Indonesia by realizing how difficult the procedures applied, while it should promote easiness in attracting new investments. The ultimate goal is initiating and determining problems; thus, further construction projects in Indonesia will be better done.

Keywords: Commissioning, Construction, Corporate Strategy, Indonesia, Preparation Stage, Procurement, Project Management.

1. Introduction

Indonesia had prepared dozens of cement plants from 2010 to 2018 to support the strategy of implementing massive infrastructure, which started in 2014. The infrastructure corresponds to construction and physical groundworks. As an essential ingredient in supporting physical construction, cement is a mandatory substance of construction without substitution in any other materials for instead. Based on this knowledge, a prediction of cement consumption was calculated commonly based on what number of people residing in a certain area. The developed countries, based on data, on average, absorb cement approximately 250 kilograms for every person annually. It meant that while Indonesia had 245 million people in 2010, it would require about 61.25 million tons of cement. The prediction simulated the cement shortage to reach 30 million tons by 2020. As a consequence, the cement projects were rampantly built during the period 2010 to 2018.

We build Table 1 to show a few 31 cement projects of 14 cement corporations constructed in response to the prediction. The world's 14 cement corporations have entered Indonesia and built at least one cement plant each to acquire the domestic market still unfilled by the existing cement plants.

In this study, we were concerned with the complex procedures that negatively impacted the whole project duration as. The management acknowledged that time management is a substantive matter in every project. A better management project can be proclaimed when the project team can accomplish a cement project of 3 million tons annual capacity within 36 months, which is based on the best record achieved in Indonesia (Subiyanto & Suyoto, 2020). However, it depends on the scale and scope of the project; the bigger the project, the longer the duration needed. For a simple guideline, the fastest accomplishment for a cement project with an annual capacity of 3 million tons was recorded at 36 months. This record has been well documented in Indonesia and has become the best benchmark for the Indonesian cement project.

Table 1 shows the time variance in project duration in Indonesia. The duration varied from one to another, implying many factors were unveiled or unsolved. Only two of the projects were accomplished on time according to the benchmark, but more projects of 29 were completed beyond the maximum duration of the benchmark.

Based on this valuable experience, this study presents to explore everything as much as possible associated with project bottlenecks based on experience in the past. We have made a list of issues of complex procedures from the preparation stage to the end of the construction to look for room for improvement and innovation in managing investment, particularly in cement projects (Gong & Wang, 2022). The coverage period starts from preparation, procurement, groundbreaking and construction, commissioning, and closing

Table 1. The duration of the construction cement projects in Indonesia

No	Name of construction project	Budget (US$ million)	Duration construction projects 2010	2011	2012	2013	2014	2015	2016	2017	2018
1	Semen Indonesia Group										
	Tuban IV	317.70									
	Indarung VI	350.00									
	Tonasa V	317.70									
	Rembang #1	350.00									
	KS-SI-Banten Global Development	31.00									
2	Indocement										
	Citereup P14	650.00									
3	Holcim										
	Tuban #1	550.00									
	Tuban #2	250.00									
4	Semen Baturaja										
	Palembang	125.00									
	Baturaja	125.00									
	Pabrik Panjang	125.00									
	Cement mill project 2009	35.00									
	Baturaja #2	250.00									
5	Semen Bosowa										
	Banyuwangi	77.35									
	Maros, South Sulawesi	400.00									
	Makassar	125.00									
	Batam	125.00									
6	Semen Imasco (Puger)	0.01									
7	Semen Merah Putih (Wilmar)										
	Banten	250.00									
8	Anhui Conch Co. Ltd										
	East Kalimantan	250.00									
	South Kalimantan	250.00									
	Train #1 Tabalong	500.00									
	Train #2	250.00									
	West Kalimantan	250.00									
	West Papua	250.00									
9	Siam Cement										
	Sukabumi, Boral	125.00									
10	SDIC										
	West Papua	320.00									
11	China Triumph										
	Grobogan, Central Java	150.00									
12	China Trio International Engineering										
	Tanjung, South Kalimantan	250.00									
13	Jhui Sin, Taiwan										
	Karawang	200.00									
14	PT Gama Group										
	Bayah, Cilograng, Lebak	200.00									

Source: data developed by the author (2023)

ceremonies. The scope was discussed and elaborated to guide investors in planning construction projects in Indonesia.

This study aims to get preliminary notices for investors and how they should prepare everything better at the earliest time as soon as possible. This study will also benefit the Government of Indonesia by realizing how difficult the procedures applied, while it should promote easiness in attracting new investments. The ultimate goal is initiating and determining problems; thus, further construction projects in Indonesia will be better done and have a well-managed future.

2. Literature Review

After officially launching the project in Indonesia, three major subsequence frameworks must be carefully organized: preparation stage, physical execution, and project closure. These frameworks are well-known as part of project management for managing dozens of mandatory obligations (Arbabi et al., 2020). Project management is run by a project organization that contains staff or people. Gurmu and Aibinu (2018) warned that managing people is fundamental to building good teams. The issues within people are safety, health po-

licy, hazard analysis, safe work environment, welfare, career, and many other personnel issues (Soliman & Altabtai, 2021; Pham et al., 2021). Accordingly, the project organization must have built a project culture, loyalty, or shared commitment. These activities are called project preparation, and it is they first must be organized.

During the preparation stage, the team must analyze macro and microeconomics, assess legal permits, meet many administration procedures, conduct feasibility studies, and measure the environmental impact analysis, which certainly took more significant portions of the schedule. The stage determines whether the project is to "go" or "no-go." Evaluating political, economic, social, technological, environmental, and legal (PESTEL) is mandatory without exception (Subiyanto, 2020; Bosch-Sijtsema & Gluch, 2021; Thonemann et al., 2022). The decision on the project proposal – based on inadequate preparation – could be an improper project or insufficient preliminary site investigation, and the consequence would be a "no-go" (Akinradewo et al., 2020; Abuezhayeh et al., 2021).

The preparation stage is generally measured as something other than a substantial activity within the project schedules. However, failure to manage this phase will have the possibility to revise, postpone, or cancel the whole project plan. Parallel to the preparation stages, many issues such as detailed engineering design (DED), engineering cost estimation (ECE), planning, scheduling, monitoring, and control of project operations are initially started. The objective is to optimize the project schedule while waiting for results; the team prepares and anticipates other tasks.

The other things must also be anticipated, especially for early contractor involvement (ECI), as the new party will potentially be a first barrier and could be surprising for other parties (El-Sayegh et al., 2021; Sarvari et al., 2021). The ECI must be well-briefed because they jump from traditional and straightforward business practices to complex issues in complex projects. As part of public companies, the major challenge is strictly adhering to national and international laws (Wondimu et al., 2020). Failure to educate the ECI on engagement has led to many process disruptions, especially in large projects or megaprojects (Kumaraswamy et al., 2017; Subiyanto, 2020).

During the preparation stages of the cement construction projects, Choudhary et al. (2019) were concerned with several issues to be measured earlier. First, the plan should be prepared for operation, production, and maintenance activities to anticipate an unschedule shutdown. Second, concerns like maintenance focusing on reliability, availability, and maintainability (RAM) analysis should be accommodated. Third, the plan should be easy to gather or collect data time between failure (TBF) and time to repair (TTR). In addition, the study suggested focusing on the subsystems of the raw-mill, coal-mill, and kiln; therefore, the projects should pay much more attention to providing support during construction in the mentioned area.

On the other hand, Choudhari & Tindwani (2017) reiterated the importance of planning the logistics needed for projects. Logistics should cover all supply chain stages, including sourcing, processing, and distribution. The expected goal is to provide substantial savings in logistics costs. The importance of supply chains, including logistics, within construction projects was previously raised by Segerstedt & Olofsson (2010), Subiyanto & Suyoto (2020), Subiyanto et al. (2021), Subiyanto (2021), Subiyanto et al. (2023).

The second stage of project management should include execution at the project site. These processes start with suppliers' selection, procurement, goods delivery, construction, civil works, mechanical and electrical works, testing and commissioning phase, product trials, commercialization, and finally, project closing (Subiyanto & Suyoto, 2020; Subiyanto et al., 2021; Mahdavi et al., 2021). These are critical success factors (CSF) to support efficient operation later during production (Omotayo et al., 2018; Watfa et al., 2021). The other CSFs are management functions related to physical construction; the most critical consideration is cost. Mellado et al. (2019) addressed that the triangle concept of cost, time, and quality is usual to measure the progress of construction projects to develop key performance indicators (KPIs) as CSF.

The costs and their associated should come from procurement activities (Ying et al., 2022; Tanuwijaya et al., 2022). Handfield et al. (2019) and Singh & Modgil (2020) have been concerned with governance during processes, evaluating supplier selection as part of the chain, and the duration of construction projects to execute procurement activities. In this stage, tools like a step-wise weight assessment ratio analysis (SWARA) and weighted aggregated sum product assessment (WASPS) are commonly used to evaluate a supplier's performance. The tools are advised to manage supplier management as part of the entire construction project chain, but it must be followed by sharing information and joint actions as teamwork (Firmansyah & Siagian, 2022; Tanuwijaya et al., 2022).

Considering the importance of the procurement session, Ying et al. (2022) decided that procurement is a part of corporate strategy. Integrating the corporate strategy framework was induced on project-level issues rather than corporate-level operational issues. In this case, the procurement resulted in project-level issues (Subiyanto et al., 2021), which are distinctive in the construction industries and can improve competitive-

ness upstream and downstream or to the entire chain involved. Compliance and governance are the most critical matters in procurement (Mwelu et al., 2020; Wulandari et al., 2022). Supplier evaluation and purchasing order allocation must be performed proportionally based on their performance considerations (Laosirihongthong et al., 2019; Firmansyah & Siagian, 2022; Tanuwijaya et al., 2022). Furthermore, Ying et al. (2022) identified four generic procurement strategies. First, it utilized many more controlling local suppliers. Second, it is integrated with downstream providers. Third, intensive procurement requires applying comprehensive relocation strategy (Subiyanto & Effnandya, 2021).

On the other hand, risks can be incurred during execution, both in the preparation and execution of stages of physical construction (Tepeli et al., 2021; Rasul et al., 2021; Almarri et al., 2021). Ali et al. (2020) and Nguyen & Do (2021) proposed adopting green supply chain management (GSCM) as an essential tool for construction projects. The GSCM is derived from six alternatives that integrate every stage: green design, green procurement, green production, green warehousing, green transportation, and green recycling. In addition, the GSCM has been proven to help reduce the effect of disharmony in project works.

Besides, the other things potentially concerned are cost overruns and delays, as the terms are always possible (Maqsoom et al., 2021). Sambasivan et al. (2017) found that project cost overrun can be sourced from consultant-related and material-related factors. However, overruns must be carefully considered as the first consequence of delays, and the serious is potentially endangering the project's performance. Sweis et al. (2019) revealed six significant categories as prior indications of project delays consecutively: (1) sanctions and disputes, (2) cash flow problems, (3) equipment unavailability and failure, (4) incompetence or unprofessional, (5) material procurement, and (6) unqualified workforce. Asiedu & Adaku (2019) mentioned four significant causes of project cost overruns. These four causes include poor contract planning and supervision, change orders, weak institutional and economic environments, and ineffective coordination among project teams. Olatunji et al. (2018) reiterated that changes in the prices of construction materials primarily cause cost overruns.

To anticipate the worst impact of the cost overruns and delays, Aladağ & Işık (2019) found a build-operate-transfer (BOT) type to mitigate time and cost overruns. The other construction to reduce risks could be engineering, procurement, and construction (EPC) projects. In EPC projects, local and foreign contractors generally have similar business processes (Ampratwum et al., 2022). Therefore, utilizing local sources would ease the exposure risk delays.

Thus, project management practices (PMPs) are essential in organizing construction projects. For example, the plan-do-check-act (PDCA), generally understood by the project team, has been able to translate into strategy implementation as primary guidance (Liu et al., 2020). According to Arbabi et al. (2020) and Saini et al. (2018), the way to archive these valuable empirical findings by knowledge management (KM) is an essential factor in project-based organizations (PBOs) (Sergeeva & Duryan, 2021). Therefore, PBOs must insert project management offices (PMOs) into their hierarchical charts to more precisely manage their projects. As part of PMP, which is common in modern construction projects, several tools have been embedded to maintain the progress of construction projects, such as network diagrams, Gantt charts, histograms, and S-curves (Cajzek & Klanšek, 2019). The primary goal is to control the performance between the planned and actual performance. For example, potential delays can be detected early, the possible impact of raising budgets can be measured, and the effect on quality can also be anticipated. Thus, project management should be appropriately implemented (AlSehaimi et al., 2014).

In other words, project delays are a severe issue. The main causes of delays in construction projects are mainly determined by three leading causes: first, problems during execution, administrative matters, and labor conflicts. Six subgroups were identified: (1) changes during construction; (2) poor construction management; (3) construction errors; (4) economic/financial; (5) conflict/relationship; and (6) lack of experience (Viles et al., 2019; Fashina et al., 2021).

Finally, the risk assessment must be performed carefully because the risk period lasts almost half of the traditional project. This shows that organizing projects span from preparation to the date of project closure. The complex projects can be accomplished in four years, but some projects in Indonesia halted and stopped for over a decade. Research showed that a significant increase in costs of 129% higher than the allocation was a sign of the project's failure to anticipate risks (Gao et al., 2019; Subiyanto, 2021). The record should be expected so the project team at the end of the project has reported good project management during project closure.

3. Methods

This research has been elaborated based on empirical case studies. We assessed 14 corporations that have executed 31 cement plant construction projects in Indonesia from 2010 to 2018. To increase reliability, we build three stages before developing research findings. First, the levels intend to filter errors or biases during

data acquisition so the data and information are getting focused.

Starting with an initial empirical case, we conduct three simultaneous stages: a questionnaire survey, issue discussions, and an evaluation workshop. The techniques were advised by Walker & Harland (2008), who stated that a simple case could be elaborated to be valuable research with certain conditions met. The standing was getting much attention from Mihas (2023), Camargo et al. (2018), Ziegler (2021), and Laudien et al. (2023). Experts must measure the preliminary information and data as we collaborated with them by enactment the expert judgment to be raised to the forum of the analytical hierarchy process (AHP). An AHP is a part of the multi-criteria decision-making (MCDM) technique to resolve uncertain issues. The AHP technique, however, is simplified; thus, it is imprecise. The function of AHP is to support decision-making, but it demands other methods to strengthen the viewpoint (Afolayan et al., 2020). For this case, we use an exploratory analysis as the other methods. The exploratory analysis has many distinctions as it can consider several alternative perspectives on different stages since planning issues to various forms the well-established frames of reference. It could reveal some of the blind spots in business-as-usual planning (Malekpour et al., 2016; Bashan & Kordova, 2021). In this stage, the methods attempt to increase reliability by using various techniques.

As this study heavily considered assessing procedures for external and internal projects, especially in Indonesia's environment, we also presented a descriptive analysis method. Descriptive analysis is a qualitative technique with particular characteristics by collecting data based on descriptive statistical tools (Othman et al., 2020). Thus, we build a flow of methods described in Figure 1.

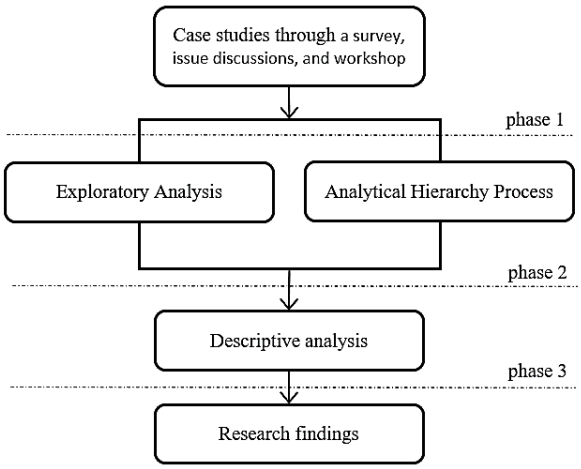

Figure 1. Mixed methods taken and developed

According to Figure 1, the process starts with the case studies, and 31-cement projects from 2010 to 2018 were evaluated. As preliminary information through surveys, discussions between experts and practitioners, and workshops, we built Table 1 as a subject matter. The table said that the period projects were varied, and the cause of different time completion was the point to be raised to the next phase.

In the second phase, we built both exploratory analysis and analytical hierarchy processes. A clarification method to convince reliable data resulted in the first phase. An exploratory development is revising or correcting errors or biases using technique frequency and where information and data came from. The mainstream sources came from a higher level of reliability, and the higher level can revise previous data. The two techniques in Phase 2 work simultaneously and the final agreed data is delivered to Phase 3.

Phase 3 is a stage to enrich previous data in which argumentation, standings, and reasons were expressed to justify why the period completion of projects varied. Again, experts and practitioners were invited to free speech, though in the end were expected to propose solutions to improve the matter. A result of this phase was sent as research findings.

These methods are principally mixed interdisciplinary studies which have seized time for discussion between experts, coordination and agreement among parties, and making management innovations when needed. Improvisation at certain points must be performed to look for the best way, but must consider the aspect of governance.

4. Results

Based on preliminary findings shown in Table 1, a few projects were found on time, but some still needed to meet the standard time of the benchmark. The results have been raised as issues and have become a focus of discussion in meetings through an analytical hierarchy process. Experts can stand based on their professional, while others may deliver different considerations. The results concluded that preparation and operational projects had been claimed as the sources that caused the delays.

Based on the table, each project title comprises the stage of preparation, phase of accomplishing engineering, procurement, construction (EPC), period of testing operations in the commissioning stage, and schedule of closure projects. The substance of the type of project of engineering, procurement, and construction (EPC projects) is standard for every project practitioner; it must perform all matters of the projects to the end. Therefore, each time required should be dedicated to accomplishing the EPC well. However, Indonesia has experienced a real difference in the field, while preparation is generally not included in the EPC scope. The preparation stage is outside the project substance, but it takes approximately 37.5% of the total length of

the whole schedule. Figure 2 shows that this stage has seized schedule for at least 18 months and remained uncertain until the end of the project.

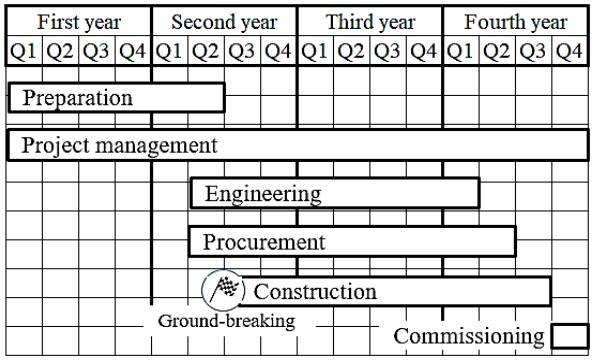

Figure 2. Resume of the duration in construction projects in Indonesia
(Source: developed by author, 2023)

4.1 An Environmental Impact Analysis (EIA) as the Caused

The primary cause for extending projects based on the result of phase one is the delay in getting approval for environmental impact analysis (EIA). An EIA document is an instrument of environmental assessment that must be strictly compiled by certified entities with the sole right to conduct EIA processes. The Minister of Environment Decree No. 5 of 2012 stipulated the prerequisite regarding types of business plans and activities that require EIA. The EIA itself consists of terms of reference for the EIA, environmental management plan (EMP), and environmental monitoring plan (EMoP).

Before carrying out construction projects, every project owner must perform an EIA. However, there are two probabilities, scale and scope of construction projects, which are optional to obtain an EIA. Therefore, the discretion was awarded without requiring an EIA for the limited scale and size of the construction projects..

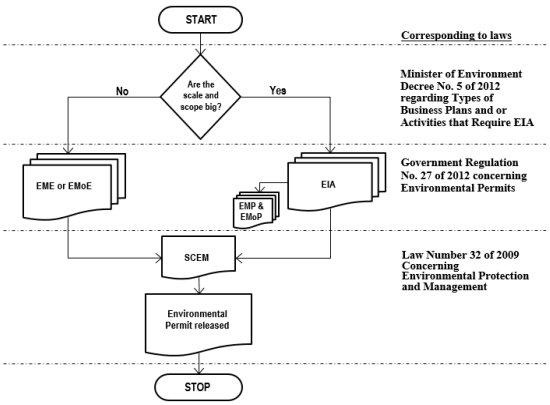

Figure 3. The option to consider requiring EME, EMoE, or EIA documents
Note: SCEM is a statement capability for environmental management

Instead, it was only necessary to meet the environmental management efforts (EME) or the ecological monitoring efforts (EMoE). These rules are based on Government Regulation No. 27 of 2012 concerning environmental permits

Figure 3 illustrates how Indonesia's government has implemented EIA management. We reiterate that the distinctive features are scale and scope. When the projects were categorized as large projects, they must perform EIA. However, for a limited project, it obliged environmental permits only. However, both EME and EMoE, and EIA are similar. It serves as guidance for managing the environment, especially in activities of construction projects. The laws finally enacted a letter of statement capability for environmental management (SCEM) to be awarded. The SCEM recognizes the ability of the person in charge to carry out environmental management and monitor the environmental impacts of construction projects.

Therefore, Indonesia Law No. 32 of 2009 concerning environmental protection and management stipulated that every project owner must present documents of EME, EMoE, EMP, EMoP, EIA, and SCEM to obtain an environmental permit. After receiving an environmental permit, a construction project is officially eligible to start.

However, according to Figure 3, it is surprising that the greatest hurdle of project completion came from preparing the documents for the environmental impact analysis (EIA). The average time to complete these documents is seized within 12 months at the fastest and approximately 24 months at the longest. Even more, several construction projects in Indonesia did not accomplish the EIA; therefore, the construction was forced to be halted and stopped.

4.2 Addressing Strategy to Accomplish the EIA

Regarding the type, the construction of cement projects must apply the EIA, as it is considered a complex project. Therefore, the project team should maintain the schedule carefully. Even though without being exercised, because the cement projects generally have at least 1.000 hectares as the mining zone, which is indeed the most impactful to the environment, the EIA must, without exception, be the sole option to be addressed.

As previously stated, an EIA consists of several essential parts: the terms of reference of environmental impact analysis, environmental management plan (EMP), environmental monitoring plan (EMoP), and the SCEM statement letter. The term of reference (TOR) was obtained from the project owner. This is impossible done by the project team; we advise coordinating and cooperating with licensed experts in an

environmental consultant or a special project team representing the owner or counterpart to compile a preliminary environmental impact analysis. The initial measurement environmental impact analysis has included all aspects that have been applied recently, and the potential future might occur as long as the period of a construction project. According to Figure 4, this stage is called the screening stage.

A further stage would be public announcements. The methods are varied; it can be published on printed media or other types of media such as local radio, internet, social media, television, or other mass media. The procedures and forms for announcements and submitting suggestions, opinions, and responses are regulated in the decree of the Environmental Impact Controlling Agency No. 08 of 2000 concerning community involvement and information disclosure in the EIA. The prerequisite public announcement should cover the specific region where the construction would be placed and one level higher in the districts, provinces, or nationwide if the building occurs in at least two provinces. This stage detects earlier inputs, supports, and probable rejection by the environment or society.

Based on the first and second stages, the EIA team should begin the third stage of environmental identification. The literature, earlier findings, and several visits to the project site must be conducted to obtain comprehensive results and reach the nearest approximation to identify the environment. PESTEL analysis is the best tool for accommodating this phase. In this stage, the results produced are stated as terms of reference to the EIA. The third stage should be connected to the fourth stage of drafting the EIA based on the defined identification. Every single risk that probably occurs must be detailed in the draft, such as how to mitigate the risks and what solutions are proposed. The recommended actions and advice for the solution should be included in the EMP and EMoP as working papers after the EIA has been approved and granted. In addition, the SCEM statement letter should be attached as a draft.

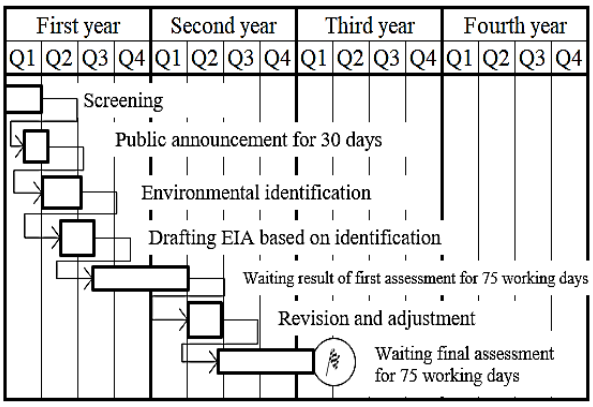

Figure 4. Stages to prepare, compile and develop the EIA

After the convincing drafting of the EIA in the fourth stage is completed, the initiator can submit documents to the EIA Board of Committee for assessment. Based on these regulations, the maximum number of days for assessment was 75 working days. During the waiting period, the EIA committee can initiate the project team as an initiator to organize direct public hearings to obtain immediate responses from stakeholders. Every suggestion, comment, and expectation is carefully noted to be addressed at the recommendation.

Revision and adjustment have commonly occurred based on empirical data; however, it is impossible to submit at first and accepted once. Therefore, in the sixth stage, recent updates, address comments, and suggestions during public hearings must be included to accommodate the process. This was the primary point of this stage.

5. Discussion

Deciding whether to expand existing plants or build new channels is difficult. This decision should first be strongly induced by external development and the strength of the internal organization. Therefore, demand-supply and input-output relationships are fundamental considerations for obtaining support decisions. According to Subiyanto (2020), this corporate strategy began with a feasibility study to convince the board of directors (BOD) before the plan was presented to the public extraordinary shareholder meeting (ESM).

The ultimate options are two probabilities. The first is to expand existing plants, and the second is to build a new additional production channel. Both types were executed by implementing only one construction project. The construction can be characterized as small, medium, or large depending on several considerations. For cement project plants, considering the complexity of the operation, PESTEL's impacts, amount of funding, duration of construction, and other factors, construction projects could be defined as large, challenging, and complex projects.

This study covers 14 cement corporations that executed 31 construction projects from 2010 to 2018. Based on Table 1, the duration required to carry out all construction phases is approximately three years at the fastest and four years at the longest. Each project must encounter similar stages: the first is preparations, the second is the execution of the construction, and the third is project closure. Based on the experiences of investors who have dealt with construction, the most concerned stage was the preparation stage. All project managers have risen to this stage as the most must be at the most serious concern, taking carefully proportional in a prepared manner; otherwise, a single fatal risk occurs. The ultimate fatal risk is forced cancellation. Therefore,

building a solid team for a project is crucial. In addition, the team must have a future vision to anticipate uncertainty that might endanger the project.

5.1 Building Team of Project

The decision to develop the corporate by constructing additional outlets through projects was initiated by the director of corporate development to the President (Learmonth & Morrell, 2021). The President then assigned the director of corporate development as an interim project director; further, they established a team project to manage all project responsibilities. Besides, the President also assigned the project owner a project charter to operate the project when it is operational. The project owner was also obligated as a firm responsible for funding all project costs; therefore, the project owner will later be given a delegation letter to the President. These circulation activities are referred to as project management.

The construction phase officially began when the environmental permit was obtained. After that, progress increased, and the actual physical construction got larger, as all the project teams were stationed at the site. Finally, groundbreaking was officially placed, and the odometer of the project execution was starting. As a result, people directly related to construction, suppliers, contractors, people looking for a job, and even the community can come closer to the project site.

Organizing all matters directly or indirectly is now becoming the project manager's task. However, the two factors must be maintained. First, it came outside, as in the preparation stages. Second, the project team must manage to handle the EPC effectively inside. Figure 5 best describes the role of project management in Indonesia's construction projects during the study period, which originated from the inside.

The project director led the project team; the President wrote to the director to perform organization following governance and accountability or to meet criteria as simply as possible. In addition, to obtain reasonable evaluation reasonably and independent evaluation, the President was measured to include project owners and counterparts to help advise when needed.

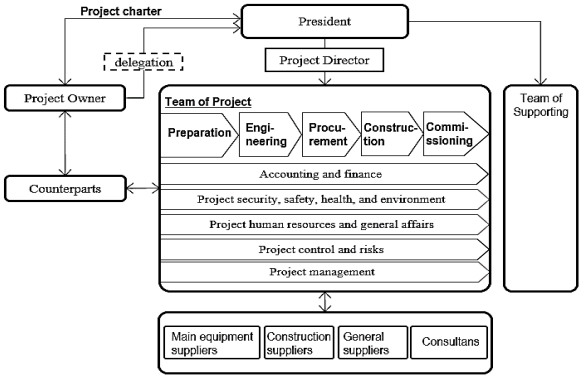

Figure 5. Project management and chain of coordination

According to Figure 5, this framework helps understand how to organize project management in a construction project. This figure shows purely internal operations after the EIA has been resolved, which is an external issue. However, for careful management, a couple of documents must be addressed every month, such as the EMP and EMoP. Based on Figure 5, to address the remaining issues, the security, safety, health, and environmental divisions should perform these routine reports mandated by the EIA.

Based on the figure, the project team covers and manages the divisions inside the box. The core division was preparation, engineering, procurement, construction, and commissioning. The other four supporting divisions were accounting and finance, security and SHE, human resources and general affairs, and project control and risk. All associates were involved in the implementation of project management. A box drawn outside is external and could be directly or indirectly related. For example, a chain of suppliers, consultants, or counterparts will likely have direct communication and coordination. However, other supporting teams formed by the project owner will indirectly relate to the project team.

The command route of operations could differ from the chain or flow of accounting and finance. In this term, the considerations are the origin of funding and who has signed the funding contract as stipulated by the headquarters.

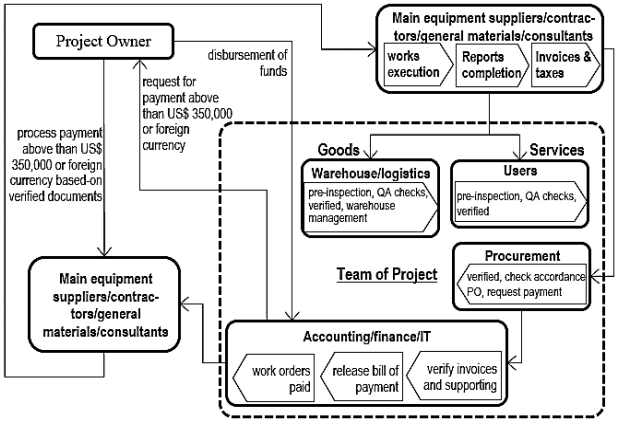

Figure 6. The flow of project operational

Generally applied in construction cement projects in Indonesia, the internal flows of accounting and finance have been identified inside the dotted box. However, if the project team deals with a considerable amount of funding, over US$ 350.000 for every transaction, coordination and permission from the project owner will be required. Figure 6 shows the flow mechanism of project operations in construction cement projects in Indonesia.

In this case, a large number of invoices, as such settlement of payment for main equipment suppliers

who are responsible for providing goods according to contractual agreement, would be handled by the project owner. The headquarters office had taken over this fixed amount in foreign currency.

In the meantime, to settle out smaller transactions, the division of accounting and finance has regularly submitted a certain varied amount of funding to the headquarters to have top-up cash. The requested amount is based on order procurement (OP), cash for smaller construction or reworks or makeup, non-technical cash or human resources, general affairs, IT systems, etc.

6. Conclusions

This study aims to get preliminary notices for investors and how they should prepare everything better at the earliest time as soon as possible. The result shows that the preparation is uncontrollable and commonly uncertain in Indonesia; the project schedule excluded the stage. Still, the stage is unseparated without the possibility of making them simultaneous with other parallel activities. Therefore, managing this stage by only assigning a small team who specialize and are competent in the field is necessary. In addition, several environmental, economic, and legal experts must be established to follow procedures and regulations in addressing the environment. The involvement of experts is mandatory as the scope comes from the central office in several ministries, governors, district heads, and societies. During the preparation stage, deliverable documents should include feasibility studies and environmental impact analysis (EIA). The principle of establishing a rigid EIA is preventing negative impacts and damage to the environment. As a result, environmental issues are customarily handled carefully in almost all aspects. In addition, project management must be concerned outside and inside, which is essential in project operation.

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