Operational Variables Determining Project Implementation Delays

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***Abstract*— The NIA-PIMO pledges to expedite irrigation infrastructure project implementation. The goal of this study was to pinpoint the operational elements contributing to project implementation delays for NIA-PIMO. 67 respondents, comprising NIA employees and contractors/project engineers, participated in the researcher's descriptive investigation. The findings showed that NIA staff, contractors, and project engineers statistically concurred that equipment-related variables, construction method-related factors, external factors, and labor-related factors contribute to project implementation delays. The level of agreement on the issues causing delays is perceived significantly differently by NIA employees and contractors. When classified by duration of service, greatest level of education attained, and rank, there are also notable disparities in the Level of Agreement on the factors driving project execution delays.**

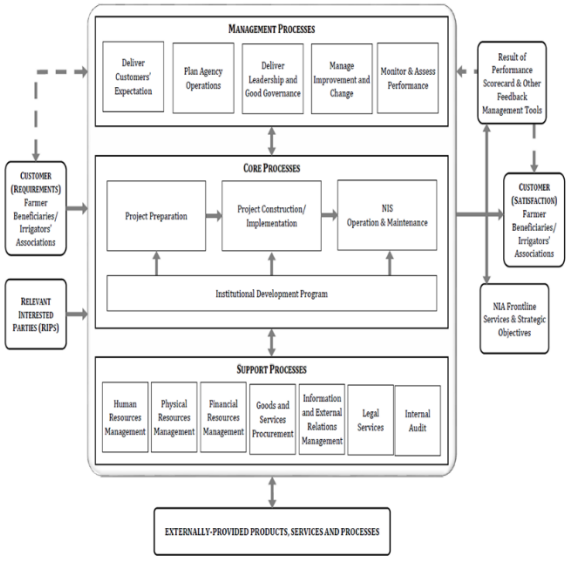
***Indexed Terms*— Implementation, Irrigation, Factors Delays, Project**

I. INTRODUCTION

A nation's plan for economic progress must include the expansion of its irrigation system. Irrigation is a well acknowledged and regularly utilized method of managing water resources. By allowing for more intensive cultivation on a given plot of land while enhancing yield, it raises agricultural output. Development of irrigation in the Philippines was impacted by public sector infrastructure investment. The government shall provide irrigation services to farmers, according to Republic Act No. 8435 (1997), numerous significant agricultural laws, including the Magna Carta of Small Farmers (Republic Act [RA] 7607) and the Agriculture and Fisheries Modernization Act, or AFMA. The 1970s and the beginning of the 1980s saw a peak in irrigation investments as a result of a large-scale modernization effort for the rice industry. However, because of the challenging economic climate in the middle of the 1980s, the government postponed the National Irrigation Administration's (NIA) irrigation development. The 2008 global food crisis and the ensuing rise in budgetary latitude led to a resurgence in public irrigation spending. The Philippine Development Plan (PDP) 2017-2022 specifically seeks to add 233,700 hectares (ha) of irrigated land during a six-year period to the irrigation area ratio, bringing it up from 57.33 percent to 65.07 percent by 2022. At a development cost per hectare of PhP 300,000, the irrigated area ratio is equivalent to PhP 70.2 billion (Philippine Institute for Development Studies, 2021). The National Irrigation Administration (NIA), which provides year-round assistance to towns that farm rice, is the government-owned and controlled corporation (GOCC) in the Philippines that is largely in charge of irrigation development and management. A competent and effective NIA improving rural development and sustained socioeconomic growth to raise the quality of rural life, primarily through rice crop production, was created by NIA to carry out the mandate. By maximizing the use of water resources for irrigation using integrated water resource management techniques, this goal aims to increase the income and food security of rice farmers (Baez, 2018). So, successful irrigation projects will raise agricultural output. Pangasinan is located in the center plain of Luzon, a significant geopolitical region. Pangasinan has abundant agricultural land and fertile plains. The National Irrigation Administration (NIA) is essential to developing, running, and maintaining irrigation systems, as per Presidential Decree No. 552 (1974). By planning, constructing, and maintaining irrigation systems, it is primarily responsible for ensuring the efficient and effective management of

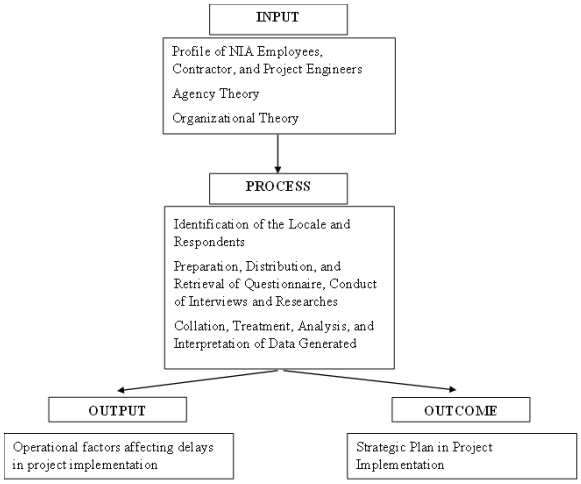
water resources for agricultural uses across the nation. The NIA wants to increase the quality of irrigation services provided to farmers by making sure that there is always enough water to support crops. Additionally, it provides training for irrigation system managers and operators as well as technical assistance to farmers on the best practices for managing crops and water utilization. The creation of policies and guidelines supporting the environmentally responsible and sustainable use of water resources is another crucial responsibility of the NIA. It also develops rules. The Pangasinan Irrigation Management Office (PIMO) is NIA's implementing division in the province of Pangasinan. Systematic management is required by the NIA-PIMO to regulate its operations. As a result, the organization chooses the process-based strategy depicted in Figure 1. The interconnected management, core, and support processes in the NIA process map are intended to help the business fulfill its goal to offering top-notch customer service and ensuring their complete satisfaction (NIA Revised Process Map, 2018). In order to meet customer expectations, plan agency operations, provide leadership and strong governance, manage improvement, and monitor and assess performance, NIA is dedicated to making sure that these are the top priorities. NIA is dedicated to offering the greatest irrigation services to boost farmers' agricultural output and revenue, and irrigation infrastructure delivery is the only way to do this.

Figure 1. NIA Process Map



For NIA to fulfill its purpose to produce water resources for irrigation, the fundamental procedures of project preparation, construction, operation, and maintenance must first be completed. To carry out its purpose, this process entails developing an ideal plan and setting tasks and timetables to address issues and reach desired results. Since the design for the irrigation project has been approved, the project is now ready for the preparation of the corresponding Program of Works (POW), Project Procurement Management Plan (PPMP), and Annual Procurement Plan (APP). The process involves identifying requirements and creating appropriate response actions for those needs. The procurement procedure and execution of the irrigation project will start after the Program of Works (POW) is approved.

Figure 2. Research Paradigm Showing the Relationships of the Variables used in the study



II. METHODOLOGY

The descriptive research methodology was used in this study because it aimed to collect comprehensive, quantitative data and allowed for a multifaceted approach to data collection and analysis. The researcher acquired factual and systematic data that may be utilized to calculate averages, frequencies, and other statistical computations to address the issues in this study. The researcher used this technique to gather more accurate and reliable data about the variables influencing delays in the project implementation of NIA-PIMO. The data generated by a descriptive research design can then be further examined to draw a sound conclusion. To explain a situation, researchers use descriptive survey research to find out "what exists" about its circumstances or factors. Personnel

from NIA, including the PIMO Manager, Project-in-Charge Engineers, BAC members, the Project Inspectorate Team, Contractors, and Project Engineers for the CY 2021 were among the responders to this survey. There were 67 responses in all, divided into two groups.

Table I. Number of Respondents of the Study

c	NIA	Contractors and project engineers	TOTAL
Male	41	15	56
Female	11	0	11
TOTAL	52	15	67

The researcher prepared a questionnaire to solve the problems with the study. For improved data reflection, the researcher contextualized the instrument suitable to the NIA-PIMO scenario. To determine respondents' level of agreement on the causes of project delays, the replies were analyzed and handled using weighted mean (WM), average weighted mean (AWM), and ranking.

Mean Interpretation:

Scale	Description	Interpretation
3.26 - 4.00	Strongly Agree	The factor extremely causes delays in construction projects.
2.6–3.25	Agree	The factor certainly causes delays in construction projects.
1.76–2.5	Disagree	This factor causes very minimal delays in construction projects.
1.00–1.75	Strongly Disagree	This factor does not at all cause delays in construction projects.

The researcher performed a t-test to identify any significant discrepancies between the contractors' and NIA personnel's assessments of the factors influencing project implementation delays. When NIA Personnel and Contractors were categorized according to profile, the researcher used analysis of variance (ANOVA) to identify the major variations in the Level of Agreement between them.

III. RESULTS AND DISCUSSION

The researcher analyzed the data to determine the respondents' levels of agreement on the operational factors affecting project implementation delays according to various criteria as well as the notable discrepancies between the perceptions of NIA employees, contractors, and project engineers regarding these levels of agreement. 67 individuals completed questionnaires that the researcher used to collect the data. The study is more accurate and more representative of the respondents' genuine perceptions because of the 100% response rate. Table 2 lists the operational factors affecting project implementation delays, along with the respondent's Level of Agreement on each issue. Among the many operational elements that have been identified as causing delays in project implementation, respondents rated external influences (M = 3.13) as the top one (M). Construction delays are undoubtedly brought on by external forces. The study's location experiences significant delays in project implementation due to external factors like weather, natural disasters, culture, and politics. Additionally, the respondents concurred those personnel (M = 2.62), building methodology (M = 2.67), and equipment (M = 2.74) are all aspects that unquestionably contribute to delays in project execution. The findings are consistent with those of Shahsavand et al. (2018), who reported that from the viewpoint of clients, consultants, and contractors, the ranking categories of delay causes were: client-related causes, labor and equipment category causes, contractor-related causes, material-related causes, design-related causes, external causes, and consultant-related causes. Aside from construction methodology, the results disagree with the findings of Fashina et al. (2021), who claimed that outside influences like weather and political interference have no discernible impact on construction delays. Instead, the construction approach and financial issues were factors that were listed as the main reasons.

Table II. Level of Agreement of the Respondents on the Operational Factors Affecting Delays in Project Implementation

FACTORS	WM	INTERPRETATION	RANK
Construction Methodology	2.67	Agree	3
Labor	2.62	Agree	4
Equipment	2.74	Agree	2
External factors	3.13	Agree	1

According to Table 3, respondents had the highest mean Level of Agreement when it came to bad site management and supervision (M = 2.78), inadequate project planning, scheduling, or resource management, and improper construction process (M = 3.01). Contrarily, underestimating the project's complexity resulted in the lowest mean Level of Agreement (M = 2.48) in terms of numbers. Overall,

the respondents concurred that all of the construction process indicators unquestionably result in delays in construction projects. The findings of Khaled (2019) are supported by the results, according to which the three most important cause factors for construction project delays are poor project scheduling, insufficient data collecting prior to design, and a lack of technical and supervisory expertise. The top ten universal delay factors, according to Zidane & Andersen (2018), are as follows: changes in the design during construction, adjustments in how much contractors are paid, inadequate planning and scheduling, inadequate site management and supervision, incomplete or improper designs, building methods, and approaches, contractor financial difficulties, a lack of resources (people, machinery, and equipment), low labor productivity, and a lack of skills. Thus, along with other indicators like methodologies, supervision, and competence, inadequate site management and supervision and ineffective project planning, scheduling, or resource management are two of the most important factors that contribute to construction delays. The lowest mean Level of Agreement for labor-related characteristics was recorded by low labor productivity (M = 2.69) and a dearth of competent professionals (M = 3.00). On the other hand, on-site accidents received the mean Level of Agreement with the lowest numerical value (M = 2.36). The respondents mostly concurred that the factors listed under labor are to blame for building delays. The results are consistent with research by Sepasgozar et al. (2019), which asserted that the top work- and workforce-related causes of construction delays were a lack of labor expertise or skilled workers. It stressed how craftworkers' knowledge impacts job-site construction and goal-setting, as well as how their experience and skills effect labor productivity. The descriptive analysis's findings about factors relevant to the labor market are therefore acceptable because experience enhances workers' cognitive and physical skills, which raises labor productivity. Organizing, planning, coordinating, monitoring, and regulating the usage of project objectives in the best manner is the goal of construction project planning and management, as suggested by the needs of project partners. It involves numerous processes and sub-processes, such as identifying site management and supervision, construction techniques, project complexity and duration, and resource management (Chinn, 2020). Construction projects are greatly impacted by the labor market. Numerous pieces of literature demonstrate that labor plays a vital role in reaching high productivity levels and that the most important elements impacting labor productivity are a lack of knowledge and skill in the field. .To be effective, contractors need to have a sufficient number of highly skilled employees on staff. If a task requires less-skilled workers, the availability of competent employees could lower productivity. Additionally indicating worker or labor-related characteristics include fatigue, absenteeism, and motivation (Abdellatif & Alshibani, 2019).

Table III. Level of Agreement of the Respondents on the Operational Factors Affecting Delays in Project Implementation along Construction Methodology and Labor

Factors	Mean	Interpretation
Construction Methodology		
Poor site management and supervision	2.78	Agree
Lack of experience	2.58	Agree
Improper construction methods	2.71	Agree
Poor monitoring and control	2.61	Agree
Underestimation of time for completion of projects	2.54	Agree
Underestimation of the complexity of the project	2.48	Agree
Ineffective project planning, scheduling, or resource management	3.01	Agree
Labor		
Fatigue	2.50	Agree
Poor productivity of labor	2.69	Agree
Lack of skilled professional	3.00	Agree
Fluctuating labor availability from season to season	2.65	Agree
Absenteeism	2.62	Agree
Accidents on site	2.36	Agree
Motivation and morale of labor	2.51	Agree

Table 4's findings reveal that the equipment deficit obtained the mean Level of Agreement with the biggest numerical increase (M = 2.89). Meanwhile, the incorrect equipment choice had the lowest mean Level of Agreement (M = 2.48) in terms of numbers. Additionally, the findings indicated that all of the indications listed under equipment-related variables were accepted by the respondents as causes of construction delays. The findings corroborate those of Prasad et al. (2019), who found that one of the major factors contributing to building delays in India is a lack of equipment with the necessary capacity and quantity, as well as equipment breakdown or maintenance issues. Construction will be hampered, according to Rachid et al. (2019), because of a lack of high-tech materials and equipment, frequent equipment failures,

and a backlog in the production of specialized equipment. The same results were also found by Khlaifat et al. (2019), who emphasized that equipment failure and shortage in Jordanian construction are among the main reasons for delays. According to their statistically highest mean Level of Agreement, respondents firmly agreed that weather (M = 3.54) and natural disasters (M = 3.27) cause delays in project implementation.

The mean Level of Agreement for cultural influence, however, was the lowest in terms of numbers (M = 2.78). Overall, the findings indicated that respondents agreed with all of the indicators listed under external influences as delays in building. The weather has a substantial impact on construction delays, according to studies by Budhathoki et al. (2019), Ghani et al. (2019), and Acharya et al. (2018). The four meteorological variables that were most frequently observed during their investigation were temperature, humidity, precipitation, and wind. These weather-related factors have various effects on personnel, supplies, and equipment. Variations in temperature typically have an impact on both the amount of time employees may spend outside and the effectiveness of their equipment. Worker and equipment operations may be greatly impacted by the precipitation conditions. Therefore, all of these weather-related factors contribute to delays in the execution of construction projects.

Table IV. Level of Agreement of the Respondents on the Operational Factors Affecting Delays in Project Implementation along Equipment and External Factors

Factors	Mean	Interpretation
Equipment		
Equipment Shortage	2.89	Agree
Low productivity of equipment	2.76	Agree
Lack of high-technology mechanical equipment	2.72	Agree
Shortage of equipment parts	2.70	Agree
Equipment failure	2.88	Agree
Wrong selection of equipment	2.48	Agree
Slow equipment delivery	2.76	Agree
External Factors		
Weather conditions	3.54	Strongly Agree
Regulatory changes	2.91	Agree
Unforeseen condition	3.24	Agree
Culture impacts	2.78	Agree
Natural disasters	3.27	Strongly Agree
Community disagreement	3.03	Agree
Politics	3.12	Agree

According to NIA Personnel and contractors, there were statistically significant disparities in the respondents' level of agreement, as shown in Table 5. Comparatively, the level of agreement among NIA staff regarding the variables influencing project implementation is numerically lower (M = 2.92). The researcher conducted a two-sample t-test to see if there is a significant difference between the two groups, presuming unequal variance. As shown in Table 5, the distribution of NIA employees and contractors was sufficiently uniform for a t-test to be performed (i.e., kurtosis = 9.0 and skew = 2.0) and for determining the assumed homogeneity of variances (F (27) = 0.436, P = 0.017). The statistics show a substantial difference between how the NIA employees are perceived and how the contractors are perceived (M = 2.91; SD = 0.26; t (47) = 6.48, p 0.001). The null hypothesis, according to which there are no appreciable discrepancies in respondents' assessments of the degree of agreement on the variables influencing project implementation delays, is thus disproved. It is public knowledge that different role actors in the building business have varying levels of agreement. According to Ramli et al. (2018), employees in companies and offices that directly hold or own construction projects have higher views of construction delays. Similar to NIA-PIMO, their study targeted experts in the construction business. The majority of professionals in private and public firms

perceive issues affecting project delivery in statistically distinct ways, according to a study by Fashina et al. (2021). According to a survey by Durdyev et al. (2019), there are notable disparities between and among groups of consultants, project owners, and contractors. The opinions of project owners or implementers and contractors differed significantly or in an essential way.

Table V. Significant Differences in the Respondents' Perception on the Level of Agreement of Factors Affecting Delays in Project Implementation

	NIA Personnel	*Contractors*
Mean	2.92	2.34
Variance	0.07	0.16
Skewness	0.55	1.80
Kurtosis	-0.09	4.12
Df	47	
t Stat	6.48	
t Critical one-tail	1.68	
F-Test		
Df	27	27
F	0.436	
P(F<=f) one-tail	0.017	
F Critical one-tail	0.524	

When classified by duration of service, Table 6 shows the data on their Level of Agreement on the operational issues affecting delays in project implementation. The greatest mean was obtained by respondents with 11–15 years of service (M = 3.04), while the lowest mean was reported by respondents with 11–15 years of service (M = 2.57).

Table VI. Mean Differences in the Level of Agreement when Grouped According to Length of Service

Length Of Service	Sum	Mean
1-5	79.46	2.84
11-15	85.25	3.04
16-20	72.00	2.57
20 - above	77.28	2.76

Results from Table 7 indicate a significant difference in the respondents' Level of Agreement on the variables influencing delays in project implementation when categorized by duration of service, F (3,108) = 6.638; P .001. The conclusion shows that the level of agreement on the variables causing delays in project implementation varies depending on the length of service. The experience of the employee is one of the most important aspects that affect labor activity in the construction industry, according to Alaghbari et al. (2019). The outcomes of this study are supported by Shahsavand et al.'s (2018) assertion that experience-related disparities in viewpoints and productivity are acceptable because they raise an employee's intellectual and physical capabilities, which in turn boosts labor alertness and autonomy.

Table VII. Significant Difference when Grouped According to Length of Service

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	3.23	3	1.07	6.638	0.000	2.689
Within Groups	17.47	108	0.16			
Total	20.70	111				

The statistics on the major variations in respondents' Levels of Agreement, when categorized by the highest level of education, are shown in Table 8. Comparatively, the numerical mean of those with baccalaureate degrees (M = 2.98) was higher than that of those with graduate degrees (M = 2.61). The researcher conducted a two-sample t-test to determine whether there is a significant difference between the two variables, presuming two unequal means. The distribution of the two variables was appropriate for a t-test, with kurtosis of 9.0 and skew of 2.0. Using the F-Test Two-Sample for Variances, F (27) = 0.547, P = 0.061, the researcher confirmed and determined that the homogeneity of the variance assumption was true. The outcome shows a significant difference between college and graduate degree holders in the parameters affecting project implementation delays (t (50) = 4.624, P.001). The findings indicate that respondents' perceptions vary depending on their level of education. The academic background of important individuals may influence how the project is implemented. Graduate degree holders in fields like engineering and construction management will aid in addressing the issue of a skilled labor shortage in the construction industry, claims a study by Kim et al. (2020). They might have knowledge and skills that are valuable to the industry, like project management, process improvement, and data analysis skills. Graduate degrees in construction management and related fields may also provide chances for workforce training and development, which can help the industry's lack of qualified workers. Better foundations and stronger critical thinking abilities may make it possible to see delays' causes as having less significance. This conclusion validates the key distinction between those with graduate degrees and those with undergraduate degrees.

Table VIII. Significant Difference when Grouped According to Highest Educational Attainment

	Bachelor's Degree	*Graduate Degree*
Mean	2.98	2.61
Variance	0.06	0.11
Skewness	0.56	1.22
Kurtosis	0.69	1.55
Df	50.0	
t Stat	4.624	
P(T<=t) one-tail	0.000	
t Critical one-tail	1.676	
F-Test		
Df	27	27
F	0.547	
P(F<=f) one-tail	0.061	
F Critical one-tail	0.525	

According to their job description, Table 9's data on the respondents' Level of Agreement for the factors that delay project implementation are shown. According to the statistics, people who hold roles other than managerial, supervisory, and technical ones had the highest mean level of agreement on the variables influencing project implementation delays (M = 3.45). Managerial positions, however, had the lowest mean (M = 1.5). To find out if there is a statistically significant difference between the positions, the researcher conducted a single-factor ANOVA. From managerial to technical grade, the mean Level of Agreement rises. A technical group is theoretically seen by an organization as people who are working on a project or field. By the findings, the technical group and direct on-field positions have the greatest Mean. F (3,108) = 117.061; P .001 results in Table 10 indicate that there are significant differences in respondents' Levels of Agreement on the elements that contribute to project implementation delays when grouped by position. According to the findings, the respondents' differing perceptions are a reflection of their positions in society.

Table IX. Mean Differences when Grouped According to Position

c	Sum	Mean
Managerial	42.00	1.50
Supervisory	71.67	2.56
Technical	80.35	2.87
Others	96.50	3.45

The study by Rachid et al. (2019) emphasizes the importance of position in the firm as a contributing factor to schedule delays in building projects in Algeria and highlights the need for effective project management techniques that take into account the roles and responsibilities of all project participants. The authors suggest that improving cooperation and communication among various business positions could reduce schedule delays in construction projects. The study emphasizes the value of effective project management strategies, which call for superb coordination and communication amongst all project participants, regardless of their positions within the firm. Overall, the results refute the null hypothesis, which claims that grouping the factors that delay project execution according to the chosen profile variables does not result in any notable differences in the degree of agreement.

Table X. Significant Difference when Grouped According to Postion

Source of Variation	SS	df	MS	F	P-value
Between Groups	56.02	3	18.67	117.061	0.000
Within Groups	17.23	108	0.16		
Total	73.25	111			

IV. CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

The study proved that NIA employees and contractors all agreed that equipment, construction methods, labor, and external factors unquestionably affect implementation delays. The top-ranking cause of delay was determined to be external variables, which include weather, culture, and politics.

The level of agreement on the issues causing delays is perceived significantly differently by NIA employees and contractors. The null hypothesis, according to which there are no appreciable differences in the respondents' levels of agreement on the variables causing delays in project implementation, is thus disproved.

When categorized by the duration of service, the greatest level of education attained, and rank, there are noticeable variances in the Level of Agreement on the variables affecting delays in project delivery. The findings imply that the sources of heterogeneity in respondents' assessments of the factors causing delays in project completion are the length of service, greatest educational attainment, and position. The null hypothesis, according to which

there are no appreciable variations in the respondents' Levels of Agreement about the causes of project implementation delays, is thus disproved.

Recommendations:

To manage construction projects effectively and prevent delays, contractors and NIA staff must appropriately apply and continuously improve project management techniques. They can strengthen their managerial skills and the workforce's ability to acquire the appropriate and necessary technical skills to be more effective and efficient by using the Enhancement Personnel Building Program. The researcher also suggests that all significant participants in the project make sure that the right equipment is identified and managed. Similarly, it is crucial to provide labor and the workforce with a solid grasp of equipment management.

By taking into account external variables, natural disasters, residents' cultural views, and political leaders as crucial aspects in forecasting project duration and compliance, project planning, nature, extent, and timing should be strengthened.

The researcher suggests further investigation into the full process cycle of irrigation projects, taking into account the influence of documentation, project design, financial considerations, etc. It is also feasible to broaden the groups of respondents, including consultants and others, to diversify the aspects and obtain a more conclusive generalization of the factors driving delays in project execution.

APPENDIX

Survey- Questionnaire on Operational Factors Affecting Delays in Project Implementation for PIMO Project-In-Charge, PIMO Manager, NIA-Region 1 Project Inspectorate Team, BAC Chairman and BAC Secretariat

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SURVEY- QUESTIONNAIRE ON OPERATIONAL FACTORS AFFECTING DELAYS IN PROJECT IMPLEMENTATION

(PIMO Project-In-Charge, PIMO Manager, NIA-Region 1 Project Inspectorate Team, BAC Chairman, and BAC Secretariat)

July 14, 2021

Dear Respondents,

The researcher is a student at the Graduate School of Urdaneta City University, Urdaneta City, Pangasinan, and is presently conducting his thesis study titled "OPERATIONAL FACTORS AFFECTING DELAYS IN PROJECT IMPLEMENTATION". This is in partial fulfillment of the requirements for the degree Master of Public Administration"

Thank you very much for participating in this research! Please be assured that all of your answers will be solely used for this study and be kept with the utmost confidentiality. In this regard, I humbly request you answer these questions as openly and honestly as possible.

The Researcher

I. PERSONAL PROFILE

Direction: Please check the parentheses provided for your response in the required information.

1. Age:
( ) 21 – 30 years old
( ) 31 – 40 years old
( ) 41 – 50 years old
( ) 51 – 60 years old
( ) 61 – 70 years old

2. Sex:
( ) Male
( ) Female

3. Marital Status:
( ) Single
( ) Married
( ) Widowed

4. Length of Service:
( ) 1-5 years
( ) 6-10 years
( ) 11-15 years
( ) 16-20 years
( ) 20 years and above

5. Highest Educational Attainment:
( ) Vocational Course
( ) College
( ) Graduate Studies(please specify):_____

6. Position:
( ) Managerial
( ) Supervisory
( ) Technical
( ) Others (please specify): _____

II. LEVEL OF AGREEMENT ON CAUSES OF DELAYS

The researcher would like to determine the level of your agreement to the following statements causing delays in the construction projects. How much do you agree with the following? To quantify your answers, please refer to the description below.

1	Strongly Agree	The factor extremely affecting delays in project implementation.
2	Agree	The factor certainly affects delays in project implementation.
3	Disagree	The factor affecting very minimal delays in project implementation.
4	Strongly Disagree	The factor does not at all affect delays in project implementation.

FACTORS	**Level of Agreement**			
	SA	A	D	SD
Construction Methodology				
Poor site management and supervision				
Lack of experience				
Improper construction methods				
Poor monitoring and control				
Underestimation of time for completion of projects				
Underestimation of the complexity of the project				
Ineffective project planning, scheduling, or resource management				
Labor				
Fatigue				
Poor productivity of labor				
Lack of skilled professional				
Fluctuating labor availability from season to season				
Absenteeism				
Accidents on site				
Motivation and moral of labor				
Equipment				
Equipment shortage				
Low productivity of equipment				
Lack of high-technology mechanical equipment				
Shortage of equipment parts				
Equipment failure				
Wrong selection of equipment				
Slow equipment delivery				
External factors				
Weather conditions				
Regulatory changes				
Unforeseen condition				
Culture impacts				
Natural disasters				
Community disagreement				
Politics				

III. PRIVACY AND CONTENT STATEMENT

Given Data Privacy Law, I agree to my details being used for research and scholarly purposes. The information will only be accessed by necessary personnel. I understand my data will be held securely and will not be distributed to third parties. I have a right to charge or file legal cases in case of data mistreatment. I understand that when this information is no longer required for this purpose, official university procedures will be followed to dispose of my data.

_____

Signature over Printed Name

Survey- Questionnaire on Operational Factors Affecting Delays in Project Implementation for Contractors and Project Engineers

SURVEY- QUESTIONNAIRE ON OPERATIONAL FACTORS AFFECTING DELAYS IN PROJECT IMPLEMENTATION
(Contractors and Project Engineers)

July 14, 2021

Dear Respondents,

The researcher is a student at the Graduate School of Urdaneta City University, Urdaneta City, Pangasinan, and is presently conducting his thesis study titled "OPERATIONAL FACTORS AFFECTING DELAYS IN PROJECT IMPLEMENTATION". This is in partial fulfillment of the requirements for the degree Master of Public Administration"

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The Researcher

I. PERSONAL PROFILE

Direction: Please check the parentheses provided for your response in the required information.

1. Age:
   ( ) 21 – 30 years old
   ( ) 31 – 40 years old
   ( ) 41 – 50 years old
   ( ) 51 – 60 years old
   ( ) 61 – 70 years old

2. Sex:
   ( ) Male
   ( ) Female

3. Marital Status:
   ( ) Single
   ( ) Married
   ( ) Widowed

4. No. of Years in Operation:
   ( ) 1-5 years
   ( ) 6-10 years
   ( ) 11-15 years
   ( ) 16-20 years
   ( ) 20 years and above

5. Highest Educational Attainment:
   ( ) High school
   ( ) Vocational Course
   ( ) College
   ( ) Graduate Studies (please specify):_____

6. Position:
   ( ) Managerial
   ( ) Supervisory
   ( ) Technical
   ( ) Others (please specify) _____

7. Type of Organization
   ( ) Single Proprietorship
   ( ) Partnership
   ( ) Corporation
   ( ) Cooperative

V. LEVEL OF AGREEMENT ON CAUSES OF DELAYS

The researcher would like to determine the level of your agreement to the following statements causing delays in the construction projects. How much do you agree with the following? To quantify your answers, please refer to the description below.

1	Strongly Agree	The factor extremely affecting delays in project implementation.
2	Agree	The factor certainly affects delays in project implementation.
3	Disagree	The factor affecting very minimal delays in project implementation.
4	Strongly Disagree	The factor does not at all affect delays in project implementation.

FACTORS	Level of Agreement			
	SA	A	D	SD
Construction Methodology				
Poor site management and supervision				
Lack of experience				
Improper construction methods				
Poor monitoring and control				
Underestimation of time for completion of projects				
Underestimation of the complexity of the project				
Ineffective project planning, scheduling, or resource management				
Labor				
Fatigue				
Poor productivity of labor				
Lack of skilled professional				
Fluctuating labor availability from season to season				
Absenteeism				
Accidents on site				
Motivation and morale of labor				
Equipment				
Equipment shortage				
Low productivity of equipment				
Lack of high-technology mechanical equipment				
Shortage of equipment parts				
Equipment failure				
Wrong selection of equipment				
Slow equipment delivery				
External factors				
Weather conditions				
Regulatory changes				
Unforeseen condition				
Culture impacts				
Natural disasters				
Community disagreement				
Politics				

VI. PRIVACY AND CONTENT STATEMENT

Given Data Privacy Law, I agree to my details used for research and scholarly purposes. The information will only be accessed by necessary personnel. I understand my data will be held securely and will not be distributed to third parties. I have a right to charge or file legal cases in case of data mistreatment. I understand that when this information is no longer required for this purpose, official university procedures will be followed to dispose of my data.

_____

Signature over Printed Name

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