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Analysis of the Impact of Erroneous Land Measurement Results on Construction Project Implementation

(Study Case of the Integrated Sports Area Development for South Kalimantan Province)

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ABSTRACT. Development problems in Indonesia are divided into two major parts, namely the problem of development objects and the problem of subjects who will carry out development. Problems originating from the subject of development are in terms of land acquisition. Thus, land acquisition efforts for these purposes need to be handled properly and carried out by taking into account the role of land in human life and the principle of respect for legal rights to land. The Public Works and Spatial Planning Office of South Kalimantan Province has planned the development area of the government center in Banjarbaru City. One of them is the design of a more representative sports area. In 2022 and 2023, the land acquisition of the Integrated Sports Area Phase I and II has been carried out together with the implementation team of the South Kalimantan Provincial BPN Office. In connection with this achievement, this research is important because the land acquisition process is related to project productivity which causes the construction of the Integrated Sports Area to be hampered. This research focuses on the variable factors of the stages and technical implementation of land acquisition (Inventory and identification of land tenure, ownership, use, and utilization) and internal factors (Verification and improvement of land parcel maps and / or nominative lists by the Chief Land Acquisition Executive if there are objections to the results of inventory and identification), namely the results of land measurement. Analysis of measurement error results by finding the amount of linear shift to determine the standard deviation of comparison of measurement results of two different tools. The results of the questionnaire will be tested for validity and reliability to determine the level of importance of the measurement results from respondents followed by Relative Importance Index (RII) Analysis to find out what dominant impacts affect the Construction project, these two methods are taken into consideration in determining mitigation efforts for land measurement inaccuracies on the physical development process. The impact of KOT land measurement errors on delays in physical development plans is obtained dominant factors based on the rank of RII values, namely the compensation value (X1.2), development project costs (X2.4), design changes (X2.3), plant growth and affected buildings (X1.3), development permits (X2.5), land certification (settlement) (X1.4), development process (X2.1), smooth land acquisition (X1.1) while delays (X2.2) are below 75% of the RII value so they are not included as priority factors to be mitigated.

Keywords: Land Acquisition, Land Measurement, Risk Management

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1. INTRODUCTION

The problems of development in Indonesia are divided into two major parts, namely the problem of the object of development and the problem of the subject who will carry out the development. Problems originating from the subject of development are in terms of land acquisition (Musra, 2014). National development, especially the construction of various facilities for the public interest, requires very large tracts of land. On the other hand, the required lands are generally already attached to a land right. Thus efforts to acquire land for this purpose need to be handled as well as possible and carried out with due regard to the role of land in human life and the principle of respect for legal rights to land.

In 2022 and 2023, Phase I and II KOT land acquisition has been carried out together with the implementation team of the BPN Regional Office of South Kalimantan Province. In connection with these achievements, this research is important because the process of land acquisition is related to project productivity which has hampered the construction of KOT. This study focuses on the variable stages and technical factors of land acquisition implementation (Inventory and identification of tenure, ownership, use and utilization of land) and internal factors (Verification and improvement of land parcel maps and/or nominative lists by the Chief Executive of Land Acquisition if there are objections on the results of inventory and identification), namely the results of land measurements due to the inaccurate determination of land boundary points, therefore it is necessary to analyze the comparison of the results of measurements of Handheld GPS with Geodetic GPS with a level of accuracy that is closer to that in the field.

Several previous studies examined the overall factors in land acquisition that resulted in delays in construction projects, while this study focuses on land measurement factors as a basis for determining the boundaries of construction project work areas. There are many studies related to project delays (Kusuma,2018) but these studies focus more on financial analysis due to delays in construction projects. Based on this experience, this research needs to be carried out in addition to examining errors/comparisons in measurement accuracy with the use of different tools, this research also helps in determining the mitigation that occurs due to land measurement errors.

2. RESEARCH METHOD

Preliminary Stage

The preliminary stage is the stage of determining the problem and determining the topics to be studied in this study. In the introductory section, the background, problem formulation, research objectives, and problem boundaries are formulated. This study aims to determine the right strategy to improve performance in terms of land measurement results for delays in construction projects, especially in the case study of the South Kalimantan Province Integrated Sports Area development plan. This is to support the determination of research topics.

Literature Study Stage

Literature study aims to study concepts and theories related to land measurement analysis using 2 (two) different tools by maximizing the recapitulation of questionnaire results to develop recommendations for mitigation plans in the form of strategic stages that need to be carried out due to inaccurate measurement results as an obstacle to physical development

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Data Collection Stage

Data collection is carried out to obtain the information needed in order to achieve research objectives. One important component in research is the process of data collection. Errors made in the data collection process will make the analysis process difficult, besides that the results and conclusions to be obtained will be ambiguous if the data collection is not carried out correctly. The data obtained is based on the planned research location.

This research location-based data collection activity aims to complete/obtain the goal of determining the right strategy to improve performance in terms of land measurement results for delays in construction projects, especially in the case study of the South Kalimantan Province Integrated Sports Area development plan. Types of data used for data collection and sources of collection, including primary data and secondary data.

Primary Data Collection

- Land Measurement Result Data

The method for analyzing land parcels with GPS Handheld and GPS Geodetic for the Development of Integrated Sports Areas for the Province of South Kalimantan is to compare the results of field measurements in the form of GCP (Ground Control Point) data. It begins with determining the boundaries of the land to be acquired prior to taking the GCP point. Retrieval of primary data in the form of coordinates using the GPS Geodetic measuring tool which will be collected for analysis at a later stage with secondary data taken from GCP using a handheld GPS at the previous planning stage.

- Questionnaire Data

To support the results of the comparison of measurement values from 2 tools that differ in terms of their level of importance, questionnaires will be distributed to at least 30 respondents including people who are qualified in the field of measurement/relevant agencies to ordinary people who feel the impact of the results of measuring land parcels. In addition to distributing questionnaires, this research will also be conducted using in-depth interviews with competent assessors/experts.

Secondary Data Collection

Secondary data is additional or supporting data to strengthen research results where the data uses material that is not from the first source as a means of obtaining data or information to answer the problem under study. The data used are pre-existing data such as KOT (Integrated Sports Area) location determination reports, KOT location maps, construction design schemes, preliminary reports and final reports of KOT planning consultants as well as literature studies and book references related to lecture material related to the object in this research. The data and information used to support this research were also obtained from literature reviews through books, journals, articles, government publications, similar previous research and internet media. Secondary data is less specific and has no control in the research that is made.

Analysis of Measurement Results

The data used is in the form of coordinate data for measurement locations or GCP retrieval to compare the distances from the two GPS devices used in the field. Comparative data from handheld GPS and geodetic GPS will be presented in the form of measuring results maps and distance linear shift graphs. The three comparative analyzes of GCP point coordinates for each linear distance value resulting from the calculation of the Handheld GCP point coordinates against GCP Geodetic coordinates. To find the standard deviation value of each X and Y component, the equation formula is used

$$SDx = \sqrt{\frac{\sum_{i=1}^{n}(\Delta X_1 - \Delta \bar{X})^2}{n-1}} \quad (2.1)$$

$$SDy = \sqrt{\frac{\sum_{i=1}^{n}(\Delta X_1 - \Delta \bar{X})^2}{n-1}} \quad (2.2)$$

Where SDx is the standard deviation in the x-axis direction, SDy is the standard deviation in the y-axis direction, ΔXi is the difference from X to i, ΔYi is the difference between Y to i, $\Delta\bar{Y}$ the average difference of Y, $\Delta\bar{Y}$ the average difference of X, and n is the number of sample.

- Absis Value

The first is a comparative analysis of the coordinates of the GCP points processed in this study, namely comparing the abscissa values of each research point, namely the abscissa resulting from processing of the Handheld GPS and the abscissa of the processing of the Geodetic GPS.

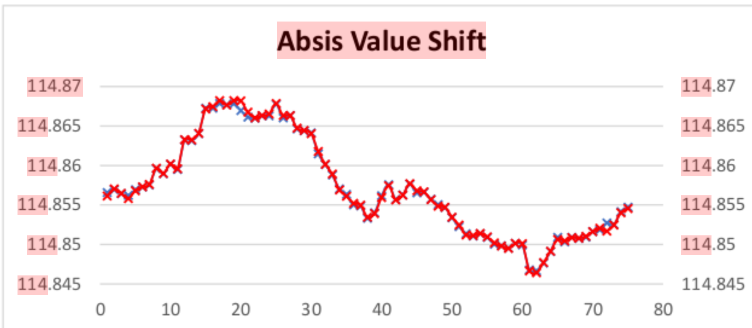

Figure 2.1. Absis Value Shift

- Ordinate Value

The second is comparing each point of longitude value (ordinate) of the resulting GCP point coordinates, namely the ordinate coordinates of the Handheld GPS measurement results and the Geodetic GPS measurement results.

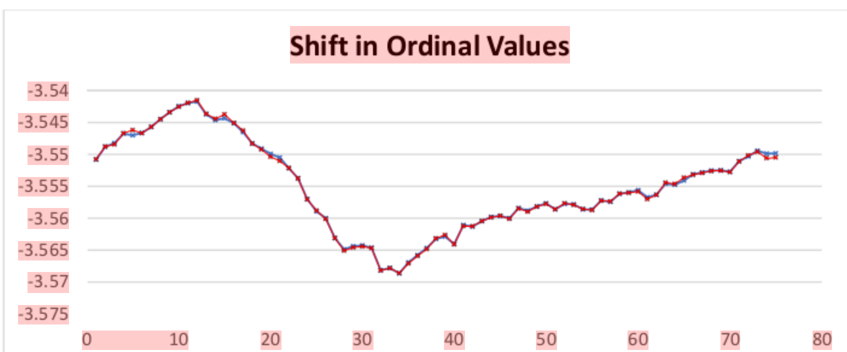

Figure 2.2. Shift in Ordinal Values

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Research Instrument Test

The data collection instrument was a series of questionnaire data consisting of several questions and divided into two assessment categories, namely the assessment of the importance of land measurement. The final stage of processing the questionnaire data is the Validity and Reliability Test.

Table 2.1 Questionnaire Question Variables

	Question Variables	**Item**
Land acquisition	Smooth Land Acquisition	X1.1
	Compensation Value	X1.2
	Planting Grows and Buildings Affected	X1.3
	Land Certification (Splitting)	X1.4
Development Project	Measurement Process	X2.1
	Lateness	X2.2
	Design Changes	X2.3
	Development Project Costs	X2.4
	Development Permit	X2.5

In addition to distributing questionnaires, this research will also be conducted using in-depth interviews with competent expert/expert appraisers to maximize the preparation of mitigation plans related to errors in land measurement in order to minimize the risk of delays in physical development.

- Validity test

Used to measure the legitimacy or validity of a questionnaire. A test can be said to have high validity if the test performs its measuring function or provides precise and accurate measurement results in accordance with the intent of the test. From the results of the correlation calculation, a correlation coefficient will be obtained which is used to measure the level of validity of an item and to determine whether an item is suitable for use or not. In determining whether or not an item is appropriate, a correlation coefficient significance test is usually carried out at a significance level of 0.05, meaning that an item is considered valid if it has a significant correlation with the total score. The significance test was carried out by comparing the value of r count with r table for degree of freedom (df) = n - 2, in this case n is the number of samples.

- Reliability Test

Measuring tool to measure a questionnaire which is an indicator of a variable or construct. A questionnaire is said to be reliable or reliable if one's answers to the questions are consistent or stable from time to time. The reliability of a test refers to the degree of stability, consistency, predictive power and accuracy. Measurements that have high reliability are measurements that can produce reliable data.

The measurement of the reliability test in this study used one shot or only one measurement. In a one shot measurement, the measurement is only done once and then the results are compared with other questions or measuring the correlation between the answers to questions in the SPSS to measure reliability with the Cronbach Alpha (α) statistical test. A construct or variable is said to be reliable if it gives a Cronbach Alpha value > 0.70.

Analysis of Relative Important Index (RII)

To find out what dominant impacts affect construction projects, an analysis is carried out using the Relative Important Index (RII) method. The Relative Important Index (RII) method analyzes the most influential factors in the research object. In addition, this analysis method is processed by statistical calculations with the results of the questionnaire as input which will be processed into factors that influence the ranking system based on the weight of the value given by the respondent after filling out the questionnaire

3. RESULTS AND DISCUSSION

Analysis of Measurement Results

First, a comparative analysis of the coordinates of the GCP points processed in this study, namely comparing the abscissa values of each research point, namely the abscissa resulting from processing of the Handheld GPS and the abscissa of the processing of the Geodetic GPS. The second is comparing each point of longitude value (ordinate) of the resulting GCP point coordinates, namely the ordinate coordinates of the Handheld GPS measurement results and the Geodetic GPS measurement results. Third, comparative analysis of the GCP point coordinates for each linear distance value resulting from the calculation of the Handheld GCP point coordinates against the GCP Geodetic coordinates.

According to the results of the calculation of the linear shift in the distance value above, it is known that the average linear shift value of the distance measured by Handheld GPS has a value of 25.557 meters with a standard deviation of the X component of 27.803 meters and the Y component of 23.508 meters. Based on the calculation results above, it can be seen that ΔX_{Min} (-112,769), ΔX_{Max} (136,787), ΔY_{Min} (-93,175), and ΔY_{Max} (74,935) while AB_{Min} is 0.353 and AB_{Max} is 144,144. The next step is to find out the range from the results of comparing the linear values of the Handheld GPS and Geodetic GPS, namely $RX = \Delta X_{Max} - \Delta X_{Min}$ obtained 249.556 and $RY = \Delta Y_{Max} - \Delta Y_{Min}$ obtained 168.110 while $RAB = AB_{Max} - AB_{Min}$ is 143.791. The value of this calculation can be seen in Fig 3.1

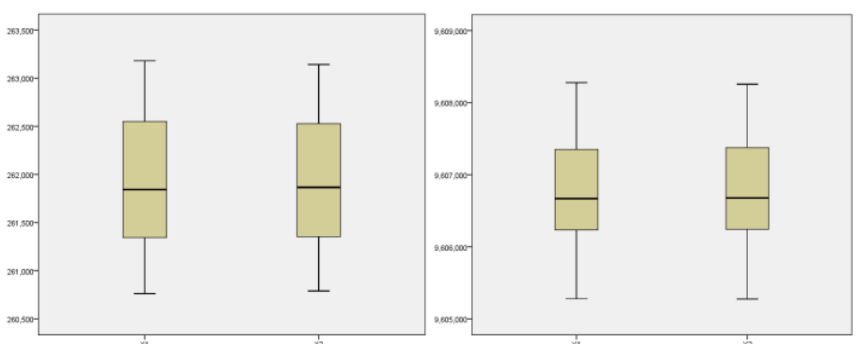

Figure 3.1. Boxplot Graph Comparison of Linear Values of X and Y Points

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The range of values described above is related to the topographical conditions of the land where the comparison of measurement results is influenced by the height of the soil and other existing conditions such as growing plants that are too shady affect the signal received by the measuring instrument. The following can be seen an overview of the land topography conditions in Figure 3.2

Figure 3.2. KOT Land Topography Conditions from UAV Drone Imagery

The use of Geodetic GPS also has limitations if in dense forest because it will affect the received signal. Comparative analysis of GCP point coordinates for each linear distance value resulting from coordinate calculations, namely the coordinates of handheld GPS observations and the results of Geodetic GPS processing using the help of the Archmap application to display a map of the field GCP point capture results. Can be seen in Figure 3.3

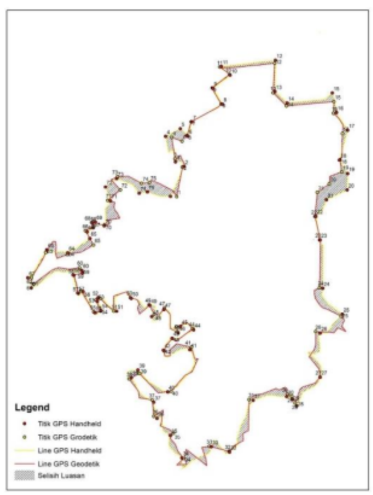

Figure 3.3. GCP Point Retrieval Results Map

Assessment of the Importance Level of Measurement Land

- Data collection

Data collection was carried out by distributing questionnaires to the target respondents who came from parties involved in the land acquisition project which will be reviewed in accordance with the Land Acquisition Team Decree.

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- Respondent Data

Questionnaires were distributed to 60 respondents. Of the total sample, 41 male respondents (68%) and 19 female respondents (32%). While the age of most respondents was in the range of 20 years to 30 years as many as 32 people (53%).

Research Instrument Test

- Validity Test

Validity test can be done by comparing the value of r count and r table with Spearman's correlation coefficient with a significance level for the one way test α 0.05. To find the size of the r table is determined by the number of respondents with the formula N-2 = 60 - 2 = 58, then we get an r table of 0.2144.. Table of validity test results can be seen in Table 3.1

Table 3.1 Validity Test Results with Spearman's correlation coefficient

Variable	**Item**	**r count**	**r Table**	**Information**
Land acquisition	X1.1	0,572	0, 2144	Valid
	X1.2	0,446	0, 2144	Valid
	X1.3	0,724	0, 2144	Valid
	X1.4	0,843	0, 2144	Valid
Development Project	X2.1	0,824	0, 2144	Valid
	X2.2	0,754	0, 2144	Valid
	X2.3	0,703	0, 2144	Valid
	X2.4	0,509	0, 2144	Valid
	X2.5	0,563	0, 2144	Valid

Based on Table 3.1, all question items are valid, as evidenced by the results of the calculation of r count which is greater than r table.

Reliability Test

Reliability test is carried out on valid question items. Items are categorized as reliable if the answers to the questions are always consistent. The consistency of the reliability of the instrument is intended to see the answers to the questions given by the respondents. If you look at the Cronbach's Alpha value in Table 3.2 it shows an r count of 0.757 which is greater than the value of 0.60, therefore the instruments in this study were declared reliable or fulfilled the requirements. The analysis can be seen in Table 3.2

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Table 3.2 Reliability Test Results

Cronbach's Alpha	N of Items
0.757	58

Identification of the Impact of Dominant Land Measurement on Delays in Construction Projects

To find out what are the dominant factors influencing construction projects, an analysis is carried out using the Relative Important Index (RII) method. The Relative Important Index (RII) method analyzes the most influential factors in the research object. In addition, this analysis method is processed by statistical calculations with the results of the questionnaire as input which will be processed into factors that influence the ranking system based on the weight of the value given by the respondent after filling out the questionnaire.

Table 3.3 Analysis of Relative Important Index (RII)

No	Factor	factor	N5	N4	N3	N2	N1	Total	N	5*N		RII	Rank
1	Land acquisition	X1.1	45	72	78	14	0	209	60	300		0,697	**8**
		X1.2	225	52	6	0	0	283	60	300		0,943	**1**
		X1.3	115	124	18	0	0	257	60	300		0,857	**4**
		X1.4	95	120	30	2	0	247	60	300		0,823	**6**
	Total		480	368	132	16	0	996	240	1200	Average Totals	0,83	
2	Development Project	X2.1	55	84	72	8	0	219	60	300		0,730	**7**
		X2.2	45	56	81	18	1	201	60	300		0,670	**9**
		X2.3	145	112	9	0	0	266	60	300		0,887	**3**
		X2.4	215	64	3	0	0	282	60	300		0,940	**2**
		X2.5	130	96	30	0	0	256	60	300		0,853	**5**
	Total		590	412	195	26	1	1224	300	1500	Average Totals	0,816	

In this study, the dominant factors taken were several factors whose values were greater than 75% or in the range of RII values 0.690 – 0.943 obtained from the total average RII (variables 1 and 2) divided by the number of factors (9 factors) multiplied by 75% so that the dominant factors were based on the rank of RII values in Table IV.5, namely the value of compensation (X1.2), costs construction projects (X2.4), design changes (X2.3), planting and building affected (X1.3), construction permits (X2.5), land certification (split) (X1.4), development process (X2 .1), the smoothness of land acquisition (X1.1) while the delay (X2.2) is below 75% of the RII value so that it is not included as a priority factor to be mitigated.

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Impact of Measurement Error on Exemption Land

From the results of interviews with respondents, as well as discussions and interviews with experts to find out which impacts affected the delay in the project caused by the results of land measurements on land acquisition, are as follows.

- Impact on Smooth Land Acquisition

Measurement errors will have an impact on the smooth running of land acquisition, this is due to the previously scheduled stages of the land acquisition procedure which will experience discrepancies if measurement errors occur. Based on the questionnaire data obtained, the impact on smooth land acquisition is dominated by a value of 3 for representatives of the "moderate" level of interest/influence with a total of 26 respondents and the rest gave scores of 4 and 5 as representatives of large and very large impact.

- Impact on Compensation Value

Measurement errors will have an impact on the compensation value for affected land parcels. This is due to the area of land that is not in accordance with the field and the measurement results obtained. This will affect the previously planned budget changes for land compensation. Based on the questionnaire data obtained, the impact on the value of compensation for land is dominated by a value of 5 for the representative level of interest/influence of "very large" the number of 45 respondents, this proves that the measurement results have a very significant impact on respondents regarding the value of land compensation.

- Impact on Growing Plants and Affected Buildings

Measurement errors will have an impact on the number of results of the calculation of growing crops contained in the land to be acquired, this is the same as the impact on the value of compensation but from different objects, namely growing plants and buildings. As a result of measurement errors will affect the number and area of affected buildings which will affect the amount of compensation for buildings. Based on the questionnaire data obtained, the impact on planting and building is dominated by a value of 4 for the representative level of "large" interest/influence with a total of 31 respondents, this means that more respondents are aware of the magnitude of the impact arising from inaccurate measurement results on the number and area planting grows and buildings are affected.

- Impact on Land Certification (split)

Measurement errors will have an impact on the certification or resolution of land rights. This is caused by an error in measuring the boundaries of the freed land so that the results of the certificate, both for the government inventory and the remaining affected community land, will experience errors in the inclusion of the area and in the attachment to the map of the land parcels being certified. Based on the questionnaire data obtained, the impact on land certification is dominated by a value of 4 for the representative level of "big" interest/influence with a total of 30 respondents. regarding the inclusion of the land area.

Impact of Measurement Errors on the Project Development

The results of interviews with respondents, as well as discussions and interviews with experts to determine the impact that affected project delays caused by the results of land measurements on development projects are as follows.

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- Impact on Development Project Measurement Process

Land measurement errors, of course, measurements in development projects will also experience errors. At the planning stage of the development project there will be errors in the placement of buildings and the size of the buildings that have been planned, continuing at the stage of physical development work with land areas that have previously experienced errors in the land measurement process will have a major impact when work is not in accordance with the planned size.

Based on the questionnaire data obtained, the impact on the development project measurement process is dominated by a value of 3 for representatives of the "moderate" level of interest/influence with a total of 24 respondents. development projects with the majority of respondents giving the reason that it is the process of measuring land acquisition that is very affected so that it affects the process of measuring development projects.

- Impact on Development Project Delays

Errors in land measurement will also have an impact on delays in development projects as in the case of land acquisition. Based on the questionnaire data obtained, it is the same as the process of measuring development projects, the impact on delays in development projects is dominated by a value of 3 for representatives of the "moderate" level of interest/influence with a total of 27 respondents, this means that almost half of the respondents stated that the influence of inaccuracies measurement does not significantly affect development project delays with the majority of respondents giving the reason that it is the land acquisition process that is most affected, thus affecting delays in development projects.

- Impact on Development Project Design Changes

Land measurement errors are inseparable from changes in the development project design. The design that was previously prepared in accordance with the planned area and boundaries of the land acquired will undergo changes in its entirety if the measurement results do not match the previous estimate. This event has an impact in the form of design delays that will be used in the development process because design changes or design reviews must be made to adjust to the measurement results that experience changes or errors.

Based on the questionnaire data obtained, the impact on changes in development project design is dominated by a value of 5 for the representative level of interest/influence of "very large" with a total of 29 respondents, this means that more respondents are aware of the very large impact arising from inaccurate measurement results on changes development project design.

- Impact on Development Project Costs

Errors in measuring land as in the process of land acquisition, development projects also experience an impact, where in development projects with land areas that experience errors and affect building designs and physical development that change, the costs of development projects change. This change is not in accordance with the previous plan in handling development projects. Based on the questionnaire data obtained, the impact on development project costs is dominated by a value of 5 for the representative level of "very large" interest/influence with a total of 43 respondents, this means that more respondents are aware of the magnitude of the impact arising from inaccurate measurement results on development project costs where there is an error in the development budget plan which must be adjusted to the area of land to be built.

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- Impact on Development Permits

Errors in land measurement have an impact on development permits, in this case the permit documents that are not in accordance with the area of the development project where land measurements that experience errors in terms of the area and boundaries of the land released affect the permits for the land to be built. Based on the questionnaire data obtained, the impact on development permits is dominated by a value of 5 for the representative level of "very large" interest/influence with a total of 26 respondents. This means that more respondents are aware of the magnitude of the impact arising from inaccurate measurement results on land permits built in terms of supporting permit documents prior to construction.

Table 3.4 Recapitulation of Respondents' Answers

Variable		**factor**	**Dominant (Modus)**	**Rank RII**	**Number of respondents**	**Impact Category**
Land acquisition	X1.1	Smooth Land Acquisition	3	8	26	Medium
	X1.2	Compensation Value	5	1	45	Very large
	X1.3	Planting Grows and Buildings Affected	4	4	31	Large
	X1.4	Land Certification (Splitting).	4	6	30	Large
Development Project	X2.1	Measurement Process	3	7	24	Medium
	X2.2	Lateness	3	9	27	Medium
	X2.3	Design Changes	5	3	29	Very large
	X2.4	Development Project Costs	5	2	43	Very large
	X2.5	Development Permit	5	5	26	Very large

Mitigation of the Impact of Erroneous Land Measurement Results on Delays in Implementation of Construction Projects

At this stage, efforts to mitigate the impact of land measurement errors on the construction project implementation are determined. In this study, the specified mitigation efforts are limited to recommendation mitigation efforts, not up to the implementation of these mitigation efforts.

- Acquisition of Impact Mitigation Efforts Based on Relative Important Index (RII)

The following is an effort to mitigate the impact of errors in land measurement results in delays in the implementation of construction projects based on the ranking order of the RII values that have previously been analyzed. of 75% or in the RII value range of 0.690 – 0.943. Mitigation recommendations related to government performance according to Saputra (2022) are to prioritize coordination, cooperation and have the same direction with a performance improvement strategy, determining the right policy directions and strategic plans, and establishing commission institutions as a coordination forum. Seen in Table 3.5

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Table 3.5. Impact Mitigation Efforts

Rank		Factor	Description	Impact Mitigation
1	X1.2	Compensation Value	Measurement errors affect changes to the planned compensation budget	- It is necessary to carry out a risk assessment of the lack of funds for additions to the revised budget - Need to use more accurate measurement tools such as GPS Geodetic
2	X2.4	Development Project Costs	Measurement errors affect the increased costs due to contracts for goods and services that are more than expected	Coordination with the measurement team for the agreed land acquisition schedule and coordination with the procurement of goods and services regarding the schedule that needs to adjust the results of land acquisition
3	X2.3	Design Changes	Measurement errors affect the design so that it needs to be reviewed to adjust to land boundaries that have improved measurement results	Coordinate periodically with the land acquisition team to find out the appropriate measurement results so that a review of design changes is carried out as soon as possible
4	X1.3	Planting Grows and Buildings Affected	Measurement error affects the reduced or the amount affected	Ensuring land boundaries are in accordance with those indicated by the land owner as well as accurate planting and building information from the land owner
5	X2.5	Development Permit	Measurement errors affect permits so that they experience changes due to changing area and land boundaries	Coordination with parties who have authority in granting development permits so that they can cooperate in issuing development permits
6	X1.4	Land Certification (Splitting).	Measurement errors will affect the area and boundaries of the land stated in the certificate	Coordination with the BPN concerned with anticipating errors in the inclusion of land measurement results
7	X2.1	Measurement Process	Measurement errors affect the planned schedule	At the measurement stage, it provides more time span for measurement and revision of measurement results according to the area of land to be acquired

8	X1.1	Smooth Land Acquisition	Measurement errors will hinder the smooth running of the stages of the land acquisition process	Use of measuring instruments with a high level of accuracy and measurement services that are more competent/experienced in the field of measurement

- Impact Mitigation Status Validation

Impact mitigation is obtained from discussions with respondents as well as in-depth interviews with competent expert/expert appraisers. The process of this effort is carried out through interviews and discussions with experts on this project (Head of BPN Regional Office of South Kalimantan Province and Measurement Consultant), as well as literature studies on previous studies as a basis for compiling recommendations for a mitigation plan in the form of a strategy that needs to be carried out before implementing the design. with inaccurate measurement results so as not to hinder the physical development/implementation of construction projects.

4. CONCLUSIONS

The impact of KOT land measurement errors on delays in physical development plans is that the dominant factor is based on the rank of RII values, namely compensation value (X1.2), development project costs (X2.4), design changes (X2.3), planting and building affected (X1.3), construction permits (X2.5), land certification (split) (X1.4), construction process (X2.1), smooth land acquisition (X1.1) while delays (X2.2) are under 75% of the RII value so it is not included as a priority factor to be mitigated.

Mitigation of the impact of land measurement errors on delays in the physical development of the KOT is determined by mitigation efforts for each impact whose value is greater than 75% or in the RII value range of 0.690 - 0.943. For example, in the compensation value factor (X1.2) as rank 1 (priority), namely influencing changes to the budget that has been planned with mitigation, a risk study is carried out on the lack of funds for additions to the budget changes and it is necessary to use more accurate measuring instruments such as Geodetic GPS.

5. REFERENCES

[1] Bayandor, Sara and Kalatehjari, Roohollah and Akherati, Reza and Kasebzadeh, Jalal, 2023. A Critical Investigation on Causes, Effects, and Solutions of Delay and Cost Overruns in Deep Excavation Projects – a Case Study for Iran.

[2] Hasanah, S. N., Iris Mahani and Rani Gayatri K. Pradoto.2023. Analisis Dampak Pemberian Jaminan Risiko Keterlambatan Pengadaan Tanah Terhadap Kelayakan Finansial Proyek Jalan Tol di Indonesia : (Studi Kasus: Proyek Jalan Tol Jakarta-Cikampek II Selatan)", Journal Of Civil Engineering Building And Transportation

[3] Kusuma, C.K., 2018. Analisis Dampak Keterlambatan Pengadaan Tanah Dan Pelaksanaan Konstruksi Terhadap Masa Konsesi Pada Pembangunan Jalan Tol Kertosono – Mojokerto. Institut Teknologi Sepuluh Nopember.

[4] Putra, D.A. 2019. Pengaruh perubahan kontrak (CCO) terhadap pengadaan material proyek jalan LASW. Padang: M.Sc Thesis, Universitas Bung Hatta.

Technium Vol. 11, pp.17-31 (2023)
ISSN: 2668-778X
www.techniumscience.com

[5] Saputra, M. Galih. 2022. Analisis Kinerja Pengelolaan Irigasi Kabupaten Tanah Laut Tahun 2022.Tesis, Universitas Lambung Mangkurat,

[6] Tayyab, M., Furkhan, M., Rizwan, M., Jameel, M., & Chadee, A. 2023. A Study on Factors Influencing Cost Overrun in High-rise Building Construction across India. Journal of Smart Buildings and Construction Technology, 5(1), 52–83.

[7] Tribhuwana, A. 2018. Perbandingan Pengukuran Luas Area Antara Theodolite dan Global Positioning System (GPS). LOGIKA, 58-64.

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