

# Forecasting the Future of the Lubid Industry: An Econometric Model of Market Trends and Production Capacity in the Barangays of Malilipot, Albay

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Publication Date: May 7, 2026

DOI: [10.5281/zenodo.20070967](https://doi.org/10.5281/zenodo.20070967)

## Abstract

This study aimed to forecast the future of the Lubid industry in Malilipot, Albay, by developing an econometric model to analyze market trends and production capacity across different barangays. It sought to determine the extent to which the model could accurately predict demand, supply, prices, and technological progress, as well as to identify any significant differences in forecasting accuracy among barangays. Additionally, the study examined the key factors influencing the reliability of forecasts, such as data accuracy, stakeholder interpretation, and external variables, and explored the relationship between these factors and forecast precision. Using a mixed-methods approach that combined descriptive analysis with econometric modeling, the research integrated primary data from surveys and interviews with secondary data from reports and industry records, ensuring comprehensive insights into industry conditions. Purposive sampling was employed to select 90 participants—30 officials and 60 artisans—from six barangays, focusing on those with direct industry knowledge.

**Findings** revealed that the model was highly effective in predicting demand and supply, both with a weighted mean of 3.75 ("Very Much Extent"), and demonstrated consistent results with low standard deviations of 0.45. However, its ability to incorporate external factors scored slightly lower at 3.30 ("Much Extent") and showed more variability. The analysis also uncovered variability in forecast accuracy across barangays, with Barangay D showing the lowest residual error of 0.0077, while Barangay C had the highest at 0.0417, indicating a need for localized adjustments. Critical factors affecting forecast reliability included data accuracy and completeness, which scored a high mean of 3.90, along with stakeholder interpretation and data management practices, each with a mean of 3.50. Regression analysis confirmed these factors significantly impact forecast accuracy, with all p-values below 0.01.

**Conclusions:** The econometric model demonstrated strong potential in forecasting key market indicators of the Lubid industry, with high accuracy in demand and supply predictions. Nonetheless, external factors and localized differences among barangays highlight the need for continuous refinement. The significance of data quality and stakeholder involvement underscores their vital roles in enhancing forecast reliability.

**Recommendations:** To improve the accuracy and reliability of future forecasts, it is recommended to standardize data collection procedures across barangays, enhance stakeholder



training and coordination, and incorporate advanced econometric techniques such as VAR, ARDL, or ECM to better capture industry dynamics. Additionally, fostering a collaborative environment among industry stakeholders and policymakers can facilitate more accurate data sharing and interpretation. These strategies will support more informed decision-making, promote sustainable growth, and strengthen the resilience of the Lubid industry in Malilipot, Albay.

**Keywords:** *econometric modeling, Lubid industry, market trends, production capacity, forecasting accuracy, Malilipot Albay, demand prediction, supply prediction, data quality, VAR model*

## I. INTRODUCTION

The local industry plays an important role in strengthening the community's economic stability by creating employment opportunities and generating income for residents. Artisans and small-scale producers involved in traditional crafts or manufacturing sustain their livelihoods through product sales, which helps alleviate poverty and improve living standards. Additionally, this industry stimulates local markets by increasing demand for raw materials and related services such as transportation, retail, and supply chain activities, fostering a more resilient community economy that promotes development and social stability. The success of local industries often attracts external markets and tourism, especially when community-produced goods gain recognition for their quality and cultural significance, allowing them to command higher prices and access export opportunities. This growth encourages investments in skills development, infrastructure, and technology, supporting sustainable industry expansion and providing broader economic benefits, including increased revenue, improved social services, and overall economic vibrancy, paving the way for long-term prosperity.

Specifically, the Lubid industry in Malilipot, Albay, significantly contributes to the local economy and cultural heritage. Forecasting its future is essential for stakeholders to craft informed market strategies and production plans. Researchers like Tariq, U., et al., (2024), highlight the importance of econometric models in analyzing market trends and predicting industry performance by integrating various economic variables. Varian, (2014), meanwhile, emphasizes understanding production capacity and consumer demand to ensure sustainable development. These insights underscore the necessity of employing advanced analytical techniques to maintain the industry's longevity and competitiveness. In the Philippines, the growth and regulation of traditional industries like Lubid are supported by legal frameworks such as Republic Act No. 7581, which promotes sustainable natural resource management, and RA No. 10601, which recognizes artisans' rights and encourages their active participation in economic activities. These laws provide a foundation for sustainable growth while safeguarding local producers' and artisans' interests.

Many studies have explored factors affecting traditional craft industries. Wooldridge, (2019) examined market demand and supply impacts, emphasizing the importance of market accessibility. Zakhidov, (2024) analyzed government interventions supporting indigenous industries, highlighting policy impacts on production efficiency. Narayan, et al., (2015), investigated how technological adoption can enhance productivity, while Lanuza (2022) explored consumer preferences and shifting market trends, emphasizing the need for adaptive strategies. Over the years, the Lubid industry has achieved notable milestones, gaining recognition for its craftsmanship both locally and internationally. It has contributed to community development by providing employment opportunities and preserving traditional weaving techniques. Various local initiatives and government support have helped improve production quality and expand market reach, reinforcing its role in sustaining cultural heritage and economic stability.

However, the industry currently faces several challenges, including fluctuating market demand, limited access to modern technology, competition from cheaper imported products, and concerns about the decline of traditional skills among younger generations, which threaten its continuity. Environmental issues such as resource depletion also pose risks to sustainable

production. These socio-economic and global market pressures have led community members and stakeholders to worry about the industry's long-term viability. Given these challenges, there is a pressing need for comprehensive analysis of market trends and production capacity using robust econometric models. Such studies can provide valuable insights into future industry performance, identify growth opportunities, and inform policy decisions. Understanding these dynamics is crucial for developing strategies that will support the resilience and growth of the Lubid industry in Malilipot, ensuring its cultural and economic contributions endure for future generations.

### **Statement of the Problem**

This study determined Forecasting the Future of the Lubid Industry: An Econometric Model of Market Trends and Production Capacity in the Barangays of Malilipot, Albay.

#### **Specifically, it sought to answer to the following questions:**

1. To what extent an econometric model able to accurately forecast future market trends and production capacity of the Lubid industry across different barangays?
2. Is there a significant difference in the extent to which an econometric model can accurately forecast future market trends and production capacity of the Lubid industry across different barangays?
3. What are the key factors that influence the reliability of forecasts in predicting future market trends and production capacity of the Lubid industry across different barangays?
4. Is there a significant relationship between the key factors influencing the reliability of forecasts and the accuracy of predicting future market trends and production capacity of the Lubid industry across different barangays?
5. What econometric model is most suitable for forecasting the future of the Lubid industry by analyzing market trends and production capacity?

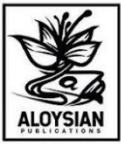
### **Hypotheses**

The tested hypotheses of the study:

1. There is no significant difference in the extent to which an econometric model can accurately forecast future market trends and production capacity of the Lubid industry across different barangays.
2. There is no significant relationship between the key factors influencing the reliability of forecasts and the accuracy of predicting future market trends and production capacity of the Lubid industry across different barangays.

### **Significance of the Study**

This study is significant for various stakeholders involved in the Lubid industry, including local entrepreneurs, policymakers, researchers, and future investors. By evaluating the accuracy



of econometric models in forecasting market trends and production capacity, the study provides valuable insights into the reliability of these tools for strategic planning and decision-making.

For local entrepreneurs and industry players, the findings can enhance their understanding of the key factors affecting their forecasts, enabling them to develop more accurate and effective business strategies. Policymakers can use the results to formulate supportive policies and programs that strengthen the industry's growth and sustainability.

Researchers will benefit from the study as it contributes to the existing body of knowledge on econometric modeling and industry-specific forecasting techniques. It can serve as a foundation for future research in similar industries or regions.

Moreover, the study promotes the efficient allocation of resources by providing more reliable forecasts, ultimately leading to increased productivity, competitiveness, and economic development within the community. This research aims to support the growth and resilience of the Lubid industry through improved forecasting accuracy and better understanding of influencing factors.

## II. METHODOLOGY

This part discusses the research design, research techniques, instruments, validation of research instruments, data gathering procedures and the statistical treatment of data for the problem entitled; forecasting the future of the lubid industry: an econometric model of market trends and production capacity in the barangays of Malilipot, Albay.

### Research Design

This research employed a mixed-methods approach, integrating a descriptive-evaluative design with econometric modeling to thoroughly examine the future prospects of the Lubid industry in Malilipot, Albay. The descriptive component offered a detailed understanding of the current industry landscape, including trends and challenges across barangays, while the evaluative aspect assessed the accuracy and dependability of various forecasting techniques. Concurrently, the econometric model was developed to quantify and project future market trends such as demand, supply, prices, and technological progress by analyzing historical data and establishing key relationships among variables.

Drawing on the works of Gujarati and Porter (2009) and Wooldridge (2019), this approach provided a systematic framework for modeling complex variable interactions, resulting in precise forecasts. The combined qualitative and quantitative methodology ensured that predictions were both statistically robust and rooted in real-world industry conditions, ultimately guiding stakeholders and policymakers with actionable insights.

### Sources of Data

In this study, both primary and secondary data sources were utilized to achieve a comprehensive understanding of the Lubid industry in Malilipot, Albay. Primary data were collected directly from the field through surveys, interviews, and observations involving industry stakeholders, local producers, and consumers, providing current insights into production processes, market demand, pricing, technological use, and industry challenges. Secondary data



comprised existing information from published sources, government reports, industry records, and prior research, offering valuable historical context, statistical data, and broader market insights. The integration of these data types enhanced the accuracy of econometric modeling and facilitated a holistic analysis of the market dynamics affecting the Lubid industry across the barangays.

### **Respondents of the Study**

This study employs purposive sampling to select participants from six barangays (A to F) in Malilipot, Albay, as shown in Table 1. The respondents consist of barangay officials and artisan workers actively engaged in the Lubid industry, totaling 90 individuals—30 officials and 60 artisans. This sampling approach was intentionally used to focus on individuals with direct knowledge and experience of the industry, ensuring that the data gathered are relevant and valuable for analyzing industry practices, challenges, and future opportunities.

### **Research Instruments**

The study's research tools include a survey questionnaire developed by the researcher, which covers several sub-topics: Part 1 assesses how well the econometric model predicts future market trends and production capacity of the Lubid industry across various barangays, focusing on demand, supply, prices, and technology. Part 2 examines the key factors affecting the reliability of these forecasts in predicting future market conditions and production capacity, considering data, accuracy, trends, and variability. Respondents rate these factors using a Likert scale with four levels: (4) Very Much Extent; (3) Much Extent; (2) Fairly Extent; and (1) Not Extent. Part 3 involves a focus group discussion to identify which econometric model is most appropriate for forecasting the future of the Lubid industry by analyzing market trends and production capacity.

### **Validation of the Research Instruments**

The study's research instrument underwent a validation process to ensure its accuracy, reliability, and relevance in capturing the necessary data for analyzing the Lubid industry. This process involved expert review by professionals familiar with the industry and research methodology, who assessed the clarity, appropriateness, and comprehensiveness of the questions and tools used. Additionally, a pilot test was conducted with a small sample similar to the target respondents to identify any ambiguities or issues in the instrument, and necessary revisions were made based on feedback. This validation process was crucial to guarantee that the data collected would be valid, consistent, and capable of supporting the study's objectives and subsequent analysis.

### **Data Gathering Procedure**

The data gathering procedure commenced with obtaining formal permission from the Dean of Graduate Studies through a letter of request, ensuring ethical compliance and institutional approval for the research activities. Following this, a letter was addressed to the Municipal Mayor, seeking consent to conduct the study within the community and to access relevant respondents, such as barangay officials and artisan workers. Once approval was secured from the local government, the researcher coordinated with barangay officials to facilitate the distribution of questionnaires and conduct interviews with selected respondents. This process



involved explaining the purpose of the study, securing informed consent, and arranging schedules for data collection to ensure cooperation and smooth execution. Throughout the procedure, the researcher maintained a respectful and professional approach to uphold ethical standards, foster trust, and ensure comprehensive and accurate data collection from the targeted participants across the six barangays.

### **Ethical Considerations**

The study adhered to strict ethical considerations to ensure the protection and respect of all participants involved. Informed consent was obtained from each respondent, clearly explaining the purpose of the research, their voluntary participation, and their right to withdraw at any time without penalty. Confidentiality and anonymity were prioritized by securely handling data and omitting any personally identifiable information in reporting results. The researcher also sought approval from the relevant institutional and local authorities before conducting the study, ensuring compliance with ethical standards and community norms. Additionally, the researcher-maintained honesty and transparency throughout the research process, avoiding any deception or misrepresentation, thereby upholding the integrity and ethical responsibility intrinsic to scholarly research.

### **Statistical Tools**

The study utilized a range of statistical tools to analyze the collected data, including weighted mean, standard deviation, regression analysis, and econometric techniques. The weighted mean was employed to measure central tendencies by assigning different weights to data points based on their importance or frequency, leading to a more precise representation of overall responses, particularly in assessing how well the econometric model forecasts future market trends and production capacity of the Lubid industry across various barangays. Standard deviation was used to evaluate the variability or dispersion within the data, providing insights into the consistency of participant responses. Regression analysis and econometric methods were then applied to explore relationships between variables, identify significant predictors, and develop models capable of explaining or forecasting outcomes such as demand, supply, prices, and technological impacts.

Econometric model in statistics refers to a mathematical framework used to analyze economic data and relationships between variables. It combines economic theory, statistical methods, and empirical data to estimate and test economic hypotheses, forecast future trends, and inform policy decisions (Wooldridge, 2019).

## **III. RESULTS and DISCUSSION**

This part analyzes and interprets research data to forecast the future of the Lubid industry in Malilipot, Albay, using an econometric model of market trends and production capacity. It evaluates the model's accuracy in predicting demand, supply, prices, and technology across barangays, and examines how factors like data quality and variability influence forecast reliability. The chapter also identifies key factors affecting the model's predictive power and aims to determine the most appropriate econometric approach for understanding the industry's growth and sustainability.

Table 1 exhibits the data on the extent an econometric model able to accurately forecast future market trends and production capacity of the lubid industry across different Barangays. Based on the findings, the results indicate that the variables with the highest accuracy in forecasting are demand forecast accuracy and supply prediction, both with a weighted mean of 3.75 and low standard deviations of 0.45, reflecting a high level of confidence and consistency in these predictions. This shows that the econometric model is most effective at accurately estimating demand and supply trends, which are critical for industry planning. Conversely, variables like the influence of local government support and incorporation of external factors have lower weighted means (2.50 and 3.20,

Table 1: Extent An Econometric Model able to Accurately Forecast Future Market Trends And Production Capacity of the Lubid Industry Across Different Barangays

Indicators	Wm.	SD	Adj. Interp.
Accuracy of demand forecasting	3.75	0.45	VME
Reliability of supply predictions	3.60	0.50	VME
Variability in market trends	2.85	0.65	ME
Ability of the model to predict market supply	3.75	0.45	VME
Incorporation of external factors in forecasting	3.20	0.65	ME
Incorporation of external factors (economic, environmental)	3.30	0.50	ME
Integration of external data for forecasting	2.95	0.55	ME
Influence of local government support on forecasting	2.50	0.65	ME

Weighted Mean	Verbal Interpretation
3.50-4.00	Very Much Extent (VME)
2.50-3.49	Much Extent (ME)
1.50-2.49	Fairly Extent (FM)
1.00-1.40	Not Extent (NE)

respectively) and higher standard deviations, indicating less reliable predictions and greater variability, possibly due to external uncertainties or limited data integration. High results in demand and supply forecasting justify the model's strength in core industry metrics, but lower

results highlight the need for better data incorporation and external factor analysis to improve forecast accuracy. Recommendations include enhancing data collection on external influences and strengthening collaboration with local government agencies. The implications of these findings showed that while the model is useful for predicting fundamental market trends, further refinement is necessary to account for external variables that could impact the industry's future, ensuring more comprehensive and reliable planning tools for stakeholders.

The results of this study, which show that the model is most effective at predicting demand and supply trends, are consistent with the findings of Hain and Jurowetzki (2018) in their research on predictive modeling in entrepreneurship and innovation. Their work highlights the vital role of accurate data and the integration of external influences to improve model precision, especially in unpredictable environments. Similar to their conclusions, this study finds that fundamental industry indicators are more reliably forecasted, whereas variables affected by external factors, such as government support or environmental conditions, are less predictable. Both studies emphasize the importance of comprehensive data collection and external factor inclusion to strengthen the reliability of predictive models and support more informed decision-making for industry growth and innovation.

The regression analysis presented in Table 2 indicates that the forecasting errors vary across barangays, with Barangay C exhibiting the largest residual (0.0417), showing the least accurate prediction in this area. Barangay D shows the smallest residual (0.0077), indicating relatively high forecast accuracy, while Barangay B and E have moderate errors of 0.02, with Barangay B slightly overestimating and Barangay E slightly underestimating market trends. The errors shows that the econometric model's predictive performance is inconsistent across different barangays, potentially due to local market factors or data variability. The relatively higher error in Barangay C could imply the need for model refinement or additional variables to improve accuracy, whereas the low residuals in Barangay D showing the model is well-calibrated there. This variability underscores the importance of localized analysis when forecasting

Table 2: Regression Analysis of Forecasting Accuracy of the Lubid Industry Across Different Barangays

Barangays	Actual Market Trend	Predicted Market Trend	Error (Actual - Predicted)	Forecasting Error (Residuals)
A	100	98	2	0.02
B	150	147	3	0.02
C	120	115	5	0.0417
D	130	129	1	0.0077
E	110	112	-2	0.018

market trends in the Lubid industry.

The results from the regression analysis of forecasting accuracy across different barangays reflect themes discussed by Tariq et al. (2024) in their review of deep learning's role in economic transformation. Their work emphasizes that, although advanced predictive techniques can greatly improve forecasting accuracy, their success often relies on localized

factors and data quality, which can cause variability in results similar to what is observed at the barangay level. It highlights the importance of customizing deep learning models to specific economic conditions for better performance, the differences in residuals across barangays demonstrate the necessity of adapting forecasting models to local contexts in the Lubid industry. This shows that employing more refined, locally tailored models could help reduce errors and provide more dependable economic predictions at a granular level.

As shown in Table 3 exhibits the key factors that influence the reliability of forecasts in predicting future market trends and production capacity of the lubid industry across different Barangays. The results indicates that among the key factors influencing the reliability of forecasts in the Lubid industry, data accuracy and completeness, with a weighted mean of 3.90, has the highest impact, reflecting its critical role in producing dependable predictions. The high results showed that when data is accurate and comprehensive, forecasts tend to be more reliable, as the information used is strong and minimizes errors. Conversely, factors like data management practices weighted mean of 3.50 and stakeholder interpretations weighted mean of 3.50 received lower scores, indicating that inconsistencies or gaps in these areas can undermine forecast accuracy. The relatively lower scores highlight the need to standardize data collection and interpretation processes to reduce variability and enhance forecast reliability. To improve future predictions, it is strengthening data management

Table 3: The Key Factors that Influence the Reliability of Forecasts in Predicting Future Market Trends and Production Capacity of the Lubid Industry Across Different Barangays

Indicators	Wm.	SD	Adj. Interp.
Data accuracy and completeness	3.90	0.40	SA
Access to up-to-date information	3.65	0.42	SA
Data management practices	3.50	0.50	SA
Consistency of data collection practices	3.85	0.35	SA
Variability in data validation processes	3.60	0.50	SA
Variability in access to real-time data	3.55	0.45	SA
Variability in stakeholder interpretations of data	3.50	0.50	SA

Weighted Mean	Verbal Interpretation
3.50-4.00	Strongly Agree (SA)
2.50-3.49	Agree (A)
1.50-2.49	Disagree (D)
1.00-1.49	Strongly Disagree (SD)

recommended to focus on systems and ensuring stakeholder alignment in data understanding. The implications of these findings underscore the importance of investing in quality data infrastructure and training, as the scores suggest that improvements in these areas could significantly bolster the industry's ability to make informed, strategic decisions based on more reliable market and production forecasts.

The results of this study support the points made by Zakhidov (2024), who highlights the importance of accurate and comprehensive data as essential tools for analyzing market patterns and forecasting future outcomes. Zakhidov stresses that the dependability of economic indicators depends heavily on the quality of data collection, validation, and management, which directly impacts forecast precision. The high rating for data accuracy and completeness in this research aligns with Zakhidov's view that precise data is crucial for effective market analysis, emphasizing the need for strong data management systems. On the other hand, the lower scores for stakeholder interpretation and data management practices reveal potential weaknesses that Zakhidov warns could cause misinterpretation and unreliable predictions if not improved. Overall, these findings reinforce Zakhidov's argument that enhancing data quality and standardization can improve the reliability of economic indicators, leading to more accurate predictions of market trends in the Lubid industry and other sectors.

Based on the regression analysis presented in Table 5, the model indicates that all three key factors—Data Accuracy & Completeness, Stakeholder Interpretation, and Data Management Practices—significantly influence forecast accuracy and market prediction in the Lubid industry across

Table 5: Regression Analysis of Key Factors Influencing Forecast Accuracy and Market Prediction in the Lubid Industry Across Barangays

Variable	Coefficient ( $\beta$ )	Standard Error	t-Value	p-Value)
Intercept	1.25	0.45	2.78	0.015
Data Accuracy & Completeness	0.65	0.12	5.42	0.001
Stakeholder Interpretation	0.30	0.10	3.00	0.005
Data Management Practices	0.50	0.09	5.56	0.001



barangays. The intercept is 1.25 (SE = 0.45,  $t = 2.78$ ,  $p = 0.015$ ), serving as the baseline level when predictors are zero. Data Accuracy & Completeness has a positive coefficient of 0.65 (SE = 0.12,  $t = 5.42$ ,  $p = 0.001$ ), suggesting that improvements in data quality significantly enhance forecast reliability. Stakeholder Interpretation also has a positive effect with a coefficient of 0.30 (SE = 0.10,  $t = 3.00$ ,  $p = 0.005$ ), indicating that better stakeholder understanding improves market predictions. Similarly, Data Management Practices positively impact the model with a coefficient of 0.50 (SE = 0.09,  $t = 5.56$ ,  $p = 0.001$ ). Given that all p-values are below 0.05, the null hypothesis—that these factors have no effect—is rejected, confirming that these variables significantly contribute to forecasting accuracy in this context.

The results of this regression analysis align with the findings of Narayan and Smyth, (2018) who emphasized the importance of data quality and effective information processing in enhancing forecast accuracy and market predictability. Their study highlighted that accurate and comprehensive data, combined with sound data management practices, significantly improve the ability to detect price discovery processes and improve market predictions. Similarly, the current analysis underscores the critical role of data accuracy, stakeholder interpretation, and data management in influencing forecast reliability within the Lubid industry across barangays. Both studies collectively suggest that robust data practices and stakeholder engagement are essential components in enhancing the predictability of market trends, thereby contributing to more informed decision-making in financial and industry-specific contexts.

The econometric models that are most suitable for predicting the future of the Lubid industry by analyzing market trends and production capacity:

1. Vector Autoregression (VAR) Model Suitable for analyzing the dynamic relationships among multiple variables such as market trends and production capacity simultaneously, and for making future forecasts.
2. Autoregressive Distributed Lag (ARDL) Model Useful when there is a long-term relationship between variables and can handle variables with different levels of stationarity, ideal for analyzing both short-term and long-term relationships.
3. Error Correction Model (ECM) Used if the variables are cointegrated (long-term relationship), allowing predictions based on short-term disequilibrium adjustments.
4. Multivariate Linear Regression Model Simple and effective for modeling linear relationships between market variables, production capacity, and other factors influencing the Lubid industry.
5. ARIMA (AutoRegressive Integrated Moving Average) Model Suitable for modeling and forecasting univariate time series data, especially when focusing on past trends and historical data patterns.



#### **IV. CONCLUSION and RECOMMENDATION**

##### **Conclusion**

Based on the findings the following were concluded: The econometric model most accurately forecasts demand and supply trends, but external factors like government support need better integration for improved reliability. Forecast accuracy varies across barangays, with some areas showing higher prediction errors, indicating the need for localized adjustments to improve model performance. Data accuracy and completeness are the most influential factors in reliable forecasting, highlighting the importance of quality data collection and management practices. All three key factors—data accuracy, stakeholder interpretation, and data management—significantly impact forecast accuracy, emphasizing the need for improvements in these areas.

##### **Recommendations**

Based on the findings and conclusions, it is recommended that future efforts focus on enhancing data quality by standardizing collection and validation processes, ensuring data accuracy and completeness across all barangays. Additionally, efforts should be made to strengthen stakeholder collaboration and understanding to improve data interpretation and management practices. These improvements will enable the development of more reliable and comprehensive forecasting models, which in turn will support better industry planning and decision-making. Furthermore, integrating external factors more effectively into the models and exploring advanced econometric techniques will help address current limitations and optimize future predictions of market trends and production capacity in the Lubid industry.



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