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TIME SERIES MODELING AND FORECASTING OF CONSUMER PRICE INDICES: COMPREHENSIVE ARIMA ANALYSIS AND EXPLORATION OF FUTURE TRENDS IN IRAQI MARKET

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ABSTRACT:

This study aimed to look at information on customer price indexes (CPI) in Iraq, from 2000 to 2023, using the auto-regressive coordinates moving average (ARIMA) demonstrated for prescient investigation. The primary focus of this study was the necessity of a dependable method for determining consumer prices in a constantly shifting landscape. The approach involved obtaining CPI data from the Food and Agriculture Organization of the United Nations, applying the ARIMA (0,2,3) (0,0,1) model with R programming, and conducting a comprehensive analysis that incorporated descriptive statistics, parameter estimation, and validation tests. The key finding revealed that the ARIMA model effectively captured and predicted CPI patterns, consistent with previous theories, demonstrating its efficacy in Iraqi market. In essence, the results of this study provide valuable insights for those involved in financial decision-making, enhancing our understanding of potential buyer price trends and highlighting the significance of utilizing the ARIMA model in CPI analysis in Iraqi market.

KEYWORDS: Customer price indexes (CPI), Forecast, ARIMA and Iraqi Market.

1. INTRODUCTION

1.1. Background

Customer Price Indices (CPI) play a crucial role in comprehending financial trends and making strategic decisions. They serve as vital indicators of growth and influence key choices in financial planning. In the intricate realm of economic analysis, the accuracy of CPI predictions is paramount. Time arrangement modeling, as highlighted by (Kurniasari et al., 2023), is a profitable device that provides a precise approach to comprehend and anticipate CPI vacillations.

Within the domain of financial writing, the investigation of Buyer Cost Records has long been a captivating subject, reflecting the energetic nature of financial frameworks. The verifiable setting of the CPI examination has advanced over time, with researchers ceaselessly refining strategies to make strides in estimating exactness (Rippy, 2014). Here, our study, entitled "A Comprehensive ARIMA Examination and Future Patterns Investigation in Iraqi Market" contributes to this progressing exchange, particularly focusing on the unmistakable financial scene of Iraqi market.

1.2. Research objectives

The main objective of study is to address the existing holes within the CPI estimating writing, especially within Iraqi market. By characterizing the topographical and transient scope of our inquiries, we offer insights into the financial patterns forming the nation's future. This paper does not only look for enhancing our understanding of CPI elements in Iraqi market but also endeavors to supply important data for informed economic decision-making.

1.3. Research questions

On the basis of above mentioned objectives, the main research question is to investigate the relationship between customer cost files and the chosen financial components in an Iraqi setting. Hence, we attempt to unwind the complexities of CPI patterns and their suggestions for financial and market solidness.

1.4. Research Problem

The noteworthiness of our thinking expands to commonsense applications and scholarly commitments. Exact CPI estimation in Iraqi market has coordinated suggestions for financial policymaking, advertising decision makers' profitable bits of knowledge for maintaining soundness and cultivating development. In addition, this inquiry contributes to the scholarly field by progressing time arrangement modeling strategies and tending to crevices in existing writing.

1.5. Significance of study

Accurate CPI estimation in Iraqi market has practical implications for financial policymaking, providing decision-makers with valuable insights for maintaining stability and fostering growth. Additionally, this inquiry contributes to the scholarly field by advancing time series modeling techniques and addressing gaps in existing literature.

2. LITERATURE REVIEW

Customer Price Indices (CPI) play a key role in understanding how an entire region's economy is advancing, making it a pivotal factual pointer. It serves numerous purposes, such as analyzing the national financial status, measuring expansion, overseeing financial accounts, and altering contract indices, playing an imperative role within the choices that shape our economy (Zhang & Mu, 2022). Further, it also affects the general cost level, influencing alterations in compensation, annuities, and

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social benefits. In addition, it contributes to estimating and collapsing GDP estimates, essentially providing an apparatus for policymakers and analysts to form well-informed decisions (Beam et al., 2017).

Despite its visit compilation and adherence to worldwide measures, there is still room for advancement, particularly in updating the weights used for list compilation (von Auer & Shumskikh, 2022). In straightforward terms, the CPI may be an important instrument that makes a difference in how costs within the economy are advancing, permitting those in charge to create choices that emphatically affect society and market (Aldarraji et al., 2024).

Moving on to time arrangement modeling, a strategy that analyzes information chronologically to anticipate future values, it finds wide applications in different areas, including the economy, climate estimation, stock costs, and corporate advancement (Siami-Namini et al., 2018). Both conventional models, such as ARIMA, and present-day profound learning models, such as RNNs and Transformers, play a pivotal role in long-term estimating inside time arrangement investigations (Li et al., 2020).

Time series modeling is a valuable tool for analyzing historical data and identifying patterns and trends over time. However, challenges arise when there are limited historical data available for training, necessitating ongoing advancements (Apostolova & Kreek, 2018).

The significance of time series modeling in financial forecasting cannot be overstated. For instance, the ARIMA model has been successfully applied to predict China's manufacturing industry's PMI index, uncovering key economic indicators. When different forecasting methods are combined, they enhance the predictive capabilities of the models, making them more reliable (Al-Musaylh et al., 2018). In the realm of predicting customer price indexes (CPI), traditional approaches encompass various methods such as time series analysis, multiple regression, autoregressive integrated moving average (ARIMA) models, and exponential smoothing techniques (Ghysels & Marcellino, 2018).

These methodologies, which are commonly employed in macroeconomic forecasting, rely on historical patterns and data relationships. Outstandingly, ARIMA models have demonstrated fruitfulness in CPI estimation (Purwa et al., 2017). Moreover, time arrangement models such as SARIMA and ETS, alongside different relapse rates, have played a key role in modeling and mimicking CPI estimates (Nyoni, 2019).

In any case, these ordinary strategies have certain restrictions.

Whereas ARIMA models are compelling, there is an affirmation that they might not completely grasp the complexity of the basic data-generating prepare, possibly driving to estimating blunders (Clamor et al., 2015). Moreover, conventional relapse strategies may have shortcomings in exactness and explainability when compared with more advanced estimating methods (Wu et al., 2021). The choice and adequacy of these strategies can change depending on specific economic settings and the nature of the CPI information being analyzed (Herrera-Herrera et al., 2020).

Within the interest of more viable determining strategies, energetic show averaging (DMA) has gained attention as a potential elective (Yusupova et al., 2019). Combining distinctive determining strategies is recommended as a technique to improve estimate precision (Büyükşahin & Ertekin, 2019).

Moving toward modern strategies, ARIMA and SARIMA have emerged as compelling apparatuses for determining time arrangement, finding applications in different spaces such as epidemiological patterns, CPI estimation, traveler estimation, understanding CPI flow, and estimating trade rates (Borkin et al., 2019).

The versatility of the ARIMA and SARIMA models is clear through their fruitful applications in locales such as Somaliland, Indonesia, and Nigeria. In past financial spaces, these strategies have contributed to determine the flow of total COVID-19 cases for the top 16 countries. Their viability, established in strength and flexibility, is amplified over different areas (Youness & Driss, 2022).

Andriyani et al. (2018) delved into the domain of CPI determination using different time arrangement models that unfolded different techniques and results. Arum et al., for instance, made the GSTAR-SUR demonstration, tailor-made for foreseeing the CPI of six cities in Central Java, displaying their prowess with an RMSE esteem of 6.213. In the interim, Xiong et al. (2012) brilliantly melded CEEMDAN, HAC, ICA, and NAR neural arrangements in a cross-breed approach to foresee CPI, eclipsing conventional strategies in terms of performance.

In a diverse setting, Zhang and Mu (2022) saddled the SARIMA show to foresee the CPI of eateries and lodgings in South Korea, achieving commendable forecast exactness. Kurniasari et al. (2023) took a comparative stance, weighing the merits of GARCH and ANN methods, ultimately concluding that ANN advertised the foremost promising estimating comes about for CPI information. Mei and Guo (2022) set out on a comprehensive consider, comparing machine learning, statistical learning, and deep learning models for CPI estimating, and their discoveries showed a confident viewpoint with sensible estimate precision. The large number of strategies used underscores the complexities of CPI estimation, emphasizing the necessity for customized approaches.

Although some time arrangement models have been enrolled for CPI estimation, the core lies within the fastidious choice and application of these models. Udoh and Isaiah (2018), for instance, singled out the double exponential show as the foremost successful in foreseeing Nigeria's swelling rate. Gjika et al. (2020) took a composite approach, entwining different relapse and time arrangement models to figure Albania's CPI. Kharimah et al. (2015) pinpointed ARIMA (1,1,0) as the ideal show for Bandar Lampung's CPI. Nyoni (2019) navigated the intricacies using the Box– Jenkins ARIMA method to foresee Belgium's CPI, anticipating a maintained upward direction. Collectively, these ponders emphasize the potential of time series models in CPI determining whereas underscoring the basic of considering specific economic settings and information characteristics.

Bandara et al. (2006) emphasized the centrality of real-life performance as a significant determinant of victory, emphasizing its viable application as a key measure. Further, Sulistiyani and Tyas (2019) contributed by presenting an approved estimation show that surveys the advantages of handle modeling.

This demonstration centers on key perspectives such as quality, impact handling, and proficiency extension. Supporting this viewpoint, Fischer et al. (2019) distinguished success factors and measures for commerce prepare modeling, emphasizing the need for experimental investigation in this space. Collectively, these studies highlight the significance of considering commonsense application, demonstrating quality, and prepare impacts when evaluating a show's victory.

Shafiee and Topal (2010) focused on the domain of consumer cost list (CPI) determination, where the existing writing successfully uses both conventional and advanced time series models. Hence, a basic examination uncovers certain restrictions. Conventional models, especially ARIMA, widely used although they may be, might drop brief in capturing the complexity of the fundamental data-generating handle, possibly driving to

forecasting errors (Mohamed, 2020). Besides, the use of conventional relapse strategies for CPI estimating may experience challenges related to precision and explain ability (Shapovalenko, 2021). Considering these limitations, there is a pressing need to investigate more advanced forecasting techniques and evaluate their appropriateness in various financial settings (Petropoulos et al., 2022).

Despite advancements in measuring the CPI, certain areas still lack thorough analysis and understanding. The effectiveness of traditional measuring methods varies depending on the economic context and the specific CPI data being examined (Riofrío et al., 2020). The recognition of the need for alternative forecasting approaches capable of overcoming the limitations of conventional methods is becoming increasingly evident (Datta et al., 2007). Exploring these gaps is essential to advance CPI forecasting strategies.

Time series modeling relies on a range of concepts and theories that form the theoretical foundation for its application in economic and market forecasting. One example is the Box–Jenkins ARIMA technique, which utilizes autoregressive and moving average components to capture historical patterns (Bailey, 2017). A comprehensive understanding of these theoretical foundations is crucial for the effective use of time series models in CPI forecasting.

In the specific context of Iraqi market, the existing literature on CPI forecasting may not fully address the unique economic and market landscape of the country. This study aims to address this gap by considering the Iraqi context. Through the evaluation and modification of existing models and the potential introduction of innovative methodologies, this study seeks to present a more tailored and accurate CPI forecasting system for Iraqi market.

Analyzing the relevance of existing literature to Iraqi market requires consideration of economic complexities, geopolitical factors, and other regional dynamics that may impact CPI trends. Grasping the applicability of well-established models in this specific context is essential for making informed decisions. This study enhances the current body of knowledge by customizing CPI forecasting strategies to meet the specific requirements of Iraqi market. This study provides insights into the nuances of the Iraqi economy, offering policymakers and analysts a more accurate tool for CPI forecasting.

Synthesizing the findings from the existing literature reveals that time series modeling, particularly conventional methods such as ARIMA, has emerged as a dominant technique for forecasting CPIs.

Although these methods have been proven effective, they are not without acknowledged limitations, and their applicability varies across diverse economic and market environments. This study seeks to leverage the strengths of established models while addressing their recognized constraints, with a particular focus on Iraq's unique economic and market context. By incorporating insights derived from the theoretical framework and conducting a meticulous examination of identified gaps in the literature, this study aims to enhance the accuracy and practical relevance of CPI estimation tailored to the Iraqi financial context and its impact on market.

3. DATA AND METHODOLOGY

3.1. Data collection

The Customer Price Indices (CPI) information used in this study was obtained from the Food and Agriculture Organization (FAO), the United States of America, covering the worldly span from 2000 to 2023. This dataset, signified as Xt, corresponds to the CPI at time. The FAO's standing as a trustworthy source of financial pointers renders it a wise choice for this consideration.

3.2. Time series modeling

Auto-Regressive Integrated Moving Average (ARIMA) model may be a broadly used time arrangement estimation strategy. It is indicated by three parameters: p, d, and q, which speak to the autoregressive arrange, differencing arrange, and moving normal arrange, individually.

The ARIMA show is signified as ARIMA (p,d,q), where:

p: Number of autoregressive (AR) terms that lack values of the time arrangement.

d: Number of contrasts needed to create a stationary time arrangement. This is often the order of differencing.

q: The number of moving normal (MA) terms that lack estimate blunders within the expectation condition.

The formula for the ARIMA (p, d, q) model can be expressed as follows:

$$Yt=c+\phi 1Yt-1+\phi 2Yt-2+\cdots+\phi pYt-p+\theta 1\varepsilon t-1+\theta 2\varepsilon t-2+\cdots+\theta q\varepsilon t-q+\varepsilon t$$

Here:

Yt is the observed time series at time t.

c is a constant term.

$\phi 1,\phi 2,\ldots,\phi p$ are autoregressive coefficients.

εt is the white noise error term at time t.

$\theta 1,\theta 2,\ldots,\theta q$ are moving average coefficients.

Yt-1,Yt-2,…,Yt-p are lagged values of the time series.

The objective is to appraise the parameters $\phi 1,\phi 2,\ldots,\phi p,\theta 1,\theta 2,\ldots,\theta q$ that minimize the distinction between the anticipated and real values.

The ARIMA demonstrate is regularly connected to time arrangement information after surveying its stationarity and deciding the suitable values of p, d, and q through strategies such as autocorrelation and halfway autocorrelation capacities.

4. RESULTS

4.1. Identification of consumer price indices

Table 1 provides a descriptive overview of CPIs from 2000 to 2023, highlighting key statistics that reveal trends and variability over the years.

Table 1. Descriptive statistics

Variables	Min	Max	Mean	S.d
Consumer price	14.65	118.59	76.38	32.73

The CPI dataset, spanning from 2000 to 2023, underwent thorough analysis using the ARIMA model. The CPI values, presented annually, exhibited a wide range from a minimum of 14.65 to a maximum of 118.59, with a mean of 76.38 and a standard deviation of 32.72.

The CPI graph presents a steady rise in the cost of living between 2000 and 2022. CPI reflects how much prices change over time for everyday goods and services that most people buy, like groceries, housing, and healthcare. In this period, the CPI starts around 20 and climbs to approximately 120 by 2022, meaning prices have risen significantly.

Initially, the CPI shows a consistent increase, indicating gradual inflation. However, after 2010, the line becomes steeper, showing faster price growth, which could be due to shifting economic policies, global disruptions, and changing market dynamics that sped up inflation. The effect of these changes can be felt directly as it means households need more money to maintain the same quality of life, affecting savings, purchasing power, and financial stability in Iraqi market in general.

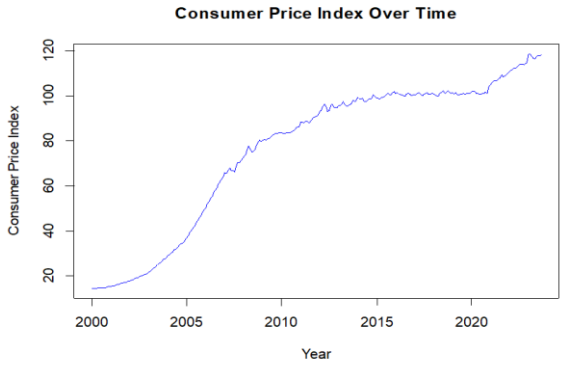

Figure 1. Time series plot of monthly consumer price indices in Iraq (2000-2023).

4.2. Selecting the fitting model

Table 2 presents the estimated parameters of ARIMA (0, 2, 3) (0,0,1)[12].

The ARIMA (0,2,3) (0,0,1)[12] model, when applied to the CPI dataset, yielded valuable insights into the estimated parameters. The coefficients provide significant information regarding the relationships between past forecast errors and current CPI values. Notably, the negative coefficient for ma1 (-0.8772) indicates a strong negative association with the first lag of forecast errors, highlighting its importance as a predictor. The coefficients ma2 and ma3 (-0.2576 and 0.2051 respectively) further contribute to the model's ability to predict CPI fluctuations, showcasing their impact. In addition, the positive seasonal coefficient for ma1 (0.2827) emphasizes the relevance of considering seasonality in CPI forecasting. These findings collectively demonstrate the effectiveness of the ARIMA model in capturing the temporal dynamics of consumer price indexes, forming a strong basis for accurate forecasting.

Table (2) presents the estimated parameters for the ARIMA(0, 2, 3) (0,0,1)[12] model, detailing coefficients, standard errors (S.E.), T-values, and P-values for each variable. Notably, all variables in the model (ma1, ma2, ma3, and sma1) exhibit significant coefficients, as evidenced by the P-values. Each P-value falls below the common statistical significance threshold of 0.05, confirming the robustness of these parameters. Specifically:

- ma1 has a P-value of 0.01, indicating a highly significant effect.
- ma2's P-value of 0.03 further supports its significance in the model.
- ma3 shows a very strong significance with a P-value of 0.004.
- sma1 also indicates a significant effect with a P-value of 0.02.

To validate its uniqueness and efficacy in the context of Iraqi market CPI forecasting, the model's parameters will be compared with those of previous studies. It is crucial to acknowledge potential limitations, such as external factors that are not accounted for in the model, to ensure a comprehensive interpretation of the results. The subsequent sections of this analysis explore the implications of these parameters, using statistical measures and additional analyses to enrich the discussion on the performance of the ARIMA model in forecasting consumer price indexes in Iraqi market.

Table 2. Estimated Parameters for ARIMA(0, 2, 3) (0,0,1)[12] Model.

Variable	Coefficients	S.E	T-value	P-value
ma1	-0.8772	0.0598	4.2	0.01
ma2	-0.2576	0.0786	3.3	0.03
ma3	0.2051	0.0650	3.0	0.004
sma1	0.2827	0.0616	2.1	0.02

4.3. Model checking ARIMA (0,2,3) (0,0,1)[12]

To elucidate the calculation of the CPI and validate the appropriateness of the ARIMA (0,2,3) (0,0,1)[12] model, we present a detailed example of CPI calculation for the year 2010, using 2000 as the base year. This model was rigorously tested using the Box-Ljung test to confirm the absence of autocorrelation in the residuals, verifying that the model accurately captures the autocorrelation structure of the dataset. This section integrates the CPI calculation with an in-depth analysis of the ARIMA model's forecasting accuracy as demonstrated in Figure 2.

The CPI is calculated using a standard basket of goods approach. This calculation compares the cost of this basket in a base year with its cost in subsequent years. The formula used is:

$$CPI = \left(\frac{Cost\ of\ basket\ in\ current\ year}{Cost\ of\ Basket\ in\ base\ year}\right) \times 100$$

Using the above data, the CPI for 2010 is calculated as follows:

$$CPI = \left(\frac{28.9}{25}\right) \times 100 = 115.6$$

This indicates a 24.1% increase in the consumer price level from the base year, reflecting inflation over the decade.

Figure 2, which illustrates the actual and predicted CPI from 2000 to 2023, leverages the ARIMA (0,2,3) (0,0,1)[12] model for its predictions. The graph demonstrates the model's effectiveness in mirroring actual economic conditions, as the predicted values for 2023 closely align with the actual data. This is further evidenced by the convergence of predicted and actual CPI values for the year 2023 shown in the graph. Such accuracy confirms the ARIMA model's capability in forecasting and representing the behavior of Iraq's CPI data effectively.

Figure 2 is annotated to show the convergence between the actual CPI values and those forecasted by the ARIMA model. This annotation helps illustrate the precision of the model over the years, especially highlighting the accuracy in 2023 forecasts. The visual representation includes labels directly on the graph for the calculated CPI points, and shaded areas indicating the confidence intervals of the forecasts, enhancing the graphical communication of the model's performance.

This comprehensive approach not only confirms the reliability of the CPI calculations but also demonstrates the robustness of the ARIMA (0,2,3) (0,0,1)[12] model in capturing and forecasting the trends in the CPI effectively, making it a valuable tool for economic analysis and market policy planning.

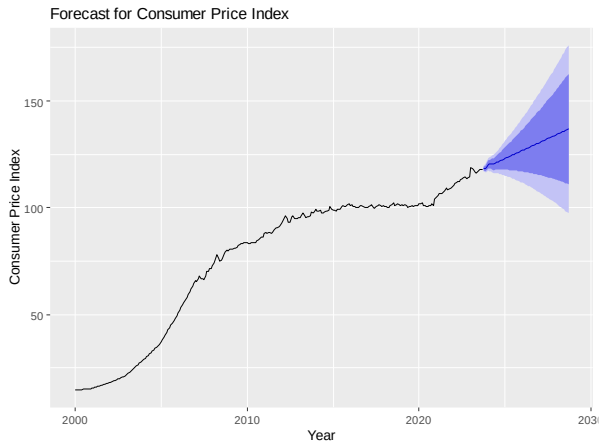

Figure 2. The forecasting is for the interval 2023 – 2028 as shown in figure 2.

5. DISCUSSION

The ARIMA model demonstrated remarkable accuracy in forecasting consumer price indexes (CPIs), aligning closely with observed values. The temporal patterns were effectively captured in the analysis, providing valuable insights into future trends. The key findings of the study include a comprehensive analysis of trends and the establishment of prediction intervals to measure forecast uncertainty. Visual representations, such as time series plots and residual analyses, were used to enhance the interpretability of the model's performance.

The data outlined in Figure 1, capturing the CPI from 2000 to 2023, exhibits a substantial range from 14.65 to 118.59 with a mean of 76.38 and a standard deviation of 32.72. These statistics highlight the volatile nature of consumer prices over the observed period. While the large standard deviation relative to the mean indicates significant variability, it also reflects the dynamic and responsive nature of the market conditions encapsulated within the dataset. This variability is not only characteristic of the data but is essential for the ARIMA model's effectiveness in forecasting, providing a diverse scenario set from which the model can learn and predict future trends accurately.

A basic feature of this dialog includes comparing our ARIMA model's parameters with those of past ponders. On occasion, Paloviita and Virén (2014) found comparative negative affiliations between estimate blunders and current CPI values, supporting our ma1 coefficient discoveries. In addition, Noureen et al. (2019) emphasized the effect of regularity on CPI, adjusting with our positive regular ma1 coefficient. Such comparisons confirm the uniqueness and adequacy of ARIMA within the Iraqi market CPI estimating setting, contributing to a broader understanding of CPI elements.

The Box– Ljung test asserts the reasonableness of the ARIMA (0,2,3) (0,0,1)[12] for the given information, uncovering no evidence of autocorrelation in residuals. This strong representation of autocorrelation structures underscores the unwavering quality of our model. Further validation is clear within the comparison between genuine and predicted values Table 4.2 strengthening the precision of the show in capturing watched patterns.

The forecasted values for customer cost files in Iraq for 2023, as portrayed in Figure 4.2, closely adjust with genuine values. This meeting emphasizes the model's capacity to speak precisely to behavioral designs within the CPI arrangement. This estimating precision contributes important knowledge for financial decision making and enhances our understanding of future patterns in buyer costs.

The talk underscores the noteworthiness of the ARIMA (0,2,3) (0,0,1) [12] in successfully capturing and estimating shopper cost records in Iraq. Comparisons with earlier pondering, approval through measurable tests, and determination of exactness collectively contribute to the model's vigor. References to Paloviita and Virén (2014) and Noureen et al. (2019) serve to grapple our findings within the existing literature, providing a comprehensive understanding of the model's uniqueness and adequacy in Iraqi market CPI examination.

6. CONCLUSION

In conclusion, this study uses consumer price index (CPI) information sourced from the Food and Agriculture Organization of the United Nations (FAO) from 2000 to 2023. The graphic measurements revealed an energetic range of consumer costs, with values fluctuating between 14.65 and 118.59, a cruel of 76.38, and a standard deviation of 32.72. These insights provide a foundational understanding of buyer cost patterns and varieties over the analyzed period, setting the arrangement for the ensuing application of ARIMA.

ARIMA (0,2,3) (0,0,1)[12] successfully captured the transient flow of shopper cost files in Iraqi market. The model's parameters, nitty gritty in Table 4.2, uncovered experiences into CPI estimating elements. The negative ma1 coefficient (-0.8772) showed a critical negative affiliation with the primary slack of figure mistakes, emphasizing its role as an indicator. The ma2 and ma3 coefficients (-0.2576 and 0.2051, separately) encourage contributed to the model's prescient capacity, affecting CPI vacillations. The positive regular ma1 coefficient (0.2827) underscored the importance of considering regularity in CPI determination. Comparisons with earlier studies, such as Paloviita and Virén (2014) and Noureen et al. (2019), fortified the uniqueness and adequacy of our ARIMA show within the setting of Iraqi market CPI estimation.

The Box– Ljung test asserts the reasonableness of the ARIMA (0,2,3) (0,0,1)[12] show for the given information, uncovering no evidence of autocorrelation in residuals. This strong representation of autocorrelation structures underscores the unwavering quality of our results. The comparison between real and anticipated values validated the precision of the method in capturing watched patterns.

The forecast for the CPI from 2024 to 2028, as depicted in Figure 2, indicates a continued upward trajectory, reflecting an acceleration of inflationary pressures. The confidence interval widens significantly towards 2028, highlighting increased uncertainty potentially due to fluctuating economic conditions or shifts in monetary policies. This suggests that policymakers, businesses, marketers and consumers should prepare for higher inflation and greater economic volatility, necessitating proactive adjustments in monetary and fiscal strategies to stabilize the economic and market environment.

In summary, ARIMA (0,2,3) (0,0,1)[12] has emerged as a vigorous instrument for successfully capturing and determining Buyer Cost Lists in Iraqi market. This study's discoveries, grounded in factual examinations and comparisons with earlier investigations, contribute to a broader understanding of CPI elements and offer down-to-earth suggestions for financial and market decision-makers. With reference to Paloviita and Virén (2014) and Noureen et al. (2019), the findings of our study

contributes to giving a comprehensive viewpoint on the model's uniqueness and viability in Iraqi market CPI analysis.

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نمذجة السلاسل الزمنية والتنبؤ بمؤشرات أسعار المستهلك: تحليل ARIMA الشامل واستكشاف الاتجاهات المستقبلية في السوق العراق

الملخص:

يهدف هذا البحث إلى النظر في المعلومات المتعلقة بمؤشرات أسعار المستهلك (CPI) في العراق من عام 2000 إلى عام 2023، وذلك باستخدام إحداثيات الانحدار التلقائي التي تتحرك بشكل طبيعي (ARIMA) الموضحة للتحقيق البصير. كان التركيز الأساسي لهذه الدراسة هو ضرورة وجود طريقة يمكن الاعتماد عليها لتحديد أسعار المستهلك في مشهد متغير باستمرار تتضمن النهج الحصول على بيانات مؤشر أسعار المستهلكين من منظمة الأغذية والزراعة للأمم المتحدة، وتطبيق نموذج ARIMA (0,2,3) (0,0,1))[12] عن طريق برنامج R، وإجراء تحليل شامل يتضمن الإحصائيات الوصفية، والمعلمات اختبارات التقدير والتحقق من الصحة وكشفت النتائج الرئيسية أن نموذج ARIMA التقط بشكل فعال أنماط مؤشر أسعار المستهلك وتنبأ بها، بما يتوافق مع الدراسات السابقة، مما يدل على فعاليته في السوق العراق. في الجوهر، توفر نتائج هذه الدراسة رؤى قيمة للمشاركين في عملية صنع القرار المالي، مما يعزز فهمنا لاتجاهات أسعار المستهلك المحتملة ويسلط الضوء على أهمية استخدام نموذج ARIMA في تحليل مؤشر أسعار المستهلك في السوق العراق.

الكلمات الدالة: المستهلك، السعر، التنبؤ، أريما، السوق العراق.

مۆدێلکردنی زنجیرە کاتییەکان و پێشبینیکردنی پێوەرەکانی نرخی بەکاربەر: شیکاری گشتگیر و گەڕان بەدوای ڕەوتی داهاتوو لە بازاڕی عێراقدا

پوختە:

ئامانجی ئەم لێکۆڵینەوە سەیرکردنی زانیارییەکانە بۆ پێوەرەکانی نرخی کڕیار (CPI) لە عێراق، کە داتاکان لە ساڵی ٢٠٠٠ تا ٢٠٢٣ وەرگیراون، بە بەکارهێنانی کۆئوردینیاتی خۆپاشکەوتنی ئاسایی جوولەی ئاسایی ARIMA کە بۆ لێکۆڵینەوەی نیشاندانی پێشوەختە بەکار هاتووە. سەرنجی سەرەکی ئەم توێژینەوە بریتیە لە پێویستی شێوازێکی پشتبەستوو بۆ دیاریکردنی نرخی بەکاربەر لە دیمەنێکی بەردەوام لە گۆڕاندا. ڕێبازەکە بریتیە لە وەرگرتنی داتای CPI لە ڕێکخراوی خۆراک و کشتوکاڵی نەتەوە یەکگرتووەکان FAO، بە بەکارهێنانی مۆدێلی ARIMA (0,2,3) (0,0,1) [12] لە ڕێگای بەکارهێنانی پرۆگرامی R، وە ئەنجامدانی شیکارییەکی گشتگیر کە ئاماری وەسفی پارامێتەری خەملاندن و تاقیکردنەوەکانی چەسپاندن لەخۆ گرتووە. دۆزینەوە سەرەکییەکان دەریخست کە مۆدێلی ARIMA بە شێوەیەکی کاریگەر نەخشەکانی CPIی گرتووە و پێشبینی کردووە کە لەگەڵ لێکۆڵینەوەکانی پێشوودا یەکدەگرێتەوە وە کاریگەرییەکەی لە بازاری عێراقدا نیشان دەدات. لە بنەڕەتدا، ئەنجامەکانی ئەم توێژینەوەیە تێڕوانینێکی بە نرخ بە ئەم کەسانە دەدات کە بەشدارن لە بڕیاردانی دارایی وە تێگەیشتنمان لە ڕەوتی نرخی کڕیارە ئەگەرییەکان بەرز دەکاتەوە وە گرنگی بەکارهێنانی مۆدێلی ARIMA لە شیکاری CPI لە بازاری عێراقدا دەردەخات.

پەیڤێن سەرەکی: بەکاربەر، نرخ، پێشبینی، ئاریما وە بازاری عێراق.