PRACTICAL APPLICATION OF ONLINE CASH REGISTER RECEIPT DATA IN THE COMPILATION OF THE CONSUMER PRICE INDEX IN UZBEKISTAN

Ismailova Shakhnoza Uktamovna

Independent researcher at the Institute of Personnel Training and Statistical Research of the National Statistics Committee of the Republic of Uzbekistan E-mail:shaxnoza.ismailova87@bk.ru

Abstract: *This paper examines the practical application of online cash register receipt data in the compilation of the Consumer Price Index (CPI) in Uzbekistan. The expansion of digital retail infrastructure and electronic sales recording systems has created new opportunities to incorporate high-frequency transaction data into official price statistics. The study analyzes data obtained from large supermarkets, pharmacies, and fuel stations and focuses on their statistical treatment through MXIK-based product identification, mapping to COICOP 2018 and an internal classifier, integration through the SIAT system, processing in Stata, and subsequent incorporation into CPI calculation. International experience demonstrates that scanner and point-of-sale data improve the coverage, timeliness, and representativeness of consumer price indices. In this context, the Uzbek practice shows that online cash register receipt data can serve as a practical and scalable instrument for modernizing CPI methodology and strengthening the digital foundation of official inflation measurement.*

Keywords: *Consumer Price Index, online cash register receipt data, scanner data, point-of-sale data, MXIK, COICOP 2018, Stata, official statistics, inflation, price observation.*

INTRODUCTION

The Consumer Price Index is one of the core indicators used in macroeconomic analysis. It plays an essential role in measuring inflation, supporting monetary policy decisions, tracking changes in real household incomes, and informing socio-economic forecasts. For this reason, the quality, coverage, and timeliness of the data used in CPI compilation are of fundamental importance.

While traditional field price collection remains methodologically important, the rapid digitalization of retail trade requires statistical systems to adopt new sources of information. In international practice, such information is commonly referred to as scanner data or point-of-sale data. These data are captured at the moment of sale and contain not only prices, but also quantities sold, turnover, and other transactional attributes. Their use makes it possible to move from observed shelf prices toward actual transaction prices, thereby improving the treatment of promotions, discounts, and changing consumer purchasing patterns [1; 3].

In Uzbekistan, the growing availability of online cash register receipt data creates new opportunities to improve CPI compilation. Official materials published in 2026 indicate that online cash register receipt data are among the sources incorporated into the updated CPI methodology [7]. This makes the topic both practically relevant and methodologically important.

The Statistical Significance of Online Cash Register Receipt Data

Online cash register receipt data consist of transaction-level records automatically generated in the retail sales process. They generally include the product name, product code, price, quantity sold, transaction date, branch or outlet, and turnover. Such information reflects actual purchase prices rather than only posted or advertised prices. In addition, the availability of quantity and turnover data improves the analytical basis for expenditure-related interpretation of price movements [1; 4].

The statistical importance of these data lies in several features. First, they are high-volume and high-frequency data. Second, they improve coverage by capturing a much wider product universe than a limited sample of observed prices. Third, they make it possible to study actual market behavior through real transactions. However, these data cannot be used in raw form for CPI purposes. They must be classified, validated, cleaned, grouped, and integrated into the broader information base used for index compilation [2; 3].

International Experience

International experience shows that transaction-based retail data are becoming an increasingly important source for CPI compilation. In the United Kingdom, scanner data for groceries were introduced into consumer price inflation statistics in 2026. The Office for National Statistics emphasized that these data improve the measurement of actual transaction prices and strengthen the treatment of temporary promotions and loyalty-card discounts [1].

Within the European statistical system, Eurostat has developed methodological guidance for the use of multilateral methods with scanner data in the Harmonised Index of Consumer Prices. Eurostat stresses that scanner data should be classified at least to the ECOICOP level and that detailed national or retailer-specific classifiers are often required in practice. Because such data are dynamic, with products constantly entering and leaving the market, traditional fixed-product methods are often insufficient [2].

The IMF, in its technical assistance report for Georgia, also highlights the role of scanner data in CPI modernization. The report notes that these data improve coverage because they capture all sold products and contain actual expenditure information rather than relying solely on field collection. The Australian Bureau of Statistics likewise recognizes transaction data as an important input for CPI compilation because they provide detailed price, quantity, and expenditure information [3; 4].

The Statistical Processing Sequence Used in Uzbekistan

In Uzbekistan, online cash register receipt data are used in CPI compilation through a clearly defined statistical sequence.

1. Product lists and MXIK codes are downloaded from the official platform tasnif.soliq.uz.

2. MXIK codes are matched with COICOP 2018 and the internal classifier.

3. Online cash register receipt data are imported from the SIAT system through specialized integration channels.

4. These data are merged with other collected price observation data.

5. The merged data are cleaned and statistically processed in Stata.

6. Finally, the Consumer Price Index is compiled on the basis of the aggregated results.

This sequence reflects the practical statistical workflow currently used in the national system. Product lists and MXIK codes obtained from tasnif.soliq.uz establish the standard product identification base. Their linkage with COICOP 2018 and the internal classifier makes it possible to assign transaction data to the relevant CPI consumption groups. The SIAT-based import of online cash register receipt data then provides detailed transactional information from large supermarkets, pharmacies, and fuel stations. Once merged with other price observation sources, the data are cleaned, standardized, validated, and processed in Stata before being used in final CPI calculation [5-7].

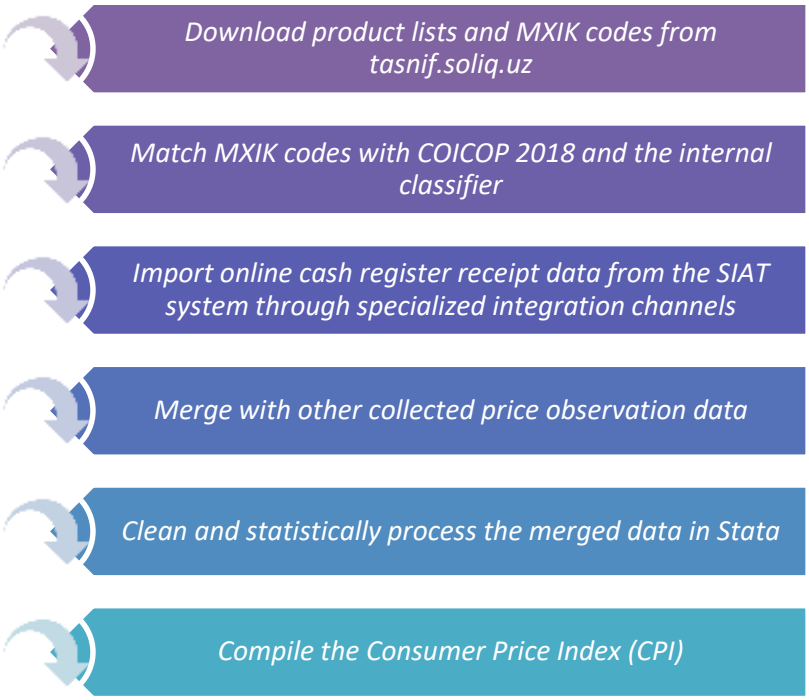

Figure 1. Statistical processing sequence for integrating online cash register receipt data into CPI compilation in Uzbekistan

Source: compiled by the author.

The Role of MXIK in CPI Compilation

MXIK creation is not itself a statistical stage of CPI compilation. Rather, it belongs to the institutional infrastructure of the Unified Electronic National Catalogue maintained within the tax system. Under the national regulation approved in April 2025, the catalogue is maintained through the official platform tasnif.soliq.uz and may be searched or downloaded, including in Excel format. When necessary, new MXIK codes can be created through an established procedure [5].

For CPI purposes, the key role of MXIK is that it provides a standardized bridge between transaction-level retail data and statistical classification. Once product lists and MXIK codes are downloaded from the official catalogue, they can be linked to COICOP 2018 and the internal classifier, allowing receipt data to be structured consistently with CPI compilation requirements [5; 6].

Advantages and Methodological Challenges

The use of online cash register receipt data offers several important advantages. First, it improves the measurement of actual transaction prices, including promotions and discounts. Second, it broadens coverage by incorporating information from large supermarkets, pharmacies, and fuel stations. Third, it strengthens representativeness because it includes quantities sold and turnover alongside prices. Fourth, it enables unified processing together with other price observation sources in Stata [1; 4].

At the same time, this approach raises methodological challenges. Retail product coding does not always correspond directly to statistical classifications, so robust mapping procedures are needed. Large datasets require stable technical infrastructure and continuous quality control. In addition, transaction data are highly dynamic because products frequently enter and leave the market, which complicates index construction. Eurostat therefore recommends multilateral methods and careful classification procedures for such data environments [2].

Conclusion

In conclusion, the practical application of online cash register receipt data in the compilation of the Consumer Price Index in Uzbekistan represents a substantive step toward the modernization of official price statistics. These data are already obtained in practice from large supermarkets, pharmacies, and fuel stations, and they provide transaction-based information on food products, alcoholic beverages, and fuels. Their analytical value lies in the fact that they include product names, codes, prices, quantities, dates, branches, and turnover, thereby offering a substantially richer statistical basis than conventional price observations alone.

Most importantly, their use follows a coherent statistical sequence: product lists and MXIK codes are downloaded from tasnif.soliq.uz; MXIK codes are matched with COICOP

2018 and the internal classifier; online cash register receipt data are imported from the SIAT system through specialized integration channels; the data are merged with other price observation sources; they are then cleaned and statistically processed in Stata; and, finally, they are used in CPI compilation. Accordingly, this approach strengthens CPI coverage, improves timeliness, and increases representativeness by relying on actual transaction data rather than only observed prices. In substantive terms, it demonstrates that the integration of digital retail data into official inflation measurement in Uzbekistan is not merely experimental, but an operationally grounded and methodologically promising direction of further statistical development.

REFERENCES:

[1] Office for National Statistics. Overview of how we use scanner data in consumer price inflation statistics: January 2026. London, 2026.

[2] Eurostat. Guide on Multilateral Methods in the Harmonised Index of Consumer Prices. Luxembourg, 2021.

[3] International Monetary Fund. Georgia: Technical Assistance Report - Scanner Data for CPI. Washington, D.C., 2021.

[4] Australian Bureau of Statistics. Use of transaction data in the Australian CPI. Canberra, 2018.

[5] Cabinet of Ministers of the Republic of Uzbekistan. Regulation on Maintaining and Using the Unified Electronic National Catalogue of Products (Goods and Services), Resolution No. 263, 28 April 2025.

[6] United Nations Statistics Division. Classification of Individual Consumption According to Purpose (COICOP 2018). New York, 2018.

[7] Statistics Agency under the President of the Republic of Uzbekistan. January 2026 CPI press release and updated methodology materials. Tashkent, 2026.