

## **MEASURING THE QUALITY OF UNIVERSAL POSTAL SERVICE IN BOSNIA AND HERZEGOVINA: CHALLENGES OF A MULTI-OPERATOR ENVIRONMENT AND THE APPLICATION OF EUROPEAN STANDARDS**

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**Abstract:** *The pilot project for measuring the quality of the universal postal service in Bosnia and Herzegovina represents the first attempt to establish a national system for independent measurement of letter mail transit time in domestic postal traffic. The project was initiated by the Postal Regulatory Agency of Bosnia and Herzegovina with the support of GIZ and implemented through three independent measurement bodies — one for the area of each public postal operator. The uniqueness of the project lies in the fact that three public postal operators operate simultaneously within a single country, creating distinctive organizational and methodological challenges in harmonizing measurement processes. The measurement was conducted in accordance with the European standards BAS EN 13850 and BAS EN 14508, enabling the validation of their applicability within the complex postal environment of Bosnia and Herzegovina and establishing the foundation for a future system of universal postal service quality monitoring.*

**Keywords:** *universal postal service, service quality, transit time measurement, multi-operator environment, postal operators*

### **1. Introduction**

Postal services have an important social and economic role, as they ensure access to communication and basic services for all citizens, regardless of their location, social status, or economic capacity. The European regulatory framework for the postal sector is defined by Directive 97/67/EC of the European Parliament and of the Council, which establishes common rules for the development of the internal market for postal services and the improvement of the quality of the universal postal service. This directive sets the obligation for each Member State to ensure the availability of the universal postal service throughout its territory at affordable prices and with guaranteed quality standards.

Subsequent amendments, contained in Directive 2002/39/EC, further expanded the process of market liberalization and enabled the gradual opening of specific postal service segments to competition, while at the same time preserving the universal service as a basic public interest. Directive 2008/6/EC completes the process of full liberalization of the European Union postal market, emphasizing that liberalization must be accompanied by mechanisms for quality monitoring and user protection. Within this system, the measurement of letter mail transit time represents an important performance indicator of the universal service and is mandatory for all regulatory authorities supervising postal operators.

Bosnia and Herzegovina has a specific organization of the postal market, as three public postal operators operate within its territory: JP BH Pošta d.o.o. Sarajevo, Pošte Srpske a.d. Banja Luka, and Hrvatska pošta d.o.o. Mostar. Such a market structure makes the process of regulation, standardization, and quality measurement particularly complex. The Postal Regulatory Agency of Bosnia and Herzegovina acts as the regulator of the postal market, whose responsibilities include the establishment of a system for monitoring and evaluating the quality of the universal service in accordance with European standards and national regulations.

Previous research on user satisfaction with the universal postal service in Bosnia and Herzegovina indicated the need to establish an objective system for quality monitoring, which was confirmed through the results of this pilot project [1].

In 2024, a pilot project for measuring the quality of the universal postal service in Bosnia and Herzegovina was launched, representing the first attempt to establish a unified national system for independent measurement of letter mail transit time in domestic postal traffic. The project was initiated by the Postal Regulatory Agency of Bosnia and Herzegovina, in cooperation with the German Organization for International Cooperation – Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH[2], and implemented by three independent measurers bodies:

- Faculty of Traffic and Communications, University of Sarajevo – for the area of JP BH Pošta,
- Faculty of Traffic Engineering, University of East Sarajevo – for the area of Pošta Srpske,
- Faculty of Natural Sciences, Mathematics and Education, University of Mostar – for the area of Hrvatske pošte Mostar.

The measurement was conducted in accordance with standards BAS EN 13850:2023 and BAS EN 14508:2017, which define the methodology for measuring transit time and statistical criteria for sample reliability. Within the project, 83 panelists participated, who handled a total of 900 non-priority letter mail items, evenly distributed across urban and rural areas of each operator. Based on the collected data, the transit time and cumulative quality indicators of the universal service were calculated at both national and inter-operator levels.

This paper presents the results of the pilot project, with a special focus on the challenges of a multi-operator environment within a unified regulatory framework, the analysis of the applicability of European standards in the domestic postal system, and recommendations for establishing a system for measuring the quality of the universal postal service in Bosnia and Herzegovina.

## **2. Regulatory and standardization framework**

The regulatory framework of the postal sector in Bosnia and Herzegovina is based on the Law on Posts of Bosnia and Herzegovina and the entity laws governing the organization, provision, and supervision of postal services — the Law on Postal Traffic of the Federation of BiH [4] and the Law on Postal Services of the Republic of Srpska [5]. These laws establish the fundamental principles of postal policy: accessibility of services to all citizens, equal treatment of users, protection of user interests, and alignment of technical standards with those of the European Union.

The establishment and supervision of the unified postal area of Bosnia and Herzegovina are entrusted to the Postal Regulatory Agency of Bosnia and Herzegovina, which holds regulatory authority for issuing licenses, monitoring the quality of the universal postal service, and harmonizing regulations with European standards. At the entity level, postal operators operate in accordance with rulebooks that define general and specific conditions for providing postal services, including the Rulebook on General Conditions for the Provision of Postal Services of the Federation of BiH [6] and the Special Conditions for the Provision of Postal Services of the Republic of Srpska [7].

The European regulatory framework is based on Directive 97/67/EC of the European Parliament and of the Council, which established common rules for the development of the internal market for postal services and the mandatory availability of the universal postal service throughout the territory of the Member States [8]. Directive 2002/39/EC gradually liberalized the postal services market and opened competition in segments that do not endanger the universal service [9]. Directive 2008/6/EC introduced full market liberalization, with an obligation for the Member States to ensure supervision of the quality and availability of the universal service [10].

The measurement of the quality of the universal postal service in the European Union is standardized through EN 13850 and EN 14508, which have been adopted in Bosnia and Herzegovina as BAS EN 13850:2023 and BAS EN 14508:2017. BAS EN 13850 defines the methodology for measuring end-to-end transit time for single-piece priority/first-class mail, using a representative sample, statistical reliability, and independent monitoring, while BAS EN 14508 defines the corresponding methodology for single-piece non-priority/second-class mail.

Bosnia and Herzegovina has not yet harmonized its legislation with the postal directives of the European Union. The new Law on Posts should ensure the gradual implementation of Directives 97/67/EC, 2002/39/EC, and 2008/6/EC, as well as the application of European standards BAS EN 13850 and BAS EN 14508 in the system for monitoring the quality of the universal postal service.

## **3. Organization and implementation of the pilot project**

The pilot project for measuring the quality of the universal postal service in Bosnia and Herzegovina was carried out during October and November 2024, with the aim of establishing a basis for independent and standardized monitoring of letter mail transit time in domestic postal traffic. The start of the measurement was postponed due to natural disasters that affected certain parts of the country during that period, which

influenced the planned timeline of project activities. The project was initiated by the Postal Regulatory Agency of Bosnia and Herzegovina, in cooperation with the German Organization for International Cooperation – Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, as part of a broader support program for regulatory institutions in the postal and electronic communications sectors.

Within the project, three independent measurement bodies were established, each responsible for conducting measurements in the area of one public postal operator:

- Faculty of Traffic and Communications, University of Sarajevo – for the area of JP BH Pošta,
- Faculty of Traffic Engineering, University of East Sarajevo – for the area of Pošta Srpske,
- Faculty of Natural Sciences, Mathematics and Education, University of Mostar – for the area of Hrvatske pošte Mostar.

The total number of engaged panelists was 83, and they handled approximately 900 non-priority letter mail items within the measurement. The measurement covered all three public postal operators, with three postal areas defined for each operator, including both urban and rural postal regions. In this way, geographical representativeness of the sample and the possibility of analyzing results in relation to the territorial, organizational, and operational characteristics of each operator were ensured.

The measurement was conducted in accordance with the provisions of the European standards BAS EN 13850:2023 and BAS EN 14508:2017, which prescribe the method for end-to-end mail transit time measurement, applying a representative sample, unified accuracy criteria, and quality control procedures. This approach ensured that the measurement results were objective, comparable, and consistent with the methodology applied in the Member States of the European Union.

The pilot project also had an important coordination dimension, as for the first time in Bosnia and Herzegovina, the quality of the universal postal service was measured simultaneously across three public postal operators. This process identified numerous organizational and operational challenges, including the alignment of time schedules, the distribution of test mail items, data validation, and the development of consolidated national indicators.

The focus of this paper is not on the detailed presentation of the measurement methodology, which was defined in accordance with standards BAS EN 13850 and BAS EN 14508, but on the analysis of organizational challenges and the interpretation of results obtained during the pilot project.

Despite its complexity, the project was successfully implemented, thereby laying the foundation for establishing a national system for measuring the quality of the universal postal service in Bosnia and Herzegovina.

#### **4. Measurement results**

The measurement of the quality of the universal postal service was conducted in accordance with the requirements of the BAS EN 13850:2023 standard, which defines the service quality indicator based on the transit time of non-priority letter mail in domestic

postal traffic. The indicator is expressed as the percentage of mail items delivered within three working days (D+3) from the day of posting.

The measurement covered all three public postal operators, with each operator assigned an equal sample of 300 test mail items, which the panelists sent within and between postal areas. The number of mail items that panelists were expected to receive differed among operators, resulting from the methodological approach based on actual mail flows between operators and defined postal areas.

According to the measurement plan, panelists in the area of JP BH Pošta were expected to receive 383 mail items, panelists in the HP Mostar area a total of 221 items, while panelists in the area of Pošte Srpske were expected to receive 296 mail items. Such a distribution allowed the simulation of postal flows to reflect real operational relationships between networks and provided representative data for assessing transit times in both national and inter-operator postal traffic.

The results of the pilot project are presented for each public operator individually, with independent measurers bodies preparing and presenting reports for the areas assigned to them. The analysis particularly focused on the differences between internal (intra-operator) and inter-operator postal flows. Table 1 below presents the aggregate results of transit time measurement for non-priority letter mail by postal operators within the framework of the pilot project.

*Table 1. Results of transit time measurement for letter mail by postal operators*

Postal Operator	Number of Panelists	Planned Number of Sent Items	Actually Received	Average Transit Time (Days)	Delivered Within 3 Days (D+3) – (%)	Average Transit Time (Inter-Operator) (Days)	Delivered Within 3 Days (D+3) – Inter (%)
JP BH Pošta d.o.o. Sarajevo	34	300	383	3.34	63%	3.98	52.31%
Pošte Srpske a.d. Banja Luka	27	300	221	2.64	76.26%	4.11	61.40%
HP Mostar d.o.o. Mostar	22	300	296	2.87	79.26%	3.04	73.75%
Total (BiH)	83	900	~900	-	68.89% (D+3 average)	-	-

From the measurement results, differences can be observed in the transit time of mail between internal (intra-operator) and inter-operator postal flows. Such variations represent an expected consequence of different network configurations, geographical coverage, and operational procedures that characterize individual public postal operators. The results were also influenced by factors such as the distance between postal centers, the number of transport stages, and the way mail transit is organized and scheduled within each network. These findings highlight the importance of process standardization and the harmonization of technical parameters among operators to ensure a uniform level of quality of the universal postal service throughout the entire territory of Bosnia and Herzegovina.

When it comes to inter-operator postal flows, the results on average showed longer transit times compared to intra-operator flows, which is in line with expectations given the additional exchange stages and mail handling processes between different networks. These flows are particularly affected by coordination mechanisms between operators, synchronization of transport schedules, and mail exchange procedures at transition points. The findings confirm that, in order to improve the quality of the universal postal service, it is necessary to further standardize and optimize inter-operator protocols to reduce the difference between intra- and inter-operator transit times.

The aggregate measurement result at the level of Bosnia and Herzegovina shows that most mail items were delivered within three working days (D+3), confirming that the applied methodology enables reliable monitoring of the performance of the universal postal service in the national context. The obtained indicators represent a reference basis for future measurements and allow the identification of key areas where technical and organizational alignment of postal networks is needed to achieve a uniform standard of universal service quality in Bosnia and Herzegovina.

## **5. Challenges in the implementation of the measurement**

The implementation of the pilot project for measuring the quality of the universal postal service in Bosnia and Herzegovina encountered a number of challenges that reflected the complexity of an environment in which three public postal operators operate and the need to harmonize different network and organizational structures.

The first group of challenges relates to the organizational and coordination framework: the parallel implementation of measurements among the three operators required the alignment of panelists' schedules, the delivery of test mail between postal areas, as well as logistics and data validation across multiple independent measurers bodies.

The second type of challenges pertains to the technical and logistical dimension: differences in distances between postal centers, transport infrastructure in urban and rural areas, weather conditions, and natural disasters—all these factors affected the dynamics of sending and receiving test mail items.

The third challenge concerns the measurement methodology itself and the application of mail flow simulations. To make the simulation representative, the sample was defined according to the actual mail flows between operators and postal areas, which resulted in different planned numbers of received items for each operator. This approach provides an advantage in measurement accuracy but introduces additional complexity in coordinating and harmonizing procedures among the measurement bodies.

The fourth and particularly significant challenge relates to the inter-operator dimension. The exchange of mail between the networks of the three public operators introduces an additional layer of complexity in measuring the universal postal service. Harmonized exchange protocols, interoperable IT tracking systems, and unified standardized reporting formats are required. A specific challenge in this type of measurement lies in determining the exact moment when one network finishes and another takes over responsibility for a mail item—that is, the precise identification of the moment the item is received by the second operator. This stage of exchange is crucial for accurately determining the transit time, as it affects which operator is attributed with a

greater share of the total transport time and how each system's contribution to meeting the D+n standards is assessed. Without a clear and technically harmonized mechanism for recording the exchange moment, it is difficult to ensure a fully objective measurement of inter-operator postal performance.

The fifth group of challenges was related to the engagement and management of panelists, who represented an essential link in the process of measuring transit time. In some areas, particularly in rural zones, it was difficult to ensure a sufficient number of active panelists, which affected the even geographical coverage of the sample.

## 6. Conclusion

The pilot project for measuring the quality of the universal postal service in Bosnia and Herzegovina represented the first attempt to establish a national system for independent monitoring of letter mail transit time in domestic postal traffic. It was implemented in an institutionally and organizationally complex environment, in which three public postal operators simultaneously operate in a single market but within separate network structures.

Despite this complexity, the project was successfully implemented, and the methodology prescribed by the European standards BAS EN 13850 and BAS EN 14508 was fully applied. The conducted pilot project therefore has a dual significance: operational, as it demonstrated that it is possible to carry out reliable measurement in a complex multi-operator environment, and strategic, as it laid the foundations for future normative, technical, and institutional development of the system for monitoring the quality of the universal postal service in Bosnia and Herzegovina.

The project results provide a solid basis for future measurement cycles and for the further development of a unified system for monitoring the quality of the universal postal service in Bosnia and Herzegovina. Based on the experience gained, it is possible to improve coordination between operators and the regulator and to define target quality values in accordance with European postal regulation.

This project established the foundation for the creation of a transparent and internationally comparable system for measuring the quality of the universal postal service in Bosnia and Herzegovina.

## Literature

- [1] A. Kosovac, E. Muharemović, N. Čorić, and N. Moranjkić, "POSTAL SERVICES IMPROVEMENTS IN BOSNIA AND HERZEGOVINA THROUGH USERS' PERSPECTIVE: A COMPREHENSIVE SURVEY ANALYSIS," in *ZBORNIK RADOVA ČETRDESET DRUGOG SIMPOZIJUMA O NOVIM TEHNOLOGIJAMA U POŠTANSKOM I TELEKOMUNIKACIONOM SAOBRAĆAJU – POSTEL 2024*, 2024, p. 10.
- [2] Agencija, "Mjerenje kvalitete univerzalne poštanske usluge u Bosni i Hercegovini," *Agencija za poštanski promet Bosne i Hercegovine*, 2024. [Online]. Available: [https://www.rap.ba/publication/read/Mjerenje\\_kvaliteta?lang=hr](https://www.rap.ba/publication/read/Mjerenje_kvaliteta?lang=hr).
- [3] *Zakon o poštama Bosne i Hercegovine*. B&H, 2005, p. 37.
- [4] *Zakon o poštanskom prometu Federacije Bosne i Hercegovine*. B&H, 2004.

- [5] ZAKONA O POŠTANSKIM USLUGAMA REPUBLIKE SRPSKE, no. 30. 2010, pp. 4–12.
- [6] SNFIB, PRAVILNIK O OPĆIM UVJETIMA ZA PRUŽANJE POŠTANSKIH USLUGA. 2007, pp. 1–44.
- [7] SGRS, Posebni uvjeti za vršenje poštanskih usluga Republike Srpske, no. 130. 2011, pp. 10–31.
- [8] Europski Parlament i Vijeće, Direktiva 97/67/EZ o zajedničkim pravilima za razvoj unutarnjeg tržišta poštanskih usluga u Zajednici i poboljšanje kvalitete usluga, no. 9. 1997, pp. 53–64.
- [9] EU, DIREKTIVA 2002/39/EZ EUROPSKOG PARLAMENTA I VIJEĆA. EU, 2002, pp. 32–36.
- [10] E. P. i Vijeće, DIREKTIVA 2008/6/EZ EUROPSKOG PARLAMENTA I VIJEĆA od 20. veljače 2008. o izmjeni Direktive 97/67/EZ u pogledu potpunog postizanja unutarnjeg tržišta poštanskih usluga u Zajednici, vol. 06/Sv. 9. SLUŽBENI LIST EUROPSKE UNIJE, 2008, pp. 214–230.

**Rezime:** Pilot-projekat merenja kvaliteta univerzalne poštanske usluge u Bosni i Hercegovini predstavlja prvi pokušaj uspostavljanja nacionalnog sistema za nezavisno merenje vremena prenosa pismonosnih pošiljaka u domaćem poštanskom saobraćaju. Projekat je pokrenula Regulatorna agencija za poštanski saobraćaj Bosne i Hercegovine uz podršku GIZ-a, a realizovan je kroz tri nezavisna tela za merenje — po jedno za područje svakog javnog poštanskog operatera. Jedinstvenost projekta ogleda se u tome što tri javna poštanska operatera deluju istovremeno unutar jedne države, što stvara specifične organizacione i metodološke izazove u usklađivanju procesa merenja. Merenje je sprovedeno u skladu sa evropskim standardima BAS EN 13850 i BAS EN 14508, čime je omogućena provera njihove primenljivosti u složenom poštanskom okruženju Bosne i Hercegovine i postavljen temelj za budući sistem praćenja kvaliteta univerzalne poštanske usluge.

**Ključne reči:** univerzalna poštanska usluga, kvalitet usluge, merenje vremena prenosa, višeoperatorsko okruženje, poštanski operateri

## MERENJE KVALITETA UNIVERZALNE POŠTANSKE USLUGE U BOSNI I HERCEGOVINI: IZAZOVI VIŠESTRUKOG OPERATORA I PRIMENA EVROPSKIH STANDARDA

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