Digital transformation of postal services – key success triggers

Branka Mikavica, Mladenka Blagojević, Aleksandra Kostić-Ljubisavljević

University of Belgrade – Faculty of Transport and Traffic Engineering, Vojvode Stepe 305, 11000 Belgrade, Serbia

Abstract
With the advancements in Information and Communication Technologies and widespread adoption of digital services at an ever-growing rate, postal operators are facing inevitable digital business transformation. The introduction of digital technologies in the postal sector over the last decades yielded a plethora of new opportunities but also poses some threats. To overcome revenue losses due to a substantial decrease in mail delivery services and changes in the postal services market, postal operators recognized the need for digital transformation in their core business activities. Digital innovations, e-commerce, data collection, and digital identity have accelerated the postal operators’ efforts to offer new services, improve efficiency, and adapt business strategies to the requirements of the digital economy. Thus, digital transformation has become a strategic priority for postal operators. In this paper, we analyze the main drivers of digital transformation in the postal sector. Key technological pillars of digital innovations in postal networks are highlighted. Furthermore, key success enablers and possibilities for improvements in digital postal services provisioning are presented.

Keywords: Digital Transformation, Digital Innovations, Postal Operators, Postal Services

1 Introduction
Nowadays, the world is embracing digital technology at an ever-increasing rate. In general, digital transformation represents an integration of new Information and Communication Technologies (ICT) into all areas of an organization, stated in [1]. Technological integration inevitably leads to the transformation of traditional business models. Moreover, the regulatory aspects must be considered in the process of digital transformation in all areas of interest. Digitalization is often considered a global maturity model that involves the implementation of new processes in all dimensions, including processes, people, governance, etc, shown in [2]. It can also be described as the capacity for interaction between customers and technology to support decision making [3]. The core of the digital transformation process is the transformation of the business itself. It should be emphasized that digitalization is not the goal, but a tool to improve the efficiency and sustainability of the business. The concept of a digital ecosystem encompasses organizations interconnected by a common interest in the prosperity of digital technology to materialize their innovative product or service, as we can conclude from [4]. However, the digital ecosystem can be observed not only from the interconnected organizations’ perspective but widely, as an environment where digital objects are embedded in changing interdependencies with other entities, according to [5].

The majority of Postal Operators (POs) under the Universal Postal Union (UPU) provide digital postal services, directly or in partnership with other companies. Customers, both senders and receivers, are expecting to interact with the Post via digital channels. POs tend to provide e-government, e-commerce and e-finance services to persons with disabilities and other persons with specific needs. Therefore, the postal sector is an integral segment of consultations in which governments, policymakers, regulators and other international organizations design strategies to foster digital inclusion. Furthermore, numerous POs have raised their investment in digital postal services. Thus, the digital postal environment continues to evolve to adapt to the digital age to remain relevant and competitive. The
digitalization of postal services is needed for effective competition. There is an urgent need for POs that have not fully digitalized to speed up the process to become reliable digital service providers for e-government, e-commerce and e-finance services. In this paper, we analyze challenges and opportunities for POs in the era of digital transformation. The main triggers of digital transformation and the relevant aspects of digital transformation in postal services are presented. Several factors are recognized as critical for success in the digital transformation process and for providing POs with a competitive advantage in the digital market.

The remaining of the paper is organized as follows. Section 2 provides an overview of the global trends in the postal digital environment. Current challenges and the technological drivers of the digital transformation in the postal sector are indicated in Section 3. Section 4 represents some future trends and guidelines for the successful digital transformation of POs. Finally, Section 5 provides concluding remarks.

2 Global Trends in Postal Digital Environment

Digital transformation is an essential segment of strategic positioning in the market for all organizations. Main triggers for the digital transformation range from technology ubiquity, to the demand for novel business models and delivery excellence, stated in [6]. The role of digital services in present business models is crucial because organizations interact with customers, businesses and other relevant entities via those services. Two dimensions are recognized as important for successful digital transformation: ubiquity and change. These dimensions reflect digital transformation maturity. Ubiquity is the degree to which digital services support the requirements of stakeholders and harness the organization architecture, while change shows the pace at which stakeholders deliver digital services to meet customers’ expectations, especially in terms of regulation, policy, strategy, and structure.

Ubiquity and change yield four distinct levels of digital transformation maturity: digital trailblazer, digital leader, digital follower, and digital laggard, concluded in [6], as shown in Fig. 1.

---

**Fig. 1.** Levels of digital transformation maturity

Digital laggards lack in both ubiquity and change, often applying a fragmented and disjointed approach to services. This group of stakeholders cannot embrace the potential of transformation and does not orchestrate success factors to their advantage. Digital followers prefer gradual steps with minimal disruption in the process. This group of stakeholders usually is not the first to embrace transformation, thus lacking the political and operational capability for significant improvements. In the case of impediments, the follower may even reverse the benefits of digital transformation. Digital trailblazers adopt digital technologies quickly, in stark contrast to digital followers. They are aware of the necessity for digital transformation. Digital leaders expand in both dimensions and encompass characteristics of both digital followers and digital trailblazers. Leaders have recognized the change as an essential success enabler for digital transformation.

Pathways to digital transformation maturity are shown in Fig. 2. The majority of organizations begin the digital transformation as digital laggards due to the speed at which digital technologies are available, the take-up is slow and lacks success. Once the digital transformation begins, there are three basic options. The organization can become a trailblazer, it can build progressive consensus and internal capability before pressing ahead, or it can directly step into the leader position, bypassing the transition levels. However, without sustained effort, it is possible to move backwards.
The introduction of digital technologies also raises new challenges. The digital tools diverse the structure and the communication channels in the organizations, thus indicating the need for new business models. These new technological triggers affect the digital transformation of the postal industry. Major challenges for future digital postal strategies are trust and cybersecurity, digital identity, inclusion, Big Data and the overall digital ecosystem, as discussed in [7].

Digital trust is critical for postal services. It assures positive long-term relationships with the customers and other stakeholders. Relations between POs and customers in the digital era rely not only on the digital services but also on the assurance that customers’ private data is protected. Hence, postal services’ digital trust is the foundation for the acquisition and retention of customers and stakeholders. POs’ digital infrastructure and customers’ private data can be endangered by cybercrime. Significant efforts are needed to improve the security of postal digital processes and e-services. An appropriate cybersecurity framework is required to prevent cyberattacks and build trust among digital postal customers and stakeholders.

Nowadays, digital identity becomes highly important. It enables postal customers to embrace benefits via digital platforms. Digital identity platforms can enhance the efficiency of postal service delivery, reduce transaction costs, improve transparency and support postal development.

Postal networks can use their vast infrastructure to enable Internet access and alleviate digital divides. Digital services encourage inclusion by providing accessible information on postal services and connecting customers who may have never been connected via traditional communication channels. Digital platforms aim to maximize scale and reach across income and gender divides.

Big Data poses additional challenges to postal networks. To support evidence-based decision making and foster postal digital development, postal networks should improve their capabilities and measure Big Postal Data. The potential of Big Postal Data can be used to measure digital postal development at regional and international levels. Furthermore, it creates postal digital awareness and improves postal capacity building.

In general, a digital ecosystem refers to a platform that comprises organizations, customers, data, processes and the Internet of Things (IoT). New digital platforms enable organizations, including POs, to be more agile and adaptive. POs can move towards creating a digital postal services platform and comply with the ever-changing needs of their customers and stakeholders.

### 3 Technological Drivers of Postal Digital Transformation

Postal services have an irreplaceable role in economic development by supporting connections among customers, economies and countries. The postal sector represents an important means of communication and trade, particularly in terms of economic perspective, stated in [8]. During the last three decades, the postal sector has experienced significant changes. Key pillars of innovations in the postal sector over the years are presented in Fig. 3.

Improvements in ICT triggered the first wave of postal digital innovation, i.e., e-substitution, that caused a progressive shift from paper-based to electronic communications. Recently, the scope of digital innovation is widened substantially and affects all processes and functions of POs, from operations to customer service. Digital innovations also generate new types of competitors, for instance, on-demand delivery platforms that may endanger the postal “last mile”. However, the advantages of postal digital innovations are enormous, including the protection of postal core business, improvements in cost efficiencies, and innovations in new
products and services. Furthermore, new opportunities arise in terms of long-term relevancy and diversification by creating new sources of revenue.

Digital transformation encompasses innovations in technologies, processes, culture and business models. For instance, cloud computing and data analytics accelerate more informed data-driven decisions, thus supporting faster responses to customers’ evolving preferences and providing more flexible delivery options. Investment in digital transformation across the PO’s network is a long-term pathway to improvements.

To embrace the potential of digital transformation, POs have to acquire or improve their ICT capabilities. The development of a digital business technology platform can bring numerous benefits to POs. Five major capabilities can be distinguished in such a platform: an information systems platform, a customer experience platform, data and analytics platforms, an IoT platform, and ecosystem platforms. The information systems platform aims at supporting back office and core systems (such as Enterprise Resource Planning). The customer experience platform contains customer portals, multichannel commerce and mobile customer applications (such as delivery management apps). Information management and decision-making capabilities are supported by data and analytics platforms (for instance, data analytics powered by machine learning can be used to predict volumes and prevent or mitigate operational bottlenecks in postal networks). The IoT platform provides sensor-based management of a postal fleet, capturing of sensor data, location intelligence (for instance, the digital mapping of postal vehicles or routes and customers’ actual locations), analytics applied to the data and their integration to the PO’s operational technology systems. Finally, ecosystem platforms provide connection of external marketplaces, communities, or supply chain partners, thus supporting cooperation between, for instance, e-commerce portals and shipping platforms, or large mailers and consolidators. All those platforms enable POs to overcome some of the most important challenges, including synchronization of the

![Diagram of Progress of digital innovation in the global postal sector](image-url)
supply chain (from shipping to delivery, both domestically and beyond borders) and modified parcel delivery in urban areas.

4 Guidelines for Improvements in Postal Digital Transformation

POs should rely on their competitive advantages, but concurrently, transform key aspects of their business to be able to offer sustainable digital services. Several factors provide POs with a crucial advantage in the competitive digital market. Primarily, the capacity of the postal sector, including post offices and postmen going door-to-door daily, is one of the largest physical networks in the world. Post offices should be complemented with new digital services to expand the competitive edge in terms of network size and density. Additionally, the access to financing for digital projects is vital, since current investment resources are usually insufficient to ensure the full development of services. More investment is needed for POs to fully digitalize their organization at the operational and product level. Taking part in sponsors’ round tables and conventions organized by international organizations may assure access to funding for digitalization projects. Over the years, POs have experienced the transition from traditional postal administration to corporations that need to compromise social impact and financial sustainability. Building partnerships with the public and private sectors can boost POs digitalization and reduce financial burdens. An essential segment of POs digital transformation is the alignment with the government’s digital strategies. It is necessary to recognize the postal network as a tool for advancing digital inclusion. Thus, POs should take part in regional and national digital strategies.

Main enablers of digital transformation in the postal sector, such as broadband Internet, mobile and social networks, IoT, robotics, and other technological innovations depicted in Fig. 4, are long-term trends that will increasingly impact postal strategies in the future, concluded in [9].

The benefits of successful implementation of the postal digital strategy include increased revenue, decreased operational costs, improved customer satisfaction, and enhanced differentiation of postal products and services. The main impacts on each of these dimensions are depicted in Fig. 5.

5 Conclusion

The changing ICT landscape transforms the way POs provide postal products and services to customers, businesses and governments. It is expected that the ICT impact on the postal sector will continue to have even greater effects in the future. Digital transformation provides POs to move from a purely physical services-based business model toward a multi-channel business model. It causes large-scale changes across multiple dimensions of business for the POs and provides new opportunities for value creation and inclusiveness for society. Digital postal services are a tool for leveraging trust and competencies, diversifying, and improvements in the core business of POs. Positive impacts that digital transformation brings to the overall POs’ business organization trigger the new waves of
increasing investment in the digitalization of the postal sector.

References


