

THE IMPACT OF E-PRESCRIPTION ON THE COMPETITIVENESS OF PHARMACIES

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Abstract: The pharmaceutical industry is one of the most innovative sectors in terms of products, so its competitiveness is perhaps unquestionable compared to other sectors. In addition to its propensity to innovate, the industry is also characterised by a strict system of standards, which leads to specific competition for public pharmacies serving consumers. The primary objective of our research is to determine how public pharmacies can increase their competitiveness by using the digital innovations available to them for marketing purposes. The narrower objective is to examine the impact of the introduction of electronic prescription as a cloud-based service on their activities and, therefore, on their performance.

Key words: competitiveness, e-prescription, pharmacy

Introduction

In Hungary, as in any other country, the supply of medicines is a key area of public health care. It encompasses the entire pharmaceutical vertical, that is manufacturing, production, storage, and distribution, and all the industrial, logistical, and commercial activities that bring the product to the end user (Simon, 2010). In the domestic market, pharmacies are responsible for the supply of medicines for the treatment of the public, for providing information on their correct use, and for providing preventive, educational and advisory services (Law Library, 2021). Their activities make them the last and perhaps the most important element of the complex process-based supply chain model outlined by Harland (1996).

Our research focuses on the competitiveness of this segment within the pharmaceutical supply chain, namely the public pharmacies. The pharmaceutical industry can be considered one of the most innovative sectors in terms of products, so its competitiveness is perhaps unquestionable compared to other sectors. However, in addition to a high propensity to innovate, the industry is characterised by strict legal and ethical regulation, which accompanies the product from the manufacturing process to the point of sale (Antalóczy et al. 2021). This rigid system of standards and the oligopolistic nature of the market leads to a specific competitive pressure on pharmacies serving consumers.

Background, History, Review-of-Literature, Methodology of the research

The emergence of industrial results in the services market

Creating value is the most important task of any business. Regardless of the nature of the product, only those organisations that find and eliminate losses in their transformation processes that do not create value for the customer can be successful. One way to identify these losses is to apply a lean approach. Processes that are streamlined by identifying and then eliminating or reorganising unproductive activities become faster, more reliable, of higher quality and play a significant role in cost savings (Kato - Smalley, 2011).

Nowadays, the clear dividing line between manufacturing and service enterprises is becoming increasingly blurred and with it the need for well-functioning leaning processes in production by pure service enterprises (Jenei et al. 2007).

In the service sector, customer satisfaction is one of the most important measures of operational performance (Tamus, 2009). A satisfied customer projects a loyal, positive image of the service provider, which is essentially the basis for stable operations and the potential for growth (Hofmeister-Tóth, 2006).

In pharmacy services, as in office-based services, part of the time is taken up by necessary processes that do not require the presence of the user. Most of these processes are routine and template-like, but they require significant resources and have a high potential for error due to their monotonous nature (OECD, 2014). Processes that are automated can also meet higher security requirements. It is enough to think that the human factor, inattention, or the possibility of fatigue are excluded, and the process used performs the assigned task with the same accuracy in the many periods. Besides the elimination of input errors, data security is also an essential element. It can be said that there is no more loyal worker than an automated process.

The automation of pharmaceutical sales is still far behind other sectors because of its specific human factor characteristics, such as advice and pharmacist care. The first step towards optimising processes is the development of unified cloud-based digital systems, which in Hungary started in 2017 with the introduction of the Electronic Health Service Space and e-Prescription (EESZT, 2020). The development of digital medicine technology could in the future lead to personalised medicine, which could be combined with the spread of 3D-printed, precise, and individually formulated medicines in pharmacies. The emergence of this technology will not only achieve a high level of patient safety, but also patient-centred therapy and the most optimal level of drug management (Zidan, 2017). The development of a unified system of medication ordering in a digital cloud-based space is also an important initial step towards the widespread adoption of robotic pharmacy dispensing. The full automation of the drug dispensing process, and with it the widespread use of pharmacy robots, will significantly reduce medication dispensing errors, while also having a positive impact on inventory management and freeing up resources (Rodriguez-Gonzalez et. al. 2018). The introduction of e-prescribing, which can be considered as a first step towards pharmacy robotization and automation, has caused significant changes in the pharmacy dispensing process in our country, and its study can highlight the importance and positive economic impact of digitalization.

The entry of medicines into the electronic market

The electronic, online tools of the modern age can be of great help in improving the quality of services if we can use them properly. This development can also be observed in the healthcare sector. Both on the patient and the provider side, advanced info communications technologies have emerged. They open new dimensions of convenience for consumers in using the healthcare system. eHealth provides unique access to data, diagnostics, and healthcare services for both professionals and users. As a complex entity, eHealth includes the collection, storage, processing, diagnosis, information transfer, communication between professionals and between professionals and patients, and even education. (Lányi, 2019). eHealth is evolving at a rapid pace, with a steady increase in the number of its sectors. In our country, the most important sectors include:

- the electronic health record system;
- e-Prescription;
- telemedicine;
- health informatics;
- modern (tele)surgery (Sipos, 2018).

The potential of e-health has been recognised by marketers around the world and they are shaping their marketing strategy in line with digital developments. Pharmacies should not be left out of the digitalisation process. Today, pharmacies need to develop their own digital health strategy and communicate digitally with their target groups, as consumers are increasingly using the online space to find information about healthcare providers (Sipos, 2019). We have also reached the stage where the packaging of medicines carries important technological information in digital form, allowing them to track the medication and even the optimal use of each dose (Piutti, 2020).

The e-recipe introduced in Hungary in 2017 has become part of this online space. e-Prescription has fundamentally changed the way consumers buy medicines. The electronic prescription is stored in the cloud, accessible anytime and anywhere, as if the patient were always carrying it in his pocket. Accordingly, there is no need to plan for its dispensing, as it is always available. Another important advantage is that the prescribing physician and dispensing pharmacist have real-time access to the medication history, avoiding duplicate prescriptions or prescriptions with incompatible active ingredients (MOSZ, 2017). International experience shows that e-prescription is spreading rapidly, with countries with advanced e-health systems such as Austria and Estonia already storing and transmitting 85-90% of patient data digitally when needed. As a good example of the cost-effectiveness of e-prescriptions, the cost of printing paper prescriptions in Estonia has fallen from €63,668 in 2009 to around €1,000 in 2010 (Georgiev - Shtereva-Tzouni, 2020).

Objective and hypothesis

The primary objective of our research is to find out how public pharmacies can increase their competitiveness, especially by using the digital innovations available to them for marketing purposes. Our hypothesis was:

H: For pharmacies with a high (90%= \leq) e-prescribing rate, dispensing has become significantly easier over the study period.

Methodology

In the research, the population considered was the 2,287 pharmacies operating in Hungary in 2021 based on officially published statistical data (KSH, 2021). Only companies with the classification of public pharmacy were included in the sample, so branch and hand-held pharmacies were not considered as a separate unit, and institutional pharmacies were not included.

We chose a standard questionnaire survey as our quantitative research method. To reach a specific target group, we used a link sent by e-mail to pharmacy managers, which navigated to the online questionnaire filling interface. The number of questionnaires sent to pharmacy managers was 350, representing 15% of the total. Questionnaire data were processed using the statistical software package SPSS version 27.0.1 with a 95% confidence level and a margin of error of 5%. Correlations were examined using cross-tabulations and χ^2 tests, and Cramer's association coefficient was used to determine the strength of the relationships found.

Results

The survey was carried out between 1 December 2021 and 31 January 2022. The number of questionnaires returned and evaluated was 77. Given the online nature of the questionnaire, the sample was not representative.

The proportion of pharmacies operating in towns with less than 50,000 inhabitants was over-represented in the sample, given that the chains providing data in the survey are mainly operating in such municipalities.

A significant proportion of respondents (48.1%) felt that the introduction of e-prescription had accelerated dispensing. However, it can be observed in (Figure 1) that 36.4% of the sample reported no change, while 15.6% felt that time efficiency had deteriorated.

A key question was whether the closures imposed in 2020 because of the COVID-19 epidemic would have changed the turnover of the pharmacies surveyed. A highly significant result was an increase in turnover among the responses (Figure 2). 45.5% of pharmacies reported a significant increase in turnover, while 35.1% reported a slightly increase. Very few, only 5.2% of respondents, reported a significant decrease in sales.

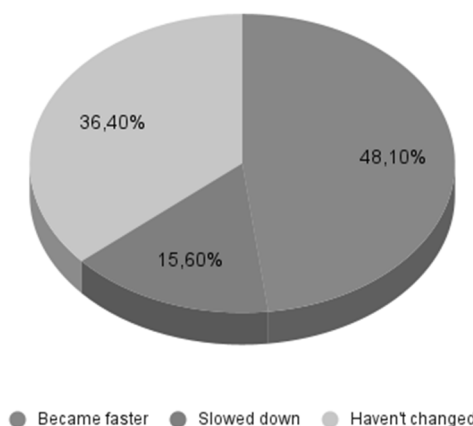


Figure 1. Impact of e-prescription on expediting (%)

Source: Own research, 2022, N=77

The possibility of whether speed of dispensing, simplification of service processes and increase in demand have any relationship with the average proportion of e-prescriptions, was first investigated using analysis of variance. We found that there is no significant difference between the plurality means of e-prescription rates for responses to speed of dispensing and simplification of service processes, as there is significant overlap in the standard deviation of the means. In these cases, the analysis of variance does not show a relationship between the criteria. However, the results of the analysis of variance indicated a clear relationship between the increase in turnover and the increase in the proportion of e-prescription.

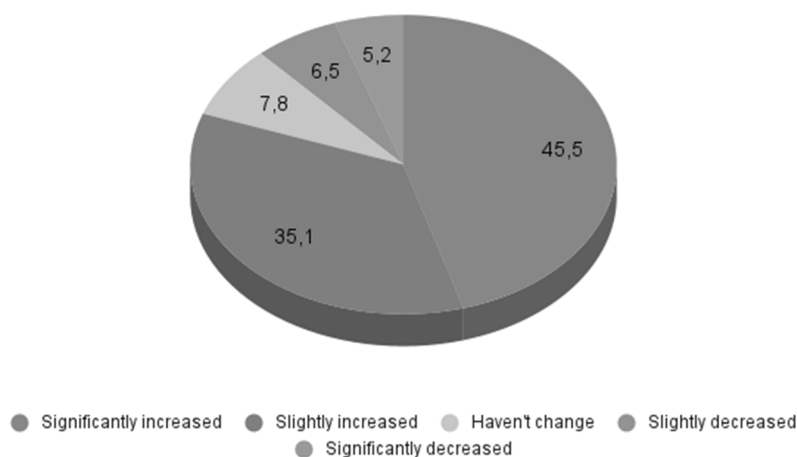


Figure 2. Change in pharmacy turnover in 2020 (base year 2019) (%)

Source: Own research, 2022, N=77

Conclusions

In our research, we looked at how digitalisation is emerging and its potential benefits for the pharmaceutical market. In our secondary research, we found that, as in other sectors of the economy, the pharmaceutical industry, and within its pharmaceutical distribution, is experiencing innovations towards automation and robotisation, which are expected to be drivers of competitiveness in the sector. The introduction of electronic ordering of medicines as a single cloud-based service has paved the way for the full automation of processes

and the widespread use of pharmacy robots. Digitised processes will significantly increase the safety of medicines while optimising inventory management and freeing up resources.

In our primary research, we found that pharmacies with a high (90%=<) e-prescription rate had a simpler dispensing process. Correlation analyses showed that there is a strong association between a high rate of e-prescribing and speed and ease of dispensing. The introduction of electronic prescriptions as a first step in the implementation of full-scale pharmacy digitisation, by making dispensing work faster and safer, has resulted in a positive perception among the pharmacists surveyed.

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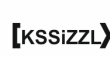
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