



# Market Changes in the Pharmaceutical Industry

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**Abstract.** The pharmaceutical market is in a constant state of dynamism. There have been many changes in the market recently, and the business environment has changed, one of the most important factors driving the market being consumer behaviour and habits. Trends towards a healthier lifestyle are reflected in changes in purchasing behaviour, with the consumption of dietary supplements becoming increasingly popular. Within the pharmaceutical supply chain, the analysis focuses on pharmacies. The aim of the study is to describe the market changes affecting pharmacy retailing, in particular the effects of changing consumer habits and more conscious purchasing and the impact of the strong presence of players outside the supply chain on pharmacy turnover.

**Keywords:** pharmaceutical industry, supply chain, market changes, consumer behaviour

## Introduction

The supply chain of the pharmaceutical industry is in many ways unique, closed, and tightly regulated in terms of its operations and interfaces. The main challenge of the supply chain is to maintain a secure supply of medicines, which requires meeting transport and logistical challenges. Patient care, ensuring that stocks are available in the pharmacy, and maintaining the viability and profitability of the pharmacies are important tasks. Changes in recent years have affected the functioning of the supply chain. The market has restructured, but at the same time it has given visibility to the direction of development and has encouraged operators

to deliver value-added services. The quality of cooperation between actors in the pharmaceutical supply chain is essential to maintain and improve the quality of supply. The integration of suppliers, manufacturers, and distributors can be observed (Nagy 2005: 27–31), as well as the spatial concentration of buyers and the dominance of certain products (Rácz-Kummer 2009: 349–357). Respect for the buyer and the supply partner is a value just as important as respect for competitors. As a result of the day-to-day operational cooperation between manufacturers, wholesalers, and pharmacies, the supply of medicines in Hungary is safe and of European quality. There is also need for forward-looking, strategic cooperation, where the actors in the supply chain need to work together, in concert with each other.

### **Identifying the Problem**

In the pharmaceutical supply chain, the role of the buyer, i.e. the patient, is rather passive, as the doctor, the social insurance system, and the pharmacist play a major role in demand creation (Antalóczy 2007: 58–82). In the case of prescription drugs, the pharmacy will dispense the product prescribed by the doctor to the patient. In the case of non-prescription products, the pharmacist's opinion, suggestion, or recommendation will influence the buyer's decision. In this situation, the pharmacist will be guided by the manufacturer and the pharmacist's customer and will have a preference for the products that can boost sales. However, we have to see that consumer thinking and needs have changed. Increasing flexibility, convenience, health-consciousness, and personalized services are important for the consumer. Patients are more likely to be informed online, to form their own opinion, and to take a more active role in their own health (Wallisch 2022). It is estimated that around 4.5% of all Internet searches worldwide are related to health-related questions or information. These trends are further expanding with the use of mobile devices. Consumers turn to the Internet not only to find health information but also to buy services or products (Fittler et al. 2018). This means that they are more informed when shopping and go to the pharmacy with a specific product need and less influenced by the pharmacist's recommendation because they also take into account a number of factors when choosing a product such as price, packaging, manufacturer, TV advertising, and specific needs. A wide range of products gives the opportunity to choose and to meet individual needs. In many cases, it is a challenge to meet the needs of patients and to be more attentive and responsive to changing consumer needs. Manufacturers are also entering other channels such as drugstores or grocery chains with the range of products they can afford, and consumers are increasingly shopping in these places. The presence and influence of players outside the supply chain on the market is a problem.

## The Supply Chain

One of the most commonly used terms in logistics management literature in recent years is supply chain or supply chain management. Although the textual definition of the term often differs, a consensus seems to be emerging on the content. At the heart of this consensus are the following three observations:

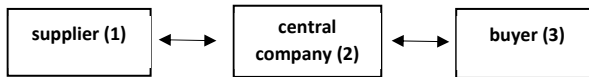
- It aims to satisfy consumer needs.
- The supply chain can be understood as a chain of several cooperating market actors.
- Supply chain encompasses the real processes involved in value creation and their system (Gelei 2003).

Supply chain and supply chain management are not unfamiliar terms in logistics terminology (Ványi–Varjasi 2014: 58). In the 1980s, supply chain meant the coordination of a company’s internal processes such as purchasing, manufacturing, sales, and distribution. The integration of these activities ensured the smooth functioning of processes within the company. With the expansion of the coordinated system within the company, we can now talk about value-creating processes that extend beyond the boundaries of the company. This broadened approach extends the cooperation between organizations from the raw material producer to the end user. This enables companies to face new market challenges as part of a chain.

The supply chain is nothing more than a series of value-creating processes – production and logistics – across cooperating organizations that produce a product or service to satisfy consumer needs (Chikan 2008). The supply chain is the individuals and organizations involved in the production and sale of a product or service, resources, activities, and technologies (Basuki 2021: 9–12). According to La Londe and Masters (1994: 35–47), a supply chain is a group of firms that transfer materials, i.e. the group of firms between which goods and services flow in the production process. A supply chain can also be defined as a group of firms that jointly market a product or service (Lambert 1998: 1–19). According to Lambert et al. (1998), supply chain members cooperate in the production and marketing of products and services. According to Harland (1996: 183–192), supply chain actors are those actors who cooperate in the process of sourcing, producing, and delivering a product or service to a customer. In Chikan’s (2008) formulation, a supply chain is a vertically interconnected set of economic activities across firm boundaries to satisfy a given consumer demand. The four main processes of planning, sourcing, manufacturing, and delivery that define the supply chain include demand-supply management, sourcing of raw materials and components, manufacturing, assembly, inventory management, order processing, distribution, and delivery to the final consumer (Szegegi 2017).

Cooperation between actors is based on trust and commitment, which members need to develop continuously. They accept interdependence and share the

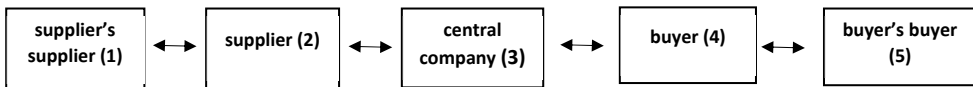
information available to them. The actors seek a long-term relationship in which each member tries to find its own solution. The main objective of the supply chain members is to satisfy consumer needs by cooperating in value creation processes while sharing both risk and profit (Gelei 2002). They have a common interest in the success of the whole supply chain, as being part of a well-functioning chain can give members a competitive advantage in the market (Gelei 2003). Supply chains can be understood as business networks (Gelei et al. 2010) – a network is a structure whose nodes are business units such as a producer firm, a buyer, or a supplier. The relationship between the nodes is the link between the actors. The relationship between the members determines the nature of the supply chain. A supply chain has at least three business units, and its length is determined by counting the number of actors in the chain. The more members, the longer the chain, but it is particularly short if the manufacturer sells the product or service directly to the end customer. The simplest type of supply chain is the direct supply chain, in which the producer, the buyer, and the supplier cooperate in the flow of goods and services.



Source: Mentzer et al. (2001)

**Figure 1.** Direct supply chain

In the extended supply chain, in addition to the above actors, the supplier's supplier and the buyer's buyer are already part of the integration by participating in the value creation process. In a broad sense, the scope of the supply chain includes both the supply chain and the distribution chain (Kozma–Tóth 2017).



Source: Mentzer et al. (2001)

**Figure 2.** Extended supply chain

The relationship between the members determines the nature of the supply chain. The starting point of the business relationship is the exchange, which is a one-off transaction and can include the transfer of goods, services, and money. If the relationship between the seller and the buyer is limited to the exchange of goods and services, it is a short-term relationship that does not imply trust between the members and does not depend on each other. In a later interpretation, interdependence appears, which may involve resources, skills, or even information.

In a well-functioning supply chain, the actors can gain a competitive advantage in the market by sharing the information available to them. Socio-cultural ties, such as trust and commitment, are established between them. They take into account that their decisions may have an impact on the other actors in the chain. They contribute to each other's profitability and seek to achieve mutual benefits (Lambert et al. 1998: 1–9). Cooperation allows the parties to work together to grow the pie – and thus their own slice – rather than trying to cut a bigger slice of a pie of a constant size at the expense of each other (Cigolini et al. 2004: 7–41).

The structure and type of the supply chain can be directly determined by the expectations placed on its operation and the objectives assigned to it. A crucial aspect in setting the target is the nature of the products and their demand (Fisher 1997: 105–116). According to Fisher, the first step in building an appropriate supply chain strategy is to understand the characteristics of demand (Fisher 1997: 105–116). Demand for a product is a complex concept, involving the current stage in the product's life cycle, the breadth of the product range, the degree of predictability of demand, and the lead time and service quality of the market, which is mainly availability, i.e. the proportion of the order that can be satisfied from stock.

Supply chains, according to Fisher, essentially perform two functions, the physical and the market intermediation function. The physical function includes activities such as the production of a product from raw materials, its assembly into components, and their delivery to the appropriate actor in the supply chain and, finally, to the end consumer. The market intermediary function aims to ensure that the range of products placed on the market actually meets the specific needs of the customers. The efficient flow of information is the means of coordination between the cooperating partners, the aim of cooperation being to meet predictable demand at minimum cost. However, in the case of innovative products, unpredictable demand can lead to excess stocks or shortages in the market (Fisher 1997: 105–116).

While the supply chain is defined as a series of value-creating processes across companies, supply chain management can be defined as the conscious management of the supply chain to improve the competitiveness of the companies involved (Gelei 2002). Supply chain management can be formulated as a long-term agreement between two or more companies, the development of trust and commitment, the integration of logistics activities, including the sharing of demand and sales data (La Londe–Masters 1994: 35–47).

The conditions for supply chain management are (Mentzer et al. 2001: 1–25, in Gelei 2002):

- Supply chain orientation: the recognition and shared belief of the participating companies that conscious supply chain management is of strategic importance because it improves their market position.

- Integrated enterprise logistics: The coordinated planning and management of value-creating processes between companies is not possible without the coordination of real processes within the company.
- Systems approach: the participating companies jointly determine the market performance of the chain, the aim of cooperation not being to optimize the position of one company but the chain as a whole.

Supply chain management aims to increase competitiveness and improve cooperation between partners (Hattayer–Gál 2022: 51–58). Members are advised not only to coordinate material flow functions but also to integrate several other activities within the company or the supply chain to achieve higher customer value and satisfaction. In this respect, the joint understanding and servicing of customer expectations and values, and their becoming a common goal, is essential (Gelei–Nagy 2005). With the spread of a customer-centric approach, tracking customer satisfaction has become an increasingly accepted and expected requirement (Kolos 2006).

## **The Supply Chain of the Pharmaceutical Industry**

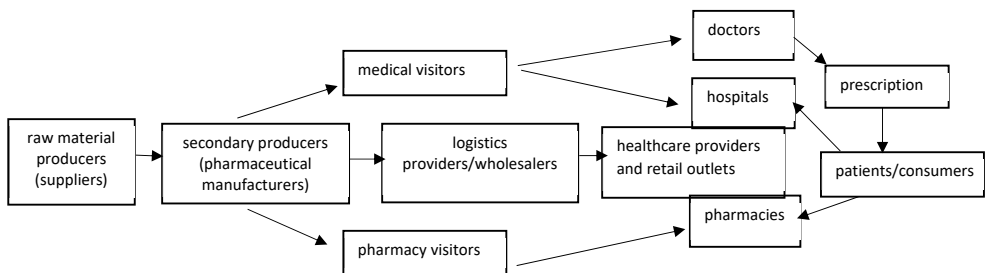
The production of a pharmaceutical product goes beyond the traditional duality of production and marketing because it also involves scientific research, clinical trials, and the social sustainability of health promotion. A specific feature of the pharmaceutical industry is its specific legal regulatory environment (patents, regulatory licensing, social security, agent–client relationship, code of ethics, environmental protection) (Lengyel–Molnár 2014: 115–123). The strategies and competitive factors of pharmaceutical companies differ depending on whether they are involved in the production of originator or generic medicines. Nowadays, the pharmaceutical industry has become a highly globalized industry (Antalóczy et al. 2019: 41–72, Haakonsson 2009: 75–95), a dynamic and innovative industry in the global economic environment (Nozari–Szmelter 2019). The proper functioning of the supply chain is also of high economic importance in the pharmaceutical industry (Kozma–Tóth 2017). The structure of the industry’s supply chain is also becoming increasingly complex. In the current fierce economic environment, relatively few companies can compete without paying attention to both their direct and indirect external relationships.

The supply chain is responsible for the efficient and effective transfer of materials from suppliers to end users (Bititci et al. 2004: 251–268), and it is composed of primary raw material producers (suppliers), secondary producers (pharmaceutical manufacturers), logistics providers/wholesalers, healthcare providers, and retail outlets (Savage et al. 2006: 1–8, Zahiri et al. 2017: 109–142). It is important that this is a regulated and closed supply chain to ensure protection against hoarding and the safe supply of medicines. The pharmaceutical industry is a highly regulated

industry. Regulation covers many operational areas, including manufacturing, quality, end-product specifications, or product packaging (Abdallah 2013).

The rapidly changing market environment and fluctuating customer demands require efficient logistics processes (Kovács–Kot 2016: 115–126). In such an unstable environment, companies need to develop more flexible and robust relationships and continuously improve them with partners to respond to these changing market situations in a timely manner (Ghatari et al. 2013: 193–205). In recent years, globalization processes have accelerated, and with the development of markets it has become increasingly important for companies to have a good understanding of supply chains and maintain good relationships between them (Kot 2012). Strategic cooperation can improve the quality of products and the customer service of companies (Bititci et al. 2004: 251–268). Trust is very important when considering strategic cooperation, and the fundamental role of trust should be emphasized. Trust is important not only to exclude market and environmental uncertainties but also to help both parties manage these uncertainties (Haakansson et al. 2009, Mandják et al. 2010: 1–25).

Today, supply chains compete with each other (Markovits–Somogyi–Ulechla 2016: 5–7) instead of products and services, a fact that can now be interpreted as a criterion for competitive advantage, as the main objective of a supply chain is to maximize the value created and to meet customer needs. This additional value is generated by the efficient operation of the supply chain (Kozma–Pónusz 2016: 181). Organizations aim to improve supply chain efficiency (Mandják et al. 2010: 1–25). Sharing risk, experience, and common purpose ensures coordinated operations (Parast–Spillan 2014: 289–314). A supply chain can provide the greatest value creation and competitive advantage if it can successfully align knowledge, skills, and capabilities towards a common goal through mechanisms that drive efficiency and effectiveness – for the benefit of customers in the narrow sense and the community in the broad sense (Katits–Varga 2016).



Source: own edition

**Figure 3.** *Pharmaceutical supply chain*

Every company is part of a supply chain, in many cases a supply network, with many different suppliers and partners (Morley 2017). Within the supply chain, the wholesaler's important and primary role is to source, store, stock, quality control, and deliver medicines to pharmacies, providing a fast and flexible service to them. Thus, the operation and inventory management activities of pharmaceutical wholesalers are affected by market factors that affect all actors in the supply chain. Companies both up and down the supply chain need to be alert, agile, and responsive to the changes they notice (Pulcini et al. 2018: 590–592). Recently, the pharmaceutical industry has grown, and this growth has necessitated an acceleration of the transportation and logistics challenges. Given the global nature of the pharmaceutical industry, the importance of a coordinated and flexible supply chain cannot be overemphasized (Venkateswaran 2018).

## **Research Purposes, Methodology**

The effects of environmental changes, changes in consumer behaviour, and market shifts are being felt and are driving and pushing supply chain actors towards change. Due to the popularity of health-conscious lifestyles, we can assume that the market has shifted towards OTC and dietary supplement purchases (H1), with a focus on health maintenance. Patients are becoming more aware, and with the advance of digitalization, they receive all information instantly, which empowers their role, opinion, will and most importantly changes their attitude. As a result, they are less influenced by the pharmacist during a pharmacy purchase, it is more difficult to influence them as to which product they should buy (H3), and they have a more active role in shaping demand. The importance of actors outside the closed and secure supply chain is increasing (H2).

## **Methodology, Hypotheses**

The study examines the changes in the market from the perspective of pharmacies, in particular the consequences of changes in consumer behaviour in the post-COVID period.

- Will demand for over-the-counter products increase?
- Can the pharmacist influence the purchaser's decision?
- How popular is the purchase of dietary supplements outside the pharmacy?

The research is based on the literature review, the fundamental issues of the supply chain, and the structure, operation, and specificity of the pharmaceutical supply chain. Based on the combination of literature and market knowledge, the hypotheses were formulated. A questionnaire survey was carried out among pharmacies in Hungary to verify the hypotheses. The pharmacies participating in

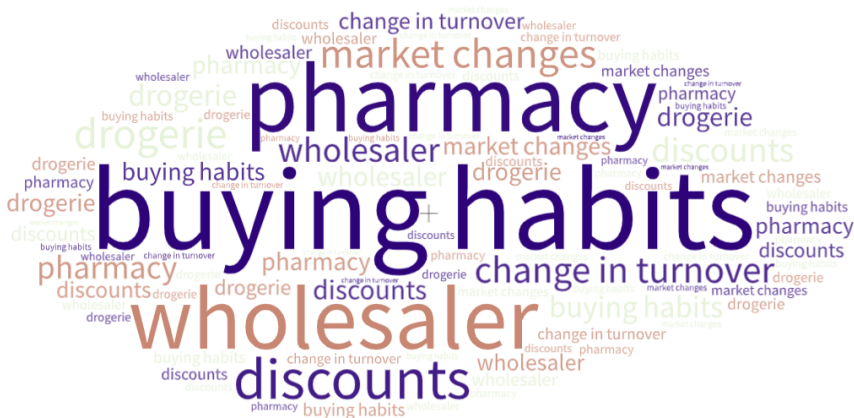


the survey were selected randomly. Our questionnaires were made available on an online pharmacy platform for a duration of one month. The responses received were aggregated on Scriptor, an SFA platform for the pharmaceutical industry. The data were transformed into statements in Excel, coded and further analysed using SPSS software. The survey was conducted in autumn 2021. 114 questionnaires were found to be evaluable.

**Table 1.** Demographic profile of the sample ( $N = 114$ )

Variables	Item	Count	%
Region	Bács-Kiskun	8	7%
	Baranya	8	7%
	Borsod-Abaúj-Zemplén	14	12%
	Budapest	16	14%
	Csongrád-Csanád	10	9%
	Győr-Moson-Sopron	4	4%
	Hajdú-Bihar	8	7%
	Heves	3	3%
	Komárom-Esztergom	5	4%
	Pest	15	13%
	Szabolcs-Szatmár-Bereg	8	7%
	Vas	4	4%
	Veszprém	8	7%
Zala	3	3%	
City/Country	City	91	80%
	Country	23	20%
Pharmacy chain	Alma	8	7%
	Benu	22	19%
	Csillag	4	4%
	Gyöngy	4	4%
	Kulcs	1	1%
	Patika Profi	2	2%
	Szimpatika	5	4%
	Chain pharmacy	46	40%
Independent	68	60%	

General, introductory questions: *where is the pharmacy located? Is it part of a pharmacy chain? Is it a member of a pharmacy? Is it a member of a major pharmacy? Which is the main supplier of the pharmacy?* The questionnaire focuses on the extent to which OTC and dietary supplement sales in pharmacies have increased in recent years, the proportion of prescription purchases, whether there is any evidence of a turnover shift. The change in buying habits identified a main trend, which led to the following important questions: *How much influence can the buyer have? How easy is it to convince him to buy another product?* Seeing the market changes, it is important to analyse the market environment. One of the reasons for the shift in pharmacy sales may be the rise of drugstores, and an important question in this context is: *How much does the sale of value-added supplements in drugstores and grocery chains influence pharmacy sales?* The main thrust of the questionnaire design and questions is how changing consumer habits are affecting pharmacy sales. Further: how is the non-prescription market evolving in relation to prescription products, how important is the OTC market today, what are the threats to pharmacies, does the sale of dietary supplements in drugstores affect pharmacy turnover, and does it impact the supply chain? The questionnaire is mainly composed of open questions, with one or two closed ones as well. It includes both text and numerical answers, open-ended questions, and a Likert scale from 1 to 4 was used.



Source: own edition

**Figure 4.** Focus points of the questionnaire

To process the results, we used statement charts and SPSS statistical software. In addition to the statistical analyses, our work was complemented by qualitative research. The hypotheses were evaluated, and in this context we formulated our conclusions and recommendations, focusing on the correlations and the

implications of our findings for the functioning of the pharmaceutical supply chain and its actors.

*Hypothesis 1: Due to changing consumer demands in recent years, the sales of OTC and dietary supplements in pharmacies have increased compared to the sales of prescription products.*

*Hypothesis 2: The turnover of pharmacies is negatively affected by the sale of dietary supplements in drugstores and grocery chains.*

*Hypothesis 3: More informed buying habits result in less influence on patients' purchasing decisions.*

## **Ground for the Hypotheses, Marketing Background**

The pharmacy market is a more complex supply chain with many regulations affecting it such as price regulation, margin capping, or price fixing. A government decision sets out the margins that wholesalers can work with when selling prescription medicines. The applicable margin is degressive, i.e. the higher the price of a medicine, the lower the margin. For products with a producer price below HUF 500, the margin is 8% (of which there are very few), but if the price of the medicine reaches HUF 2,000, the margin is 4.4%. The pricing policy is strictly regulated by law, and there are margin constraints. Among the actors in the supply chain, this not only affects the wholesaler mentioned above, but it also has an impact on the retail sector, i.e. pharmacies. Under the regulations, the average margin for prescription products in a pharmacy is 12%, which is considered low.

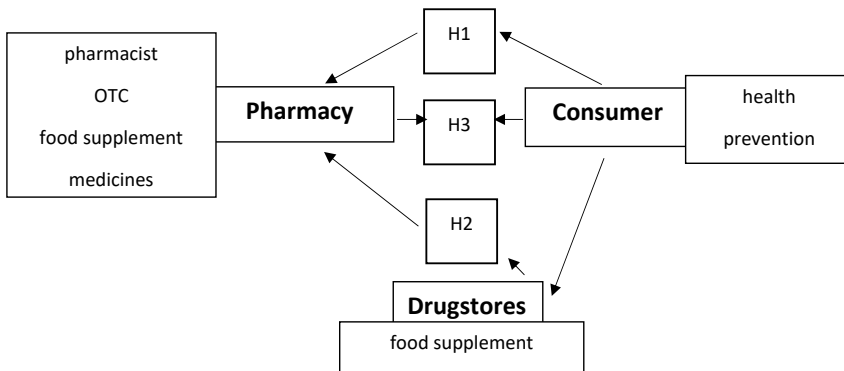
The regulation governing margins was last amended nearly a decade ago, but since then the costs for businesses have increased substantially. For many years, pharmacies and wholesalers have been trying to counter this problem by cutting costs and optimizing processes within the supply chain. Both sectors live on margins; if there are insufficient resources, there is no funding for the necessary investments and improvements, and the result is that patients receive a lower-quality service (Galambos 2021).

Within the category of food supplements, vitamins accounted for the largest share of sales in pharmacies during this period. During the pandemic, prevention became even more important for people. In particular, sales of vitamins C and D increased. Market surveys have also shown that people are taking vitamin D specifically to strengthen their immune system against COVID-19 in addition to supporting the immune system. Purchases of vitamins C and D were more frequent than before the outbreak. Such a surge in consumer demand during this viral period has resulted in stock shortages at pharmacies and wholesalers and has also caused problems with production schedules. The change in circulation and the buying up of stocks had a major impact on all players in the supply chain, as there were no spare stocks to meet the increased demand. Pharmacies

in a more advantageous position were those operating with a higher stock level than the average 7–14 days’ supply, so products that were already in short supply elsewhere could still be supplied by these pharmacies. The stock shortages resulted in disrupted deliveries, which disrupted the supply chain. Thus, for the future, rethinking stocking strategies within the supply chain is an important issue. In order to ensure a safe and continuous supply of medicines, it is important that pharmacies’ orders are not disrupted and that patients visiting the pharmacy are served smoothly, as this will ensure the smooth functioning of the supply chain.

The aforementioned shortages in pharmacy stocks have also led to people obtaining the vitamins and minerals they need from other sources. In addition, during the emergency, people visited pharmacies less frequently, although the value of the basket was higher on a shopping occasion. There was a limit of one person at a time in the pharmacy. Discount chains and drugstores did not have such strict restrictions. Customers were more likely to buy basic vitamins and other dietary supplements in these shops.

Today, drugstores and grocery chains offer a wide range of dietary supplements. These channels are becoming increasingly popular due to changing consumer behaviour. More and more people are buying dietary supplements in drugstores, discount chains, and other food chains. It is assumed that some of the pharmacy sales will thus shift to drugstores and discount chains. This is because consumers’ mindset and needs have changed. Increasing flexibility, convenience, health consciousness, and personalized services are important for the consumer. Based on the above market changes, we have formulated the hypothesis that pharmacy sales are negatively affected by the sale of dietary supplements in drugstores and grocery chains.



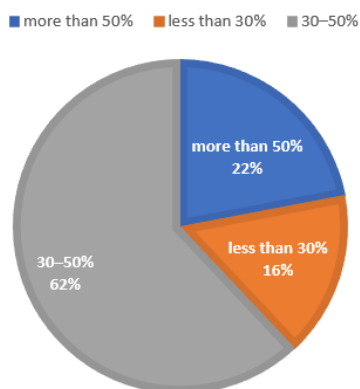
Source: own edition

Figure 5. The context of hypotheses

Our third hypothesis is based on the observation that people are becoming more health conscious, specifically looking for (disease-)preventive ways of living, and are therefore consuming more vitamins and supplements. Nowadays, consumer attitudes have changed, as the world has become faster, information is instant and up-to-date, and people are used to and expect to have instant access to everything, be it information, products, or services. They are more aware of what they buy and are more informed before they do it. Consequently, I assume that the consumer will play an increasingly important role in shaping demand and that it is not the pharmacist/manufacturer-influenced pharmacist who will cause the demand for a product to increase or decrease. I argue that more informed buying habits will result in less influence on patients' purchasing decisions.

## Results of the Examination, Evaluation of the Hypotheses

*Hypothesis 1: Due to changing consumer needs in recent years, the sales of OTC and dietary supplements in pharmacies have increased compared to prescription sales.*



*Source: own edition*

**Figure 6.** Share of OTC sales in pharmacies compared to prescription sales

This hypothesis is based on the fact that people are becoming more and more concerned about their health and that prevention and healthier living are becoming increasingly important. They are buying more vitamins and supplements, as can be seen from the sales figures. The pandemic has had an impact on this, as the viral season has made it even more important for people to replenish their bodies with the right vitamins and minerals. We are also seeing a change in the proportion of sales in pharmacies as a result, with an increasing emphasis on OTC product categories. The traditional pharmacy model is based on serving patients with prescriptions and providing medicines to them to help

them heal. The essence of prevention is placing the emphasis on OTC products. It is important to see the current ratio of prescription to non-prescription sales in pharmacies. The results of the questionnaire survey are shown in the pie chart above (*Figure 6*).

62% of the surveyed pharmacies said that the OTC category accounts for around 30-50% of the total sales. This means that the turnover is still primarily from prescription products. 22% of pharmacies have more than 50% OTC turnover: in these pharmacies, this category is stronger, and they sell the most. In only 16% of the pharmacies is this share typically very low. Looking at this, we can say that sales from the OTC product categories are becoming more significant and approaching 50%. But currently, prescription medicines still account for the bulk of sales. The analysis, market expectations, and experience show that the OTC category is growing and will continue to grow alongside prescription sales.

In the present case, however, the hypothesis does not hold, as the bulk of pharmacy sales are still generated by sales of prescription medicines.

**Effect on the supply chain:** supply chain actors need to respond to changing consumer demands. Pharmacies need to replenish their stocks in anticipation of higher future demand for dietary supplements and to listen to patient feedback and needs. Wholesalers will also need to stock a wider range of these products to ensure uninterrupted service. And manufacturers should be alert to new product innovations and portfolio expansion.

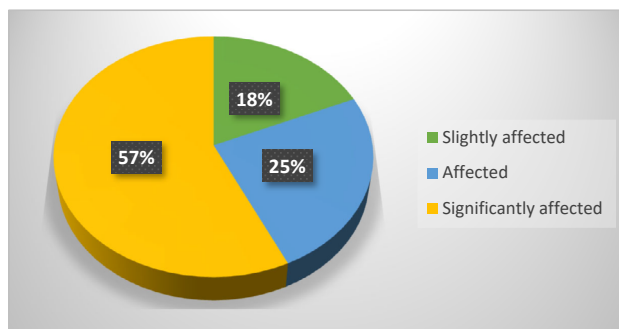
*Hypothesis 2: Pharmacy sales are negatively affected by the sale of dietary supplements in drugstores and grocery chains.*

The question asked was as follows: How much is pharmacy turnover affected by the sale of dietary supplements in drugstores and grocery chains? Basically, we want to see clearly as to whether the rise of discounters is affecting pharmacy sales and whether the increasing choice of products in drugstores is shifting pharmacy sales away from dietary supplements, i.e. whether people are buying fewer dietary supplements in pharmacies than in drugstores. Shopping habits have changed, with more and more people buying dietary supplements in drugstores. The COVID-19 epidemic has had an impact on changing shopping habits. People could shop in pharmacies for a single person and almost only for the essentials. More people shopped in drugstores and grocery stores, where they could buy essential vitamins in the same way. Another reason was that the pharmacies were running out of stock, and people were going elsewhere.

Drugstores are also now offering a wider range of products. It can be an advantage to be able to pick up the product and even buy it at a better price. A disadvantage may be that the customer cannot ask for professional advice, unlike in a pharmacy, where the pharmacist can provide help and product information.

Most importantly, based on the results, we see that all pharmacies believe and perceive that selling dietary supplements in drugstores and grocery chains affects

pharmacy sales. All respondents believe that it is an influencing factor, with responses differing only in the extent to which they believe it affects turnover.



Source: own edition

**Figure 7.** *The influence of drugstores and food chains' sales of dietary supplements on pharmacies*

57% of the responding pharmacies say that sales of dietary supplements in drugstores and grocery chains have a significant impact on their turnover. This is quite a high proportion, more than 50%. This means that the importance of drugstores and food chains in this respect cannot be disputed. It is therefore very important that supply chain members keep a constant watch on market changes and the environment, just as to find strategic advantages that can ensure that pharmacies operate profitably.

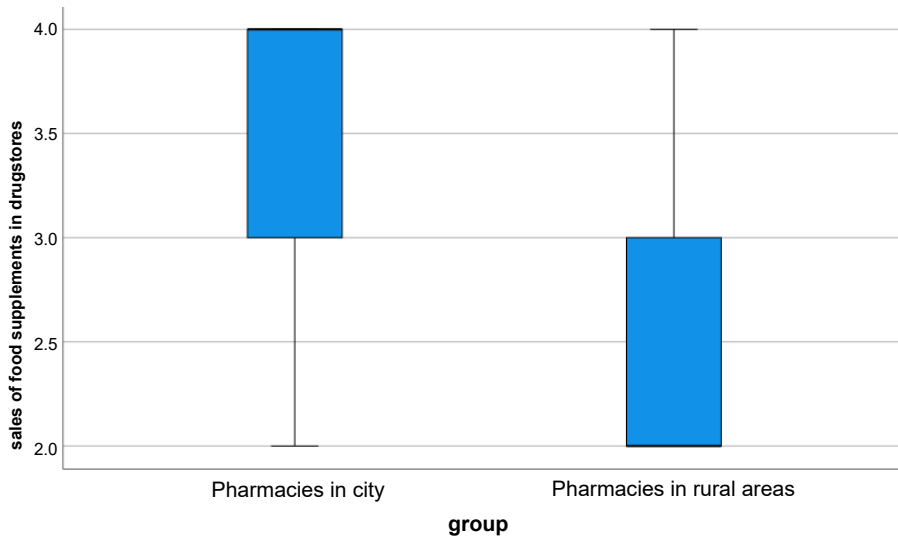
In the context of this study, I hypothesise that urban pharmacies will be more influenced by the expansion of drugstores and discounters and the ever-expanding range of products. Drugstores are only found in cities, and discounters and grocery stores are mostly found in cities. In smaller municipalities, there are few opportunities to buy food supplements outside pharmacies, and the product range is rather limited. In towns with fewer inhabitants, some basic vitamins are stocked, one reason being that they are reluctant to take risks with higher stocks.

However, if we assume that people who live in municipalities commute to work in urban areas and therefore do their shopping, buying medicines and supplements in towns, then this will have some impact on the turnover of pharmacies in municipalities. We assume that some of these purchases are also made in drugstores and grocery stores. To verify my assumption, I used the Mann–Whitney test. I tested two independent groups who were completely unrelated to each other when completing the questionnaire. One group is made up of urban pharmacies and the other group is of rural pharmacies. Based on an independent sample design, the results of the Mann–Whitney test are as follows.

**Table 2.** *The Mann–Whitney test results (SPSS statistics)*

Test Statistics	Sales of Food Supplements in Drugstore	Group	N	Mean Rank	Sum of Ranks
Mann–Whitey U	408,000	Pharmacies in city	91	64.52	5,871.00
Z	−5,061	Pharmacies in rural areas	23	29.74	684.00
Asymp sig. (2-tailed)	<0,01	Total	114		

Using the Mann–Whitney test, the hypothesis was confirmed because a significant difference was found between the two groups, with the turnover of urban pharmacies (Mdn = 4) being more significantly influenced by the sale of dietary supplements in drugstores and grocery stores than that of rural pharmacies (Mdn = 2) [U = 408, Z = −5.061, p = 0.005 (1-tailed), r = 0.474].



**Figure 8.** *Comparison of urban and rural pharmacies based on the Mann–Whitney test (SPSS statistics)*

The graph shows that urban pharmacies have scores between 3 and 4, i.e. they are significantly influenced by the sale of dietary supplements through other channels. In this case, the fact that people can buy these products in drugstores and grocery stores has a negative impact on their sales. In contrast, the rural pharmacies’ values have fallen to between 2 and 3, and their turnover is affected



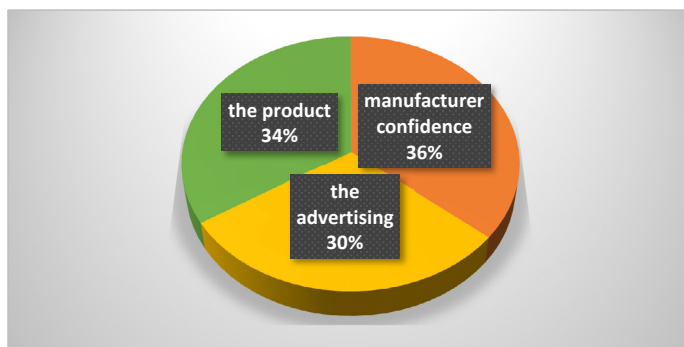
(though only slightly in most cases) by this market phenomenon. It can also be seen from the graph that the sale of dietary supplements in drugstores certainly affects the market and the players to some extent since the ‘not affected’ answer assigned to the value of 1 was not found.

The above analysis confirms the hypothesis.

**Effect on the supply chain:** Distribution outside the chain, distribution channels pose challenges to the members of the chain. It may trigger the idea of necessary changes both in pricing issues and in the context of product portfolio expansion. As outsider distributors, i.e. non-members of the pharmaceutical supply chain, drugstores and grocery chains have an impact on the chain’s operation, gaining sales and customers away from pharmacies. This demonstrates the importance of looking at external environmental impacts. It is necessary to look for competitive advantages that can increase the economics of pharmacy sales.

*Hypothesis 3: More informed buying habits will lead to less influence on patients’ decisions.*

The literature suggests that the patient is a passive actor in the development of pharmacy demand because the pharmacist plays a major role in the development of demand (Antalóczy 2007). Product recommendations in pharmacies are greatly influenced by the relationship between the pharmacy visitor and the pharmacy consultant. If the pharmacy is still member of a pharmacy chain, the category management built up there is decisive when recommending a product.



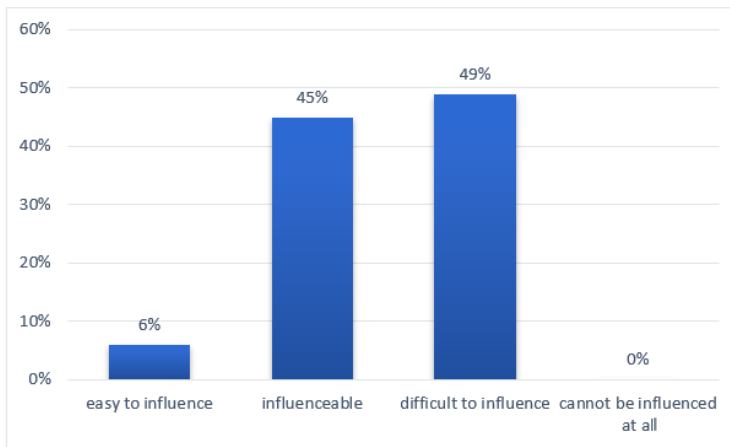
*Source: own edition based on the database of VitaPlus Ltd.*

**Figure 9.** *Influence of a pharmacist’s recommendation*

It is assumed – and I think the market changes suggest so – that customers are coming to the pharmacy more and more aware and prepared, with a specific product need, less open to persuasion, and the decisions about their purchases are certainly not pharmacist-driven. Based on this, the hypothesis is that it is not easy to convince a patient to buy another product if they come with a specific

idea in their mind (here we are talking about over-the-counter products). Results from a previous manufacturer market survey involving nearly 800 pharmacies show that pharmacist recommendations are primarily driven by the belief in the product manufacturer. This can shape demand because the pharmacist will prioritize formulations, and there will be certain products/product categories that s/he will recommend more often, prioritizing them over other products, which can influence demand and sales figures.

We assume that the market is not that simple; especially in recent years, consumers have become more vigilant and have much more information available to them, including about what products are available for a given healthcare issue. They have choices, their own opinions, own will, and own ideas. There has also been a step forward in health awareness, which has been reinforced by the pandemic period, so we are consuming more health-promoting products. The patient is now less influenced by the pharmacist. It is more difficult for the pharmacist to ‘put’ the product s/he prefers, if any, in the consumer’s basket. We used a 4-point Likert scale to measure how impressionable the customer is, how easy it is to convince him/her to buy another product. On a scale of 1 to 4: 1 = the customer was easily influenced, and 4 = the customer’s decision could not be influenced at all.



Source: own edition

**Figure 10.** *Pharmacists' influence on customer decisions*

Results show that patients are becoming increasingly difficult to influence although as much as 45% of pharmacists argue that they *can* be persuaded. But when we compare the figures, we see that 49% say that patients' decisions are difficult to influence. And this trend is expected to increase. The hypothesis that patients' decisions are difficult to influence can be confirmed.

**Effect on the supply chain:** The first step in strategically building the right supply chain is to understand the characteristics of demand (Fisher 1997). As per the literature, it is necessary to understand what drives demand, and we need to understand the factors that influence consumer expectations and purchasing decisions because the role of the patient in shaping demand is an important factor. Decision-making is less influenced. In the case of OTC products, it is no longer only the pharmacist who plays an active role in shaping demand. It is therefore an important task for supply chain actors to map consumer expectations in order to meet them as flexibly and as quickly as possible, and one of these important factors could be availability and out-of-stock service in the future. Summarizing the hypotheses put forward, the results are as follows.

**Table 3.** *Justification of hypotheses*

<b>H1</b>	Changing consumer needs in recent years has led to an increase in the sale of OTC and dietary supplements in pharmacies compared to prescription products.	FALSE
<b>H2</b>	Pharmacy sales have been negatively affected by the sale of dietary supplements in drugstores and grocery chains.	TRUE
<b>H3</b>	Patients' purchasing habits are less influenced because customers are becoming more aware of what they buy, making their own decisions.	TRUE

## Conclusions

The pharmaceutical market has shifted due to the transformation of consumer habits. As a result, the over-the-counter market is growing, and sales of OTC products, mainly of vitamins and dietary supplements, are increasing. People are willing to spend more on their health. For pharmacies, it is OTC products and pharmaceuticals that can provide an added margin due to pricing. There is an increasing pressure on the traditional business model of pharmacies, with margins from the traditional and core business of pharmacies, the sale of prescription medicines, declining for years. Most pharmacies would already not be able to operate profitably without the distribution of non-prescription medicines, nutritional supplements, and other products. It should be noted that these products are also widely available in drugstores and grocery chains, which have a major impact on the life of pharmacies. In Hungary, there is a 7-9% growth in the OTC product categories, while the prescription market is stagnating because the margin is fixed, so there is no volume growth. However, it is also clear from the studies that prescription products account for the bulk of pharmacy sales. Market demand for the level of supply is increasing. There is a constant need for all actors in the supply chain to be ready to innovate and respond to new market challenges and

changing consumer behaviour. This change of mindset will be important for all actors. They need to be prepared and flexible in their response to challenges. To do this, it is necessary to see what is happening in the pharmacies today, what determines pharmacy management, so as to monitor changes in the turnover of the OTC and prescription market.

Understanding demand characteristics will be a strategic building block for supply chain operations. In developing a new approach with a visible focus on patient needs, the primary focus will be on meeting demand by providing accurate, fast, reliable, and as wide a range of care as possible. This means maintaining safe stock levels, delivery frequency, and discount levels to keep pharmacies viable and profitable, which will be the primary responsibility of the wholesaler. Further, it will be important to develop an ever-improving core service, value-added services, and innovative solutions for pharmacies.

Pharmacies are the first to meet the patient, the first to recognize consumer needs. Through their daily contact with the patient, they can provide information to the rest of the chain on changing market needs, evolving consumer habits, and emerging needs.

The quality of cooperation between the actors in the pharmaceutical supply chain is essential to maintain and increase the quality of supply, and respect for the buyer and supplier partners is a very important value, as well as respect for competitors. As a result of the day-to-day operational cooperation between manufacturers, wholesalers, and pharmacies, the supply of medicines in Hungary is safe and of European quality. Strategic collaborations within the supply chain need to be developed with the primary aim of achieving higher customer value and satisfaction, as per the literature. The literature also suggests in this respect that the joint understanding and servicing of customer expectations and values, and their becoming a common goal, is essential (Gelei–Nagy 2005).

It is necessary to understand customers' needs, constantly research the direction of change, and adapt services accordingly. This could be the key to progress, to halt the decline in the number of pharmacies and in the sector's profitability, and to make pharmacy an attractive profession for young people again.

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