HEALTH SERVICE RESEARCH IN SOCIAL PHARMACY FOCUSED ON EFFICIENCY AND OTHER OUTCOMES OF ORGANIZATIONS PROVIDING PHARMACEUTICAL CARE

Malovecká, I . – Foltán, V. – Mináriková, D.

Faculty of Pharmacy, Comenius University Bratislava, Slovak Republic

РЕЗЮМЕ

Соціальні дослідження Аптека досліджує питання, пов'язані з фармацевтичної практики, включаючи його фінансову сторону. Він використовує безліч дисциплін, включаючи економіку, щоб вивчити всі аспекти фармацевтичної практики. Наша стаття спрямована на теоретичне пояснення фінансової оцінки, яка повинна проводитися в кожній організації надання фармацевтичної допомоги та про фінансові показники аналізу, яких необхідно дотримуватися, щоб уникнути надзвичайних ситуацій. Оцінка організації бізнесу здійснюється моніторинг показників фінансового аналізу, який вносить свій внесок у позитивне економічний розвиток в організації надання фармацевтичної допомоги. Результати фінансового аналізу заборгованості, ефективності, рентабельності, показники ліквідності. Вони у порівнянні з рекомендованими значеннями і вносяться пропозиції щодо підвищення ефективності організації та процвітання. В результаті такого підходу до оцінки бізнесу сприятиме позитивним фінансовим розвитку організації надання фармацевтичної допомоги, і це обслуговування або виживання на майбутніх часу.

Keywords: *social pharmacy research – organization providing pharmaceutical care – financial analysis – balance sheet, profit and loss statement – debt ratios, liquidity ratios – efficiency ratios, profitability ratios*

INTRODUCTION

Pharmacy's core knowledge base is traditionally formed by chemistry, biochemistry, physics and physiology. Knowledge of medications and their effects is the basis of the pharmacists' professional expertise. Practising pharmacy is carried out among human beings, the persons referred to as customers or patients or users. They are connected with one another in families, organizations and health systems in countries and cultures around the world. [1]

When trying to explain, understand or change pharmacy practice, the natural sciences simply do not provide adequate tools or perspectives. They need to be supplemented with knowledge from the disciplines that deal with people and systems, i.e., the humanistic, social sciences and with economics disciplines. And this is where Social Pharmacy comes into the picture. Social Pharmacy studies the medicine sector from the social scientific, humanistic and economics perspectives. Topics relevant to Social Pharmacy consist of all the social and economic factors that influence medicine use.

The primary pursuit of Social Pharmacy research is to investigate questions and themes concerning pharmacy practice. It is a hybrid field that uses theories and methods from numerous humanistic, social and economics scientific disciplines in order to explore all aspects of pharmacy practice. Social Pharmacy leans more heavily on psychology, social psychology, sociology, political science and economics, especially as these relate to issues in public health and social politics.

Social Pharmacy or Pharmacy Practice Research is linked to the broad field known as health services research. This linkage emphasises that this is an applied field of research concerning distribution and availability of services, demand of services, organisation and process of service delivery, effectiveness and outcomes of services, improving quality of services and quality assurance, evaluations of policy and practise experiments and innovations, interface between pharmaceutical and other health services payment and remuneration for services and pharmaceuticals.

Doing pharmacy practice research on mention health services we must always think on the finances which are related to every process of providing health care services.

[2] Finances are associated with every provider of pharmaceutical care services whose aim is to be prosperous and efficient. That depends on the managers who set up financial strategy and the method of money utilization. Every organization operates different and the level of revenues and costs differ either. The better the corporate finances are managed, the lower are costs of running a business, the more money are left to provide patients with wider range of pharmaceutical care services, for even more people. At the same time it generates appropriate profit for further development of pharmaceutical care services and also the profit of the owner. This is a very complicated process in which managers must observe many financial parameters and information from the financial statements, calculate from them financial ratios and track their development. They must be aware when the evolution of financial ratios is incorrect and be prepared to make informed decisions armed with facts, not intuition to correct them. [3, 4]

To better understand financial analysis we must become familiar with financial parameters by understanding organizational system that company figures. There are two basic financial relevant statements. Profit and loss statement reports on financial parameters such as business's income, expenses, and profits over a period of time and balance sheet reports on other financial parameters such as assets, liabilities and net equity of a business at a given point in time. They help the organization to provide a summary of all the relevant financial information about pharmaceutical care business.

Profit and Loss Statement is a summary of the financial performance of an organization business over time (monthly, quarterly or annually). It reflects the past performance of the organization´s business and is the report most often used by organization providing pharmaceutical care to track how it´s business is performing. Each component of the Profit and Loss statement influences the determination of net profit, and is used in the two basic equations 1. Gross profit = sales – cost of goods sold and 2. Net profit = gross profit – expenses. The main components of a profit and loss statement are revenue, cost of goods sold, gross profit, expenses and net profit. [5]

Gross profit is the difference between sales and the cost of purchasing products or services before subtracting operating expenses such as wages, rent, accounting fees, or electricity. Gross profit reflects how efficiently labour and materials are used to produce goods or services. The gross profit margin is one indicator of the financial health of an organization. Larger gross profit margins are better. The higher the percentage, the more the business retains of each euro of sales for other expenses and net profit. Gross profit is used to calculate the gross profit margin ratio.

Net profit (net income) is calculated by subtracting expenses from the gross profit, showing what the organization´s business has earned (or lost) in a given period of time (usually monthly, quarterly, or annually) after both the cost of goods sold and operating expenses have been taken into account.

The Balance Sheet provides a good picture of the financial health of the organization business and is a tool used to evaluate organization´s business liquidity. The balance sheet is a statement of what an organization owns (assets) and owes (liabilities), and the value of the owner's equity (or net worth of the business) at a specific point in time.

The next stage is to analyse figures in order to gain a better understanding of the organization business. To avoid the shortfalls it is essential to convert financial data to ratios or percentages. A ratio by itself means little unless it is benchmarked, so it needs to be compared to some expected or required outcome. Financial analysis will help identify problems, implement the necessary corrective actions and improve the organization operations. To calculate the ratios there will be a need for information from annual profit and loss statements. [6]

Profitability ratios measure the ability of the organization´s business to make a profit. An increase in the ratios is viewed as a positive trend. The profitability ratios for analysing the profit and loss statement are gross profit margin ratio and net profit margin ratio.

Gross profit margin ratio expresses the gross profit as a proportion of sales. The gross profit margin ratio is used as one indicator of a business's financial health. It shows how efficiently a business is using its materials and labour, in the production process and gives an indication of the pricing, cost structure, and production efficiency of the business. The higher the gross profit margin ratio the better. The gross profit margin is simply the gross profit margin ratio expressed as a percentage. Larger gross profit margins are better for businesses. The higher the percentage, the more the business retains of each euro of sales, which means more money is left over for other operating expenses and net profit. A low gross profit margin ratio means that the organization generates a low level of revenue to pay for operating expenses and net profit. It indicates that either the business is failing in control of the inventory or that prices are set too low.

The process of calculating the price of drugs, medical devices, dietary food and special medical supplies in Slovakia is based on the officially fixed price, for which is applied the algorithm of the calculation. We have 11 price ranges differing by absolute value and the decline applied algorithm of calculation. Examples of the price calculation of drugs and dietary supplements are listed in Table 1.

Table 1 „The price calculation of drugs and dietary supplements in Slovakia"

Range	Basis for a maximum price of business performance	Maximum price in euros and percentages			
		for the holder of the wholesale distribution of medicines and dietary foods supplier		for the holder of the provision of pharmaceutical care in a community pharmacy	
1.range	0,00 to 2,66 including	0,00 eur	14,10 %	0,00 euro	32,90 %
2.range	2,67 to 5,31 including	0,37 eur	+ 11,10 % base exceeding 2,66 euro	0,87 euro	+ 25,90 % base exceedi 2,66 euro
3.range	5,32 to 7,97 including	0,67 eur	+ 8,10 % base exceeding 5,31 euro	1,56 euro	+ 18,90 % base exceedi 5,31 euro
4.range	7,98 to 13,28 including	0,88 eur	+ 5,10 % base exceeding 7,97 euro	2,06 euro	+ 11,90 % base exceedi 7,97 euro
5.range	13,29 to 23,24 including	1,16 eur	+ 3,30 % base exceeding 13,28 euro	2,70 euro	+ 7,70 % base exceedir 13,28 euro
6.range	23,25 to	1,48 eur	+ 2,70 % base exceeding	3,46 euro	+ 6,30 % base exceedir

	39,83 including		23,24 euro		23,24 euro
7.range	39,84 to 73,03 including	1,93 eur	+ 2,40 % base exceeding 39,83 euro	4,51 euro	+ 5,60 % base exceedi 39,83 euro
8.range	73,04 to 165,97 including	2,73 eur	+ 2,25 % base exceeding 73,03 euro	6,37 euro	+ 5,25 % base exceedi 3,03 euro
9.range	165,98 to 331,94 including	4,82 eur	+ 2,10 % base exceeding 165,97 euro	11,25 euro	+ 4,90 % base exceedi 65,97 euro
10.range	331,95 to 663,88 including	8,31 eur	+ 1,95 % base exceeding 331,94 euro	19,38 euro	+ 4,55 % base exceedi 31,94 euro
11.range	Over 663,88	14,78 eu	+ 1,80 % base exceeding 663,88 euro	34,48 euro	+ 4,20 % base exceedi 663,88 euro

Net profit margin ratio is the net profit as a proportion of sales. The net profit margin ratio shows the proportion of every euro of sales that is left after all expenses has been paid and remains as net profit. The higher the net profit margin ratio the better. The net profit margin is simply the net profit margin ratio expressed as a percentage. A high net profit margin ratio demonstrates how effective a business is at converting sales into profit. A low net profit margin ratio may mean that the organization is not generating enough sales, the gross profit margin is too low, or that organization is not keeping operating expenses under control to leave an acceptable profit. [7]

To set other ratios, information is needed both from the annual balance sheet and the profit and loss statement to calculate the debt ratios, liquidity ratios, efficiency ratios.

Debt ratios measure the ability of the business to repay long term debt. That is debt to equity ratio which indicates vulnerability of the business to risk and is often used by creditors to determine the ability of the business to repay loans. It gives a comparison of how much of the business was financed by owner's equity and how much was financed through debt or liabilities. The higher the ratio, the more the business relies on debt to finance its operations and the greater the risk to external lenders. A ratio of less than 1:1 means that debt is less than owners' equity, the business is positively geared, the external lenders are bearing less risk than the owners and the owner has a stronger financial interest in the business than external lenders. A ratio of more than 1:1 means that debt is higher than the owners' equity, the business is negatively geared, the external lenders are bearing more risk than the owners, and external lenders have a stronger financial interest in the business than the owner. Generally, a debt to equity ratio in the range of 1:1 to 4:1 is acceptable but will depend on individual business and industry circumstances. [8]

Liquidity ratios measure the capacity of the business to meet short term financial commitments as they become due. These are current ratio and quick ratio. These ratios indicate a comparison of the proportions of current assets and short term liabilities. The current ratio tells whether the business has enough current assets to meet its short term financial obligations (current liabilities) as they become due. The higher the current ratio, the better the capacity to meet short term financial commitments. The quick ratio measures the level of all assets that can be quickly convertible into cash and used to meet short term liabilities. The higher the ratio, the higher the level of liquidity for the organization’s business. The optimal quick ratio is 1:1 or higher. [9] Examples of the profitability ratios, liquidity ratios calculated on a model pharmacy in Slovakia and the comparison to ratios reached in foreign pharmacies are listed in Table 2.

Table 2 „The profitability and liquidity ratios of model pharmacy in Slovakia and foreign pharmacies”

	Analyzed model pharmacy in Slovakia	Analyzed foreign pharmacies average value	Top 25% foreign pharmacies	Top 10% foreign pharmacies
Profitability ratios				
Gross profit margin	8,24%	23,20%	25,40%	27,10%
Net profit margin	1,00%	3,00%	6,30%	8,60%

Liquidity ratios				
Current ratio	1,11	2,89	3,71	5,77
Quick ratio	0,96	1,30	2,04	2,55

Efficiency ratios measure how well the organization manages its assets. These ratios indicate how quickly a firm converts non-cash assets to cash assets. These are accounts receivable turnover ratio, accounts payable turnover ratio. [10] Accounts receivable turnover ratio shows how quickly credit customers are paying the organization. The greater the number of times receivables turn over during the year, the shorter the time between the sale and collecting of the cash for that sale. The higher the ratio, the faster the business collects its accounts receivables and the more cash it has available. A low ratio indicates inefficient management of debtors or less liquid debtors. Accounts payable turnover ratio shows how quickly the business pays its bills and how often payables turn over during the year. Trends in the accounts payable turnover ratio demonstrates how the business handles its outgoing payments and can help us assess the cash situation of the organization´s business. Examples of financial analysis ratios with explanations, calculations and recommended values are listed in Table 3.

Table 3 „The financial analysis ratios with explanations, calculations and recommended values"

Ratios		**Explanation**	**Calculation**	**Recommended value**
Profitability ratios	Gross profit margin ratio	The higher the ratio, the more the business retains of each euro of sales.	Gross profit margin ratio = gross profit ÷ income	The higher the ratio, the better. Monitor development.
	Net profit margin ratio	The higher the ratio, the more effective is business at converting	Net profit margin ratio = net profit ÷ income	The higher the ratio, the better. Monitor development.

		sales into profit.		
Debt ratios	Debt to equity ratio	The higher the ratio, the more the business relies on debt to finance its operations and the greater the risk to external lenders.	Debt to equity ratio = total liabilities ÷ owners' equity	The 2:1 ratio is recommended value and the explanation says that the organization has 2€ loaned for every 1€ of owner's equity.
Liquidity ratios	Current ratio	The higher the ratio, the better the capacity to meet short term financial commitments.	Current ratio = current assets ÷ current liabilities	Keep the current ratio above 1:1 and as close to 2:1 as possible and the explanation says that the organization has current assets of 2€ for every 1€ of current liabilities.
	Quick ratio	The higher the ratio, the higher the level of liquidity for organization business.	Quick ratio = (current assets - inventory) ÷ current liabilities	The optimal quick ratio is 1:1 or higher, which means that current liabilities can be met from current assets without the need to sell inventory.
Efficiency ratios	Accounts receivable turnover ratio	The greater the ratio, the shorter the time between the sale and collecting the cash for that sale.	Accounts receivable turnover ratio = total sales ÷ accounts receivable	The higher the ratio, the better. Organization faster collects its accounts receivables and the more cash it has available.
	Accounts payable turnover	Increasing trend in the ratio, the	Accounts payable turnover ratio = cost of goods	The increasing trend in the ratio, the better. (The

	ratio	company is paying of suppliers at a faster rate.	sold ÷ accounts payable	higher the ratio, the better).

CONCLUSION

The assessment of pharmaceutical care business by monitoring indicators of financial analysis will help to identify crucial financial parameters responsible for the problems in organization providing pharmaceutical care, implement the necessary corrective actions and improve organization operations. Only regularly supervised and managed financial parameters and ratios can achieve recommended industry benchmarks and organization benefits from appropriate liquidity, limited debt, acceptable prosperity and maximizing efficiency. That result in reduction of costs and increasing of incomes and more money are left for the organization providing pharmaceutical care services. That can contribute to cheaper pharmaceutical care services, procedures or medicines and more patients can be treated or wider range of pharmaceutical care services can be offered.

REFERENCES

1. Sørensen EW, Mount JK, Christensen ST. The Concept of Social Pharmacy. The chronic ill. 2003; 7.
2. Annemans N. Health Economics for Non-Economists: An Introduction to the Concepts, Methods and Pitfalls of Health Economic Evaluations. Gent: Academia Press; 2008.
3. Herist N, Rollins B, Perri M. Financial Analysis in Pharmacy Practice. London: Pharmaceutical Press; 2011.
4. Chrisholm-Burns MA, Vaillancrt AM, Shepherd M. Pharmacy Management, Leadership, Marketing and finance. Sudbury: Jones and Barlett Publishers; 2011.
5. National Community Pharmacists Association. Selling a Pharmacy. http://www.ncpanet.org/pdf/digest/digest09_financials.pdf; 2009.

6. Michalski GM. Financial Analysis in the Firm: A Value-Based Liquidity Framework (May 12, 2011). Available at SSRN: http://ssrn.com/abstract=1839367 or http://dx.doi.org/10.2139/ssrn.1839367.
7. Schroeder R, Clarc M, Cathey JM. Financial Accounting Theory and Analysis. New Jersey: John Wiley & Sons; 2011.
8. Tootilian BH, Wertheimer AI, Mikhailitchenko A. Essentials of Pharmacy Management. London: Pharmaceutical Press; 2012.
9. Carroll J. Financial Management for Pharmacists: A Decision-making Approach, Baltimore, MD: Lippincott Williams & Wilkins; 2007.
10. Doucette WR, McDonough RP, Mormann MM, Vaschevici R, Urmie JM, Patterson BJ. Three-year financial analysis of pharmacy services at an independent community pharmacy. J Am Pharm Assoc. 2012; 52(2):181–187.

SUMMARY

Social Pharmacy research investigates questions concerning with pharmacy practice including its financial side. It uses numerous disciplines, including economics, to explore all aspects of pharmacy practice. Our article is focused on theoretical explanation of financial assessment which should be done in every organization providing pharmaceutical care and on financial indicators of analysis which must be followed to avoid emergency situations. The assessment of organization business is made by monitoring indicators of financial analysis that contributes to positive economic development in the organization providing pharmaceutical care. The outcomes of the financial analysis are debt, efficiency, profitability, liquidity ratios. They are compared to recommended values and the suggestions are made to improve organization´s efficiency and prosperity. The result of this approach to assessment of business will contribute to positive financial development of the organization providing pharmaceutical care and it´s maintenance or survival at the upcoming time.

РЕЗУЮМЕ

Социальные исследования в рамках лекарств исследуют вопросы, связанны с фармацевтической практикой, которая включает его финансовую сторону. Они используют множество дисциплин, включая экономику, чтобы изучили все аспекты фармацевтической практики. Статья направлена на теоретическое объяснение финансовой оценки, которую должно проводить в каждой организации фармацевтической помощи и на финансовых показателях анализа, который необходимо соблюдать, чтобы избежать чрезвычайных ситуаций. Оценка организации бизнеса составляет из мониторинга показателей финансового анализа, что способствует позитивное экономическое развитие в организации, предоставляющей фармацевтическню помощь. Предлагаем рузультаты финансового анализа задолженности, эффективности, рентабельности, показатели ликвидности. Они по сравнению с рекомендованными значениями вносятся в предложения по повышению эффективности организации и его развития. Результатом приведенного подхода к оценке бизнеса будет положительное финансовое развитие организации оказаюшей фармацевтическую помощь.

prof.RNDr.Viliam Foltán, PhD., a graduate of the Faculty of Pharmacy, Bratislava, Doctor of science, Candidate of Pharmacy Sciences, Professor of Public Health in 1998. He teaches at the Faculty of Pharmacy at Comenius University in Bratislava, in the years 1995 -1997 as an external employee at the University of Veterinary and Pharmacy in Brno. The scientific and professional activities performs in the field of active drug utilization, working with SIDC Bratislava, Ministry of Health and the General Health Insurance. Over 10 years is the national representative of the ESAC project, aimed to evaluate the utilization of antibiotics in the EU. He acts as a guarantor of the project S-media, dedicated to the issues of rational use of antibiotics. He is one of the representatives of pharmacoeconomics in SR, in which actively teaches and publishes. One term he served as Associate Dean of Pharmacy Faculty, since 1998 is a head of the department. Under his leadership, graduated more than 100 master degree graduates, dozens rigor graduates, 6 PhD graduates and three docent graduates, published more than 200 works in national and international journals with 250 citations listed in the citation index, the author and co-author of 20 books and text books.

PharmDr. Ing. Ivona Malovecká, a graduate of the Faculty of Pharmacy, Comenius University in Bratislava and Faculty of National economy, Economics University in Bratislava. Since graduation, she worked in a community pharmacy, where she actively devoted expeditionary operations, galenic preparation, billing and management activities. From 2012 she works as an assistant of professor at the Department of Organization and Management in Pharmacy Faculty of Pharmacy Comenius University and deals with issues of social pharmacy, pharmacoeconomics and pharmaceutical services. In 2012 she entered graduate study in the field of social pharmacy and community pharmacy.

PharmDr. Daniela Mináriková, PhD., a graduate of the Faculty of Pharmacy, Comenius University in Bratislava, Doctor of science. For several years, she worked on manager positions in pharmaceutical companies, where actively devote marketing and management of drugs, medical devices and nutritional supplements. Since 2010 she works as an assistant of professor at the Department of Organization and Management in Pharmacy, Faculty of Pharmacy, Comenius University and deals with issues of health management, public health, and pharmacoeconomics.

Contact address:
Department of Organisation and Management in Pharmacy, Faculty of Pharmacy,
Comenius University in Bratislava,
Kalinčiakova 8, 832 32 Bratislava, Slovak republic.
E: foltan@fpharm.uniba.sk
Telephone: +421 2 50117347
Mobil: 0910 226 300