2005 WSEAS Int. Conf. on ENVIRONMENT, ECOSYSTEMS and DEVELOPMENT, Venice, Italy, November 2-4, 2005 (pp175-180)

OPTIMIZING BUSINESS PROCESSES IN PRIVATE PHARMACIES WITH AN AIM OF CONTRIBUTING TO A RATIONAL MEDICINAL PRODUCTS SUPPLY

DAVORIN KRALJ[1 3], MARKO STAMENKOVIĆ[2]

ART-K, BusinessConsulting, Na gricu 47, 2000 Maribor, SLOVENIA[1],
Marko Stamenković – Lekarna Arnica Montana, Knafelčeva 31, 2000 Maribor, SLOVENIA[2]
Faculty of Chemistry and Chemical Engineering, University of Maribor Smetanova ul. 17, 2000 Maribor, SLOVENIA[3]

Abstract:
Slovenia's joining the EU brought about many changes in its economy – Slovenian market stopped being locally oriented, which affected many fields of activity including the pharmaceutical. The economical and political system changed and led to modifications in the business activity of Slovenian pharmacies as well as to new market proportions. One of the most vital aspects of these modifications is rationalization and optimization of the business activity including operating costs and resources. A way of controlling costs is licensed private pharmacies with a concession; which attributes extreme significance to total quality management. The latter is a result of optimizing essential organizational processes supported by information technology, according to systematization standards. The quality of contribution to a rational medicinal products supply of the population by private pharmacies will thus undoubtedly be most successful.

Key words: public health care management, quality, information system, business processes, private pharmacies

1 The selected problem and viewpoint of treating

Slovenia's joining the EU brought about many changes in its economy – Slovenian market stopped being locally oriented, which affected many fields of activity including the pharmaceutical. The economical and political system changed and led to modifications in the business activity of Slovenian pharmacies as well as to new market proportions. The modifications took place even though pharmacies are believed to be a stable system with permanent upgrading of expert knowledge and development in the field of providing medicinal products. One of the most vital aspects of these changes is rationalization and optimization of the business activity including operating costs and resources. The Ministry of Health and the National Health Insurance Institution are trying to rationalize operating processes in all health care activities with a specific focus on medicinal products costs. A great number of related attempts have had little or no success in the last ten years, some of them even produced completely opposite effects. A way of controlling costs is private pharmacies with a concession; which attributes extreme significance to total quality management. Private pharmacies along with those in the public sector represent a new dimension to the quality of medicinal products supply, with extreme significance being attributed to total service quality in the pharmaceutical sphere. Irrespective of the medium-term market orientation of pharmacies in both sectors, private and public, we have to change our philosophy into >>think globally, act globally>> for the following reason: Slovenia is becoming part of the European market where local characteristics mix with the global ones. The complexity of the health care system depends greatly on pharmacies and their activity – these are a final link between the health care system and individual patients

before these take their share of responsibility for medical treatment (medication). It is very hard to imagine effective regulation of medicinal products costs without pharmacies' cooperation or without creating a database needed to monitor a patient's course of treatment. Pharmacies have an exceptional role in the spheres of preventive medicine and public health promotion, in the sense of keeping a favorable balance between costs and benefits. An efficient and successful system of providing quality service pertaining to medicinal products supply - a system satisfying the needs, wishes and expectations of everybody concerned through an overall activity control, is one of the most suitable mechanisms enabling us to have global supervision and to act globally on the local market – with global characteristics. Simultaneously, such a system offers a possibility of constant growth in business operation.

2. Pharmacies in Slovenia

2.1 Legislation

Pharmacies activity in independent Slovenia is defined by the Pharmacies Act (Official Gazette of the Republic of Slovenia Nos. 9/92, 13/93 and 38/99) with details being set by a bylaw on Requirements for performing pharmacy activity (Official Gazette of the RS No. 37/92). Due to a need of reducing medicinal product costs covered by mandatory health insurance, a bylaw on Classification, Prescribing and Dispensing Medicinal Products in Human Medicine (Official Gazette of the RS No. 59/03) allows the pharmacist to substitute a medicinal product prescribed for a cheaper one figuring on the list of mutually interchangeable medicines, without previously consulting the physician.

2.2 Pharmacies Activity

Pharmacies activity is a part of health service activity; it provides general population as well as health institutes and other organizations with medicinal products. The Medicinal Products and Medical Devices Act (Official Gazette of the RS Nos. 101/99, 70/00, 7/02, 13/02 and 67/02) classifies human medicinal products into those that

- Can be dispensed only on prescription and obtained only in pharmacies,
- Can be dispensed over the counter and obtained only in pharmacies,
- can be dispensed over the counter, obtained in pharmacies as well as in specialized shops.

Supplying medicinal products comprises also magistral preparation and galenic products. Their scope of activity can imply also the following: supplying subsidiary medicaments, orthopedic devices, hygiene and beauty products as well as other health preservation products; dispensing veterinary medicinal products; producing medicines, subsidiary medicaments and controlling their quality; giving advice on prescribing and using medicinal products, etc.

2.3. Organization of pharmacies service and pharmacies ownership

Pharmacies activity is a public service that can be performed by public institutes and by individual pharmacists to whom a concession has been granted. In 2004 the National Assembly has adopted the National Health Care Programme of the Republic of Slovenia – Good Health for Everybody Until 2004. It envisages a gradual transition towards private ownership, which depends on privatization of pharmacies (public institutes) and on laws and regulations.

2.3.1. Public institutes

The founder of a public institute is a municipality. The act of foundation has to be based on the National Health Insurance Institute expert opinion and consented by the Ministry of Health. The Chamber of Pharmacy of the Republic of Slovenia is not involved in the procedure. Pharmacies activity is performed in business units, pharmacies and subsidiaries. These can be equipped with galenic laboratories and those designed for control and analysis where galenic products are made, magistral preparation carried out, followed by product testing and control.
Since the managerial and executive roles in an institute are not separate a general manager of an institute has to have a university degree in Pharmacy while the executive manager of a pharmacy has to have a university degree in pharmaceutical studies and a certificate proving the person in question has passed proficiency examination.

2.3.2. Pharmacists in the private sector

Pharmacists in the private sector need to apply for a concession offered in a public tender - granted by the administrative bodies of the Municipality. The concession is awarded for business operation in a

single territory; extended operation is permitted solely through a subsidiary unit. Territories specified in the tender are defined by the health care plan of the Republic of Slovenia. A concessionaire is obliged to meet the same requirements as an executive manager of a pharmacy within a public institute.
Municipalities are public institute pharmacies owners and authorized bodies in charge of granting concessions. This authority allows public institute owners to choose between entering into competition with private pharmacy owners and keeping local monopoly dating from the past. The law on privatization of public property which would in a way equalize public institute pharmacies – if in the interest of the owner – and private pharmacies-concessionaires was not adopted.

	96	97	98	99	00	01	02
Public Institutes	159	165	164	167	173	176	179
Growth %	-	3,8	-0,6	1,8	3,6	1,7	1,7
Private Owners	48	54	56	60	69	72	73
Total	207	219	220	227	242	248	252
Growth %	-	5.8	0.5	3.2	6.6	2.5	1.6
Popul/phamacy	9,5	9,0	8,9	8,7	8,2	8,0	7,9

Table 1: The number of pharmacies and the population per pharmacy in Slovenia (Source of information: Institute of Public Health, Statistical Office of the RS, Chamber of Pharmacy).

Year	Population/pharmacist (university degree)	Population/pharmacist (secondary school degree)
1998	3558	5511
1999	3404	5020
2000	3174	5000
2001	3101	4936
2002	2895	4842

Table 2: Population per pharmacist (university degree) and per pharmacist (high school degree) in public pharmacies in Slovenia (Source: Institute of Public Health, Chamber of Pharmacy**).**

3. Operating quality management in private pharmacies

Private pharmacies are a new constituent element of pharmacies activity and can significantly affect the development and growth of the latter. Simultaneously, they exert influence on resources usage and consequently on costs optimization. Controlling costs is a very important aspect of differentiation and competitiveness between the two sectors, private and public. Expert work along with permanent education enables us to form a competitive advantage in both spheres of the public audience, expert and non-expert, and to achieve considerably better results than in the past. Creating, maintaining and improving the system of operating quality management, following the guidelines and requirements of the SIST ISO 9001:2000 standards, serves as a rational operation tool giving grounds to systematization and to a comparison between both sectors, private and public. Information support allows a direct comparison. This is the reason for the decision of private pharmacies sector to optimize business processes and introduce information support of business operation. With the quality management system and information support of the business operation we can achieve the following basic goals:

- Assure and permanently improve the level of pharmacy service quality,
- assure constant growth of general population's satisfaction with medicinal products supply,
- optimize the economic aspect of business operation.

Reaching the three basic goals leads to the one set nationwide – quality service and rational medicinal products supply, a project which comprises five stages:

1. Current situation analysis.
2. Modeling and optimizing business processes.
3. Information support plans.
4. Evaluating the quality of the sample model results.
5. Application into business reality.

Three basic aims of the project:

1. Find reasons of ineffectiveness on the level of global pharmacy operation and give suggestions for improvement.
2. Find reasons of ineffectiveness on the level of pharmacy individual business processes and give suggestions for improvement.

3. Find deficiencies in information support structures of the pharmacy and give suggestions for improvement.

4. Current situation analysis

4.1 Methodology

Current situation analysis was divided into three parts which helped us focus on the project goals:

- Analysis of the pharmacy current operating situation on the global level
- Analysis of the current business processes situation
- Analysis of the pharmacy information infrastructure

The three analysis parts were carried out with a view of reaching the following goals:

- Gaining neutral information on the current situation
- Getting managers and other employees' opinion on the current situation
- Identifying current situation problems

Our data sources for the current situation analysis were:

1. Documentation submitted by the pharmacy owner,

2. Interaction with pharmacy employees of different profiles.

4.2 Analysis of the current business processes situation

There is a strong contrast between primary and support processes in the pharmacy. Primary processes are powerful, the support ones are limited to a minimum level still ensuring their operation. A similar contrast is to be found among measurable economic effects of individual processes – primary processes represent the highest costs and incomes in the pharmacy business operation. Individual support processes have already become important for smooth business operation, others will acquire significance along with fiercer competition in the pharmacy environment and its market.

Primary and support processes, i.e. activities, are shown through Porter's concept of the Value Chain mode (Picture 1: Value Chain mode) which offers a dynamic insight into operating processes of an organization.

Medicinal products purchase which represents approximately 80% of the total operating costs is one of the primary processes in the pharmacy. Along with that of selling products it represents the core of the pharmacy business operation; consequently both processes are the key ones for a detailed analysis and potential optimization.

The process of purchase and selling is closely linked to that of storing products. To ensure smooth operation the pharmacy needs heavy stocks of goods which mean high operating costs. Consequently, we classify the storage process as a primary one that needs to be analyzed in detail and optimized in case of need.

Due to a certain dynamic in the sphere of pharmacy personnel it is necessary to highlight the process of human resources management. Being classified as a support process it nevertheless affects primary pharmacy processes to a high extent. Personnel dynamic refers to time and place arrangements involving employees (caused by absences due to study leave, holidays, sick leave and maternity leave). It is also important to stress a high level of expert knowledge the employees need to have owing to specific features of the pharmaceutical branch; planning and supervising permanent education within the pharmacy is therefore indispensable.

A number of other support processes linked to managerial activities - finances, accounting, marketing and new product introduction - have been identified besides that of human resources management. All these processes are effective despite being less powerful than the three mentioned before. Key processes to be subject of analysis are as follows:

Primary processes:
1. Purchase
2. Selling
3. Storing
4. Advising

Support processes:
1. Human resources management

5. Modeling and optimizing processes

There is an analysis based necessity for modeling basic, support and external processes. Process modeling uses guidelines of the ISO 9001:2000 standard. Arnica Montana, a private pharmacy, decided to apply a process method in the spheres of operating quality management, environment treatment, safety and health at work precautions – for the entire scope of pharmacy activity. Every activity that receives input items and transforms them into output items is considered a process. A process method means systematic recognition and management of processes used within the pharmacy and their mutual impact.

Picture 1 shows a schematic presentation of the process method sample model. The model takes into account an important role a customer has in defining input requirements. Customers' satisfaction supervision is essential for evaluating and confirming the fulfilment of customers' requirements. It is equally important for the performers of the process to carry out their work tasks with little or no work risk.

6. Optimizing information technology in the private pharmacy

6.1 Business information system

Optimizing information technology is a further vital factor following the setting of organizational processes and it means the setting of an effective business information and decision making system – quality information can be selected from a data pile, which makes tactical decision making possible.

The system should involve the following elements:

- Data warehouse
- Reporting
- Creating and analyzing information

6.2Data warehouse

A data warehouse is a static base of data depending on time. The effectiveness of data warehouses is gained by their separation from the transactional data system (with terminated transfer unit) which prevents losing their sense and effectiveness. Furthermore, the data in data warehouses is consistent and permanent, which is not always the case in transactional data systems. Consequently, the data warehouse will be filled solely with verified summary data for a chosen period, depending on the desired evaluation accuracy. The data in data warehouses is related to history – data warehouses comprise a number of time cross-sections that are no longer changing. Thus, specified time cross-section data is transported into a data warehouse and can afterwards be only read. The table features data categories, saved in the data warehouse, their sources, the method of adjustment to local databases and the method of primary data gathering from their source.

Category	Source	Adjustment method	Ways of gathering data
Selling in pharmacies	Selling premises	Daily adjustment of the data warehouse with a pharmacy database	Reading bar codes from products sold in pharmacies
Orders of products raw materials	Pharmacy manager	Data is saved exclusively in the data warehouse	The system creates an order proposal based on stock balance; the pharmacy manager suggests changes
Stock balance on raw materials and rare medicinal products	Pharmacy manager	Daily adjustment of the data warehouse with the database of the pharmacy	Operation stock is defined as a difference between goods delivered and goods sold

Table 3: Data categories for the data warehouse

6.3 Reporting

Adequate and accurate information forms a basis for appropriate decision making. The primary function of the Information System therefore is to provide the management with access to information, which is feasible on the grounds of an IS reporting module. The Information System has to ensure functional reporting about different business categories and events. The table below presents a minimum assortment of reports that the system has to provide along with the periods to which reports refer and dimensions incorporated into reports.

6.4 Creating and analysing information

Creating and analysing information module is used for statistical data processing in the data warehouse on the basis of which we can determine a certain trend or pattern that can prove to be a vital factor in further decision making. For instance, a sales forecast can be made based on the sales data from previous periods. Furthermore, after analysing the sales data from previous periods together with the current stock balance data we can create an order proposal for goods.

7. Conclusion

Optimizing processes in private and public pharmacies is essential for process costs control and in for contributing to a rational medicinal products supply of the population. Quality and development of private

health care services is constantly improving. The use of incremental and breakthrough quality management techniques to constantly improve processes, products, or services provided to internal and external customer and thus achieve higher levels of customer satisfaction. On the other hand, needs for those services are increasing due to the ageing of the population. Financial resources to cover the health system's costs are more or less limited. All possible steps towards higher quality and rationalisation of health services have to be considered and correctly implemented. Privatisation of a public health service may be one possible step in combination with a thorough consideration of all benefits and deficiencies [15].
This is a way to improve the quality of private pharmacies activity contribution to a rational medicinal products supply of the population. Private pharmacies will thus simultaneously influence those in the public sector, which again leads to a rational medicinal products supply and to the satisfaction of the customers**.**

References:

[1] Mulej M., *System Thinking* UM-EPF, Maribor, (1992)
[2] Steiner G., *Creativity as Prerequisite for Sustainable Development*, 2004
[3] Elkington J.: Cannibals with Forks. *The Triple Bottom Line of 21st Century Business*, Capstone Publishing, Oxford, (1997)
[4] Nonaka I., Toyama R., Konno N.: "SECI, Ba and Leadership: A Unified Model of Dynamic Knowledge Creation", *Long Range Planning*, 33, pp.5-34, (2000)
[5] Kralj D.: *The Meaning of Systematical Consideration in Enforcement of Managing Innovation in the process of TQM*, Maribor, (1994)
[6] Wright T.: "*A Selected Viewpoint on " Systems Thinking and Climate Change System"*, Cambridge, (2004)
[7]Kralj D.,Krope J., Goricanec D.: *The Permanent Development as a Consequence of Administration Innovating*,WSEAS Transations on Bussines and Economics, Issue, Vol 2, 1.17-23 (2005)
[8] Peters, T.: Re-imagine !, Business Exellence in a Disruptive Age, (2003)
[9] Mulej M., *System Thinking* UM-EPF, Maribor, (1992)
[10] Markič, M: Processes Innovation – A Precondition for Business Excellence, UM –FOV, Organizacija, Maribor (2003)
[14] ISO 14001:2004
[15] Puksic M., Goricanec D.: *Increasing Quality and Economic Efficacy of Health Institutions in Public and Private Sectors in Slovenia*, WSEAS Transations on Bussines and Economics, (2005)