Understanding Institutional Markets from a Network Perspective: Empirical Findings about the Hospital Market in Hungary

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Abstract

Purpose of the paper and literature addressed – Two main approaches of networks can be distinguished (Ritter et al. 2004). One of them considers network as an organisational choice, located between free markets and hierarchical organisations. The other one looks network as markets (markets as networks). Markets are made up of a web of interactive relationships. In our paper we use this later approach and analyse the relationships with suppliers in an institutional market. We present some results of a research about the hospital market in Hungary. The purpose of our study is to answer these questions: How do hospitals react to the regulation originated from the network, that is, what can we say about the realisation of public procurement in the practice of drug purchase? And how does this regulation affect the behaviour of hospitals? What are the characteristics of the business relationship between the drug supplier and the hospital?
Research method – In the framework of the survey data have been collected from the chief pharmacists in charge of purchasing at each of the 152 public hospitals in Hungary. The survey was conducted in November and December 2002. The overall response rate is 42,8 % (65 hospitals). In order to understand the characteristics of the buyer-seller relationship and to make a typology about these relationships, we used the method of factor and cluster analysis.
Research findings – Only the half of the surveyed hospitals has used the public procurement and the other half rejected to use it. The most important reason of rejection was that the hospital might obtain better conditions in drug purchase by using other purchasing methods, like purchasing directly from the manufacturer. A clear correlation can be noticed between the use of public procurement and the size of the hospital. Surprisingly we found no relationship between the usage of public procurement (yes or no) and the characteristics of the relationship with the major supplier.
Main contribution – Through the evaluation of the relationship with the major supplier we found two types of different approaches. One approach describes a more social-economic orientation, the other emphasises the process character of the relationship. Using these two approaches we made a typology of relationships and create three hospital segments. The segments represent three different perceptions of the relationships. Discovering these three different perceptions can be one of the contributions of the paper. Our study is new in a sense, that it investigates business relationship with an institutional buyer. Understanding the role of personal bonds in the relationships between Hungarian public hospitals and their suppliers is a real question of a future research.

Keywords: relationship, network, hospital, public procurement, typology

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Introduction

Institutional buying behaviour next to organisational buying behaviour has been analysed in several times in the marketing literature. These comparative studies reveal differences between the buying behaviour of industrial firms and that of non-profit institutions. Due to the transparency and accountability of institutional purchases, there are more (direct or indirect) participants involved, which allow us to investigate this topic from a network perspective. Institutional markets as networks may be analysed from several points of view, e.g. from the buyers', or from the sellers' side. In this paper we put emphasise on the buyer-seller relationship in the pharmaceutical market, where the buyers are institutions, namely hospitals.

Theoretical background

Business markets are firms, institutions, or governments "that acquire goods and services either for their own use, to incorporate into the products or services that they produce, or for resale along with other products and services to other firms, institutions, or governments" (Anderson and Narus 2004:4). All business market actors are organisations at the supplier side mainly industrial, service and trade firms. On the buyer side over and above all kind of firms there are government agencies and institutions. Third parties are always actors of business markets as regulatory authorities auditing companies and lobbying or pressure groups. Institutional customers include health care services (hospitals, nursing homes) or different kind of schools (kindergarten, primary schools or universities).

We understand business relationships as an interactive exchange activity between two organisations. (Mandják 2003) The business relationship is in the meantime the organisational and management forms of the connections between the two companies, and this has several levels.
The building components of a business relation are the different exchange episodes (Hakansson and Snehota 1995). The adequate frequency of the episodes can on the one hand build an adequate confidence between the participants of the episodes and on the other hand can simplify the exchange episodes through the relational routines that they acquire and thereby can decrease the costs related to these. The relational level means the frame and the system of conditions of the single exchange episodes. As the exchange episodes get embedded in the relation, the relation itself gets embedded in its, own network. The network means those actors who can in some forms influence directly the behaviour towards each other of the participants of the relationship (Axelson and Easton 1992).

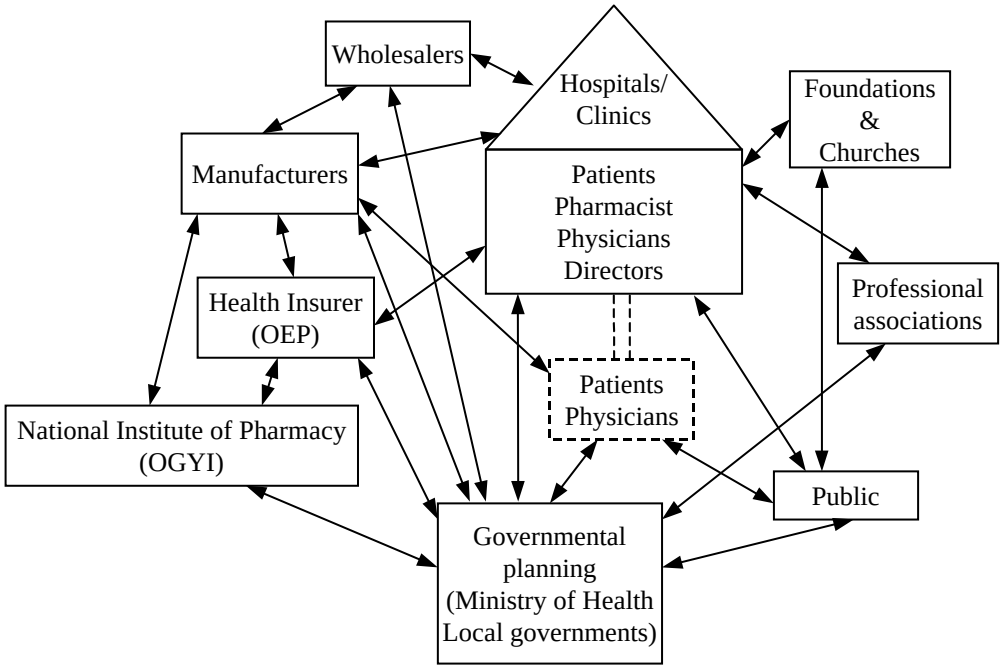
Business network can be regarded and analysed in several points of view. One can consider or analyse network as a set of business relationships or as some sort of structure for the activities or perhaps as the aggregation of the separate positions of different firms. Two main approaches can be distinguished (Ritter et al. 2004). One of them considers network as an organisational choice. Network is a type of organisation between free markets and hierarchical organisations. The other one looks network as markets (markets as networks). Markets are made up of a web of interactive relationships. In our paper we use this later approach.
In business networks actors are related by different types of relationships. Generally economic exchange relations are between buyers and suppliers. Non-economic exchanges can relate competitors, complementary suppliers, actors with third parties as authorities or others and potential partners (Easton and Araujo 1992).

Business marketing literature is very large about interactions, exchange episodes between buyer and supplier. These interacting actors are generally considered either in a quite abstract way as organisations or in a more particular way as companies. There is not so much if any research about the specificities or characteristics of business relationships between a supplier and a non-economic actor as an institution or an authority. More precisely there are not so much research, which use markets-as-networks approach as its theoretical basis. Organisational buying behaviour and project marketing discuss some aspects of this question as institutional decision making or tendering activity but they are not really focusing on the business relationship between the two actors. This paper tries to discover some characteristics and typology of some kind of institutions' behaviour in a business relationship with their suppliers. More concretely the paper deals with the behaviour of the Hungarian hospitals in relation with their most important drug suppliers.

The hospital market in Hungary

The pharmaceutical market itself is a highly regulated industry all over the world. We understand hospital market as a segment of the pharmaceutical market where the buyers are the hospitals as organisations and the organisational budget is used for purchasing, while the purchase is carried out according to internal and external regulations (Szalkai 2004). The hospital market is a complex scene of economic and non-economic relationships. Figure 1 represents the Hungarian hospital market as a network of these relationships.

FIGURE 1
Network perspective of the Hungarian hospital market



The network includes economic actors (drug manufacturers and wholesalers), non-economic actors, authorities (OEP, OGYI), other governmental actors, non-profit organisations (foundations, churches, professional associations), public and the hospitals. Public covers also the organisations of patients. We indicated also the outpatients and physicians (family practitioners) who are not closely related to the hospital market, but as participants of healthcare they have a certain deferred role in the network.

Additionally three more types of relationship exist: (1) relationship among hospitals, (2) relationship among suppliers, and (3) relationship among manufacturers. The main characteristic of the relationship (1) is the information exchange. The horizontal integration of hospitals in order to increase the buying power is not peculiar is Hungary. Relationships among suppliers contain information exchange and in special case also economic change, because the market leader drug wholesaler is the exclusive distributor of imported drugs. Relationship (3) is realised in different forms, drug manufacturers' co-marketing activity is a typical business relationship.

In our paper we analyse the next two different types of business relationships in the hospital market: the buyer-seller relationship between the drug manufacturer and the hospital and that relationship between the wholesaler and the hospital. We are not dealing with the buyer-seller relationship between the manufacturer and the wholesaler.

In Hungary, similarly to other countries, the drug purchase of hospitals represents a relatively small part of the pharmaceutical market. Approximately 15% of the total pharmaceutical sales go to hospitals and this ratio seems to be constant in the last 10 years. The needed drugs are mostly (80%) purchased from wholesalers and not directly from manufacturers. Similarly, wholesalers are the major drug suppliers in The Netherlands, Slovakia, Slovenia, Great Britain, Finland, Sweden, and Norway, while the direct supply from manufacturers is typical in France, Austria, Germany, Spain, Belgium, and in Greece (Amman 2003). These two types of suppliers – manufacturers and wholesalers – have different competitive advantage, and also their relationship with hospitals is different. In Hungary, four

wholesaling companies cover more than 80% of the hospital market. If we look at hospitals as buyers from the wholesalers' point of view, the following characteristics can be identified (Szabó 2001):

- The range of drugs sold to hospitals is wider than the range sold to pharmacies.
- The average price of drugs sold to hospitals is higher than the average price of drugs sold to pharmacies.
- The shipping cost for hospitals is lower than for pharmacies.
- Hospitals have lower buying power than pharmacies have.
- It is difficult to forecast sales to hospitals on long term.

Hospitals have more distinct characteristics as buyers from the manufacturers' point of view, which make their position in the network special.
(1) Hospitals play a key role in the drug development process by taking part in the clinical trials of new drugs and in other tests.
(2) Hospitals are considered to be the place of the introduction stage of drugs' life cycle, so the success of a new drug in the total pharmaceutical market will be greatly effected by the sales toward hospitals.
(3) Pharmaceutical sales in pharmacies are often induced by the hospitals in the case of ethical drugs, since family practitioners often prescribe the brand, which was taken by the patient during his/her therapy in the hospital.
(4) Prescription behaviour of physicians working for a hospital and having special surgery hours is greatly influenced by the drug preference of the given hospital.
(5) Since the opinion leaders of the pharmaceutical market (physicians) work in hospitals, these hospitals participate in the image building of a medicine or a pharmaceutical producer/brand.
(6) Postmarketing studies (analysis of new medicines launched into the market, for example in order to reveal incidental side effects) take place also in the hospitals whereby the awareness of the brand can be sustainable and it may increase the sales.

The relationships with the suppliers are affected by the applied purchase method. Suppliers have to identify these methods in hospitals in order to make a reasonable offer. In Hungary, hospitals may satisfy their need of drug in five different ways, by

- centralised public procurement
- public procurement
- shipping contracts
- non-regular procurement (price discounts)
- delivery of 'gratis drugs' – free delivery of drugs by manufacturers

In the practice of hospitals the above mentioned methods are usually combined. The category 'gratis drugs' means drugs, which go to hospitals from the pharmaceutical manufacturers for free. The amount of these drugs represents and means a hidden part of the pharmaceutical market, but it is considered as indispensable for the normal daily operations of the Hungarian hospitals. In Hungary the procurement of drugs is submitted to the public procurement law.

Research method

The research results presented in this paper are part of a broader research work about the competitiveness in the pharmaceutical industry, focusing on the role of the hospital market.

As an exploratory research, interviews with chief pharmacists and physicians in hospitals, representatives of drug manufacturers, representatives of wholesalers and with pharmaceutical experts have been initiated. The objectives of these interviews were to reveal the factors influencing the drug purchase of hospitals; purchasing methods; organisational factors of the purchase; the buying centre; characteristics of the relationship with drug suppliers; provisions of hospital's management toward financial constraints concerning the drug choice and other different factors of the buying decision. We emphasize that exploring the relationships formed only a part of the research, the interviews gave us a general picture about the major issues of the drug purchase of hospitals.

On the basis of the results of the interviews questionnaires were formed for a quantitative analysis of the Hungarian hospital market. Data have been collected from the chief pharmacists in charge of purchasing – determined by the law – and one chief physician at each of the 152 public hospitals in

Hungary. Two different questionnaires were made up for the chief pharmacists and for the physicians, respectively. Chief pharmacists were asked about drug supplier choice, the hospital's drug purchase method, the application of public procurement model for drugs, relationship with drug suppliers, among others. Physicians were asked about their product choice, source of information about new drugs, etc. We limited the citation of the asked questions according to the topic of this paper, and present only the results based on the answers of pharmacists, because they are the responsible for purchasing in the Hungarian hospitals.

The survey was conducted in November and December 2002. The overall response rate is 42,8% considering the responding chief pharmacists. The response rate may be considered representative to geographical, ownership and hospital size variables. The profile of the investigated 65 hospitals is presented in Table 1 and 2.

TABLE 1
Type of investigated hospitals

Type (owner)	Number of hospitals
Ministry of Health/Nation-wide	10
University	2
County government	15
City government	23
For-profit/Foundation/Church	4
Other ministry/Hungarian Railway (MÁV)/Military	5
Budapest City Government/Infant Hospital	6

TABLE 2
Size of investigated hospitals

Number of beds	Size	Number of hospitals
500>	small	38
500<..<1000	medium	18
1000<	large	9

The classification of hospitals exhibited in Table 1 and 2, concerning type and size, corresponds with the classification of the Hungarian Hospital Association.

Most of the investigated hospitals were governed by city governments all over the country. The number of this type of hospitals is the largest also in the total sample. Drug purchase of hospitals is influenced by their size. Most of the Hungarian hospitals are small, just like in the survey.

Research findings

Understanding the Hungarian hospital market as a network, the purpose of our study is to answer these two major questions:

1. How do hospitals react to the regulation originated from the network, that is, what can we say about the realisation of public procurement in the practice of drug purchase? And how does this regulation affect the behaviour of hospitals?
2. What are the characteristics of the business relationship between the drug supplier and the hospital?

Henceforth we present the research results focusing on these topics.

Regulatory effects on buyer's behaviour

Since the method of drug purchase hospitals apply was found to be a determining factor of the buyer-seller relationship, we examined the practice of hospitals in the use of the public procurement method for drugs. According to the results only the half of the surveyed hospitals (32) has used the public procurement and the other half (33) rejected to use it. Among the ones, which use public procurement,

20 hospitals enlist the services of an outer company to carry out the procurement procedure. Naturally this outer help makes the purchase more expensive.
The chief pharmacists were asked to rank the listed reasons of rejection into order of importance. The most important reason of rejection was that (1) the hospital may obtain better conditions in drug purchase by using other purchasing methods, like purchasing directly from the manufacturer. The further reasons were ranked as follows: (2) the amount of consumption of the different specific groups of drugs does not justify the general use of public procurement, (3) long term planning (needed for the application of the public procurement method) is difficult for the drug consumption of the hospital, (4) the procedure of public procurement is expensive, (5) the weak liquidity of the hospital's budget does not allow the use of public procurement. A clear correlation can be noticed between the use of public procurement and the size of the hospital (see Table 3). A bigger hospital uses public procurement for drug purchase most probably than a small one. We have collected information about the groups of drugs usually purchased by public procurement as well. It was found that public procurement used to the different types of drugs depends on the individual practice, most of the hospitals have used this purchasing method for all the drugs they need.

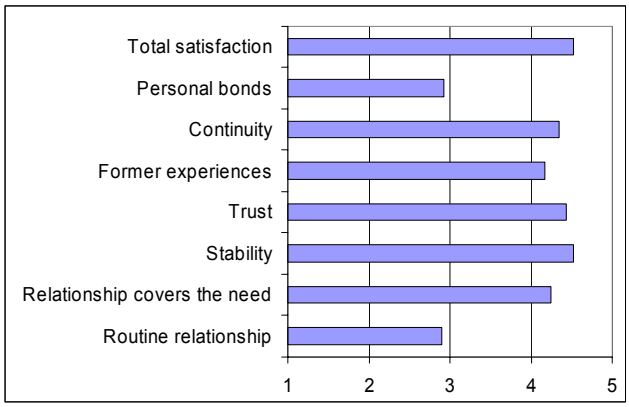
TABLE 3
Correlation between public procurement and hospital size

	Size of hospital			
	Small	**Medium**	**Large**	**Total**
Public procurement	43,8%	31,3%	25,0%	100,0%
Non-public procurement	72,7%	24,2%	3,0%	100,0%
Total	58,5%	27,7%	13,8%	100,0%
Level of sign. of χ^2 = 0,016				

Business relationship characteristics

The evaluation of the relationship with the major drug supplier (in most of the cases they are wholesalers) was made by the chief pharmacist in each hospital. The variables included in the evaluation are originated from the qualitative research. The original questions in the questionnaire concerning the relationship are presented in the Appendix.
In this study in order to evaluate the relationship we could use only those variables, which were included in the original questionnaire (made for a broader research). This set of variables gave certain limitations for our current research.
According to the answers, more than a half of the respondents marked 5 (on a 1-5 score scale, where Score 5 means the most adequate characteristic) for the variables of trust and stability in the relationship. The role of former experiences with the supplier and the continuity of the relationship were also significant characteristics of the relationship. The respondents gave very distinct opinions about the role of personal bonds in the relationship. Many pharmacists have evaluated this factor rather not typical at all than typical, the modus were around 3. Concerning the total satisfaction, most of the respondents are satisfied with the drug suppliers (see Figure 2).

FIGURE 2
Evaluation of the relationship with the major supplier by the chief pharmacist (on a 1-5 score scale)



Analysing these results concerning our 65 hospitals in the sample, surprisingly, we found no relationship between the usage of public procurement (yes or no) and the characteristics of the relationship with the major supplier.

Typology based on relationships

In order to understand the characteristics of the buyer-seller relationship and to make a typology about these relationships, we used the method of factor and cluster analysis. The same set of variables (mentioned in the previous section) was used, which gave a limit for our possibilities making the typology. The characteristics included in the analysis were the followings: (1) the relationship covers the need, (2) stability, (3) trust, (4) history of the relationship (former experience) is important, (5) continuity of relationship. Results regarding personal bonds could not be taken into consideration because of the very different pattern of this aspect. As result of the factor analysis we analyse the two-factor solution, explaining 70% of total variance of the variables. The two factors can be explained by the variables (see Table 4).

TABLE 4
Factors and variables

Factor 1 Social-economic orientation	relationship covers the need history of relationship trust
Factor 2 Process orientation	continuity stability

We conducted a cluster analysis using Ward method based on the factors (as a previous step we filtered out the outliers, so we had a sample of 53 hospitals for the final cluster analysis). We accepted the 3-cluster result, containing 3 segments of 28, 9 and 16 hospitals. After confirming the segments with discriminant analysis, we found a very high value of goodness of classification (96%), that means that 96% of the cases (out of 100) were classified correctly compared to the probability distribution. This serves as an appropriate basis for segmentation and typology.
The description of the clusters based on the factors and original behavioural variables are presented in Table 5 and 6.
Table 5 shows the means of factor loading in each cluster. The more positive the values are within a column (cluster), the better the given factor characterises the cluster and vice versa.

TABLE 5
Appearance of the factors in the clusters

	Cluster 1	**Cluster 2**	**Cluster 3**
Factor 1: Social-economic orientation	0,67	~0	-0,54
Factor 2: Process orientation	0,29	-1,5	0,15

The factors indicate two types of really different approaches of the evaluation of suppliers' relationships. Factor 1 describes a more social-economic orientation of the chief pharmacist evaluating the relationship with the major drug supplier. This factor is the strongest in case of Cluster 1. Factor 2 emphasises the process character of the relationship. This character is relevant in the first and third clusters, but rejected very much in Cluster 2.
Table 6 shows the characterization of the clusters based on the original behavioural variables and the perception of relationship whether it is a routine one and in which extent, and the total satisfaction with the relationship as well.

Hospitals in Cluster 1 regards socio-economic orientation as very important, process orientation as an important behaviour, their relationships are long, stable, with a high level of trust and personal bonds. The buyers in this relationship are satisfied very much and consider the relationship as a not very routine one. Cluster 1 contains mainly large hospitals, and a few medium and small hospitals. All the nation-wide institutes belong to this cluster. The usage of public procurement is more characteristic in the drug purchase of these hospitals. The hospitals in Cluster 2 are rather insensible, they regard the relationships and the characteristics as not important, personal bonds and trust are not significant, the buyers are not satisfied with the relationships. They rather ignore the former experiences in the business relationship. Cluster 2 contains more medium and less large hospitals. The hospitals in

Cluster 3 regard the relationships rather as a transaction, as a routine one, where personal bonds are not important. The stability and length of the relationships is like average, the satisfaction of the buyers as well. Cluster 3 contains only small and medium hospitals, and the usage of public procurement for drugs is not characteristic.

TABLE 6
Description of clusters regarding business relationship characteristics

Original variables	**Cluster 1**	**Cluster 2**	**Cluster 3**
	No routine relationship	Moderately routine relationship	Rather routine relationship
	Personal bonds exist	Personal bonds are not significant	Personal bonds are not significant
	High stability	Average trust	The role of the history of the relationship is average
	High continuity	The history of the relationship is not relevant	
	High trust	The relationship does not cover the total drug need of the hospital	
	High total satisfaction	The weakest total satisfaction	Relatively satisfied
Name of clusters	**Relationship focused**	**Insensible**	**Transaction focused**

The characteristics of the clusters give us impressions how the quality of the relationships is viewed in the hospitals. The quantitative analysis let us assume that the hospitals differ regarding the evaluation of some relationship characteristics. As a conclusion we found three different perceptions of the relationships. Cluster 1 may be called **relationship focused** according to the characteristics. Most of the variables are on the highest level, indicating that hospitals in this cluster view relationships as a stable, continuous bond for long term between buyer and seller. Cluster 3 is called **transaction focused** mainly because of its routine characteristic. Cluster 2 is called **insensible**, concerning the relationship with the drug supplier.

Main contribution

In our paper the hospital market in Hungary is introduced as network of different actors. We analysed business relationships between drug suppliers and hospitals. As a typical institutional procurement method, public procurement has characteristics, that results significant role in forming these relationships. Analysing the results for the practice of public procurement, we had two very distinct groups of hospitals. One of the groups contained 32 hospitals that use public procurement for drugs together with other procurement methods. The other group contained 33 hospitals that rejected to use public procurement for drugs. Surprisingly we found no relationship between the usage of public procurement (yes or no) and the characteristics of the relationship with the major supplier.

In the second place we analysed the characteristics of the business relationship between the hospital and the major drug supplier. Although we are aware of the limitations of our research, our study presents important findings about a business relationship of a non-economic actor. Through the evaluation of the relationship we found two types of different approaches. One approach describes a more social-economic orientation, the other emphasises the process character of the relationship. Using these two approaches we made a typology of relationships and create three hospital segments. The segments represent three different perceptions of the relationships. Discovering these three different perceptions can be one of the contributions of the paper. Our study is new in a sense, that it investigates business relationship with an institutional buyer. Understanding the role of personal bonds in the relationships between Hungarian public hospitals and their suppliers is a real question of a future research.

Appendix

A. Please, evaluate the degree of routine in the relationship with your major drug supplier!

Not routine at all				Fully routine
1	2	3	4	5

B. Please, evaluate the relationship with the major drug supplier according to the following factors on a 1-5 score scale! Score 1 means that the factor does not characterise the relationship at all, while Score 5 means that the factor is fully typical. Use other values to tone your opinion.

	Not typical at all				Fully typical	Do not know
Relationship covers the drug need of the hospital/clinic	1	2	3	4	5	9
Stability of relationship	1	2	3	4	5	9
Trust in the supplier	1	2	3	4	5	9
Former experiences (relationship history) support maintaining the relationship	1	2	3	4	5	9
Continuity of relationship	1	2	3	4	5	9
Personal bonds in the relationship	1	2	3	4	5	9

C. Please, evaluate the degree of satisfaction with your major drug supplier!

Totally dissatisfied				Totally satisfied
1	2	3	4	5

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