

Süleyman Demirel Üniversitesi
İktisadi ve İdari Bilimler Fakültesi
Y.2002, C.7, S.2 s.21-31.

THE USE OF MARKETING INFORMATION SYSTEMS IN SMALL AND MEDIUM SIZE HEALTH CARE ORGANIZATIONS

Assoc.Prof. Dr.Mustafa TANYERİ*
Assist.Prof. Dr.Figen A. YEŞİLADA*
Dr.Tahir YEŞİLADA*

ÖZET

Ulusal ve uluslararası pazarlarda egemen olan rekabetçi koşullarla başedebilme dürtüsünün bir sonucu olarak örgütlerin hem yapılarında, hem de işlemlerinde yaşamaları gerekli olan değişim düzeyi belirgin biçimde ortaya çıkmaktadır. İşletmelerin, güçlü yanlarını ön plana çıkararak bir değer zinciri yaratmak sureti ile pazarda başarılı olmaya çalıştıkları düşünüldüğünde, bu amaç doğrultusundaki değişim süreçlerinde benimsedikleri stratejilerin anahtar rol oynadığı söylenebilir.

Bu çalışmada, küçük ve orta ölçekli sağlık kuruluşlarının rekabet koşulları altında başarı sağlayabilmek için pazardaki veri ve bilgiyi toplama, işleme, analiz etme yetenekleri ile buna bağlı olarak strateji geliştirme düzeyleri değerlendirilmeye çalışılmaktadır.

1. INTRODUCTION

The need for change in the organizations' structures and operations has become apparent as a result of the endeavor to cope with the severe competition both in domestic and international markets. The strategies that direct this change are critical tools for firms in achieving their objectives. Since firms try to create a value chain to succeed in the market by emphasizing their strengths in the marketing strategies they develop, this issue requires closer consideration in marketing management. The development of the aforementioned value chain requires that gathering, processing, and analysis of data, strategy formation, and control stages be soundly carried out. The rational marketing decisions, achieved as a consequence of such a process, provide the opportunity for the firm to minimize the risks of uncertainty. On the other hand, they contribute to more effective performance measurement and evaluation in all functional areas of the organization, especially in marketing.

* Dokuz Eylül University, Faculty of Business, Department of Business Administration

2. LITERATURE REVIEW

One of the basic problems faced by the organizations operating in different sectors lies in the issue of gathering valid and reliable marketing information that will enable the organization to smoothly manage the changes occurring in the market. Forming one of the prerequisites for the organization to survive in the market, this concept requires that all marketing decisions be handled within a framework of decision support system, which regulates the flow of information. Apparently, the need for gathering and management of marketing information is being felt intensely by organizations of all types, even when one ignores the fact that the volume of information is increasing geometrically due to the developments achieved in the area of information technologies. It is also clear that the successful health care organizations of today, whether structured for profit or not-for profit, will be those that understand their environment, their purpose, their customers, and their competitors (Robinson and Kleiner, 1997, 229)

The globalization of the marketplace in recent years has intensified business competition throughout the world. Today's marketing executives are facing an ever expanding and rapidly changing marketing environment (Talvinen and Saarinen, 1995). They are receiving more information from both internal and external sources through the help of improved computer technology and databases (Higby and Farah, 1991).

There is a definite need for marketing executives to process more data and information for decision-making at all levels of managerial activities. In order to handle the ever increasing amount of internal and external information and to improve decision quality, the need to establish Marketing Information Systems (MkIS) in one's company is never before so great (Li *et al.*, 2001, 85).

Health care organizations, especially in countries with a market dominated by state health care organizations like Turkey, show a growing interest in marketing concepts and environment. Under the pressure of fierce competition, these organizations have developed an understanding about the importance of marketing for health care organizations.

Managers of health care organizations are searching for concepts and tools to handle the new challenges arising in the market and to respond to changing consumer expectations. To many health care executives, emphasis on marketing strategy has become a means of survival in the threatening new environment of intense competition (Tomas *et al.*, 1995, 36).

There are two basic technical (or *hard*) preconditions for health care organizations in attracting patients: Top quality physicians and high-tech equipment and facilities. Obviously, these preconditions will not suffice in the organizations' quest for magnetizing customers towards the organization. In some cases, health care organizations with top quality physicians and ample high-tech equipment and facilities, may have to deal with customer satisfaction tribulations unless they attach the required importance in the fields like post-operation services, pricing, customer satisfaction

measurement, purchasing, logistics, and public relations. These issues form the bases for the *soft* side of the patient satisfaction concerns. Patient satisfaction cannot be considered as a unitary concept (Tucker III and Adams, 2001, 273).

Linder-Pelz's patient satisfaction theory states that patient satisfaction with health care, as an attitude, is based on the summation of the very subjective assessments of the dimensions of the care experience (Linder-Pelz, 1982). These dimensions can include interactions with providers, the ease of access, the burden of costs, and the environmental issues such as cleanliness of the health care facility (Tucker III and Adams, 2001, 273).

Health care consumers are demanding more value at lower price, and at the same time asking for more freedom of choice of providers. Such a trend creates a situation where acquiring and maintaining a market share becomes more dependent on the will of patients. For health care providers, this means that market share is linked to patient satisfaction (PS) more than it has been in the past (Zabada *et al.*, 2001, 9).

Patient satisfaction is ranked among the three most important performance measures considered by consumers of health care service (Roberts and Philp, 1996). Thus, PS is recognized as one of the variables that can help hospitals achieve competitive advantage (Ware, 1995; Gilbreath *et al.*, 1996).

As the forces of competition equips the patients with the freedom in choosing hospitals and physicians, health care organizations will have to face more and more competition from those organizations providing the similar services. Study has shown that a decrease in PS increases the likelihood that patients will change their old provider of health services for a new one (Marquis *et al.*, 1983). Health care providers must therefore find ways that will maximize current and potential patients' satisfaction.

In this connection, health care organizations need a system that will enable them in identifying the standards related with basic and supportive marketing functions and in vigorously building and running the organization's interrelations with other internal and external units, with a vision that will enable the organization to identify and rectify the problems associated with patient satisfaction problems. MkIS provides the essential bases for such a system.

3. THE MODEL

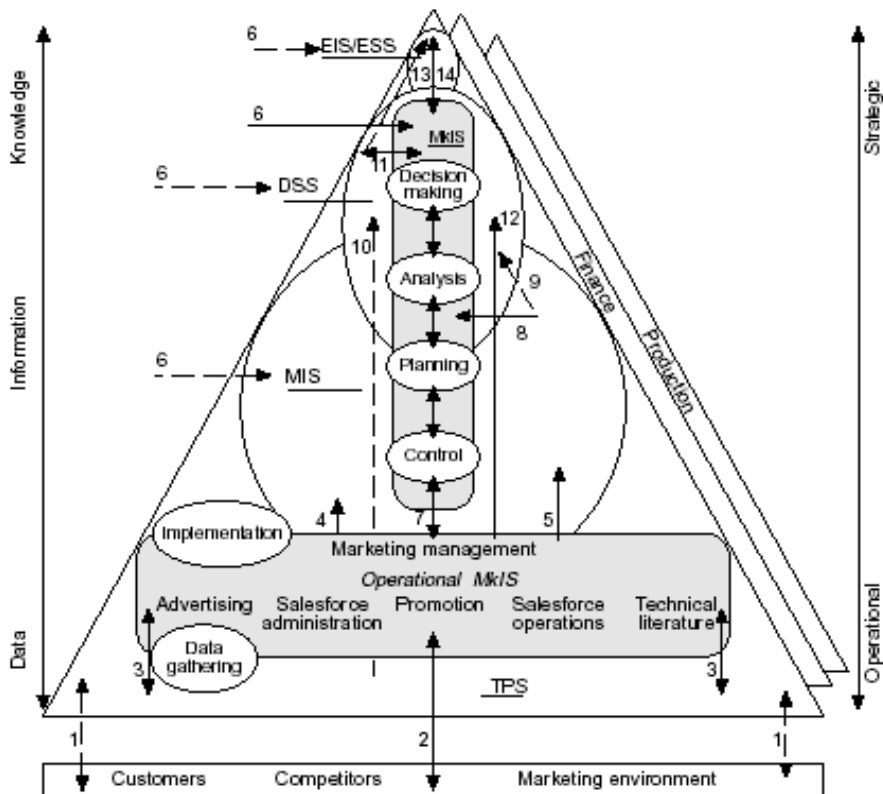
Customer and market information should be considered as vital elements in creating customer satisfaction, as the information regarding the services that the organization supplies is not sufficient itself. In the mean time, alertness is required about the perceived service quality of those competitors who provide similar services and about new service applications in health care. One of the sources to be used by MkIS is the positive (and negative) impression of the patients who have benefited from the organization's services.

Research indicates that word-of-mouth communication (WOM) has a significant effect on consumer purchasing behavior. A study conducted by the US Office of Consumer Affairs indicated that, on average, one dissatisfied customer can be expected to tell nine other people about the experiences that resulted in the dissatisfaction. Satisfied customers, on the other hand, relate their story to an average of five other people (Knauer, 1992, and Mangold *et al*, 1999). WOM seems particularly important to the marketing of services (Murray, 1991).

Consumers have been found to rely on WOM to reduce the level of perceived risk and the uncertainties that are often associated with service purchase decisions (Murray, 1991).

A model of MkIS is provided in Figure 1, which takes into consideration the possible sources of external and internal information, which aims at solving many of the problems that management often faces with respect to information such as too much information of the wrong kind, in the wrong place at the wrong time, and not enough information of the right kind in the right place at the right time.

Figure 1: Information systems in marketing



Source: Jari M. Talvinen (1995) "Information systems in marketing: Identifying opportunities for new applications", *European Journal of Marketing*, Vol.29, No.1, p. 17.

The MkIS model developed by Talvinen (1995), provides a comprehensive delineation of the concept. The model depicted in Figure 1 is explained as follows (Talvinen, 1995, 16):

The data from those sources like the customer base, competitors and the marketing environment in general are stored to organizational Transaction Processing System (TPS) (Figure 1, arrow 1). It may also be stored directly to operational MkIS (arrow 2); or data may be transferred to operational MkIS through TPS (arrow 3). The data in TPS are essentially quantitative. On the other hand, marketing information gathered in operational MkIS is qualitative in nature, especially concerning customers' buying behavior. Order status, sales forecasts and other management reports are normally presented in Management Information Systems (MIS). The sources of these figures are especially TPS (arrow 4) and operational MkIS (arrow 5). In addition to these figures, there is a need for external marketing information to complement internal information, which supports, explains and deepens the information available (arrow 6). If needed, external marketing information can also be transferred directly into Decision Support Systems (DSS), management MkIS and Executive Information Systems / Executive Support Systems (EIS/ESS) (arrow 6). External information sources in these systems are mostly data banks and commercial databases.

From data to information and knowledge: TPS are, together with operational MkIS, essential systems for gathering marketing information. Operational MkIS are, in addition to this, vital for implementing marketing and sales activities. All information systems presented in Figure 1 are used for refining and analyzing marketing information needed as a basis of marketing planning and decision-making problems facing the company. However, in operational MkIS the direction of data and gathered information is twofold – gathered and analyzed information is also used in different sales and marketing activities, such as direct mail and telemarketing.

Management controls markets, plans marketing activities, analyses target markets and makes decisions based on the information offered by MkIS. Vital internal information sources for management MkIS are operational MkIS (arrow 7) – (especially concerning qualitative customer and market information) – and MIS in general (8). This information, which is gathered for planning and decision-making, is used in management MkIS. The objective of management MkIS is to transform data to information and finally to knowledge. This knowledge is needed especially in R&D, market forecasting and planning. Thus, MkIS can be seen as an integrated, intensive and vital part of a company's IS portfolio. Analysis and decision-making: As one can observe from Figure 1, the MkIS have clearly become a tool for analysis and decision making, and have developed closer to DSS. Information sources for DSS are illustrated in Figure 1 (arrows 6 and 9-12). From the MkIS, market information needed in decision-making situations is transferred to DSS (arrows 11, 12). Senior executives analyze the information from different sources by using EIS/ESS (arrows 6, 13, 14) in addition to DSS. Sales- and marketing-related decisions made by senior executives are returned to management MkIS (arrow 14), which itself is transferred to be implemented in operational MkIS (arrow 7).

4. METHODOLOGY

This study aims to identify the common MkIS problems faced by health care organizations operating under unique settings; determine the current status of applications of MkIS; and to suggest activities for the improvement of the MkIS process. In this way, information, which will accelerate the functioning of the process and provide the opportunity for such organizations to become proactive under competition, will be gathered more rapidly.

The sample of the study consists of small of medium sized health care organizations operating in Izmir, Turkey. Izmir, with a population around 4 million is the 3rd largest city of Turkey and can be considered as a pilot area for several reasons. The city provides health care services to other cities and urban centers of population at the peripheral. Additionally, there exists a population and income structure that demands health care services at different price levels, as a result of the fact that the city attracts migrants from the whole country. Another important characteristic of Izmir is that it comprises a wide variety of health care providing organizations, including state, university, social security institution, foundation, and private ones and that in recent years, both specialized and full service private hospital investments have increased.

4.1. Sample of the Study

In light of the information obtained from the official health authority of the Izmir province, private hospitals have been identified as small and medium size organizations according to the number of staff they employ. In addition to the private hospitals; medical centers, diagnosis centers, and medical laboratories are also included in the sample.

In order to obtain thorough information and gain deeper insights about marketing in the health services sector, face-to-face interviews were held with the executives during which they have answered the questionnaire that was developed by the research group, thus providing the chance to employ the expert opinion technique as well. Only the leading diagnosis centers and medical laboratories in the sector were included in the sample, as face-to-face interviewing and expert opinion tools are rather time-consuming methods of data collection. No distinctions were made for the medical centers and private hospitals and they were all included in the sample. From a total of 48 health care organizations that has been applied for the research, 27 responded positively and executives of these organizations have been interviewed face-to-face, resulting a response rate of 56.25%.

5. FINDINGS

The organizations included in the survey have formed a balanced distribution amongst the diagnosis centers, hospitals that provide bed services, and hospitals without bed services. Executives from 70% of the small and medium size hospitals providing bed services have been accessed for the research and interviewed. Amongst the persons interviewed in all the health care organizations visited, 88.4% were physician executives and 11.6% were public relations managers.

The most widely used three tools for monitoring new products, competitors, prices, and similar issues in the market related with the sector were medical publications, internet, and professional institutions (e.g. chamber of physicians, etc.), respectively. The type of health care service provided does not affect the above order of importance. The finding that should be accentuated hereby is that, internet has been marked as an important source of information in monitoring the environment by all of the organizations. The significance of such a finding can be traced to the fact that the adoption of an MkIS requires that adequate information technologies be constructed prior to system design phase.

70.4% of the organizations keep patient records with computers, while 11.1% use patient follow-up cards and 14.8% employ an integrated database for the same purpose.

Two items in the questionnaire asked whether the organization employs a marketing research activity and/or an MkIS activity. 70.4% of the health care organizations in the sample have been found not to use a market research or MkIS activities. The part of the questionnaire that is designed for these organizations firstly asked them to state the reasons for not using such activities. 33.3 % stated that there was no need for these activities; another 33.3% responded that they were not aware of such an activity or concept, and 16.7% stated that these activities bring superfluous costs for the organization. Considering the high market potential of the sector, it is vital for the health care providers to make realistic forecasts about the future that will generate competitive advantage not only in the form of increased market share and improved profitability margins, but also in the form of wielding barriers for the new entrants. Consequently, although the current customer pool of the organization may produce a profitable environment in the short-run, it is clear that as the forces of competition increase in the long-run, health care organizations will have to take proactive measures that will enable them with the tools, which will be used in identifying patient wants and needs. In this connection, the adequate tools must be employed that will provide the opportunity for the organization to continuously monitor its environment. A system, which embraces such tools, may seem to bring extra costs, but returns from such a system will benefit the organization in the long run.

The organizations, which do not use MkIS, have stated that activities directed towards obtaining market information should be carried continuously (38.9%) or periodically (27.8%). Although these organizations

have not yet adopted an MkIS, they seem to be aware of the significance of such a system as it provides continuous monitoring of the market environment. Thus, it can be argued that these organizations will be fervent in the adoption of an MkIS when they have the chance to get familiarized with the concepts and benefits provided by the system. The interview and questionnaire results suggest that in building an MkIS, health care organizations prefer to use their own resources (33.3%) or receive professional consultancy (33.3%). The striking point in these findings is that, health care providers do not consider universities for consultancy in developing an MkIS for their organizations. The organizations using an MkIS stated that they are employing at most 3 full-time experts in the unit, with an exception of one organization. This exception has an MkIS team consisting of 17 full-time staff. The executive of this health care provider have explained the reason behind such a situation during the interview as their organization is the oldest in the sector and that they want to retain their market share under the fierce competition. It was also stated by the executive that an MkIS is being used in the organization for the last 8 years, which is the longest period of MkIS application within the sample.

55.6% of the organizations that use MkIS have defined the system as a system that provides the required information for decision-making through basic data analyses, and 44.4% as a system that carries out complex analyses of data and produces useful recommendations to be used at different levels of the organization. In the light of these findings, it can be argued that 55.6% of the respondents are not able to fully exploit the benefits of an MkIS, while 44.4% enjoys the complete use of the system.

Table 1: Percentage distribution of the respondents' perceptions about the specific abilities of the MkIS

Specific Abilities of the MkIS	Strongly disagree	Disagree	Neither	Agree	Strongly agree
a) Marketing personnel can obtain all the marketing data they need from the system.	-	25.0	-	25.0	50.0
b) Our system has a flexible structure and includes all the data.	-	25.0	-	62.5	12.5
c) The system is easy to use for the marketing unit.	-	12.5	-	50.0	37.5
d) Our system has the statistical ability to analyze all the market data.	-	25.0	12.5	37.5	25.0
e) Our system has the statistical ability to analyze all the patient data.	12.5	12.5	12.5	37.5	25.0
f) Currently, our system provides much more information than can our marketing personnel use.	12.5	12.5	12.5	50.0	12.5
g) Our system enables us to easily identify the target market for all of the services in our service mix.	-	12.5	37.5	37.5	12.5
h) By using the detailed patient records within the system, we are able to provide our other services to the current patients.	12.5	12.5	25.0	25.0	25.0

Table 1 (Continued)

Specific Abilities of the MkIS	Strongly disagree	Disagree	Neither	Agree	Strongly agree
i) The performance of our MkIS has been over the expected levels until today.	-	37.5	12.5	12.5	37.5
j) Having an MkIS resulted for our organization to possess competitive advantage against our competitors.	12.5	12.5	12.5	25.0	50.0

It can be seen from Table 1 that the respondents have found the MkIS they use as satisfactory, with the exception in three issues. Among these three issues, the item about cross-selling (item h) should be emphasized. One of the objectives of an MkIS is to enable the organization to sell its other services from its service mix to the current customers. As an example, cross-selling may enable the health care provider to direct a patient who have been diagnosed with diabetes, to other units within the organization if he/she experiencing other complications like optical or blood pressure problems related (or not related) with diabetes.

Another finding that should be highlighted is that the performance of the respondents' MkIS performance has not been realized above the expected levels. One conclusion drawn from the interviews was that the health care executives might be considered as having a miracle like expectation for their investments in such a system, that the information obtained from the system has not been used by the executives effectively, or that the system itself had been designed erroneously.

These organizations that use MkIS have stated that top management, marketing, and public relations units are benefiting most effectively and that purchasing unit is benefiting least effectively from the system. Such a finding confirms the conclusion that the organizations are not using the system effectively, when we consider the fact that an MkIS structure holds the attribute to provide detailed information about the suppliers as well.

Although MkIS supplies the organization with information at all organizational levels, the research has revealed that information from the MkIS has little contribution to the tactical decisions (50.0%). While the system provides an average contribution to the short-term decisions (48.5%), strategic decisions receive high levels of contribution (75%). The MkIS's contribution to different levels of decision-making does not differ significantly with the type of health care service provided.

The most important information expected from the system by the organizations that use MkIS are related with; potential demand (15%), patient satisfaction (13%), how well the organization is recognized in the market (13%), and market shares, price levels and promotion strategies of the competitors (13%).

6. CONCLUSION

The findings and interviews with executives show that small and medium size health care organizations analyzed in the study do not have an understanding of MkIS, let alone its use. During the interviews, some of the executives asked for information on the topic. From an optimistic point of view, such a situation can be considered as a positive case. At least, there is not a negative attitude towards the system. However, interviews have shown that health care organizations have not yet developed a thorough understanding about the use of marketing in health care sector. They have almost no idea about the terms and techniques related with the marketing discipline. One should not put the blame on the organizations, for it is the responsibility of the universities and thus academicians to develop such an understanding. The findings show that if health care organizations ever decide to set up a MkIS, they would rather do it themselves or get professional consultancy; but would not ask for consultancy from the universities, thinking that universities are too much theory oriented and lack the talents required to implement the theory into practice. Thus, in order for health care providers to accept the need for and the use of MkIS, they should first understand that marketing is not selling, but a concept much deeper. Once these organizations understand what marketing really is, they will most probably feel the need for an MkIS and use the system effectively in all levels of decision making throughout the organization.

REFERENCES

1. Gilbreath, E.R., Schilp, J. and Pickton, R. (1996), "Toward an Outcomes Management Information Processing Architecture", *The Journal of the Healthcare Information and Management Systems Society*, Vol.10, No.1, pp.83-97.
2. Higby, M.A. and B.N. Farah (1991), "The Status of Marketing Information Systems, Decision Support Systems and Expert Systems in the Marketing Function of U.S. Firms", *Information and Management*, Vol.20, No.1, pp.29-35.
3. Knauer, V. (1992), *Increasing Customer Satisfaction*, United States Office of Consumer Affairs, Pueblo, CO.
4. Linder-Pelz, S. (1982), "Toward a Theory of Patient Satisfaction", *Social Science and Medicine*, Vol.16, pp.577-82.
5. Mangold, W.G., F. Miller and G.R. Brockway (1999), "Word-of-mouth communication in the service marketplace", *The Journal of Services Marketing*, Vol.13 No.1, pp.73-89.

6. Marquis, M.S., Davies, R.A. and Ware, E.J. Jr (1983), "Patient Satisfaction and Change in Medical Care Provider: A Longitudinal Study", *Medical Care*, Vol.21, No.8, pp.821-9.
7. Murray, K.B. (1991), "A Test of Services Marketing Theory: Consumer Information Acquisition Activities", *Journal of Marketing*, Vol. 55 No. 1, January, pp. 10-25.
8. Roberts, H. and Philp, I. (1996), "Prioritizing performance measures for geriatric medical services: what do the purchasers and providers think?", *Age and Aging*, Vol.25 No.4, pp.326-8.
9. Robinson, M.K. and B.H. Kleiner (1997), "Competition and its Implications for Managing Health Care Organizations", *Health Manpower Management*, Vol.23, No.6, pp.229-232.
10. Talvinen J.M. (1995), "Information systems in marketing: Identifying opportunities for new applications", *European Journal of Marketing*, Vol.29, No.1, pp.8-26.
11. Talvinen, J.M. and T. Saarinen (1995), "MkIS Support for the Marketing Management Process: Perceived Improvements for Marketing Management", *Marketing Intelligence and Planning*, Vol.13, No.1, pp. 18-27.
12. Tomas, G., M. Hult and B.A. Lukas (1995), "Classifying Health Care Offerings to Gain Strategic Marketing Insights", *Journal of Services Marketing*, Vol.9, No.2, pp.36-48.
13. Tucker III J.L. and Adams S.R. (2001), "Incorporating Patients' Assessments of Satisfaction and Quality: An Integrative Model of Patients' Evaluations of Their Care", *Managing Service Quality*, Vol.11, No.4, pp.272-286.
14. Ware, E.J. (1995), "What Information Do Consumers Want and How Will They Use It?", *Medical Care*, Vol.33, No.1, pp.JS25-JS30.
15. Yi, E.Y., H.G. Chen and J. Roan (2001), "Marketing Information Systems Usage in Taiwan's Top 1000 Companies", *Journal of Computer Information Systems*, Winter 2000/2001, Vol.41, Issue 2, pp.85-96.
16. Zabada, C., S. Singh and G. Munchus (2001), "The Role of Information Technology in Enhancing Patient Satisfaction", *British Journal of Clinical Governance* Vol.6, No.1, pp.9-16.