Leveraging marketing performance through information technology use

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The effect of Information Technology (IT) on marketing processes has been widely acknowledged in the last two decades (Leverick et al 1998). Technological development has reached most areas of marketing. Popular business press first promulgated the limitless rise of business performance enhanced by IT, then, after the bursting of the dot-com bubble (Szabó 2002) technology was completely disgraced. IT development and its effects on business activities have been in the forefront of scientific thinking in the last two-three decades (Castells 2005, Glazer 1991, Salo et al 2005). According to Brady et al (2002) IT brings elementary changes in marketing. What's more, not only the marketing activities, the used methods or processes could change. Technical competencies will have a central role in the marketing practice (Webster 1992), since the ability to handle technology will become one of the success factors of marketing professionals.

Companies using IT solutions have to analyze which is greater: the benefits of IT usage and automation, or the advantages of personal interactions and direct customer relationships (De Wulf et al 2001, Fellenz–Brady 2006, Rebolledo et al 2005). Many customers choose automated services because they have had bad experiences in interactions with frontline employees and in contrast the infusion of technology may not be embraced by all customers (Bitner et al 2000).

Research results are not consistent yet, there are many fields that still have to be examined. In this research we have analyzed the IT use of 179 Hungarian companies in their marketing activities. The middle and top management of the companies were surveyed in the winter of 2010. As we hypothesized the results are mixed but give us important insights into the topic in question.

Keywords: information technology, relationship marketing, CRM, automation

1. Information technology use in marketing

Managers most often decide on the introduction of information technology in the pursuit of one of three goals (*Zuboff* 1985). In the early days of the spread of information technology developments, the basic motivation was *automation*. Companies expected financial and time benefits from the introduction of new technology, as automated systems are operated by less human labour and consequently fewer errors and in a constant quality that is, eliminating a significant percentage of potential errors. Such systems, even though they demand substantial investment, can be operated more cheaply and even continuously by using their maximum capacity; thus higher level results are achieved faster (*Dewett–Jones* 2001). The application of technology also greatly enhances the practice of *information creation*. Information technology, even if it had originally been installed with the purpose of automation, continually provides information about the manufacturing process, often along with information which had not previously existed. According to the saying, "information is power", which is equally true for the course of business, production processes and marketing activities. The information provided by the technology makes it possible to gain deeper knowledge of the processes, thereby the changes aimed at increasing efficiency are able to reinforce the company's competitive position. Insofar as the information necessary for

decision making and operation is available, the company's aim can be to *transform* the activities and *the business performance* and to take the opportunities becoming available by the usage of information technology (*Brady* et al 2002).

The effect of technological development touches upon most areas of marketing. Studying the literature reveals that besides information gathering, market segmentation and targeting, (mass) customization, customer relationship management (*Rust–Espinoza* 2006), and client interaction (communication and sales), further areas of the marketing mix (*Brady* 2003) have equally benefited from the development of information technology.

Technological development is becoming an increasingly important element of the company-client interaction. Moreover, some authors regard these technology based interactions as the key to long-term success (*Coviello* et al 2001). Ever newer ways of communication and sales are appearing, which involve customers more and more in the value creation process. During the sale of products (goods and services), companies are faced with customers using multiple channels as a result of technological development. Customers today take the opportunity of using multiple channels during their purchases and it may even happen that they realize the activities or elements of the purchase process on different channels (*Törőcsik* 2007). In the formation of multi-channel sales, the adaptation of technological solutions plays an important role in the selling process. Clients more and more often meet the opportunity for self-service; in the case of certain transactions, there is no other way than to choose the self-service mechanism in the virtual space. Whereas there are experts who attribute a very important future role to self-service technologies (*Schultze–Orlikowski* 2004), a part of the research holds these very technologies responsible for the dissatisfaction and the dropping out of clients (*Brady* et al 2002a). For the time being, the research results of this topic are not unified. For instance, in comparing interpersonal and audio-based (e.g. telephone) communication, researchers have found that during audio-contact, the communication between the participants became psychologically more distant and less personal, the participants experienced the activity as task-solving and they behaved in less spontaneous and cooperative ways (*Leek* et al 2003). However, the company's aim with automation is precisely to change an activity requiring personal interaction into a simple, routine task, thus speeding up their service and decreasing their costs. Companies applying such solution must examine whether the benefits resulting from automation or those stemming from personal interactions and direct client relations are greater (*De Wulf* et al 2001). According to *Bitner* et al (2000), for example, many customers prefer using info-communication (ICT) based services because they had been disappointed with the standard of human service.

The research of *Leek* and *Turnbull* (2004) has shown that the functions realized during the interaction between the seller and the buyer (e.g. generating ideas, information exchange, problem solving, evaluation, negotiation, crisis-intervention, social role and self-reinforcement) may work with different levels of efficiency by the use of different communication channels and solutions. The benefits of personal relationships may, in certain cases, be outweighed by the usefulness of ICT solutions.

Corporate databases and the ever more popular customer relationship management (CRM) solutions also provide a lot of topics for researchers. Information technology also plays an outstanding role in the building of the company's knowledge base (*Rebolledo* et al 2005). It is apparent from all this that IT is totally intertwined with the area of marketing (*Papastathopoulou* et al 2007), but most companies operate separate or partially linked information systems, some of which is not even directly linked to the marketing department.

Especially in the world of services, but also in the manufacture and sale of goods, personal interaction, the building of trust and direct relationships play an important role. However, nowadays, old foundations seem to be changing. New groups of buyers more and more often and more and more enthusiastically use solutions offered by modern technological achievements and keep in contact with their business partners and service providers with the help of technology-based systems. Info-communication devices, CRM, collaborative filtering (*Riedl* et al 2004) and other techniques of recommendation provide today's modern consumer, the mobile or online generation, with individual treatment and personal effect even if direct, face-to-face meeting does not take place between the seller and the buyer (*Majó* et al 2004). According to *Spero* and *Stone* (2004), young people live in the digital world: this is where they join communities, approach those whom they admire and, of course, play and learn at the same time. It is estimated that in Britain, one in four 7–16 year-olds browses the internet instead of watching TV.

Therefore, the influence of information technology in the development of marketing is unquestionable. The results of information technology development have been closely intertwined with the development of marketing theory, so today the names of the different marketing activities supported by information technology mean the technology itself the marketing approach at the same time.

On the basis of the above, we can claim *that the use of IT solutions enhances marketing if it generates information and thus creates value for both participants of the relationship, that is, for the seller as well as the buyer*.

2. Contemporary marketing practices, the CMP model

During the study of marketing activity, more and more researchers turn to the viewpoint of relationship marketing. Whereas traditional marketing takes the approach of competition and self-interest, according to the relationship-based approach, co-operation and interdependence tend to become the motivations of value creation. The followers of the latter approach see those as a much more effective and efficient tool in the process of value creation (*Veres* 2003). The participants of services marketing and generally of the B2B market have long been aware of the importance of co-operation, however, practical application is not always so successful, most often due to personal features or bureaucratic and legal regulations. The recent past has brought about the appreciation of relationships also on the market of consumer goods (*Törőcsik* 2007), which resulted in the acceleration of research and the development of modern management techniques. Consequently, in the process of value creation, the co-operation of several participants take place.

Accordingly, the basic principle of marketing activity means much rather the building of a relationship with customers and other stakeholders than conducting a series of separate transactions (*Grönroos* 1999).

The examination of the marketing role of transactions has brought about the concept created by Nicole Coviello and followed by Contemporary Marketing Practices Group (*Coviello* et al 1997), which says that transactional and relationship marketing has several different types, from which companies select to pursue their marketing activities. Companies can even use the different types parallelly, as the relationship of the buyer and the seller is mostly determined by the market participants' sensation of the given market situation and only to a lesser extent by the field or market that the company operates on (*Pels* et al 2000).

Coviello et al chose as their research subject Contemporary Marketing Practices – CMP. Their research resulted in identifying five marketing types used by companies today (*Brodie* et al 2008):

- transactional marketing (TM)
- database marketing (DM)
- e-marketing (EM)
- interaction marketing (IM)
- network marketing (NM)

The company using *transactional marketing* applies marketing-mix tools to attract and serve their customers by conducting individual business transactions. Although the individual transactions may be repeated, the company treats them separately. Companies using this type of marketing use mass marketing tools to approach their market, identify their target group and to create their product according to the expectations of the group.

Database marketing can be identified as a type of relationship-oriented marketing. Companies using this type of marketing still focus rather on the conducting of the transaction, but information exchange also appears besides business exchange. The aim of the user is to keep their identified clients, although the marketing and the communication activity within it is still directed at the consumers rather than being realized with their cooperation.

E-marketing means an activity during which the communication (dialogue) between the company and its specified customers is supported by the internet and other interactive technologies, which serve as the basis for mass customization and personalized online marketing. By using information technology, companies are enabled to treat their customers individually and to build relationships. Several authors call this type of contact approach one to-one marketing (*Peppers–Rogers* 2004) or interactive marketing (*Barwise–Farley* 2005).

Interaction marketing means the type of marketing in which personal contacts become the centre of the business model and where face-to-face interaction between individuals is the most important building block (as opposed to database marketing, where the relationship, although built on personal data, is still distant). The relationships of individuals and their partners and their interactions supported by information technology devices, together create the organisational dimension of the seller-buyer relationship. In the use of interaction marketing, both parties make an effort to build and maintain the relationship. The seller-buyer relationship often takes the form of a partnership.

The analysis of the seller-buyer dyad helps to understand only a part of the relationships. In the centre of *network marketing*, there is the network of corporate relationships and included in that the relationship of these relationships to each other. The company maintains individual, yet connected, tight (personal) or looser (impersonal) relationships with its customers, suppliers, partners or distributors, not to mention indirect relationships. The business network is constituted by the collection of relationships related to each other. Marketing, in this sense, focuses on the creation, utilization and maintenance of the network.

In order to ensure their long-term business success, companies apply one of the marketing types introduced above, depending on the characteristics of their businesses. These marketing types do not exclude each other, but a company may use the transactional type parallelly with database or interaction marketing in its different branches. That is what makes it possible for instance, that Coca-Cola, whilst trying to influence individual consumers by using promotional tools based on mass and group communication and databases, communicates and keeps in touch with its retailers through its sales representatives and product managers on the level of interaction.

All in all, the significance of relationships in business life is acknowledged more and more widely and companies make more and more efforts to maintain their relationships with customers, suppliers and other business partners in the long run to ensure long-term profit. Nowadays, companies alternate between the marketing tools and approaches they use, depending on the characteristics of their product and the market to be served. As for the personal nature (personal or impersonal) or the frequency (daily or occasional) of the relationship, companies aim to create a close or distant relationship according to the demands of the customer to be served.

3. Empirical research

We used an *online questionnaire survey* technique for data collection. We sent a request to fill in the questionnaires to graduates of the University of Szeged Faculty of Economics and Business Administration. 712 graduates of the faculty received the request in the autumn of 2010. We asked the former students to participate in the survey if they were working in a marketing position or to forward the questionnaire to their marketing manager colleague. During our research, 179 questionnaires were filled in.

3.1. Hypotheses

H1: Higher levels of marketing are associated with higher levels of information technology use.

As nowadays the pursuit of marketing activities – regardless of the company's dominant marketing practice – is increasingly built on solutions using information technology, we can suppose that a higher level of marketing, that is, a higher average value of a given marketing activity is associated with a more intensive use of information technology. As our research endeavours to study five different types of marketing, this hypothesis is divided into five sub-hypotheses, according to the marketing types.

H1a: a higher level of transactional marketing (TM) is associated with a higher level of information technology use.

H1b: a higher level of database marketing (DM) is associated with a higher level of information technology use.

H1c: a higher level of e- marketing (EM) is associated with a higher level of information technology use.

H1d: a higher level of interaction marketing (IM) is associated with a higher level of information technology use.

H1e: a higher level of network marketing (NM) is associated with a higher level of information technology use.

H2: A higher level of information technology use is associated with a higher level of performance compared to previous expectations.

According to most literature sources, the ultimate motivation of information technology use is to improve the company's performance (e.g. *Szabó–Hámori* 2006). *Orlikowski* (2000) determines the three possible roles of information technology use in accordance with *Zuboff*'s (1985) model. Information technology *reinforces and preserves the status quo* (supports business performance), or *enhances the status quo* (increases business performance) or

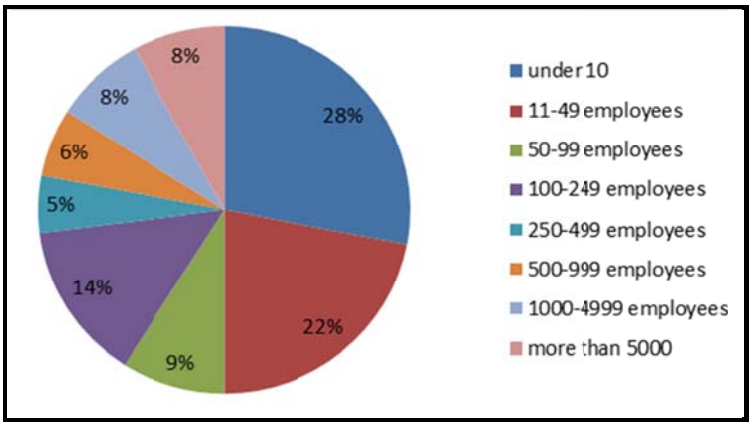
transforms the status quo (IT goes beyond previous performance and changes the business model). Our study aims to reveal whether there is a link between the role of IT and company performance in Hungary, as shown by Orlikowski's model.

3.2. Introducing the sample and the respondents

179 respondents filled in the questionnaire. The gender-distribution of the questionnaires analysed was balanced: 49% men and 51% women answered. The average age of the respondents was 35 years; the youngest being 20 and the oldest 56. 53% of the respondents have been working for their company for at least 4 years, and only less than 10% have worked in their job for less than 2 years.

According to the number of staff, small- and medium sized companies (SMEs) were in the majority (Figure 1). 73% of the companies filling in the questionnaire employ fewer than 250 people, with only the remaining 48 companies employing more than that.

Figure 1. The distribution of companies according to the number of employees (N=179)



Source: own construction

The distribution of companies taking part in the study according to revenue is shown in Table 1. The question referring to company revenue was answered only by 95 respondents. The table shows that on the basis of revenue, 83% of respondents belong to small or medium-sized companies.

Table 1. The distribution of company revenue for 2009 (N=95)

	Frequency (N)	Relative frequency (%)	Cumulative relative frequency (%)
under 10 million HUF	12	12,6	12,6
10–49 million HUF	11	11,6	24,2
50–99 million HUF	9	9,5	33,7
100–499 million HUF	21	22,1	55,8
0,5–2,4 billion HUF	15	15,8	71,6
2,5–12,4 billion HUF	11	11,6	83,2
12,5–19,9 billion HUF	4	4,2	87,4
20–100 billion HUF	5	5,3	92,6
több mint 100 billion HUF	7	7,4	100,0
total	95	100,0	

Source: own construction

During our research, in order to examine the changes in revenue, taking the effects of economic crisis into consideration, the category of decreasing revenue was differentiated by more than one answers. 42% of respondents experienced a decrease in revenue in 2009 and 52% an increase of some degree. It can be established that more than half (56%) of the companies taking part in the study has less than 500 million HUF annual revenue.

With respect to the markets served, 38% of respondents are active on the organizational or B2B market, whereas the remaining 62% on the consumers' or B2C market.

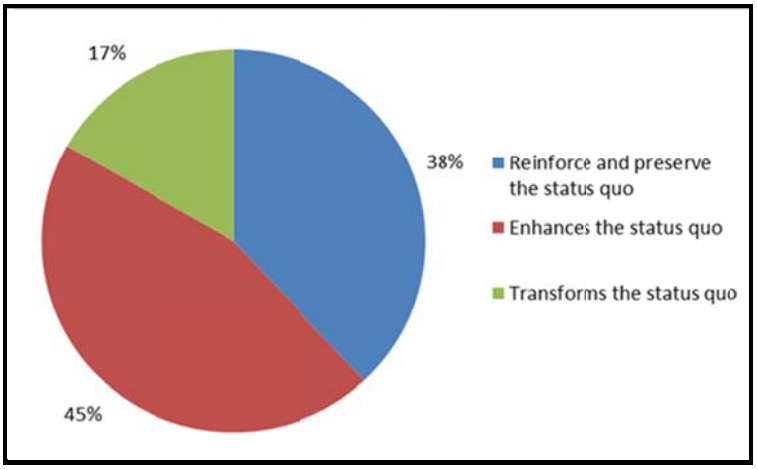
The ratio of production and service companies in the sample is 30%-70% that is, manufacturers constitute less than one third of the sample.

3.3. The evaluation of information technology use on the basis of the research results

On the basis of *Orlikowski*'s (2000) model about the role of information technology for the company, it can be established that in the case of 38% of the sample, the embeddedness level of information technology is low; in the case of 45%, the role of IT is to increase or improve business performance and in the case of only 17% can the changing or transformation of business performance be observed (Figure 2).

We also examined the role of information technology in the case of clusters created on the basis of marketing practice. It can be established that 64% of the members of the average relationship-oriented cluster make use of the performance enhancing role of IT and the supporting role, meaning the lowest level of integration, can be identified only in the case of 21%. From this point of view, the transactional cluster seems mixed. Although in the case of 40% of companies, integration is at a low level, this cluster shows one of the highest ratio of the performance transforming role of IT (21%). The members of the relationship-oriented plural cluster are characterized by the performance-enhancing (54%) and the performance transforming (38%) role, whereas the interaction cluster features the supporting (54%) and the performance enhancing (38%) role of IT. The members of the anti-marketing cluster tend to use information technology in their business procedures on a low level (8 times out of 10).

Figure 2. The role of information technology (N=179)



Source: own construction

In order to study the relationship between the level of marketing use and the role of information technology in the company, the Somers d index was applied (Table 2).

Table 2. The relationship between the marketing type levels and the role of information technology (N=142)

		Somers'd Symmetric	Somers'd marketing type dependent	Somers'd IT dependent
TM level and the role of IT	value	–0,007	–0,007	–0,008
	sig.	0,925	0,925	0,925
DM level and the role of IT	value	0,229	0,226	0,233
	sig.	0,001	0,001	0,001
EM level and the role of IT	value	0,277	0,242	0,325
	sig.	0,000	0,000	0,000
IM level and the role of IT	value	0,033	0,034	0,032
	sig.	0,667	0,667	0,667
NM level and the role of IT	value	0,161	0,153	0,171
	sig.	0,030	0,030	0,030

Source: own construction

Looking at the significance levels of the Somers d index, it can be established that with 1% significance level, there is a positive correlation between the DM and EM levels and the role of IT. With a 5% significance level, a weak positive correlation exists between the level of NM and the role of IT. The index has the highest value in the case of the relationship between the level of EM and the role of IT, but even so there is only a weak correlation.

Examining the statements of our first hypothesis on the basis of the above results, we can conclude the following: If in the cases of hypotheses H1a and H1d, a significant correlation could not be shown, we reject those. However, hypotheses H1b, H1c and H1e have been proven and we can claim that there is a relationship between the levels of DM, EM and NM and information technology use.

The values of the significance level and the values of the Somers d index used for examining the relationship between the level of information technology use and the level of success compared to previous expectations are contained in Table 3.

Table 3. The relationship between the role of IT and the level of success compared to expectations (N=125)

		Somers'd Symmetric	Somers'd IT dependent	Somers'd Success dependent
the role of IT and success level	value	0,019	0,019	0,019
	sig.	0,811	0,811	0,811

Source: own construction

On the basis of the results of Table 3, with a 5% significance level, no relationship can be is visible between the role of information technology and the success of the company that is, the extent of their performance compared to previous expectations, therefore we reject hypothesis H2.

4. Summary

Today, there is no doubt that information technology must be used in marketing. Of course, it does not mean that each company uses technological solutions to an equal extent. The research of *Brady* et al (2002) proved that relationship-oriented companies use IT solutions to a greater extent than transaction-oriented ones. This is in an interesting contradiction with the common approach, as in the literature, that services and sales supported by IT solutions tend

to be regarded as transactional rather than relationship (*Fellenz–Brady* 2006). This precisely stems from the fact that usually automation is considered the primary purpose of the introduction of information (and communication) technology, whereas today, solutions much rather serve the purpose of creating information and transforming business performance by making it possible to treat clients individually, ensuring the planning of client life cycle and the calculation of the value of client relationships. The research of *Meuter* et al (2000) proves that self service technologies are becoming more and more popular with both sellers and buyers, especially if the purpose of technology use is indeed client support and not only cost reduction.

However, the results of our survey involving 179 Hungarian companies do not clearly prove the widespread and high level use of information technology for marketing purposes as, according to over one third of the companies, information technology only plays a supportive role in business activities.

A significant correlation between the use of different types of marketing and information technology was shown only in three cases: in database marketing, e-marketing and network marketing, which is not surprising at all. Similarly, it is not an unexpected result that there was no significant correlation in the case of interaction marketing, which builds on maintaining personal relationships.

Although the effect of information technology in the enhancement of general business performance has not been clearly supported by our research, the relationship between marketing activities and IT use is well illustrated by the data relating to the level of IT use of the clusters created by marketing activities of the companies. It is apparent that the higher level the marketing activity of a given company, the more typical it is that information technology plays a role of enhancing or even transforming their business performance.

On the basis of our research, even though the effect of information technology on the enhancement of marketing performance could not be clearly supported, it can be established that in the case of three out of five marketing types, there is positive correlation between marketing and the role of information technology in the company.

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