

# **Analysis of the ICT Developments and the Online Advertising Potential of Enterprises in Zala County**

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University of Pannonia Nagykanizsa Campus

[keller.krisztina@gmail.com](mailto:keller.krisztina@gmail.com), [peter.ertzsebet@uni-pen.hu](mailto:peter.ertzsebet@uni-pen.hu)

## *Innovation gains ground*

Recently the usage of the word 'innovation' has been extremely widespread in the technical, scientific and economic sector as well. Nevertheless, if it is about the exact definition of the concept, there are different definitions as far as branches of science and authors are concerned. Innovation research belongs to several fields of science such as economics, management (technological) and to sociology as well (Torma et al., 2012).

The notion was introduced to economics by the Nobel-prize winner Austrian economist, Joseph A. Schumpeter, who came up with the oldest interpretation that he introduced in his work 'The theory of economic development' published in 1911. As he saw it, innovation in economy is doing things differently in any form and he pointed out the essence of innovation as the new combination of factors of production. These new combinations are innovations (Csizmadia, 2009:27).

The notion of innovation became more and more widespread in sectors outside economy; therefore, it was used more and more often for changes taking place in health, education and political institutions (Gáspár, 1998 - cited by Buzás, 2007, p. 15). It was necessary to arrange the several types of notions and viewpoints, which was carried out by OECD. The assortment of notions and tools connected to surveys and their findings was published in the various editions of the Oslo Manual (1993, 1997, 2005). The definition published in the third edition in 2005 is the most recognized in international and national scientists' circles: 'Innovation is any new or significantly improved product (goods or service), process or new marketing method or the introduction of a new organizational method in the business practice, in the work organization or external connections' (Oslo Manual, 2005:30; Katona, 2006:3).

Studying the various definitions of innovation highlights a crucial problem, namely the question of the relativity of innovation. According to *Kotler* (2004:382-383): 'Innovation is any goods, service or idea that is perceived as new. An idea may have come a long way but for those who observe it as new it is considered innovation.'

The appearance in different time and space makes the novelty content of the innovation relative. According to *Fazekas* (2007:23) the continuous change and renewal is the essential element of innovation since what can be considered innovation nowadays will spread all over the world and then ceases to be

innovation. Understandably, due to the inequalities of becoming general in different places cause further anomalies; therefore, while one thing is considered innovation in one place, the same thing is already a common, routine practice in another place. This approach was already suggested by Schumpeter.

Quantitative studies were carried out with this attitude in mind since being relative is one of those questions that arise in almost each point of a research. The studied enterprises regard something as innovation with view to their own individual experiences. In the questionnaire what the respondent observed or what the interviewer could accept as innovation was considered such; therefore, a compromise was reached and each mentioned innovation was a result of a bilateral relativity (Torma et al., 2012).

### *The relation of innovation and companies*

A business enterprise is such human activity whose primary aim is to satisfy customers' needs alongside with gaining profits. A company is the organizational framework of a business enterprise (Chikán & Czakó, 2008; Chikán, 2008:24-31).

Innovation is the result of the cooperation and interaction in process between companies and the various other actors surrounding them as well as of the novelty processes within the company (Andersson & Karlsson, 2007:129-149). As a consequence, company and innovation are inseparable concepts although the innovation ability of companies of different size is not unanimous among the researchers.

The newly established small- and medium-size enterprises (SME) - such as Microsoft, Cisco Systems or Google – were developing almost like a blast. Their employment-creating ability was powerful and they played an important role in innovation processes as well (Drucker, 1985:39).

According to the followers of the newer approach (Sutton, 1997:40-59; Autio, 2005; Papanek, 2010:354; Bakucs & Fertő, 2008:25-38) it is not the size of investments that matters but the quality of innovation. It may occur that SMEs invest less; however, they are more motivated when it comes to truly radical innovations (Baumol, 2002; Papanek, 2010:360).

The economic crisis that started in 2007 and that concerned almost every business sector strongly stresses that it is not worth hoping for the idea that the performance development of large multinational companies will become the future engine of the economy. Practically, improvement can only be expected from making the SME sphere more dynamic (Andrási et al., 2009:10).

The SME sector is remarkably heterogeneous (Dannreuther, 2007), which makes the development of the SME policy even more difficult; what is more, the individual aptitude of the entrepreneurs can greatly influence the success of the particular SME. The efficiency of the efforts made is the most frequently disputed questions of SME policies. The question is whether it helps innovation among SMEs if the companies and their development projects are directly supported or if the framework conditions of their operation are improved and

their innovation system is developed. The scientific literature undoubtedly stands up for the latter one (Andrási et al., 2009:62).

Economic expansion and gaining ground can be envisaged through SMEs becoming stronger; gaining strength in this case means the improvement of the adaptability, which can chiefly be acquired by increasing the innovation capacities and being open to novelties (Torma et al., 2012).

### *The role of information technology in the life of enterprises*

In the 21<sup>st</sup> century information technology plays a role in the life of companies as an unavoidable factor; moreover, some even build up information technology strategies. The general corporate strategy determines which direction the business activity should head for. The IT system strategy determines the IT tools necessary for the business goals. Information technology strategy determines how these tools should be available. IT projects assist the realization of the goals defined in the IT strategy; therefore, the projects are in conformity with the corporate strategy (Yardley, 2002; Szabó, 2011).

Enterprises, organisations and governments gather, use, store and forward an enormous amount of information and data during their operation. By now, using and managing information efficiently has become one of the key factors of competitiveness in the business sector; businesses rely more and more on information or rather on those IT systems that provide them. The development and complexity of information technology means considerable challenge for those enterprises which wish to maintain their competitiveness; therefore, they have an interest in the latest technologies (Szabó, 2011).

Certain technological changes, developments may affect the operation of the whole company; therefore, these should be carried out cautiously and with the greatest care. Furthermore, it is another crucial aspect that an IT investment means enormous expenses. Among IT projects there are frequently occurring projects that introduce integrated corporate management systems that are complex, bring along radical changes; they are expensive, their implementation requires real teamwork and their management means considerable challenge (Szabó, 2011). Due to these factors it is essential that an IT service provider company should implement the projects professionally and should have the adequate project management knowledge in the background (Szabó, 2011).

Information technology plays a significant role in the knowledge-based economy since it contributes to the fast development of the information society; in addition, it is indispensable to carry out business and non-business activities successfully within any sector (Vas, 2009:128). The extensive progress of technology contributes to the decrease of the role of territorial concentration as well as to the more effective development of clusters (Szabó, 2011).

## *Relation between innovation activity and IT investments*

Information technology includes all those methods and techniques that are useful for gaining, managing, retrieving, processing, visualising and providing information (Borza, 2010). In order to establish a strong IT manufacturer sector there are several factors needed:

- stable and strong legal and business environment
- well-considered talent support
- support of innovation
- widely spread information technology in society (Borza, 2010).

In order to have the information technology sector operate appropriately the combined effects of six factors are needed:

- expertise
- innovation-friendly culture
- world standard technological infrastructure
- strong legal system to protect intellectual property (e.g. patents, copyrights)
- open, competitive economy
- a government management that establishes the balance between the support of technology and the availability of the effects of market forces.

These six factors facilitate the development and the advancement of the information technology industry of a country to the right direction (Borza, 2010).

The development of the information and communication technology (ICT) sector has become a question of competitiveness nowadays. The ICT improves the standard of living and makes business processes more effective. By means of ICT solutions it becomes possible to produce more effectively and to develop more competitive services. The opportunities provided by the new technologies contribute to the innovations to a great extent and nowadays the ICT tools represent part of the basic infrastructure (Pannon Novum Kft., 2012).

## *Empirical research methods and objectives*

The quantitative research gathered information on the IT developments and extra revenue potential of the business enterprises participating in the study. Copies of the questionnaire were sent to organisations located in Zala County (Hungary). The sample was chosen from the database of the Hungarian Statistical Office using systematic sampling procedure. The data collection was carried out both in person and by electronic means in October 2013 involving 131 enterprises and organisations.

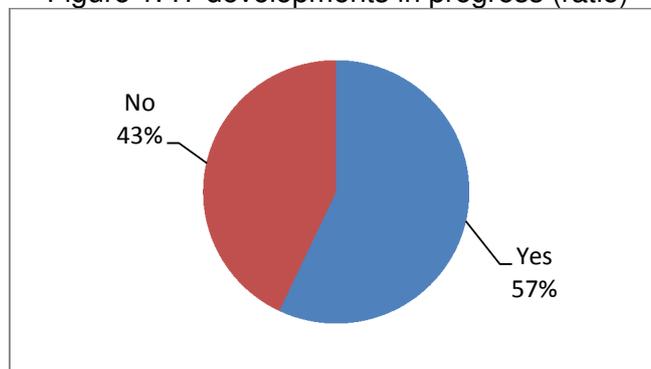
## *Statistical data on the enterprises participating in the survey*

42% of the respondents are micro enterprises, 50% are small and 3% are medium enterprises, while 5% are large companies. Half of the respondents operate as limited companies, one-fifth are self-employed people and the other categories represent less than 10% respectively.

### *Information system developments*

Companies of any size need information system and the constant development of that technology. The aim of our study was to find out the volume of IT developments among companies.

Figure 1. IT developments in progress (ratio)



Source: own research

The result shows that more than half of the enterprises (57%) improve their information systems. This ratio must increase, since *“the basis of a developing enterprise is a reliable system of well-designed and regularly maintained IT and office devices”* (Informatika outsourcing).

The question is which fields are worth developing and whether companies should use in-house specialists and/or outside contributors. A research performed by Corvinus University of Budapest reveals that *“regardless of the completion of the task (internal/external resources) the standard way of providing IT services is by establishing Service Level Agreement and differential charging. This method is mainly used by companies with external service providers. Half of the companies choose external IT service providers on the basis of their service catalogue and Service Level Agreement that provide differential charging”* (Drótos & Móricz, 2011).

Enterprises must decide on short/long-term developments and which part of their information technology should be developed. The design and development of an application with short deadline should be outsourced, while the existing computer resources and systems should be improved by in-house IT specialists. Most companies assign only 0.8% of their revenue to information technology development, which is an insignificant amount (Drótos & Móricz, 2011).

It is important to discuss the advantages and disadvantages of an internal IT development. In-house IT specialists have better understanding on the situation of the company; consequently they can maintain the system more efficiently and tailor it to the company's needs. Long-term employees, however, may become uninterested and ignore the development; hence they must be motivated all the time.

External IT service providers are usually asked to develop software tailored to the company's needs. Nevertheless, they are not familiar with the day-to-day operation of the company so they often fail to satisfy the users' requirements. External IT specialists train and motivate themselves in their own interest; they diversify and are better qualified than in-house system administrators (Informatika outsourcing).

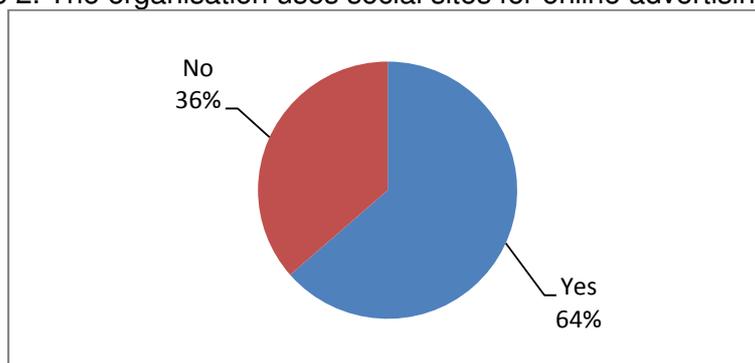
### *Advertising on social networking sites*

Universal McCann defines social media as all the applications, surface or software that help co-operation, interaction and content sharing. There are five criteria for using social media:

- Participation: Participants must be active and provide content so that the system can work effectively. Entrepreneurs should participate actively where their customers are present.
- Accessibility: One of the most important features of these contents that they can be accessed and used without restriction. The uploaded information can be commented on openly.
- Interaction: This feature distinguishes social media from other traditional media. The contents are not only provided, but are also discussed. Interaction is continuous and expected. All remarks are designed to be responded to, commented on and be shared in order to start a communication chain.
- Community: The participants share and discuss nearly everything; they can collect information together and tell their experiences. The community may be established around an experience, a common goal and any product or device that is liked by all of the members. The last one is definitely important in business terms.
- Contact: It makes social media much more effective as opposed to simple websites. The content generated by users can spread via contacts. Contents are shared by people because they are in contact with other acquaintances and communities (Király, 2010, pp. 71-73).

Advertising on social networking sites also provided an important topic for our empirical research.

Figure 2. The organisation uses social sites for online advertising (ratio)



Source: own research

The results show that nearly two-third of the respondents (64%) advertise on social networking sites. This ratio is to be raised, because it is a communication place where target groups can be separated and addressed easily.

Social networking sites have become part of our lives. Researchers claim that 90% of the Hungarian internet users who are registered for at least one site have a Facebook account and the majority visit it regularly. At the same time, LinkedIn is gaining ground in professional networking. In November 2012, only 6% of the internet users had a LinkedIn account, which increased to 10% by June 2013, however, the site has fewer active users than Facebook. Their service is used mainly by people living in Budapest with university/college degree. The number of Twitter users has grown as well; in 2012 14% of the Hungarian internet users had an account, while in 2013 21% were registered.

Google+ increases its role in business communication. Many companies apply the service to get better search results with Internet search engines. Google does its best to increase the number of Google+ users; Gmail users can hardly avoid joining the service (Forgács, 2013).

The Hungarian advertising market went up by 0.6% in 2013, which meant 175.4 billion Forints. Online advertising grew by 16%, it was worth more than 39 billion Forints (Minimálisan, de növekedett a reklámpiac, 2014).

Advertising enterprises must consider, however, that according to the figures of Kutató Centrum (Research Center) one-third of the regular users of social networking sites pay no attention to these advertisements (Kerüljük a hirdetést a közösségi oldalakon, 2013).

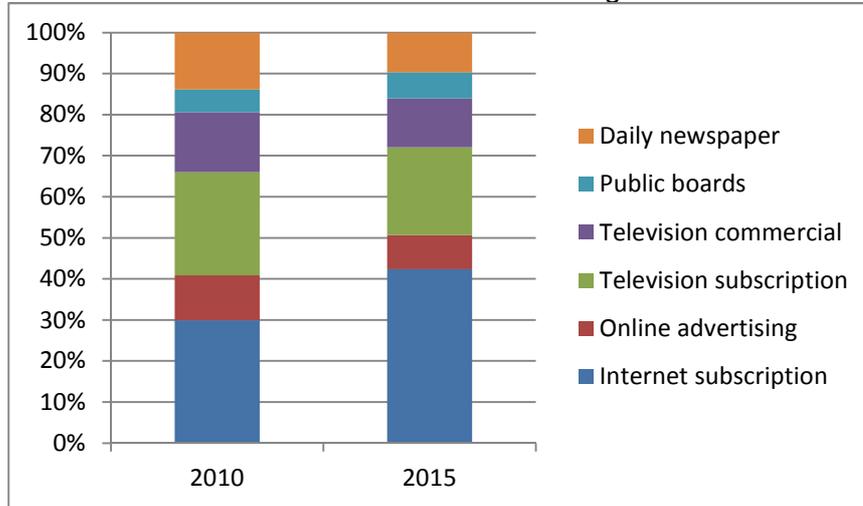
### *Other forms of paid internet advertising*

There are five types of online advertising: banners, pop-ups, contextual advertising, PR articles and newsletters.

Actually, marketing companies started advertising worldwide after they had realised the potential in online advertising. Nowadays Internet is a fully efficient means of advertising. Tony Winder, CEO of InterActive Agency Inc. stated, that *“The provision of information, entertainment and news and the connection between the contents and advertisements give new tasks for companies specialised in marketing and mass media. The information revolution is*

*happening right before our eyes and the most overwhelming part is online advertising” (Zeff & Aronson, 2000:19).*

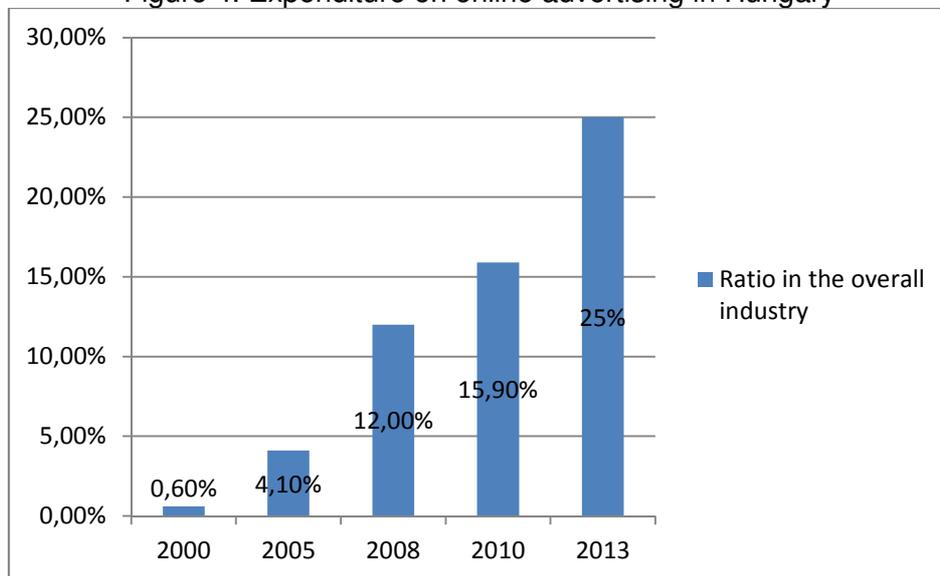
Figure 3. Structure and sources of income in the Hungarian media market



Source: Szórakoztatóipari és médiapiaci körkép, 2011-2015, p. 9.

*“Internet offers alternatives to traditional business activities. Direct mails are being replaced by e-mail marketing; television and radio commercials are being replaced by pay-per-click advertising. Contextual advertising makes up more than 50%, while banners comprise 20% of the overall advertising industry.” (Salgó, 2006)*

Figure 4. Expenditure on online advertising in Hungary

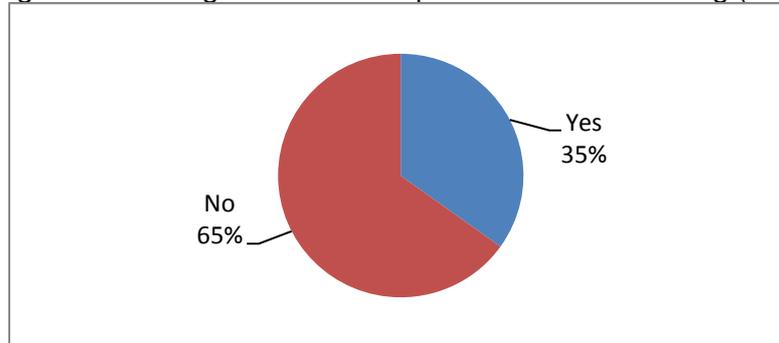


Source: Brandtrend.hu, 2014.

The bar chart clearly shows that the ratio of online advertising is increasing dynamically in Hungary. The low ratio in 2000 multiplied by seven times by 2005, and it has been growing since then (apart from a short stagnancy

between 2008 and 2009). Internet and online advertising are important tools in marketing, therefore we paid attention to them in our study.

Figure 5. The organisation uses paid internet advertising (ratio)



Source: own research

The result reveals that companies prefer advertising on social networking sites to using paid internet advertising (35%). However, companies must consider other forms of internet advertising when promoting products or services.

### Correlation analyses

Cross-tabulation analyses the correlation between two or more variables and shows their combined frequency distribution. After the analysis we find out whether the two nominal or ordinal variables have any connections (Sajtos & Mitev, 2007:137).

The study evaluated the correlation between the variables by using Chi square tests. This method defines the statistical significance of correlation between the two variables. In order to be able to continue the analysis, value of the indicator must remain below the chosen  $p < 0.05$  significance level threshold.

Cramer V is considered the “most reliable” index by many researchers (Sajtos & Mitev, 2007:143). The symmetrical coefficient determining the level of correlation varies between 0 and 1, where 0 means no correlation and 1 means significant correlation. The research proved connection between the type of the company and the IT developments.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18,757 <sup>a</sup>	4	,001
Likelihood Ratio	17,493	4	,002
Linear-by-Linear Association	,394	1	,530
N of Valid Cases	131		

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	,378	,001
	Cramer's V	,268	,001
N of Valid Cases		131	

At 0.001 significance level, the value of Cramer V indicator is 0.268, which means medium correlation. We conclude that expensive information system developments can mostly be carried out by capital intensive companies.

We found no significant correlation between the type of the company, the average statistical staff number of employees and other elements of the test area.

## Summary

Enterprises, organisations and governments gather, use, store and forward an enormous amount of information and data during their operation. By now, using and managing information efficiently has become one of the key factors of competitiveness in the business sector; businesses rely on information or rather on those IT systems that serve them more and more. The development and complexity of information technology means considerable challenge for those enterprises which wish to maintain their competitiveness; therefore, they have an interest in the latest technologies.

Our research was divided into secondary and primary parts. In addition to defining innovation, the studied scientific literature analysed the relationship of innovation and enterprises and the significance of information technology as well as the relationship between innovation activities and IT investments in businesses.

The questionnaire related to our quantitative research examined the information technology developments of the studied enterprises in Zala County and the advertising potential of the respondents. 57 % of the studied enterprises invest in developing their IT systems. 64 % of the respondents make use of the opportunity to advertise on social network sites; in comparison with this, they advertise via other online channels to a much less extent (35%). These proportions are definitely to be increased since such a communication interface is present where the target groups can be easily distinguished and aimed at.

As for closing the research we carried out correlation analyses between the characteristics of the enterprises, the IT developments and the advertising potential. In the cross-sectional analysis we have found moderately strong relation between the legal framework and the IT developments to be realised at enterprises. We have investigated further correlations between the legal status of the enterprise, its average statistical personnel and the studied fields.

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## References

- Andersson, M., & Karlsson, C. (2004). Regional Innovation Systems in Small & Medium-Sized Regions. In Johansson, B., Karlsson, C., & Stough, R. (Eds.), *The Emerging Digital Economy: Entrepreneurship, Clusters and Policy* (pp. 55-82). Berlin; Heidelberg: Springer.
- Andrási Z., & Papanek G. et al. (2009). *A mikro-, kis és közepes vállalatok növekedésének feltételei*. Budapest: GKI Gazdaságkutató Zrt.
- Autio, E. (2005). *Global Report on High- Expectation Entrepreneurship. Global Entrepreneurship Monitor*. Babson Park MA, London: London Business School Mazars-Babson College.
- Bakucs L. Z., & Fertő I. (2008). Érvényes-e a Gibrat-törvény a magyar mezőgazdaságban? *Közgazdasági Szemle*, (1), 25-38.
- Baumol, W. (2002). *The Free Market Innovation Machine; Analysing Growth Machine of Capitalism*. Princeton University Press.
- Borza T. (2010). *Az IT szektor és versenyképesség az Európai Unióban*. [Szakdolgozat.] Debrecen: Debreceni Egyetem.
- Buzás N. (2007). Individuális innovációs intézmények. In Buzás N. (Ed.), *Innovációmenedzsment a gyakorlatban*. Budapest: Akadémiai.
- Chikán A. (2008). *Vállalatgazdaságtan*. 4th Edition. Budapest: Aula.
- Chikán A., & Czakó, E. (2008). Versenyképesség vállalati nézőpontból. In Chikán A., & Czakó E. (Eds.), *Versenyben a világgal – Vállalataink versenyképessége az új évezred küszöbén*. Budapest: Akadémiai.
- Dannreuther, C. (2007). EU SME Policy: On the Edge of Governance. *CESifo Forum*, (2).
- Drótos Gy., & Móricz P. (2011). *A vállalati informatika szerepe a versenyképesség alakításában a pénzügyi és gazdasági válság időszakában*. TM 37. sz. műhelytanulmány. Budapest: BCE Vállalat gazdaságtan Intézet Versenyképesség Kutató Központ.
- Drucker, P. F. (1985). *Innovation and Entrepreneurship, practice and principles*. New York: Harper and Row.
- Fazekas Zs. (2007). *Innováció, hálózatok és emberi erőforrás a vidékfejlesztésben*. [PhD Dissertation.] Budapest: Corvinus Egyetem.
- Gáspár L. (1998). *Általános innovációelmélet*. Budapest: Magyar Innovációsszövetség.
- Katona J. (Ed.) (2006). *Az innováció értelmezése a 2005. évben kiadott Oslo Kézikönyv 3. kiadása alapján. Az NKTH megbízása alapján készült tanulmány összefoglalója*. Budapest: NKTH.
- Király A. L. (2010). A közösségi média alkalmazásának lehetőségei az építőipari marketingben. *Marketing & Menedzsment*, 44 (4), 71-75.
- Kotler, P. (2004). *Marketing menedzsment*. Budapest: Műszaki.
- Papanek G. (2010). A gyorsan növekvő magyar kis- és középvállalatok a gazdaság motorjai. *Közgazdasági Szemle*, 57 (4), 354-370.
- Pannon Novum Kft. (2012). *I3CT Klaszterfejlesztési koncepció és cselekvési terv*. Budapest.

- Sajtos L., & Mitev A. (2007). *SPSS Kutatási és adatelemzési kézikönyv*. Budapest: Aliena.
- Szabó F. (2011). *Informatikai projektek menedzsmentje*. [Diplomadolgozat.] Veszprém: Pannon Egyetem.
- Torma R., Birkner Z., Péter E., & Lehota J. (2012). *Kutatási jelentés „ICT határon átnyúló klaszterképzés” című projekt célja kétoldalú üzleti együttműködések és kapcsolatok kialakítása Magyarország és Horvátország határ régióiban*. Budapest.
- Zeff, R., & Aronson, B. (2000). *Reklám az interneten*. Budapest: Geomedia.
- Yardley, David (2002). *Successful IT project delivery. Learning the lessons of project failure*. Harlow: Pearson Education Limited.