

The Economies of Balkan and Eastern Europe Countries in the changed world, EBEEC 2014, Nis, Serbia

## Readiness for future internet services in rural areas

Szilvia Botos\*, Miklós Herdon, László Várallyai

*University of Debrecen, Faculty of Economics and Business, Institute of Applied Informatics and Logistics, Böszörményi út 138., Debrecen, 4032, Hungary*

---

### Abstract

Among the functional analysis the evaluation of rural regions has a growing importance. From the analysis reveals, that there is a significant difference between rural and metropolitan areas. With regard to the territory and the population, Hungary is mainly ranked as rural area, so in accordance with our objectives, the attitudes of the business sector have been studied globally on a rural settlement and we present our results in this article. We have chosen Hajdúböszörmény for detailed analysis and 106 enterprises involved in our study. The data collected during the research were construed by Principal Component and Cluster analyses and the results were evaluated from two aspects. On the one hand for the SME-s, and on the other hand for agricultural enterprises. The separation was necessary because the situation of the SME-s had a bad reputation, especially in rural regions. The basis of the results of the analysis, agro-enterprises use ICT at least of all. The farms do not use and consider unnecessary the use of broadband services, referring to the nature of their work. They communicate with partners and clients personally and trust is very important factor for them. They sell the products and carry out the purchase just few places. A change in this situation is not expected in the foreseeable future. In contrast, the most of factors were considered important or expressly important by service and commercial enterprises, regardless from the application. Regarding to remote network services there was a uniform conclusion. The majority of SME-s is not familiar with these services, and when the services are known, these are not considered useful or efficient. The price is not a determinative factor for the use of these services, so the diffusion of the solution would be difficult and lengthy. E-business can do much to strengthen the vitality and sustainability of agricultural and related industries. Enterprises still do not interested in new IT solutions, such as Cloud Computing. They not trust about it and only 10% considering to take a remote software or data server. We have concluded that the current result of network investments is principally the creation of the possibility and right of accessibility, and equal opportunities. The business SME sectors do not take enough advantage of business opportunities provided by networks.

© 2015 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review will be under responsibility of Department of Accountancy and Finance, Eastern Macedonia and Thrace Institute of Technology, Kavala, Greece.

---

\* Corresponding author. Tel.: +36-52-508444; fax: +36-52-486255.  
E-mail address: [botos.szilvia@gmail.com](mailto:botos.szilvia@gmail.com)

*Keywords:* Future internet; infrastructure; broadband services; usage, enterprises.

---

## 1. Introduction

It is indisputable that the presence on digital platforms, i.e. the online presence and the speedy transmission of information became crucial for all economic sectors and for the society. In parallel with the development of digital technology a so-called digital ecosystem is emerging, in which all areas of living and business are supported by digital solutions. In the digital ecosystem millions of users (population, enterprises, and public institutions) and tens of millions of tools communicate with each other, using tens of thousands of contents and applications. The constantly emerging new infocommunication services and its accessibility, technical characteristics and affordability now have a central role in shaping the structure and development of the economy. These are important in the improvement of the quality of life and provide new business possibilities and advantages. As the result of the process thanks to the significant increase in the number of users the data traffic has been also notably increased. The need for speed of new services and applications and the network security expectations has also become higher. The development of a network infrastructure suitable for reliable and secure data transmission has become crucial which now means the construction of the Next Generation Network (NGN). Among the functional analysis the evaluation of rural regions has a growing importance. Currently the rural development policy has been acquiring a stronger role in the strategy of the European Union and its Member States, since the social and economic role of rural areas is very important. SMEs also have an essential role in the Hungarian economy, mainly in rural regions. Consequently, the analysis of the ICT situation and future prospects of SMEs has become essential. Therefore in our article we present the role of network development in rural regions and the usage and infrastructural characteristics and future network attitudes of small and medium sized enterprises.

## 2. The role of ICT for SME sector in rural regions

These areas constitute more than 91% of the EU's territory and here is the place of residence of the 56% of EU's population. The 66% of Hungary's territory is classified as a rural area, where 48% of the population lives (Eurostat). In addition our country has a significant agricultural and food industry which is the typical sector of rural regions.

The food and agriculture sector represent a significant part of the European Union economy. In Hungary in 2012, 8.5% of the number of persons employed worked in these two sectors and they represent around 5% of the GDP (KSH). EU is one of the largest food and beverage producer and the overall value of their production is estimated at 675 billion euros (European Council, 2006).

Guo& Jin (2009) pointed out that the rural regions have, increasingly, multifunctional role and not only agricultural, food and raw material production functions. They have a role of the conservation of natural resources, they have socioeconomic functions, the leisure and tourism industry is very important and enterprises with diversified economic activity appear in these regions. However, these regions facing serious difficulties, resulting from the ageing of population, the poor infrastructure, the lower standards of service and the high unemployment. The main objectives of rural development are defined taking into account the following aspects (FVM, 2007):

- to prevent the migration of rural population,
- to make attractive the living and working conditions,
- providing alternative income opportunities in addition to the agricultural income sources,
- to preserve and renew the values of man-made, cultural and natural values of rural regions which includes the development of rural tourism,
- to develop and strengthen the cooperation of economic sectors.

SME sector is very important therefore the national and regional competitiveness is crucial. The backwardness of SMEs means big problem for EU and Hungarian economy equally, because they play very important role. In

Hungary there are more than 1.6 million enterprises now and the vast majority of these (~99%) are micro, small and medium sized companies. In proportion to its share, they employ a great portion (~75%) of the overall employees. Furthermore they produce almost 50% of Hungarian GDP and they give one-third of export (KSH). However the competitiveness of domestic SME sector is weak in international comparative terms (Szerb, 2008). Less than 48% of business start-ups survive the first five years, 90% of them couldn't develop and just 1% plans the market entry in abroad ([www.vallalkozasvezeto.hu](http://www.vallalkozasvezeto.hu)). ICT contribute to it, as regards the effects of new ICTs, e-commerce and e-business, their impact has been the multiplication of possible business configurations and thus choices to make for managers. In contrast to the traditional organization of a sector where business models looked alike, the range of possible new business models in the ICT era have grown strongly (Herdon et al., 2006). This is the reason why ICT development is so important, particularly for SMEs.

ICT helps companies to increase their potential for competitive advantage by enabling them to perform primary and support activities either at less cost or in a way that leads to differentiation and a premium price (Bayo-Moriones&Lera-López, 2007). ICT creates many new interrelationships among businesses, expands the scope of industries in which a company must compete to achieve competitive advantage. Information systems and technology allow companies to coordinate their activities in distant geographic locations (Fathian et al., 2008). Despite these advantages, one big sector is the small enterprises, which means bottleneck in ICT usage, mainly in rural areas and poor social strata (Struzak, 2010). However one of the range of factors that has been identified as impacting upon the level of ICT adoption amongst SMEs is access to and confidence in external specialist advice (Morgan & Colebourne, 2006). With the help of different surveys and calculations, researchers made many advantages relating to fast data networks, which support their activities. But in practice they don't think that it may give them any chance or opportunity. SMEs have special needs because of their limited resources in terms of personnel, finances, and knowledge pertaining to management, marketing, commercialization, or information technology. They often lack knowledge and expertise about international trade issues and foreign markets. An IT outsourcing service provider asked almost 9000 enterprises in Central-Hungarian region to find out the IT situation of them and whether they interested in the new IT solutions or not. It found out that SMEs have more than one decade backwardness in their IT systems (Navigator, 2012).

The analyses of the SME sector are important to determine the factors which hinder them reducing the digital divide and exploiting the potential of broadband services. The empirical studies of Bayo-Moriones&Lera-Lopez (2007) have confirmed the positive impact of ICT on the performance of enterprises, not only in terms of productivity, profitability, market value and market share, but also in terms of indirect indicators such as process efficiency, service quality, cost savings, organizational and process flexibility, and customer satisfaction. According to Guo& Jin (2009) the use of ICT and e-commerce are only help the survival, they don't provide economic benefits for enterprises in business life. For the competitiveness of rural SMEs in the 21st century, additional services are required, which increase the satisfaction of clients and the safety of business transactions. The demand of special products is not sufficient. Atzeni&Carboni (2006) surveys conducted at Italian firms demonstrates the link between ICT, productivity and the level of innovation investment. Their research results support the hypothesis that in the case of ICT the technological development differs from the development of conventional technologies and the investment has a greater impact on the enterprise than the ratio of ICT capital investment represents. Redoli et al. (2008) examined among SMEs the impact of ICT on innovation performance and they highlighted its importance in the cooperation of businesses. Janom&Zakaria (2008) developed an e-readiness model for analyze the B2B e-commerce activities of SMEs, which in they analyzed in particular those technologies which are necessary to the usage of electronical actions and their adaptation. Kamal et al. (2009) pointed out that, according to World Bank experts, the IT adaptation willingness of micro-enterprises increase their performance by 3.4% potentially. The factors enabling the increase of performance are the expansion of possibilities to achieve the market, the increase of efficiency of administration and the speed of access to information.

According to Ramírez-Medina (2009) more company consider important and innovative the usage of e-technologies than are introduced. Fathian et al. (2008) reviewed the proposed models for e-readiness assessment on national level and they identified the critical factors for evaluation of e-readiness of SMEs. They examined as priority factors the organizational characteristics, the availability of ICT infrastructure and the security and legal environment of ICT.

So several solutions have proposed for enterprises, the main problems and those benefits, which could motivate the managers for developing online contents, doing online commercial and marketing activities and using the available e-services, have identified. In spite of these research results, the Hungarian SME sector the progress has been slight. In respect of use of these services, the results of our own research the vast majority of managers of enterprises don't show motivation. In our opinion this mentality could mean in many cases difficult operation for undertakings. Joining to the online presence doesn't mean a high expenditure of time and money, but it would bring high savings in costs and time. Moreover, for a new enterprise, it is a great advantage that it can apply the new techniques and technologies immediately.

### 3. Methodology

We made Principal Component analysis the basis of 23 variables of part of our survey which contains questions about Internet usage. We considered important to make it in the interest of clarity, to reduce the number of variables. First, we made the internal reliability test of the variables by question groups with Cronbach-Alfa analysis. The result of the test have to be 0.6 at least, in the case of all groups this condition has been met. We also checked the suitability of data for Principal Component analysis, we used Kaiser-Meyer-Olkin (KMO) and Bartlett-test, and Anti-image correlation matrix. The result of the test is that the variables are suitable for further analysis. Since we had scale type variables, calculation and usage of Spearman-correlation matrix deemed appropriate for the analysis. We used Varimax rotation. The variables were subject to a principal component analysis. This was necessary for the grouping of the 23 variables in some background variables. The principal components have been used also for cluster analysis, and the aim of the analysis was to determine how the activities of the enterprises affect the views regarding utility of network services. In case of clusters the average value of the principal components has been evaluated. The aim of the cluster analysis is to classify the observation units in relatively homogenous groups based on the variables involved in the analysis. The process is successful when the units are similar to the other components of the group but are different from the elements of other groups. In the cluster analysis the fundamental task is to determine the variables which cause the difference between the groups, therefore the cluster analysis is frequently performed with variables produced during factor analysis. For our studies the Ward's method was applied because it minimises the loss of information caused by the combination of groups. The Ward's method is favourable because of the use of scale variables and there was no extreme value. The deviation of the groups was nearly identical, and the correlation between variables was eliminated during the principal component analysis. The Ward's method calculates the average of all elements for each cluster, than the Euclidean squared distance for all observation units shall be calculated. The Euclidean squared distance was selected because it is suggested by the main scientific literature for Ward's method. The characterization of created clusters was made based on variables measured on grouping, not metrical scale, by cross tabulation analysis.

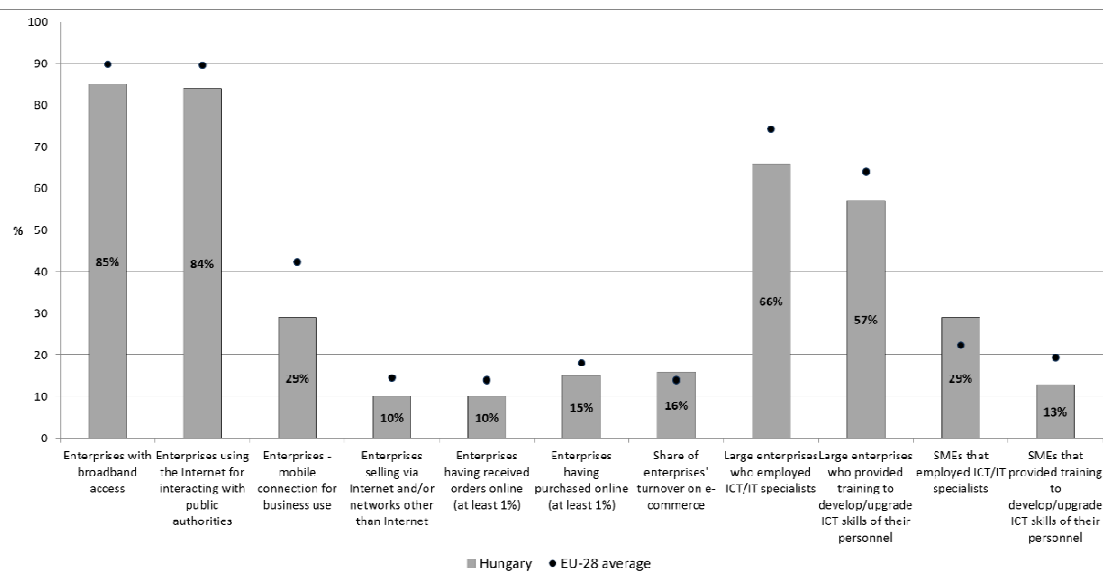
### 4. The ICT development of Hungarian Enterprises

Hungary achieved good results in many ICT area, in addition to the improvement of the overall Internet infrastructure and usage characteristics, the popularity of new applications is also increasing among enterprises.

The percentage of enterprises which have broadband access was 85% in 2013, but this penetration still remains below the EU average, as well as in 2008. The use of mobile Internet increasingly appears in several sectors as important technology. Almost one third of the enterprises apply it already in Hungary, but our backlog is still more than 13% from the mean of EU-28. The usage rates of other e-services are also below average. The turnover of e-commerce increased significantly, on the Hungarian electronic market the amount of goods was ~180 million Euro in 2008, but in 2012 achieved ~500-560 million Euro (Piac&Profit, 2013). Currently almost 6000 webshops are available in Hungarian and operate actively, which means that these webshops really work, so the owner and/or the operator shall keep the catalogue of the webshop permanently updated and in repair. 4100 of the 6000 webshops in Hungarian registered in Hungary (Dojcsák, 2013). The rate of enterprises, whose turnover from online sales is at least 1%, is 10% which is less by 4% than the average of EU countries. On the other hand, the share of enterprises' turnover on e-commerce from the total turnover is 16% in Hungary, which is higher than the EU-28 average (14%).

Figure 1 clearly shows that in the case of ICT indicators of the enterprises the difference between the Hungarian and EU-28 average values in most cases was only a few percentage points in 2013.

In Hungary the popularity of new applications is growing both in business and private sector. The development of e-commerce is a good example for it. In 2009 the trade of retail stores was almost 360 million Euro, which means 2% from the overall trade. For this added further 100-110 million Euro trade value from online auction markets (GKIeNET, 2011). But this rate is still much below the EU-27 average, where the percentage of enterprises' total turnover from e-commerce was 4.2% in 2007 (epp.eurostat.ec.europa.eu). In the regions of Hungary only 40-50% of enterprises have website (except Central-Hungary where this rate is about 70% thanks for the capital) (KSH). E-



services were popular among undertakings in 2010, the utility (time and cost saving) of these services is high for them. They made use of the online platform for education and administrative procedures a lot smaller (20% and 51%), but during two years it increased. Late data are not available, but based on the year of 2010 we come to the conclusion that nowadays the enterprises use almost the full range of e-administration.

Fig. 1. Development of Hungarian enterprises in ICT indicators and the average of EU-28  
Data source: Eurostat, 2013

## 5. ICT Readiness of SME sector – A case study

Our research focuses for rural micro and small to medium enterprises about their significant economic role. With our survey we would like to get answer that how firms use internet, which are the relevant ICT for them and what it depends on. We consider it important to know the ICT attitudes of companies how depends on the economic factors and what the tendency might be expect in this area. For this we asked several SMEs from a settlement – which is a typical in the North-Hungarian region and its main profile is agriculture – to fill our survey. In the town operate approximately 2000 enterprises (KSH). The number of SMEs which we interviewed was 106. The sample represents well the enterprises of the town. The most part is the service and commercial businesses and those firms which related to the agriculture. Our aim was to find out that are they find useful the Internet, the network services and the infrastructure. The basis of the answers we determined which opportunities will expect in the future too.

We have got five principal component as the result of the analysis with higher than 1 eigenvalue. The cumulative variance of the five components was 72.794%. This is significantly exceeding 60%, which is required in socioeconomic analysis.

According to the result of this analysis the five principal components have been ranked in five groups of indicators. These represent how much the company decision makers recognize the utility of Internet in relation to the single activities.

1. Function supporting internal and external Internet relations
2. Importance of online presence
3. Function supporting purchasing activity
4. Importance of online advertising
5. Sales promotion function

We made Cluster Analysis on the basis of our original variables and the aim of it was to find out how the type of sector of the enterprises influences the opinions of utility of the network services. The result has shown by Figure 2.

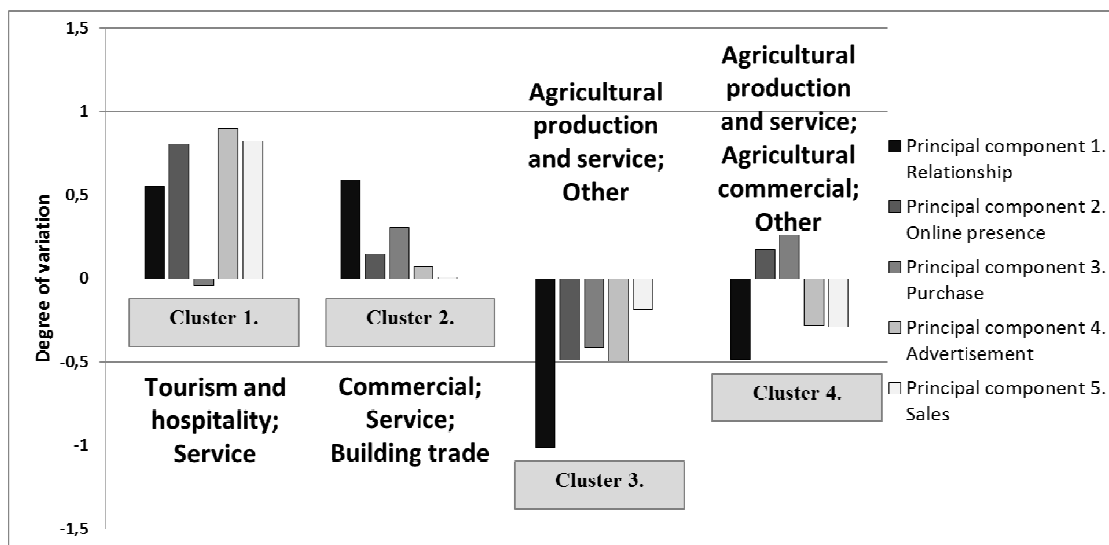


Fig. 2. The result of cluster analysis. Source: Own survey

To determine whether or not the differences between the clusters are significant, we made variance analysis (ANOVA) on the principal components. The result of it, that there is a significant difference between the clusters ( $P < 0.001$ ). Table 1 shows the distribution of enterprises in the clusters by their activity.

The decision makers in the 1st cluster evaluated very positively all the components except for the third one. The members of the cluster consider really important and useful the services available on Internet. Mainly the enterprises on tourism and catering and service are ranked in this group. Considering the importance of the sector in the town this is a very good result, as the presence on Internet is a crucial factor to take advantage of development possibilities. It is crucial that - based on the results - the enterprises of the sector are aware of these possibilities. In the case of the 2<sup>nd</sup> cluster all of the components are positives, but the difference respect to the 1st cluster consists in lower component scores. The score of 4<sup>th</sup> and 5<sup>th</sup> components are much lower but the 3<sup>rd</sup> one is much higher. This cluster contains several types of enterprises, but most of the commercial, service and building trade enterprises are in it. The 3<sup>rd</sup> and 4<sup>th</sup> cluster contains mainly members of agricultural activities and some enterprises with other activity. The component scores are the lowest in this cluster.

The basis of the results of the Principal Component and Cluster analysis, agro-enterprises use ICT at least of all. In their case, these services are not necessary for their activities because they communicate with partners and clients personally. Trust is very important factor for them. They sell the products and carry out the purchase just few places. The result was not surprising regarding to usage of internet services. The most dominants are sending e-mails and searching general information. Unfortunately, the micro-enterprises related to agriculture (individual and family farms) chose these two services in almost all cases. The larger companies use internet for relationship with partners and clients and for marketing and innovation goals also. The e-commerce activity is very low, but in purchasing and sales, it has effect reducing costs.



In the second part of our survey we made questions to find out the expected ICT tendency of SMEs in the future. New ICT approaches, however, offer solutions that will be as applicable to the small business as to the large (Herdon, 2009). Enterprises still do not interested in new IT solutions, such as Cloud Computing. They not trust about it and only 10% considering to take a remote software or data server. The other part of our questionnaire served the purpose of understanding the currently and future IT-attitude of managers. To identify the requirements in terms of e-services, which have a role in the reduction of costs and mean an available and affordable solution for SMEs, was an important aspect in the analysis.

For 45% of the enterprises consulted the payment of costs related to the telecommunication is not a problem, but for 55% means a greater or a lesser burdensome cost. The IP-based data transmission may contribute significantly to a reduction of costs: telephone charges by IP-telephone, cost of purchasing of softwares and storing of data can be reduced by different outsourcing possibilities. 17% of the respondents know and use the IP-based services, in the opinion of 40% this option is not effective so they don't use them, 43% of the respondents have never heard about these services. The development of speed of Internet connectivity has slightly higher importance for businesses. 33% of the respondents took in Internet service with data rate of 50 Mbit/s even if it would cost more expensive. 30% don't require such fast Internet and for 37% the existing speed is appropriate. So one third of the businesses faster service is necessary, because with the current speed the wait time is relatively long during their work. In our opinion, the expanding range of e-services will strengthen – even it means an increase of only a few percent – the demand in the settlement studied.

To map the future trends relating to the Cloud Computing services we asked the managers about the softwares used in the enterprises. More than 60% of the respondents don't use softwares for their activities, more precisely the vast majority of the enterprises use the minimum basic software necessary, accounting and inventory systems are most often used. Integrated systems used by only 4% of the enterprises studied and there are software which support two or more economic activities in only a few companies. During the personally interviews it was found that dedicated software are not required for the given activity, in contrast where there is a demand for them, there are financial problems. The use of Cloud Computing affords a solution for the enterprises with lack of funds, because the costs are lower and lower, in addition by the gradual introduction (by modules) a flexible and scalable system may be established which guarantee high integration at the same time (Schopp, 2011).

At the respondent enterprises the majority of decision makers rejects the use of network services. Neither the reduction of cost represents a motivation. The main reasons can be the lack of knowledge and skills, the low level of openness to change which are particularly present in the rural areas. In many cases these services obviously are not needed (farmers), here the main problem is the serious lag in the use of Internet. Based on the results of the questionnaire we have concluded that the IT closing up of small, middle and micro enterprises is a very slow process, and we would like to underline two reasons. It shall be started from a level much lower than the average which will be restrained by the IT attitudes of decision makers. In relation to software and remote data access we detected poor performance results. The 60% of the enterprises does not use specific software for the activities, and the 29% does not trust in remote services. Only the 10% of the enterprises represents a potential development, notwithstanding that there are specific, cost-saving solutions also for small enterprises. The situation is more serious for remote data access. The 92% of the enterprises consider secure when the data are stored in place, on own devices. Only the 8% of the enterprises considers secure this solution, while in reality the data are stored more safely at a company specialized in data storage than on a computer used by collaborators. At 48% of the respondent enterprises more employees use the same computer, therefore there is a greater chance of Internet attacks.

## 6. Conclusions

It's hard to say forecast what will be the tendency for a decade later, since that is impossible in our rapidly changing world. But that's sure that the catching-up of SMEs will be slow process. A change in this situation is not expected in the foreseeable future. But e-business can do much to strengthen the vitality and sustainability of agricultural and related industries.

Based on our questionnaire we have concluded that the situation of agricultural enterprises, especially of farmers is very serious, they have a significant lag in the use of broadband services. They don't use and do not consider necessary the use of these services, referring to the nature of their work. The company managers have recognized the advantages of network services only very slightly, and they have given a positive assessment mainly in relation to purchasing activities. The use of ICT applications is the slightest among the agricultural enterprises. These

services are not necessary for their activities, the contact with their partners and clients is maintained in person. The purchases are realized only from a few suppliers and selling is targeted to only a few clients. The trust and personal contact are the most important for them. The most of factors were considered important or expressly important by the decision makers of service and commercial enterprises, regardless from the application. Due to the relevant role of agricultural sector many farms operate in the town, having similar attitudes, but it must be underlined that service and catering enterprises provide substantially better application characteristics.

## References

- Atzeni, G. E. and Carboni, O. A., 2006. ICT productivity and firm propensity to innovative investment: Evidence from Italian microdata. *Information Economics and Policy*. Volume 18. Issue 2. June 2006. pp. 139–156.
- Bayo-Moriones, A. and Lera-López, F., 2007. A firm-level analysis of determinants of ICT adoption in Spain. *Technovation*. Volume 27. Issue 6-7. June–July 2007. pp. 352–366.
- Dojcsák, D., 2013. Kétszázmilliárd forint felett a magyar online boltokforgalma. <http://www.hwsz.hu/hirek/50247/enet-kutatas-magyar-webshop-vasarlas-kereskedelem.html>
- epp.eurostat.ec.europa.eu
- European Council, 2006. Bridging the Broadband Gap. [Online] <URL: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0129:FIN:EN:PDF>>
- Fathian, M. et al., 2008. E-readiness assessment of non-profit ICT SMEs in a developing country: The case of Iran. *Technovation*. Volume 28. Issue 9. September 2008. pp. 578–590.
- FVM – Földművelésügyi és Vidékfejlesztési Minisztérium, 2007. Új Magyarország Vidékfejlesztési Program. [http://www.terport.hu/webfm\\_send/179](http://www.terport.hu/webfm_send/179).
- Guo, Q. and Jin, B., 2009. Development of E-business and Networking in Rural Small and Medium-sized Enterprises. pp. 2912–2915. In: *Information Science and Engineering (ICISE), 2009 1st International Conference*. IEEE ISBN 978-1-4244-4909-5 Nanjing. 26–28 Dec. 2009
- Herdon M., 2009. Impacts of e-collaboration tools for development of rural areas. *AVA Congress 4: International Congress on the Aspects and Visions of Applied Economics and Informatics 2009.03.26–2009.03.27*. In: *Book of Abstracts*. Agroinform Publisher, pp. 952–959. (ISBN: 978-963-502-897-9).
- Herdon M. et al., 2006. e-Factors in e-Agribusiness. *Information Systems in Agriculture and Forestry XII. European Conference*. 2006.05.16–2006.05.17. Czech University of Agriculture in Prague. pp. 1–10. (ISBN: 80-213-1494-X)
- Janom, N. and Zakaria, M. S., 2008. B2B E-Commerce: Frameworks for E-Readiness Assessment. pp. 1–8. In: *Information Technology, 2008. ITSIM 2008. International Symposium Vol: 1* (eds. Mohd Nasir Taib) IEEE ISBN 978-1-4244-2327-9 Faculty of Information Science and Technology Universiti Kebangsaan Malaysia Kuala Lumpur. 26–28 Aug. 2008.
- Kamal, M. et al., 2009. Development Outcomes from IT Adoption in Micro-Enterprises. pp. 1–10. In: *System Sciences, 2009. HICSS '09. 42nd Hawaii International Conference*. (eds. Ralph H. Sprague Jr.) IEEE ISBN 978-0-7695-3450-3 Big Island, HI. 5–8 Jan. 2009.
- Morgan, A., D. and Colebourne, B. Thomas. 2006. The development of ICT advisors for SME business: An innovative approach. *Technovation* 26. pp. 980–987.
- NAVIGATOR Informatika Zrt., 2012. Évtizedes lemaradásban a kkv-k. [http://www.navigatorrt.hu/evtizedes\\_lemaradasban\\_a\\_kkv\\_k\\_1.html](http://www.navigatorrt.hu/evtizedes_lemaradasban_a_kkv_k_1.html)
- Piac&Profit, 2013. Webshop trendek: bővülés változik az online piac. <http://www.piacprofit.hu/infokom/webshop-trendek-bovul-es-valtozik-az-online-piac/>
- Ramírez-Medina, J. A., 2009. Enterprise 2.0 Readiness Index. pp. 2677–2684. In: *PICMET 2009 Proceedings*, August 2–6, Portland, Oregon USA. IEEE ISBN 978-1-890843-20-5 Department of Engineering and Technology Management Portland State University, Maseeh College of Engineering & Computer Science Portland, Oregon USA. August 2–6 2009
- Redoli, J. et al., 2008. A model for the assessment and development of Internet-based information and communication services in small and medium enterprises. *Technovation*. Volume 28. Issue 7. July 2008. pp. 424–435.
- Schopp, A., 2011. Kevés a komplex rendszer. IX évf. 10. szám pp. 14.
- Struzak, R., 2010. Broadband Internet in EU Countries: Limits to Growth. *IEEE Communications Magazine*. Volume 48. Issue 4. April 2010. pp. 52–57.
- Szerb, L., 2008. A hazai kis- és középvállalkozások fejlődését növekedés befolyásoló tényezők a 2000-es évek közepén. *Vállalkozás és Innováció (V&I)* 2. évf. 2. szám. pp. 1–35.
- [www.ksh.hu](http://www.ksh.hu)
- [www.vallalkozasvezeto.hu](http://www.vallalkozasvezeto.hu)