

INFORMATION

The intensity and quality of Internet usage in the agriculture sector and possibilities of its further development

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ABSTRACT

The level of the usage of information and communication technologies (ICT) has a direct influence on the development and competitiveness of individuals, firms, production sectors, regions and even the whole continents. The availability of ICT, including the Internet, to agricultural enterprises in the Czech Republic is already very satisfactory. Due to the structure of agricultural enterprises the penetration of Internet technologies in the Czech Republic is more intensive than in most EU countries. Therefore an urgent issue is the level of the usage of these technologies that is not an issue related to finances anymore but it is a problem related to the knowledge and habits of users and availability of information and services. The project of the portal for the agriculture sector and countryside AGRIS has a significant impact on the level of the usage of Internet information and services in the agriculture sector.

Keywords: ICT; Internet; portal; agriculture; agriculture sector; information; services; utilization

The level of the usage of information and communication technologies (ICT) has a direct impact on the development and competitiveness of individuals, firms, production sectors, regions and even the whole continents. It is possible to state that the general characteristics and principles of ICT usage in the agriculture sector are beyond any doubt valid and will be valid in future. Some specific aspects are reflected that characterize this environment as well as the time delay of the development caused by the conditions in this sector.

Having mapped the situation in the sphere of agricultural informatics we can confirm that nobody had been interested in the issue of Internet technologies in this sphere. One of the first published surveys was the research of the Institute of Training and Education of Ministry of Agriculture of the Czech Republic (IVV, it does not exist anymore), realised by visitors to the TECHAGRO exhibition in Brno in April 2000. The results proved that 25% of respondents considered Internet to be a source of information for their business.

On the basis of this totally unsatisfactory situation in the sector the Information and Consulting Centre of the Faculty of Economics and Management at the CUA in Prague (ICC FEM) organised an extensive survey of enterprises active in the agriculture sector. It was conducted under the AGRIS project and in co-operation with other partners. The Centre also took an active part in the survey (from April to June 2000). One of the main objectives of the survey was to monitor the usage of ICT in agricultural enterprises in the Czech Republic.

MATERIAL AND METHODS

The survey of ICC FEM in 2000 was carried out in the form of telemarketing in agricultural enterprises from the whole Czech Republic. All Czech enterprises with the minimum acreage of 100 ha of the arable land or enterprises having the number of 100 large livestock units were contacted. The results were derived from a sample of the enterprises that represented 70% of arable land in the Czech Republic. Since 2001 the survey has been conducted using a combined method – the questionnaire form is combined with telemarketing (differently to the first year). This led to the extension of the sample of enterprises and subsequently to the extension of the representation of arable land in the Czech Republic. The data on arable land are related to the results of the Czech Statistical Office survey (AGROCENZUS 2001), please see Table 1. Due to the significance and extension of this survey, it is planned to continue in the following years.

Table 1. Number of respondents (source ICC – AGRIS)

Year	No. of respondents	Arable land coverage in the Czech Republic (%)
2000	2026	70.3
2001	2546	75.1
2002	2587	75.2
2003	2675	75.8

Table 2. Enterprises with the Internet connection (source ICC – AGRIS, IVV)

Research/year		2000	2001	2002	2003
IVV – TECHAGRO (April)	(%)	25	–	37	–
IVV – <i>Země živilka</i> exhibition (August)	(%)	19	36	–	–
ICC – AGRIS (April–June)	(%)	21	41	55	78

RESULTS

The summarised results of the survey on the Internet usage carried out in 2000–2003 by ICC FEM and IVV are indicated in Table 2. It is apparent that the survey of ICC-AGRIS provides the results of development of the Internet availability for the whole monitored period. The survey ICC-AGRIS is therefore the only one that has continually been realised in the conditions of the Czech Republic in this period.

The presented values indicate that an increase in the number of agricultural enterprises with the connection to

the Internet was very dynamic and reached the levels of penetration in the other production sectors. Currently, the proportion of agricultural enterprises with the Internet connection is comparable or often even higher than in developed EU countries (25–63% according to the country and methods of the survey). This favourable state is above all the result of the structure of agricultural enterprises – the size of enterprises is significantly smaller in the EU countries than in the Czech Republic. To confirm this it is possible to point out the fact that in the eastern federal states of Germany with the similar structure of agricultural enterprises to ours, the Internet penetration is higher than in the more developed western federal states. The current state of the Internet penetration in agricultural enterprises (78% according to the survey of ICC-AGRIS) does not provide any space for further significant growth. We are currently in the period of transformation from the quantitative stage to the qualitative one when the maximal usage of services and information available on the Internet should become a key objective. In the first quantitative stage the main limiting factor of ICT development in agriculture were the extensive financial costs. But in the qualitative stage the key factors change – they are the knowledge and habits of users, availability of information and services. From this aspect the data on the way and quality of the usage of Internet technologies in agricultural enterprises found in the above-mentioned surveys ICC-AGRIS are interesting (Figures 1–4).

Due to the significant increase in the number of Internet users in 2003 in comparison with 2002 (by 22%), the increase in the utilisation of e-mail (by 7.1%) and WWW (by 9.5%), the number of users of the basic Internet services increased as well. It is also important that Internet is also used more intensively, a positive trend of the regular, everyday usage of Internet is shown in 2003 (see Figure 2). Nevertheless, only a limited number of agricultural enterprises uses their own WWW sites for the communication with their surroundings. Although some increase is noticeable (see Figure 3), it is necessary to consider this state unsatisfactory. The Internet connection type structure of agricultural users is also interesting. ISDN connection (46%) and dial-up (38%) are prevailing mainly due to the existing offer of Internet providers. It is probable that a significant move to the ADSL connection will occur in future as it is seen in the other countries. The ADSL connection became available in the Czech Republic just at the time of the ICC FEM survey and was not reflected in its results.

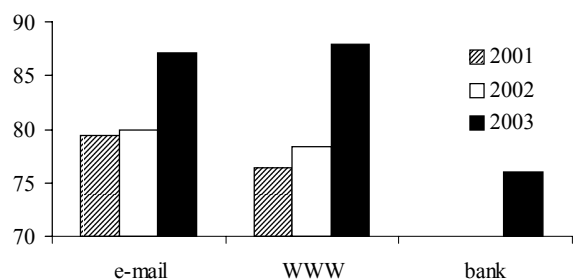


Figure 1. Way of the Internet utilization in agricultural enterprises in the Czech Republic in 2001–2003 (in %) – results of bank service utilization are available only for 2003

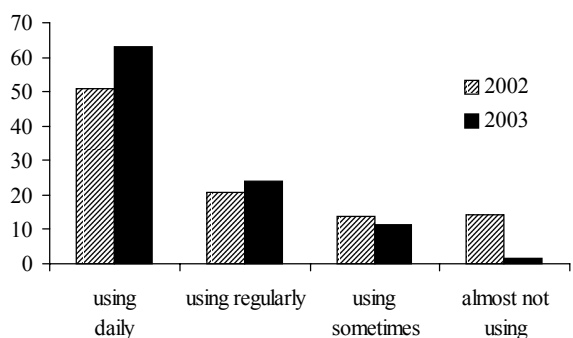


Figure 2. Intensity of the Internet utilization in agricultural enterprises in the Czech Republic in 2002 and 2003 (%)

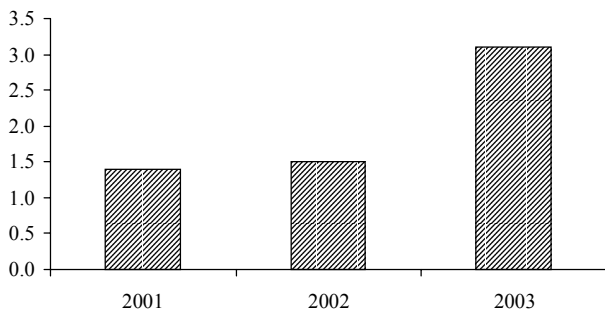


Figure 3. Agricultural enterprises having WWW sites in 2001–2003 (%)

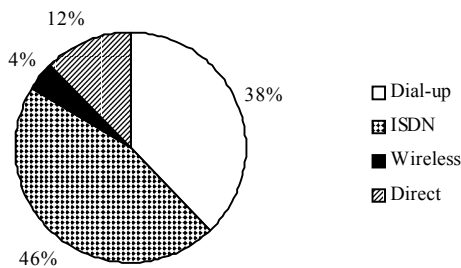


Figure 4. Way of the Internet connection of agricultural enterprises in 2003 (%)

DISCUSSION

The objective of the AGRIS project (<http://www.agris.cz>) is to establish a unified on-line information site on the Internet for the countryside and all spheres of the agriculture sector (i.e. agriculture, food industry, forestry, water service). The targeted groups of portal users are managers, public administration employees, students, all food consumers, and countryside residents. The AGRIS portal has been offering its services since 1999. The AGRIS portal was awarded the *Zlatý klas* (Golden Spike) award at the *Země živitelka* (Land the Provider) agricultural exhibition in České Budějovice in 2000. It has also won many other awards. The portal flexibly reacts to demands of the agriculture sector and ICT development – currently the third version of the program is used (1999, 2001, 2003). The development of AGRIS portal is coordinated by the council of experts.

The AGRIS portal provides access to already existing information sources, provides its own information services and publishes the information from the subjects that do not have the conditions for quality electronic (Internet) presentation. The added value of the portal is especially the improvement of availability and efficiency of the presented information.

The solution is consistently built on general principles, it is modular and open. Therefore its trouble-free implementation in other sectors or professions is possible. The



Figure 5. Business information of the AGRIS WWW portal – the price development of wheat (<http://www.agris.cz/ceny/?graph=1&id=18&lg=>)



Figure 6. WWW servers evaluation TOP AGRIS – section of vegetable production (<http://www.agris.cz/zemedelstvi/links.php?iSub=520>)

portal solution represents the third, i.e. the highest level of the Internet services structure. The whole system is realized within a unified concept of informatics of Ministry of Agriculture of the Czech Republic and continually modified to the needs arising from pre-accession negotiations with EU and to the needs of the EU environment in future.

The solution provides two basic levels – integration of resources and integration of services.

Information available on the AGRIS WWW portal

- **up-to-date news** – reporting of the portal itself, the CTK service, monitoring of the national and regional press, prepared events, information of Ministry of Agriculture
- **business information** – actual prices, graphical process, exchange rates and conversion units, time development since 1995 (see Figure 1)
- **professional articles** – a possibility of full-text and domain search, archives
- **scientific publications** – electronic journal AGRIS online, scientific conference proceedings
- **databases of enterprises** – unique database of agricultural enterprises
- **links to specialised servers** – sector segmentation, possibility of references enlistment, evaluation of the best servers – TOP AGRIS (see Figure 2)

Services available on the AGRIS WWW portal

- **AGRIS Info** – sending of ordered information from AGRIS portal by e-mail
- **information dissemination** – enlistments of information on www sites of partnership organizations
- **A-web** – application for self-presentation on WWW sites of agricultural enterprises, easy operation, fast updating, connection to central databases
- **WWW designing** – advantageous designing of WWW sites for enterprises
- **education** – computer courses (beginners >> advanced >> professionals)
- **consulting** – in the field of ICT utilization

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ABSTRAKT

Intenzita a kvalita využití internetu v zemědělství a možnosti dalšího rozvoje

Úroveň využití informačních a komunikačních technologií (ICT) ovlivňuje v současné době rozvoj a konkurenceschopnost jednotlivců, podniků, výrobních odvětví, regionů a celých kontinentů. Rozšíření ICT, včetně internetových, v zemědělských podnicích České republiky je v současné době již uspokojivé. Vzhledem ke struktuře zemědělských podniků je penetrace internetových technologií v ČR větší než ve většině států Evropské unie. Aktuální otázkou se tak stává především úroveň využití těchto technologií, která již není z větší části otázkou finanční, ale především záležitostí znalostí a zvyků uživatelů a dostupnosti informací a služeb. Projekt Portálu pro agrární sektor a venkov AGRIS výrazným způsobem ovlivňuje úroveň využití informací a služeb na internetu v oblasti zemědělství.

Klíčová slova: ICT; internet; portál; zemědělství; agrární sektor; informace; služby; využitelnost

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