# Revealing Willingness of Consumers to the Information Economy

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*The current economic conditions, together with the highly developed information and communication technologies, provide business entities with a variety of opportunities to work with consumers. The article relates the experience in revealing the level of readiness of educational services consumers – students – to a meaningful and productive interaction with a higher education institution in an information economy. The author proposes a way of estimating such willingness and the aspiration to an independent search and analysis of information, basing on the results of the consumers' questioning. Visualization of data, splitting the respondents into groups were applied in the study, as well as tools of the geometric mean and the Mann–Whitney U non-parametric statistical hypothesis test were used.*

***Keywords:*** *willingness to consume, information economy, management, competitive advantages.*

## Introduction

Before embarking to the formation of competitive advantages based on modern information technologies, organizations need to be sure of the willingness of consumers to accept the information economy. For this purpose, customers' questioning can be implemented with the ensuing comprehensive analysis of the results. It is particularly important to find out whether customers are willing to search, analyze and process information using information and communication technologies (ICT).

The research aim was to identify students' willingness to consume educational services provided in the information economy conditions, to determine whether they are ready to be active in an information economy. The following objectives were posed in the study: to determine competitive advantages in an information economy; to find out whether students are willing to consume educational services in the information economy; to inquire whether students are ready for self-searching and analyzing information on the services. The methods of individual questionnaires and content analysis (quantitative and qualitative) were applied.

## Competitive advantages conditioned by the information economy

The development of the economic system of society results in the formation of new competitive relationships which stimulate market participants to create new types of competitive advantages. Organizations are increasingly turning to use the information

technologies that can be characterized by a high positive acceleration in their development. Using the information technologies in turn encourages organizations to form previously unknown competitive advantages (Porter, Millar, 1985). For instance, using adaptive information management systems results not only in the reduction of time costs for the transmission and processing of information, decision-making, but also changes the operating model of the organization in general.

One of the priorities of the Republic of Belarus' socio-economic development is a radical modernization of all sectors of the economy, and ICT are determined among the priority directions of scientific and technological activities[1]. Organizations tend to an optimal and efficient usage of information resources when reaching the results of their activity. To this end, they improve administrative processes or initially orient them to adapt to the conditions of the information economy.

Economic entities in the Republic of Belarus at present tend to look for new approaches to management, to improve management processes and initially orient them to adapt to the conditions of the information economy. In addition, the growing level of competition in most sectors of economic management encourages organizations to look for and to form previously not inherent competitive advantages in order to defend their market positions. Organizations need to develop their competitive potential, to monitor the existing potential to identify the preconditions for creating new competitive advantages. Also, it makes sense to conduct an audit of the existing competitive advantages and to adjust requirements to them in accordance with the changing economic conditions.

**Information & Organizational Management Method** (IOM Method) is a method for attaining a competitive advantage adapted to the activity carried out by the economic entities in the information economy based on knowledge. The title of the method reflects the state of the entity for which the management of the subject as a whole and its individual units (processes) are carried out due to the optimal organization of the management of external and internal information flows, using appropriate human resources and ICT (Гедранович, 2011).

A feature of the method is the absence of analysis of financial flows of an organization, since it is assumed that they are distributed optimally.

The implementation of the method is carried out in five stages; their content is presented further (Figure 1).

1. Specification of the organization objectives:
   – the objectives without achieving which the functioning of the organization is impossible;
   – additional objectives aimed at creating new competitive advantages.
2. analysis "as is" (identification of shortcomings). Three types of analysis are carried out at this stage:
   a) analysis of the organizational activities:
   – timeliness of tasks assignment;
   – clarity of wording of the desired result;

[1] On approving the Programme of socio-economic development of Belarus for the period 2011–2015: Decree of the President of the Republic of Belarus from 11.04. 2011, № 136.

- availability of templates and (or) examples of performing tasks;
- the correctness of tasking;
- absence of tasks' performers "duplication";
- timeliness of tasks' execution;
- compliance of the results with the required specification;
- quality of tasks' execution;
- the presence of control that the results comply with the required specification;
- the presence of feedback to return results in order to eliminate inconsistencies;

b) analysis of the competitive potential of the organization (Медведева, Баранова, 2008):

- human resources;
- ability to innovate;
- the information potential;
- resource capacity (time, materials, tools);

c) analysis of the competitive potential usage – an integral assessment of the organization's competitiveness, carried out on the basis of three parameters:

- integrated assessment of the competitive advantages of the organization;
- integrated assessment of the competitive advantages of products (services) (Фатхутдинов, 2004);
- the competitive potential of the organization.

3. Formulation of shortcomings, which can be divided into the following groups:
   - lack of information;
   - non-optimal information routs;
   - requirements unsupported with motivation;
   - incompetent staff;
   - discrepancy between the potential and the outcomes.
4. Setting tasks on correcting the shortcomings and achieving objectives. The tasks are ranked to determine the order of their performance, basing on the specified weight values of prioritization, execution speed, resource consumption.
5. Monitoring of the objectives' achievement. If the goal is achieved completely, further on the task of keeping it current is performed. If the goal is not achieved, either adjusting the target is carried out with the return to the first stage, or the goal is abolished.

Thus, the IOM method provides an organization tending to occupy leading positions in the industry with the ability to assess the quality of existing competitive advantages and to create the new ones. Moreover, during implementation of the method, a regular audit of information and organizational processes will be carried out, thereby supporting the existing quality management system.

While doing an "as-is" analysis it makes sense to ensure that customers are able to adapt to new service conditions (Figure 1). This can be done by undertaking clients' questioning and a comprehensive analysis of the results. Inter alia, it is important to find out whether customers are willing to search, analyze and process a wealth of information using ICT.

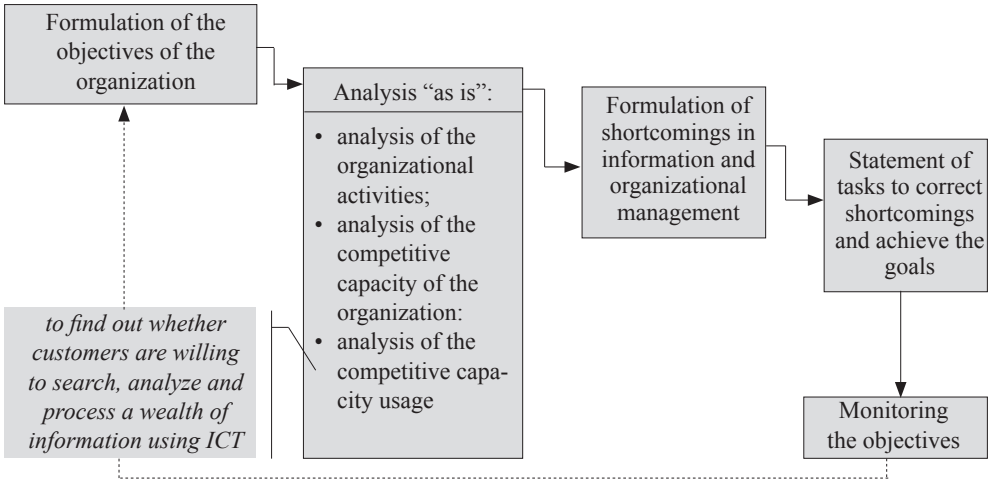



*Figure 1.* ***Information & organizational management method implementation***

## Specification of the study

The aim of the research was to identify consumers' willingness to consume the services provided in the information economy conditions (on the example of students and postgraduates of the Belarusian higher education institutions).

Due to the high level of information technologies, higher education institutions acquire a lot of new possibilities to improve their educational services and, therefore, to create competitive advantages. But this raises the question of consumers' of educational services willingness to accept the conditions of the information economy. Students are considered to be the most progressive members of society, receptive to innovations. So, it makes sense to identify their willingness and the trends that take place among consumers in society.

Students are regular customers of higher education institutions (HEI) providing them with educational services. The marketing activities of HEI aim to attract the largest number of regular customers. However, HEI are also interested in the "high quality" of attracted customers so that:

- educational services will be consumed as efficiently as possible;
- the prerequisites for improving the services provided will be created by the growing needs of customers;
- competitive professionals will be delivered to the market, and thereby the prestige of HEI will be sustained.

The resent research was based on the individual questioning of 200 students and postgraduates of the Minsk Institute of Management and the Belarusian State University.

The research has the following characteristics:

- the object: willingness of consumers to accept the information economy, or, in other words, we would like to know if they are ready to be active in the information economy (IE).
- the methods: individual questionnaires and content analysis (quantitative and qualitative).

*Table 1.* ***Qualitative distribution of respondents***

| Status | Form and year of study | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | full-time | | | | | extramural | | | | | |
| | **1** | **2** | **3** | **4** | **5** | **1** | **2** | **3** | **4** | **5** | **6** |
| Student | 31 | – | 9 | 51 | 4 | – | 3 | – | 10 | 3 | – |
| Second-degree student | – | – | – | – | – | – | 21 | – | – | – | – |
| Master student | 6 | – | – | – | – | 12 | – | – | – | – | – |

After a preliminary analysis of the completed questionnaires with a view to the accuracy of filling them, 50 questionnaires were screened out. Further, the study analyzed 150 questionnaires of students studying in various profiles, including: economic profile – 101 student, psychological – 23, IT – 15, law – 9, linguistic – 2. The distribution of respondents by status, form and course of study is presented in Table 1.

At the beginning of the research, it was hypothesized that:

**H1:** students are willing to consume educational services in the information economy.

**H2:** students are not ready for self-searching and analyzing information on the services.

In their own estimation, students named the levels of computer literacy in the male/female ratio (Figure 2).

One can see that on the average men consider themselves more computer-literate. Approximately two-thirds have intermediate and higher levels. So, we can assume that most students are ready to consume information at least at a satisfactory level. Of course, it is necessary to carry out a more detailed and objective analysis.

## Testing H1: Students are willing to consume educational services in the information economy

Among others, students answered the questions how often they use the following Internet services and facilities:

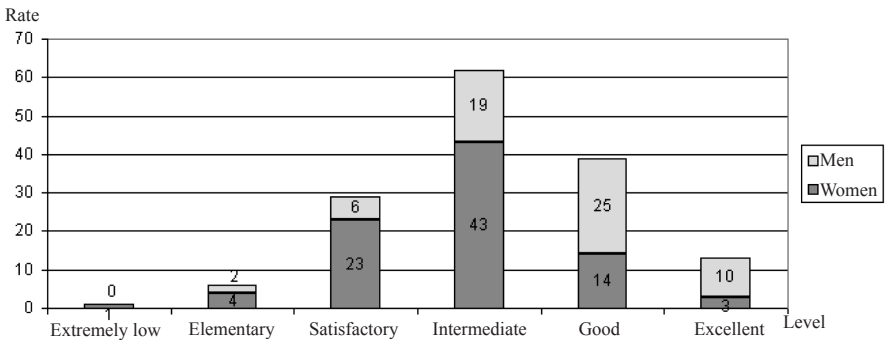



*Figure 2.* ***The level of computer literacy of students (in their own estimation) in the male/female ratio***

– e-mail;
– online shops;
– social networking services, blogs;
– search engines;
– instant messengers (e.g., Skype, Google Talk, ICQ, etc.);
– payment systems;
– professional information handling;
– academic information handling;
– entertaining information handling;
– visiting the University web-site.

The set of the possible answers included "daily", "a few times a week", "a few times a month", "a few times a year", "even less", "never".

The frequency of using the Internet services and facilities by students is presented in Figure 3. All respondents were divided into five groups with approximately the same need for informing through consumption of educational services: master students (Figure 3a), extramural students (Figure 3b), 1st year full-time students (Figure 3c), 2nd–5th-year full-time students (Figure 3d), second degree students (Figure 3e).

On the bar charts (Figures 3a, 3b) one can see that master students are more active in using online services than extramural students.

If we take a look at the next two bar charts (Figures 3c, 3d), we will see that full-time students also use online services more often than do extramural students, and these are rather negative figures because it would be logical if extramural students used all possible communicational services to get information by themselves.

If we compare the online activity of 1st-year full-time students and 2nd–5th-year

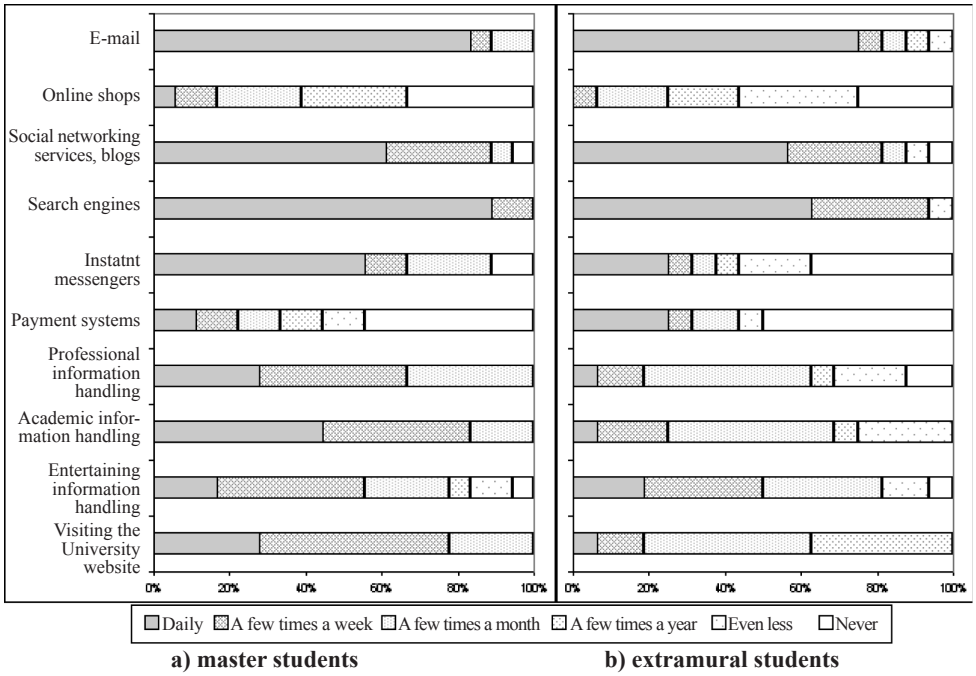
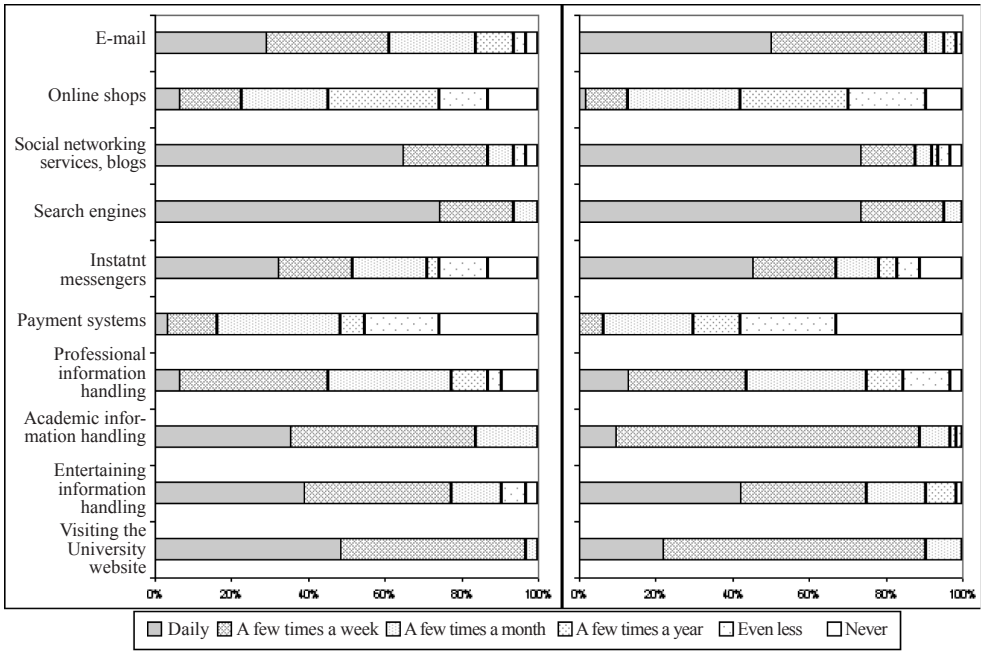
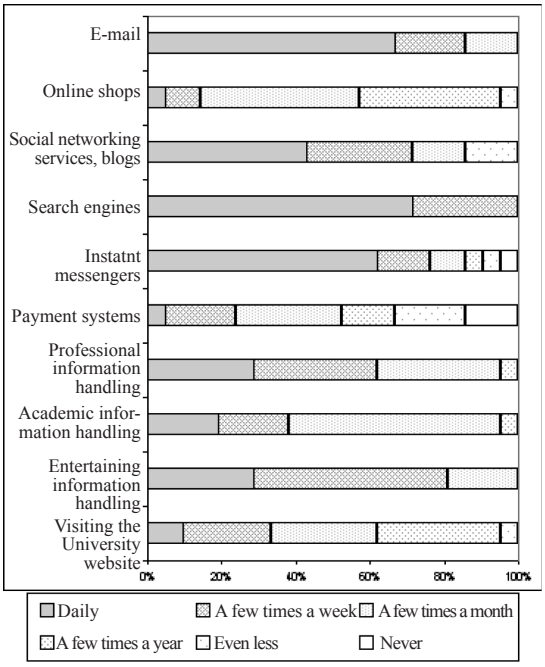



*Figure 3.* ***Frequency of using Internet services and facilities by students***




**c) 1st-year full-time students** **d) 2nd-5th-year full-time students**

*Figure 3.* ***Frequency of using Internet services and facilities by students***




**e) second-degree students**

*Figure 3.* ***Frequency of using Internet services and facilities by students***

*Table 2.* ***The average frequency of using information services by students by categories***

| Respondent's status | Internet services and facilities | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | E-mail | Online shops | Social networking services, blogs | Search engines | Instant messengers | Payment systems | Professional information handling | Academic information handling | Entertaining information handling | Visiting the University website |
| master student | 5.72 | ***2.94*** | 5.33 | 5.89 | 4.89 | 2.67 | 4.94 | 5.28 | 4.28 | 5.06 |
| extramural student | 5.38 | ***2.50*** | 5.06 | 5.44 | 3.00 | 2.94 | 3.44 | ***3.75*** | 4.25 | ***3.88*** |
| 1st year full-time student | ***4.65*** | 3.35 | 5.35 | 5.68 | 4.16 | 2.97 | 4.06 | 5.19 | 4.94 | 5.45 |
| 2nd–5th-year full-time student | 5.34 | 3.17 | 5.44 | 5.69 | 4.63 | 2.45 | 4.13 | ***4.94*** | 5.05 | 5.13 |
| second degree student | 5.52 | 3.71 | 4.86 | 5.71 | 5.10 | 3.33 | 4.86 | ***4.52*** | 5.10 | ***4.00*** |
| quasi-ideal student | **5** | **3** | **4** | **5** | **2** | **2** | **3** | **5** | **4** | **5** |

full-time students, we'll see that the picture is on the average identical, but 1st-year students handle academic information and visit the University web-site significantly more often, possibly because these students are from the generation that is constantly using ICT in their everyday lives.

And finally, second-degree students (Figure 3e) leave behind only the extramural students. This group shows a negative trend as well.

To test the first hypothesis – to assess students' willingness to consume services in the information economy – responses of certain categories of respondents were compared with a quasi-ideal student's rates. It was considered that the frequency of using services by a quasi-ideal student is sufficient to operate successfully in information society.

The average frequency of using a number of information services was evaluated on the bellowing scale: 6 – daily, 5 – a few times a week, 4 – a few times a month, 3 – a few times a year, 2 – even less, 1 – never (Table 2).

The table shows that only 8 out of 50 average evaluations are below the quasi-ideal student's rates, i.e. about 84% of respondents are completely ready to operate in the information society. To present this result graphically, refer to Figure 4.

To assess the readiness in numbers, let's at first normalize the values of the average frequency of using information services by dividing them by quasi-ideal values. Further, let's figure out the geometric means for each of the five student categories (see Table 3). A geometric mean is used when comparing different items (finding a single "figure of merit" for these items) when each item has the multiple properties that have different numeric ranges.

Table 3 shows that each of student categories can be considered willing to consume services in the information economy. Extramural students are willing it to the minimal degree, while second degree stu-

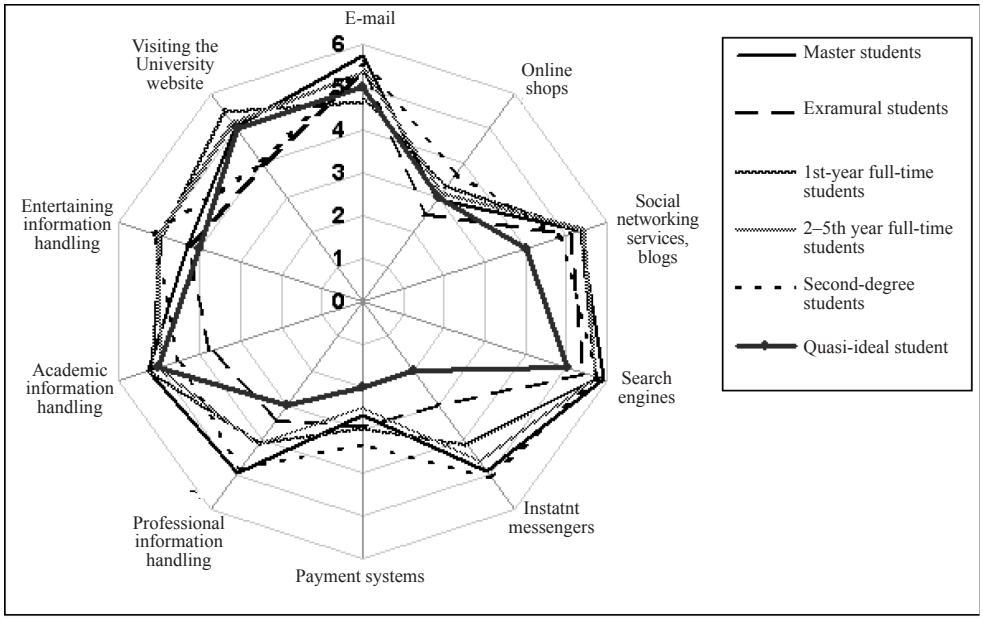



*Figure 4.* ***Comparison of the average frequency of using information services by different categories of students and by a quasi-ideal student***

*Table 3.* ***The Geometric means of the frequency of using information services by students***

| **Category of respondents** | **Geometric mean** |
|---|---|
| *quasi-ideal student* | *1.00* |
| extramural students | 1.07 |
| 2nd–5th year students | 1.24 |
| 1st year students | 1.25 |
| master students | 1.27 |
| second degree students | 1.28 |

dents can be considered as willing to consume them to the highest degree among all the categories.

Thus, we can confirm the truthfulness of the hypothesis **H1:** students are willing to consume educational services in information economy. Also, the following conclusions can be done:

– approximately 84% are completely ready for consumption in the information economy;

– Belarusian higher education institutions can adjust the work with consumers on the basis of their preferences in online services.

## Testing H2: Students are not ready for self-searching and analyzing information on the services

When testing the second hypothesis, it should be noted that respondents also assessed:

1) the possibility to obtain information about services before they are received (weight coefficient 0.3);
2) the possibility to obtain information about additional services in the process of receiving basic services (weight coefficient 0.1);
3) information supply on the process of receiving services (weight coefficient 0.6).

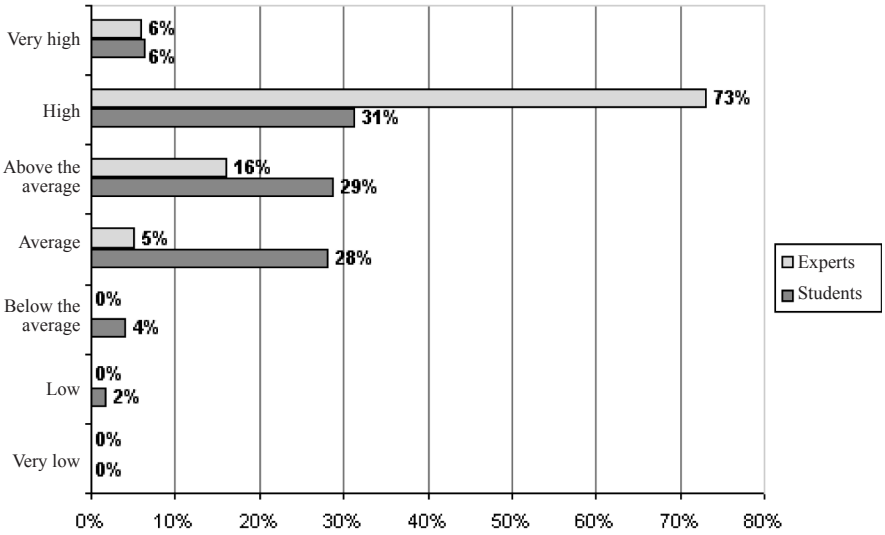



*Figure 5.* ***The level of information supply on providing educational services process (according to experts and students)***

It is important to make the following assumptions:

- students are able to evaluate information environment;
- students must get themselves at least 50% of educational information;
- experts are students who work in a higher education institution at the moment (5 master students and 5 students of 4th–5th years).

After calculating the weighted average of the three indicators, we get the following result (see Figure 5).

If we assume that the assessments of experts show the real level of information supply, then about 42% of students are not ready for self-searching and analyzing information on the services provided.

To more strictly test the second hypothesis, we used the free software environment for statistical computing and graphics "R"[2]. Respondents' assessments of the level of information supply we put to the Mann–Whitney U test (Mann, Whitney, 1947) – a non-parametric statistical hypothesis test for assessing whether one of the two samples of independent observations tends to have larger values than the other.

The test results show that the distribution of the values of students' assessments may be considered as corresponding to the distribution of the values of experts' assessments with the probability of 0.002538. In other words, the distribution of the experts' assessments is significantly more "super" than the distribution of students' assessments. In other words, students assessed the level of information supply in much lower rates than experts did. This suggests two reasons:

[2] The R Project for Statistical Computing. http://www.r-project.org/, accessed on 15.06.2012.

1) students are careless in searching for information;
2) students fail to analyze the information found.

Thus, we can confirm the truthfulness of the hypothesis **H2:** students are not ready for searching and analyzing information on the services. In addition, the following conclusions can be made:

– approximately 42% of students are not ready for searching and analyzing information;
– the organization should create an environment in which the consumer is naturally interested in searching and analyzing information.

## Conclusions

The modern information and communication technologies – social networks, electronic money, Voice over IP services, execution of webometric rankings, etc. – are prerequisites for creating new competitive advantages by business entities within information economy. The study has shown that students are willing to consume educational services in the information economy. This may indicate that society today can be called information society.

Unfortunately, the results of the analysis have confirmed that students are not willing to search for academic information and analyze it. However, the training programs suggest that at least 50% of educational information students are able to find and handle it themselves.

The following conclusions and suggestions can be made:

– Belarusian higher education institutions can adjust the work with consumers on the basis of their preferences in online services;
– an organization should create an environment in which the consumer is naturally interested in searching and analyzing information.

**REFERENCES**


MANN, Henry B.; WHITNEY, Donald R. (1947). On a Test of Whether one of Two Random Variables is Stochastically Larger than the Other. *Annals of Mathematical Statistics*, No. 18 (1), p. 50–60.

PORTER, Michael E.; MILLAR, Victor E. (1985). How information gives you competitive advantage. *Harvard Business Review*, July-August, p. 149–160.

ГЕДРАНОВИЧ, О. Б. (2011). Информационно-организационный менеджмент как средство достижения конкурентных преимуществ. In: *Инновационные процессы в социально-экономическом развитии: материалы Междунар. науч.-практ. конф. (Бобруйск, 15 апр. 2011 г.)*. Минск: БГЭУ, 2011, с. 278–279. ISBN 978-985-484-771-9.

МЕДВЕДЕВА, О. М., БАРАНОВА, А. В. (2008). Сущность и содержание конкурентного потенциала организации. *Вестник ИжГТУ*, №. 4, с. 87–90.

ФАТХУТДИНОВ, Р. А. (2004). *Управление конкурентоспособностью организации.* Москва: Изд-во Эксмо, 2004. 544 с. ISBN 5-699-05104-X.

## VARTOTOJŲ PASIRENGIMO INFORMACINEI EKONOMIKAI ATSKLEIDIMAS

**Volha Kandratsenka**

S a n t r a u k a

Šiuolaikinės ekonomikos sąlygos kartu su aukštu komunikacijos ir informacijos technologijų lygiu suteikia verslo subjektams įvairių darbo su vartotojais galimybių. Straipsnyje apibrėžtas švietimo paslaugų vartotojų – studentų – pasirengimo lygis prasmingai ir efektyviai sąveikauti su aukščiausią išsilavinimą teikiančia institucija informacinės ekonomikos sąlygomis. Autorė pateikia tokio pasirengimo vertinimo būdą, taip pat identifikuoja siekį savarankiškai ieškoti ir analizuoti informaciją, atsižvelgiant į poreikių anketavimo rezultatus. Tyrimui buvo taikoma duomenų vizualizacija, respondentų grupavimas, panaudotas geometrinio vidurkio instrumentas ir neparametrinis statistinis Mann–Whitney U kriterijus.