

## Business Information Quality and its Assessment

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*Topical problems of modern business are: how to cull right information from its abundance, how to decide which information is valuable and which one is useless, finally, how to assess the quality of the usable information. These problems are relevant and important both globally and locally in Lithuanian business. This paper highlights information quality (IQ) management and assessment peculiarities, reveals the importance of IQ in the modern business.*

*The authors present IQ dimensions that are essential to Lithuanian and foreign business information consumers because effective IQ assessment and management depend upon right evaluation of these IQ dimensions. The authors of this paper also evaluated information maturity levels of Lithuanian business organizations and revealed their attitudes towards the information. This information maturity was assessed according to IBM Corporation proposed Information Maturity Model.*

*In reference to the accomplished research, authors of this paper identify the crucial problems that influence business IQ and also highlight these root problems: absence of proper technologies, poor information technologies (IT), inappropriate software, difficulties to discover reasons for IQ errors, insufficient information security, lack of time to ensure IQ, lack of reliable information sources, poor knowledge of business information consumer (employee). The findings revealed that the main business IQ assurance problem is influenced simply by the lack of time.*

*To draw a conclusion, to ensure IQ, information must be presented and produced in accordance with clearly defined IQ dimensions, just like other products (services and goods) are supplied and evaluated according to specific quality characteristics. Consequently, the identification of IQ dimensions that are the most important to information consumers, and the estimation of IQ measurement criteria and its methodology are the basis for the better information product's quality assessment.*

*To assure quality information in the organizations the authors of this paper propose: to adapt IQ Management Model that might service like one of the tools for solving IQ assurance problems, to define and choose right business IQ dimensions, and change organizational attitude towards the value of information.*

Keywords: *information quality, quality assessment, quality dimension, model, information maturity.*

### Introduction

Information Age demands adaptation – rapid development and improvement of information technology changed business environment – organizations now have more data than they know what to do with, consequently it is difficult to separate poor information from high quality. Business processes like planning, product development and production; purchasing, market, sales and distribution not only drive all business, but also generate precious information. Methods and principles of quality management that were designed to improve the quality of mentioned processes for a long time were not adjusted to information (Al-Hakim, 2004; Ballou et al., 2003; Kahn et al., 2002; Wang, 1998). However, the efficiency of the mentioned business processes relies on the IQ, because quality information that organizations use in due business time and position scores a great business success. So organizations that want to gain competitive advantage should treat information not only as a subsidiary business element, but also as a product that quality may differ and that should be managed efficiently using appropriate methods, principles and means of quality management (Ruževičius, 2005; 2006). Latterly, information and various information sources are booming, the understanding of information consumers and managers about information also grow. On the other hand, far from boosting productivity, the constant flow of poor quality information can seriously reduce an employee's intellect and ability to focus on tasks (Knight, 2005). So, poor IQ can have significant negative impact on organizations' success. Consequently, organizations should implement IQ assessment methods to separate poor and quality information and to improve it. Organizations cannot implement effective business management without properly IQ assessment (English, 2000, 2003). IBM revealed the results of their research, which identified organizations' attitudes towards the information. According to IBM research, more than 60 percent of business executives say quality information is their top priority for improving business processes, employee productivity, and customer satisfaction (IBM..., 2006). But still most organizations struggle to use and create information effectively. Consequently, organizations start to "sink in information slough" with a lot of information duplicates, unnecessary data storages, inefficient data soft wares. So many different versions of the truth slow decision-making, responsiveness, and the ability to pursue new business opportunities or react to market forces (IBM..., 2006). IBM research revealed that organizations that are highly effective at information management and integration across the enterprise are five

times more likely to drive value creation than those who are poor at it (IBM..., 2006). So only properly managed high quality information enables to have reasonable business solutions. These arguments confirm the relevance to develop the methodology for the information quality (IQ) assessment; this is crucial to international and Lithuanian business. *The purpose* of this paper is to reveal the business information quality (IQ) and its assessment peculiarities, and to present the business IQ management model.

*Methodology.* The paper was prepared according to comparative analysis of the foreign scientific literature and the results of the structural survey of Lithuanian business organizations. To make research presentable stratified sampling method was used. The research included organizations that are the leading Lithuanian organizations according to the sales size, and were picked from the annual publication “Leaders of Lithuanian Business 2005/2006” of “Verslo Žinios”. For this research there were selected random samples from within each of the basic business segments. The proper (without recur) sample was estimated according to calculation of marginal error and this formula (Kruopis, 2003):

$$n = \frac{N \cdot t^2 \cdot \sigma_0^2}{\Delta x \cdot N + t^2 \cdot \sigma_0^2};$$

Where:

- $n$  – sample,
- $N$  – number of organizations,
- $t$  – reliability ratio,
- $\Delta x$  – marginal sampling error,
- $\sigma_0^2$  – dispersion of variable feature.

The organizations that participated in the research belong to the business sectors like: commercial banking, financial auditing, IT service companies, construction and projection companies, newspaper publishers, financial broker and insurance companies, publicity companies, fuel and other retail trade companies and etc. The names of the companies are not disclosed, because of the confidentiality. The sample of the research was 65 organizations this enabled to receive the results with reliability of 90 percent.

### Defining Information Quality (IQ)

In the review of the existing literature on IQ, there were found several different approaches to defining IQ. However, there is no established - one definition for IQ. Different authors propose various definitions but still they also have some common aspects. Yet, there were no systematic studies of business IQ in Lithuania (Atkočiūnienė et al., 2004; Ruževičius, 2006c). The most common used IQ definitions are:

1. Information that is fit for use by information consumers (Eppler, 2000).
2. The characteristic of information to meet or exceed customer expectations (Kahn, 2002).
3. Information that meets specifications or requirements (Kahn, 2002).

4. The characteristic of information to be of high value to its users (Wang, 1998).
5. The degree to which information has content, form, and time characteristics which give it value to specific end users (Brien, 1991).
6. A difference between the required information determined by a goal and the obtained information. In an ideal situation there will be no difference between the required and obtained information. A qualitative measure for IQ is expressed by the smaller the difference the greater the quality of information (Gerkes, 1997).
7. The characteristic of information to meet the functional, technical, cognitive, and aesthetic requirements of information producers, administrators, consumers, and experts (Eppler, 2000).
8. Consistently meeting customer’s expectations and through information and information services, enabling them to perform their job effectively (English, 1996).

The authors of this paper think that the clearest IQ definition proposed Kahn (2002) and it is similar to IQ description offered by English (1996; 2000). Yet, Kahn (2002) definition offers IQ aspects that were not included in IQ definition proposed by English (1996). Consequently, authors of this paper offer IQ definition: *Information Quality – the sum of information characteristics and dimensions to meet or exceed information consumer – knowledge worker – expectations and requirements, expressed or unasked needs* (English, 1998, 2000; Khal et.al., 1999; Ruževičius, 2005; 2006a; 2006b).

### Dimensions of Information Quality (IQ)

IQ assessment is based on the assumption that if a material product has quality characteristics so and information has particular quality dimensions, which we can distinguish and evaluate. Consequently, just like quality management of physical products, IQ has multiple dimensions (Al-Hakim, 2004). Wang and Strong works (1996) have the biggest international recognition in the field of IQ research. One of the results of their scientific and research works was the identification of key IQ dimensions. These dimensions are recognized and have a big value to various range information consumers, and also these IQ dimensions are the methodological basics for IQ assessment and measurement. This laid the foundations for IQ science and its development (Caballero et al., 2004; Eppler, 2000; Gackowski, 2004; Knight, Burn, 2005 and other). Wang and Strong (1996) not even identified the essential information dimensions, but also proposed to group them into four IQ categories (*intrinsic, contextual, representational, accessibility*). *Intrinsic IQ* denotes that information has quality in its own right, so the underlying dimensions of this category capture the intrinsic aspect of IQ. This category includes not only accuracy and objectivity, but also believability and reputation. This suggests that, contrary to the traditional view, information consumers also view the importance of knowing where the information comes from. So believability and reputation should also be treated as the integral part of intrinsic IQ, because accuracy and objectivity

alone are not sufficient for information to be considered of high quality. *Accessibility IQ* emphasizes that systems and information must be accessible but secure. The authors of this paper revise the definition of accessibility and emphasize that this dimension should be treated as the ability to access concrete information, also absence of accessibility barriers for concrete information consumers. *Contextual IQ* highlights the requirements that IQ must be considered within the context of the task at hand. The underlying dimensions are completeness and timeliness. *Representational IQ* points up the importance of the systems. This category includes aspects related to the format of the information and meaning of information (Wang et al, 1996; Gackowski, 2004).

The authors of this paper sought to identify what IQ dimensions are the most important to Lithuanian information consumers. There are about 200 various dimensions and factors that determine IQ in information literature (Al-Hakim, 2004; Gerkes, 1997; Jarke, Vassiliou, 1997; Myers, 2002; Wang et al., 2002). Many of these IQ characteristics repeat. An in-depth essence and content analysis of quality dimensions defined by various authors was done, and the authors of this paper selected 31 basically different IQ dimensions as a result. These IQ dimensions and its definitions were included into the survey questionnaire. Respondents were asked to select up to 10 most important IQ dimensions. According to cumulated research results, the authors selected 14 mostly mentioned IQ dimensions. The authors of this paper strove to compare our country's business information consumers' opinion with the findings of the foreign empirical research (Wang, Strong, 1996). These two foreign authors are one of the pioneers in IQ science who identified 14 key IQ characteristics that are important to business information managers and consumers. The findings of our research are summarised in Figure 1 and Table1. According to the results of the research the most important IQ dimension for Lithuanian business organizations is believability. Almost 80 percent of the respondents indicated that believability is essential dimension. Information relevancy and accuracy are evenly important to information consumers, because 61,5 percent of respondents pointed them as important. Aestheticism of information is substantial only to 3 percent of respondents. Surprisingly, but from the list with 31 dimensions no one picked the ease of information maintenance.

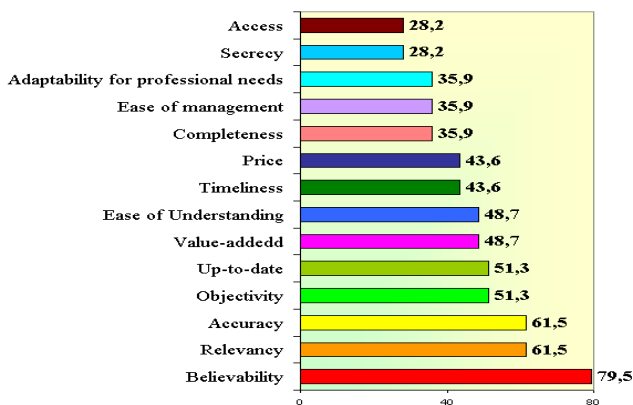


Figure1. Essential IQ dimensions (results in percentage), 2006

The findings of Wang, Strong research (1996) and our research are compared and summarized in Table 1.

Table1

Comparison of IQ dimensions

The results of research accomplished by Wang et al., 1996	The results of the research accomplished by the authors of this paper in 2006
Accuracy	Accuracy
Objectivity	Objectivity
Believability	Believability
<b>Reputation</b>	<i>Adaptability for professional needs</i>
Access	Access
<b>Security</b>	<i>Up-to-date</i>
Relevancy	Relevancy
Value-added	Value-added
Timeliness	Timeliness
Completeness	Completeness
<b>Amount of data</b>	<i>Secrecy</i>
<b>Interpretability</b>	<i>Ease of management</i>
Ease of understanding	Ease of understanding
<b>Concise (consistent) representation</b>	<i>Price (costs)</i>

The IQ dimensions that are written in normal font style matched. The dimensions written in italic font style are identified with our exploratory research and these IQ dimensions have no correspondence with the results of the mentioned foreign research (Wang et al, 1996). The dimensions written in bold font style were identified with the research made by Wang and Strong (1996), and those dimensions do not correspond with the dimensions identified by the authors of this paper. So, IQ dimensions such as: accuracy, objectivity, believability, access, relevancy, value-added, timeliness, completeness and ease of understanding are very important to Lithuanian and foreign business information consumers. Information reputation, security, amount of data, interpretability and concise/consistent representation is not so important to Lithuanian business information consumers. Lithuanian respondents instead of these five listed: adaptability for professional needs, up-to-date, secrecy, manageability and price.

This discrepancy between these two evaluations of the IQ dimensions might be explained by the two reasons: first, the differences of the business environment and culture that occurred through a decade that separates these comparable researches; second, changes in the business information content, size, form characteristics, and obvious changes in the information presentation and its management facilities. To draw a conclusion, to ensure IQ, information must be presented and produced in accordance with clearly defined IQ dimensions, just like other products (services and goods) are supplied and evaluated according to specific quality characteristics. Consequently, the identification of IQ dimensions that are mostly important to information consumers, and the estimation of IQ measurement criteria and its methodology are the basis for the better information product's quality assessment.

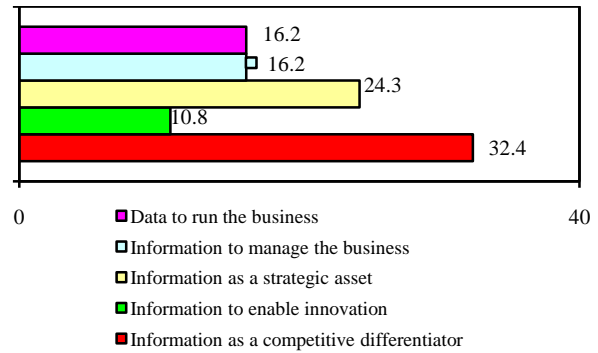
### Measuring Information Maturity

Information enables organizations to gain competitive success unless organizations use effective informa-

tion and its quality management measures and tools. Firstly, these aspects are determined by the attitudes of organizations. According to IBM Corporation specialists (IBM...,2006), to enable organizations to have the solutions and expertise they need, and become competitive in the markets, at first organizations should improve their view about business information, importance of its quality, and use information as a strategic business asset. IBM Information Maturity Model estimates priorities and attitudes of the business organizations towards the information (what company's managers, executives are thinking about IQ and its importance to business, how they are using information potentiality within the organization and etc.). Also maturity model helps organizations assess where they can progress and expand using information as an important business factor to gain competitive ability. This approach can help organizations reduce decision-making risk, drive innovation, and improve business operations, worker productivity, and client care (IBM...,2006). The model delivers the new business value of information and describes five stages of maturity of information use. *Stage 1: Data to run the business.* Here the focus is on data and reporting. Mainly static, structured data is used operationally or in lightweight reporting. No cross – system version of the truth exists, and when information is integrated, it is done largely in spreadsheets or local databases. *Stage 2: Information to manage the business.* As organizations achieve basic information integration, they shift to a tactical content management system and point-to-point integration of structural data for basic reporting and analysis. Although information integration techniques like data warehousing are likely employed to help manage the business, information is not yet considered a strategic asset to the business. *Stage 3: Information as a strategic asset.* These corporations no longer see information as merely a by-product of operations – it is, rather, a business asset that can lead to greater innovation and differentiation. Organizations at this stage seek to free information from silos, typically beginning with master data management techniques. Organizations in this stage begin to recognize the need for a strategic information infrastructure. *Stage 4: Information to enable innovation.* Here organizations seek ways to use information to enable innovation. They have already leveraged standards and virtualisation techniques so that trusted information is seamless, and available as a service that can be used by any business process. Information sources are fully integrated, and business context of information is well understood. These companies focus on using information to innovate processes, providing predictive and proactive management of all business processes. *Stage 5: Information as a competitive differentiator.* Here organizations are using information to streamline business processes and leverage their internal and external value networks to provide enhanced products and services to customers and add value to partner and supplier relationships and interactions. Organizations at this stage of information maturity realize the value of their information as a source of competitive differentiation and use it to quickly sense and respond to changes in the market and their businesses (IBM...,2006).

The findings of Lithuanian business organizations

maturity research are summarized in Figure 2.



**Figure 2.** Maturity of information use in Lithuanian business organizations (results in percentage), 2006

The research revealed that only third of the respondents work in companies that are in the highest information maturity level. Authors of this paper think that this score is quite high for the country that not long ago turned the business to market economy. Almost 11 percent of the respondents indicated that information in their companies is for enabling innovations. This fourth level of information maturity just slightly differs from the fifth level. Consequently, these fourth level organizations progress their information management to the right trend. Yet, more than a half surveyed organizations are in the lower information maturity levels.

To draw a conclusion, Lithuanian organizations still do not use all information potentiality to gain business development and increase competitiveness. The research findings revealed that Lithuanian business representatives pay too little attention to identify business IQ. Signed business information manufacturing, gathering, and presentation contracts very often do not include specific IQ dimensions and requirements. Also, most organizations hardly realize the surplus value of the business information. It is very important to develop the new approach to information as a business integrated part, which at the same time can be business strategic asset, an innovation tool, and most important a competitive differentiator. Consequently, organizations can achieve effective IQ management only when they change attitude towards the information.

### Information Quality (IQ) Management Model

For the meantime, there is no single method for IQ assessment and hardly will it be created because in different circumstances and for the different information consumers the importance of IQ dimensions will be different too. Some authors (Wang, Lee, Pipino, 2002; Wang, Strong, 1996) analyse what IQ should be, what are the dimensions, features, assessment, but just few authors reveal the factors that create and determine IQ and its dimensions, which assessment methodology is so important to create. Consequently, the authors of this paper present the model where IQ management is shown as a system which functions in a specific environment (see Figure3). The purpose of this model is to reveal the structure of information resources, the place of IQ management system in the information manufacturing process,

information assessment and processing to the final quality information product (Wang, 1998) that satisfy or even exceed information consumer expectations and needs. Lagefors researched this field, and marked specific factors that create information: *people and their experience, technologies and time* (Al-Hakim, 2004). The process of information system created by Lagefors can be applied to topic of IQ. Lagefors formulates the process of obtaining information to be  $I = i(D, S, t)$ , where  $I$  - information;  $i$  - information manufacturing system, which result is information product;  $D$  - data;  $S$  - user's experience or knowledge;  $t$  - certain time, to manage the task (Lillrank, 2003). According to this theory, persons with different experience or at different time might interpret particular information differently. Technology that is used by the organization also plays the big role. So, *data, personal experience, technology and time* create necessary circumstances for information process. Consequently, these resources are the basics for IQ creation and determine final information manufacturing result. Yet, authors of this paper penetrate some limitation - Lagefors identifies or treats experience and knowledge as alternative factors. Marchand (2004) also tried to answer the question, which factors determine information processes and systems. He states that processes are not only under the influence of technologies, but they depend on the information technologies (IT) too. Marchand proposes one more resource that was not marked by Lagefors that is *employee knowledge*. The difference between experience and knowledge might be presented with the statement that employees might have knowledge, but it does not mean that they know how to use it in practice. Consequently, terms like experience and knowledge at least in this context should be treated as separate terms. Finally, Al-Hakim (2004) summarizes Marchand and Lagefors ideas and presents the model of IQ system environment. This model figures information manufacturing resources, the result, mechanism and control. Authors of this paper generalized and merged Al-Hakim's (2004) model with Wang's developed Total Data Quality Management system (Wang, 1998) and as a result introduce model of IQ management (see Figure 3). There are some substantial differences between Al-Hakim (2004) model and the model proposed by the authors of this paper. First, authors enter *IT*, because *technologies* and *IT* have different meanings. Second, authors include other important factor that was marked by Marchand (2004) it is *employee knowledge*. Third difference result from the second one: authors of this paper emphasize that every information worker has different experience and knowledge. *Experience and knowledge* of two employees will never coincident - they will differ. If information manager and information end-consumer have different knowledge and experience then it is very hard to ensure IQ. Information end-consumer might not know how to explain his requirements and expectations of final information product to information worker. In opposite situation, information worker's delivered information product might be too complicated to understand for information end-consumer. If this variance emerges between information workers (between information provider and information creator) then IQ will not be ensured. According to the authors of

this paper, this gap might be liquidated by implementing particular *instructions* that should be introduced to every information worker and information end-consumer. Particular preconceived instructions draw the frame for final quality information product and prevent from different interpretation. So, third factor - information department instructions. Fourth, information end-consumer is separated from the information managers that collect, process, creates information. This end-user is presented like external factor, but in many situations information worker and end-consumer is the same person. Fifth, authors of this paper give an additional meaning to the conception *time*. Time in Al-Hakim (2004) theory means a certain time to create IQ. Authors of this paper agree that this factor has direct influence on IQ, but also propose to complement this meaning with more accurate term *speed*, which means the speed of information creation. The faster we need information product the bigger possibility to have inaccurate, unreliable and poor IQ. If IQ dimensions (Wang et al, 1996) are eliminated just because of information processing speed, then this factor should be included into the list of resources that determine IQ. In the Total Quality Management literature, the widely practised Deming cycle for quality enhancement consists of: plan, do, check, and act. By adapting this cycle, Wang (1998) developed the Total Data Quality Management cycle.

In this cycle defining, measuring, analysing, and improving IQ continuously is essential to ensure high quality information. The *definition* component of the cycle identifies important IQ dimensions (Wang et al, 1996) and the corresponding IQ requirements (Wang, 1998). The *measurement* component produces IQ metrics. This measurement can be either objective or subjective. The *analysis* component identifies substantial causes for IQ problems and calculates the impacts of poor quality information. The *improvement* provides techniques for improving weak IQ areas (Wang, 1998).

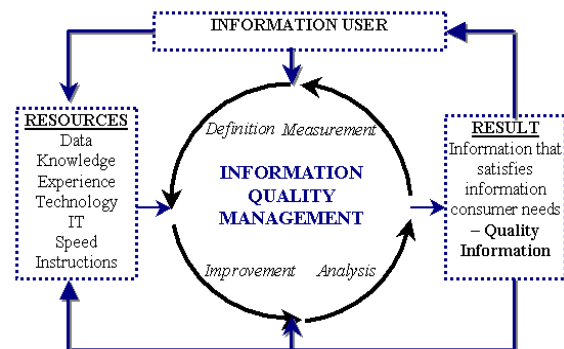


Figure 3. Information Quality Management Model

Taking everything into consideration, in the proposed IQ Management Model function IQ definition, measurement, analysis and improvement procedures, and model reflects resources and factors that are essential to create IQ. The result of this model is information (quality information or information product) that satisfies end-consumer needs. So, to possess IQ, an organization must clearly define its resources that create information and implement business IQ management system.

## Problems to Assure Information Quality (IQ)

In reference to the findings of our country's business organizations' research, the authors of this paper present the crucial problems that influence business IQ. Authors of this paper highlight these root problems: absence of proper technologies, poor information technologies (IT), inappropriate software, difficulties to discover reasons for IQ errors, insufficient information security, lack of time to ensure IQ, lack of reliable information sources, poor knowledge of business information consumer (employee). The findings of the research revealed that 16.5 percent of IQ assurance problems are influenced simply by the lack of time to create quality information; lack of reliable information sources creates 14.8 percent of problems. Other problems are also important – poor technologies influence 10.8 percent and bad IT creates 10.9 percent of problems in IQ assurance processes. Difficulties to discover reasons for IQ errors form 11.9 percent of all IQ assurance problems. Inappropriate software and poor knowledge of business information consumer (employee) create similar percentage of IQ assurance problems: 11.4 percent and 11.3 percent. Insufficient information security creates 12.4 percent of IQ assurance problems.

The authors of this paper think that the proposed IQ Management Model might service like one of the tools for solving the IQ assurance problems in business; this model also helps to define right business IQ dimensions within the organizations, and change their attitudes towards the value of information.

## Conclusion

The identification of the essential dimensions of IQ that meet or exceed information consumers' expectations and requirements, expressed or unasked needs are the basis for the IQ assessment and for delivering high quality business information. To ensure IQ, information must be presented and produced in accordance with clearly defined IQ dimensions, just like other products (services and goods) are supplied and evaluated according to specific quality characteristics.

In order to define IQ dimensions the research of Lithuanian business organizations was accomplished and key business IQ dimensions were defined. The authors of this paper revealed that three most important IQ dimensions are: believability, relevancy, and accuracy.

IQ enables organizations to gain competitive success. The research findings revealed that Lithuanian business representatives still too little pay attention to identification of business IQ: only 32,4 percent of the respondents work in companies that are in the highest information maturity level and treat information as a competitive differentiator.

Organizations of the 21<sup>st</sup> century must harness the full potential of their information in order to gain competitive advantage, implement innovations, and attain strategic goals.

The authors of this paper prepared the IQ Management Model as a tool to meet IQ assurance and management challenges in organizations. This model reveals the structure of the information resources, also the place of

IQ management system in the information manufacturing process, information assessment and processing to the final quality information product that satisfy or even exceed information consumer expectations and needs. In the proposed IQ Management Model functions Total Data Quality Management system (Wang, 1998): IQ definition, measurement, analysis and improvement procedures that are essential to create and assure IQ.

The authors of this paper identified and presented the crucial IQ assurance problems: absence of proper technologies, poor IT, inappropriate software, difficulties to discover reasons for IQ errors, insufficient information security, lack of time to ensure IQ, lack of reliable information sources, poor knowledge of business information consumer (employee). The findings of the research revealed that the biggest (16.5) percent of IQ assurance problems are influenced simply by the lack of time to create quality information.

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### Verslo informacijos kokybė ir jos vertinimas

#### Santrauka

Aktuali šiuolaikinio verslo problema – kaip pasirinkti tinkamą informaciją iš jos gausos, kaip atskirti, kuri yra vertinga, o kuri bevertė, kaip nustatyti naudojamos ir kuriamos informacijos kokybę. Šios verslo problemos aktualios ir svarbios ir pasauliniu, ir mūsų šalies mastu. Lietuvoje verslo informacijos kokybė sistemingai negarginėta.

Šiame straipsnyje analizuojami verslo informacijos kokybės (IK) valdymo ir jos įvertinimo ypatumai. Darbo tikslas - atskleisti verslo informacijos kokybės (IK) ir jos vertinimo ypatumus bei pateikti IK

valdymo modelį. Siekiant tikslo kelti šie uždaviniai: identifikuoti svarbiausius Lietuvos verslo organizacijų IK rodiklius ir juos palyginti su užsienio autorių tyrimų rezultatais; įvertinti mūsų šalies verslo įmonių informacinę brandą.

Atliekant informacijos kokybės vertinimo tyrimą, remtasi tokia prielaida: ir materialus produktas turi matuojamus kokybės požymius bei rodiklius, ir informacija turi tam tikras kokybės charakteristikas, kurias galima išskirti, išmatuoti ir įvertinti. *Metodologija*. Straipsnis parengtas remiantis mokslinės literatūros lyginamąja analize ir Lietuvos verslo organizacijų struktūrizuota anketine apklausa. Tyrimo reprezentatyvumui užtikrinti pasirinktas tikimybės stratifikuotos imties metodas. Tyrimui organizacijos atrinktos iš „Verslo žinių“ leidinio „Lietuvos verslo lyderiai 2005/2006“, kuriame pateikiamos pardavimų apimtimi pirmaujančios įmonės. Atrinktos visų pagrindinių verslo sektorių įmonės. Reikiama imtis nustatyta remiantis ribinės paklaidos apskaičiavimu. Tyrimo metodologija laidavo 90% patikimumo rezultatus. Atlikus literatūros informacijos kokybės tematika analizę, galima padaryti išvadą, kad nėra vieno ir visuotinai priimtino informacijos kokybės apibrėžimo. Skirtingi autoriai pateikia skirtingus, bet vis dėlto turinčius ir panašumų, informacijos kokybės apibrėžimus.

Autoriai teikia tokį IK apibrėžimą. Informacijos kokybė – tai visuma informacijos savybių ir jų rodiklių, leidžiančių atitikti ir viršyti informacijos vartotojų – žinių darbuotojų – lūkesčius ir reikalavimus, išreikštus ir neišreikštus jų poreikius. Lietuvoje verslo informacijos kokybė sistemingai negarginėta.

Tyrimas atskleidė, kad, Lietuvos verslo organizacijų nuomone, svarbiausias IK rodiklis yra informacijos patikimumas. Kaip svarbiausią jį nurodė beveik 80% respondentų. Informacijos tinkamumą ir tikslumą dauguma respondentų (61,5%) taip pat priskiria prie svarbiausių šio produkto charakteristikų. Informacijos tikslumą, objektyvumą, patikimumą, prieinamumą, tinkamumą, pridėdamąją vertę, pateikimą laiku, išsamumą ir suprantamumą kaip svarbiausias charakteristikas pripažįsta ir Lietuvos, ir užsienio verslo informacijos vartotojai. Informacijos reputacija, saugumas, tinkamas duomenų kiekis, interpretavimo galimybė, pateikimo glaustumas ir nuoseklumas mūsų šalies informacijos vartotojams nėra patys svarbiausi IK rodikliai. Mūsų šalies respondentai svarbesnėmis IK charakteristikomis laiko informacijos pritaikymą profesiniams poreikiams, jos pateikimą sutartu laiku, slaptumą, valdymo lengvumą ir kainą. Minėta kai kurių IK rodiklių vertinimų nesutapimą galima paaiškinti dviem priežastimis – verslo aplinkos ir kultūros skirtumais, per dešimtmetį, kuris skiria gretinamus tyrimus, įvykusiais verslo informacijos turinio, apimties, pateikimo formų ir informacijos teikimo bei valdymo infrastruktūros akivaizdžiais pokyčiais. Daroma išvada, kad, siekiant užtikrinti IK, informacija turėtų būti kuriama, pateikiama ir vertinama pagal konkrečiai apibrėžtus kokybės kriterijus, kaip pagal iš anksto aptartus kokybės rodiklius yra tiekiami ir vertinami kiti produktai – prekės ar paslaugos. Konkrečiai vartotojų grupei svarbiausių IK charakteristikų identifikavimas, jų matavimo ir vertinimo kriterijų bei metodologijos nustatymas yra informacijos produkto objektyvesnio kokybės įvertinimo pagrindas.

Informacija verslo įmonėms gali suteikti konkurencinį pranašumą tik tada, kai organizacijoje taikomi veiksmingi jos valdymo ir kokybės užtikrinimo metodai ir priemonės. Pastaruosius aspektus pirmiausia lemia organizacijų požiūris į informaciją. 2006 m. IBM kompanija paskelbė modelį, padedantį nustatyti, kokio informacinės brandos lygmenis yra konkreči organizacija. Modelis apima organizacijos prioritetų ir požiūrio į informaciją vertinimą bei įmonės verslo informacijos pokyčių ir plėtros kryptį identifikavimą, siekiant užtikrinti konkurencingumą. Šis vertinimas suteikia verslui naują požiūrį į informacijos vertę. Organizacijos informacinės brandos įvertinimas padeda sumažinti sprendimų priėmimo riziką, teikti naujoves, pagerinti verslo procesus, darbuotojų produktyvumą ir rūpinimąsi savo klientais. Modelis apibrėžia penkis organizacijos informacinės brandos lygmenis: 1) *Duomenys – verslo priemonė*. Šio žemiausio lygmenis įmonė dėmesio skiria duomenims rinkti ir atskaitoms rengti. Kasdienėje veikloje dažniausiai naudojami statiški ir struktūruoti duomenys. Kiekvienas organizacijos padalinys turi savo „informacinės tiesos“ versiją, o sukurta informacija kaupiama vietinėje duomenų laikmenoje ar paprastose elektroninėse lentelėse; 2) *Informacija – verslo valdymo priemonė*. Šio lygmenis įmonės jau yra įgyvendinusios pagrindinės informacijos sąveikos posistemį, ir jų informacijos valdymo pagrindinė veikla nukreipiama į taktinę turinio valdymo sistemą. Jos atlieka detalią struktūrinių duomenų integraciją, skirtą esminių atskaitų rengimui ir analizei. Tokioje įmonėje informacija dar nėra suvokiama kaip strateginis turtas; 3) *Informacija –*

*strateginis turtas*. Šio brandos lygmens organizacijos jau nemano, kad informacija yra šalutinis verslo operacijų produktas ar pridėtosios vertės kūrimo veiksnys. Informacija suprantama kaip verslo turtas, padedantis sėkmingai veikti. Šios įmonės, naudodamos pagrindines informacines technologijas, siekia atskirti kokybišką informaciją nuo „informacijos liūno“. Organizacijos pradeda suprasti strateginę informacijos naudą, ieško būdų didesnei informacijos teikiamai naudai užtikrinti; 4) *Informacija – naujoviškumo priemonė*. Šios brandos organizacijos ieško informacijos naudojimo metodų ir priemonių naujovėms įgyvendinti. Jos jau yra įdiegusios standartus ir virtualias priemones, taigi vientisa informacija galėtų būti prieinama ir naudojama visuose verslo procesuose. Informacijos šaltiniai yra visiškai integruoti, o verslo informacija gerai suprantama ir viena-reikšmiškai suvokiama visų padalinių darbuotojų. Tokios įmonės informaciją naudoja kaip vieną pagrindinių priemonių kuriant naujoviškus procesus, užtikrinant prognozuojamą ir iniciatyvų valdymą; 5) *Informacija – konkurencinio išskirtinumo priemonė*. Šio aukščiausio lygmens organizacijos veiksmingai vertina ir valdo IK, o pačią informaciją traktuoja ir naudoja kaip verslo plėtrą, inovacijas ir konkurencingumą lemiantį veiksnį. Jos naudojami vidiniais ir išoriniais informaciniais tinklais, kurdamos ir tiekdamos vartotojams didelės ar išskirtinės vertės produktus ir paslaugas. Bendradarbiaujant su tiekėjais ir partneriais remiamasi pridėtosios vertės kūrimo principu. Informacija vartojama kaip svarbiausias šaltinis ir priemonė operatyviai ir veiksmingai reaguoti į rinkos, įmonės, verslo ir kitus aplinkos pokyčius.

Tyrimas parodė, kad beveik trečdalis tirtų mūsų šalies organizacijų galima priskirti prie aukščiausiojo informacinės brandos lygmens. Autorių nuomone, tai gana aukštas rodiklis šaliai, vos prieš keliolika metų pasukusiai rinkos ekonomikos link. Beveik 11 % respondentų savo įmones identifikuoja kaip organizacijas, kuriose verslo informacija yra pagrindinė naujoviškumo priemonė. Šis brandos lygmuo jau nedaug skiriasi nuo aukščiausiojo, vadinasi, dar dešimtadalis mūsų šalies įmonių verslo informacijos vadybą plėtoja tinkama linkme ir

artėja prie informacinės brandos organizacijų elito. Tačiau daugiau nei pusės tirtų įmonių informacinės brandos lygmenys kol kas dar yra žemesni.

Kol kas nėra vieno IK rodiklių įvertinimo metodo, ir vargu ar toks bus sukurtas, nes skirtingomis aplinkybėmis ir skirtingų informacijos vartotojų, skirsis ir IK rodiklių svarba. Vieni autoriai nagrinėja, kokia turi būti kokybiška informacija – jos charakteristikas, rodiklius, įvertinimą, tačiau mažai autorių atskleidžia, kas nulemia pastaruosius IK rodiklius, kas kuria ir veikia IK. Todėl šio darbo autoriai teikia modelį, kuriame IK valdymą siekiama parodyti kaip sistemą, veikiančią tam tikroje aplinkoje. Modelis apima informacijos išteklių struktūrą, IK valdymo sistemos vietą informacijos kūrimo procese, informacijos vertinimą, apdorojamą iki galutinio kokybiško informacijos produkto rezultato, kurio tikslas – kuo visapusiškiau atitikti informacijos vartotojo lūkesčius.

Tyrimo metu nustatytos pagrindinės problemos, susijusios su verslo IK užtikrinimu. Išskirti šie verslo IK trūkumai: tobulų technologijų stygių, netinkama programinė įranga, informacijos klaidų priežasčių sudėtingas identifikavimas, informacijos saugos nepakankamas užtikrinimas, laiko, patikimų informacijos šaltinių ir verslo informacijos vartotojų žinių trūkumas. Nustatyta, kad apie šeštadalį problemų, trukdančių disponuoti kokybiška informacija versle, sukelia darbo laiko trūkumas kokybiškai informacijai generuoti ir gauti. Patikimo informacijos šaltinio nebuvimas sudaro apie 15 proc. respondentų visų išskirtų IK problemų.

Siekiant veiksmingiau spręsti IK sunkumus, organizacijoms siūloma pasinaudoti verslo IK valdymo modeliu, tinkamai identifikuoti ir pasirinkti pagrindinius IK rodiklius bei keisti visos organizacijos požiūrį į informaciją vaidmenį organizacijoje ir IK efektyvaus valdymo svarbą.

Raktažodžiai: *informacijos kokybė, kokybės vertinimas, kokybės rodiklis, modelis, informacinė branda.*

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