Economics Institutions for Internet Transactions

Evgeny V. Popov
Corresponding Member, Prof. Dr.
Head of Economic Theory Center,
Institute of Economics,
Ural Branch of Russian Academy of Sciences;
Professor, Chair of Management Theory and Innovations,
Institute of Public Administration and Entrepreneurship,
Ural Federal University named after the First President of Russia B. N. Yeltsin
Ekaterinburg
Russia
Telephone: +7 343 371 45 36
Fax: +7 343 371 45 36
Email : epopov@mail.ru

Sergey V. Kulpin
Teaching Assistant, Chair of Management Theory and Innovations,
Institute of Public Administration and Entrepreneurship,
Ural Federal University named after the First President of Russia B. N. Yeltsin;
Postgraduate Student,
Institute of Economics
Ural Branch of the Russian Academy of Sciences
Ekaterinburg
Russia
Telephone: +7 343 358 19 73
Fax: +7 343 358 19 73
Email : skulpin@yandex.ru

Presented at the
Inaugural WINIR Conference
"Institutions that Change the World"
(WINIR 2014)

Old Royal Naval College, Greenwich
London, UK

September 11-14, 2014

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Popov E.V., Kulpin S.V.

The Internet is becoming interesting for researches as an economic phenomenon. The institutional economics researches are no exception. K. Elshbach (2002), T.Jensen (2008), A. Salazar (2009), M. Mueller (2000), C. Avgerou (2000), J. Salmeron, S. Bueno (2006), L. Jin, D. Robey (1999), Y. Bakos (1998), and other, tried to describe institutional changes during the formation of virtual market. Also attempts to evaluate the transactional interaction in the Internet were made in the studies of Thompson S.H. Teo (2004), R. Stump, J. Heide (1996), R. Benjamin, R. Wigand (1995), A. Cordella (2006) et al.

However, scientific literature has not developed common theoretical description of the Internet's institution conception. The studies do not have concepts of transactions, transaction costs in the Internet. Modern virtual world researches pay attention not to the system of institutions, but to allocation of the separate institutional units of the Internet which are not connected by a certain structure. There is a problem of the systemization of the economic institutions and transactions of the Internet.

Objective of this research is the theoretical systematization of the Internet's economic institutions views. Authors solve problems of the analysis of existing institutional concepts of the virtual world, allocation of separate elements of the Internet institutional structure and the modeling of the virtual world institutional system.

According to authors' views, the principle of the isomorphism of economic norms is a base of an institutional systematization. The institutions of electronic economic environment are a reflection of some traditional trade institutions. Furthermore, completely new institutions appeared in the virtual world extrinsic to the traditional economy.

In addition, the research analyzes various approaches to the description of transactional interaction in the global Internet space. The authors formed their vision of the typology of transaction costs in the virtual space and paid attention to the issue of the impact of information technology on the value of transaction costs in general.

Practical significance of the research consists in the formation of methodological bases for planning and forecasting of the institutional structures development in the Internet economic relations. The economic relations developing in the Internet have a nature different from the traditional interactions of economic agents. Modern science is at the beginning of the full understanding of the virtual world's economic potential.

Keywords: *the Internet, institutional theory, isomorphism, institution typology.*

Introduction

From the point of view of economic development perspectives Internet can be seen as the main force behind production boost. Virtually all economic institutionos are nowadays linked to the development of informational and technological sphere.

By now there have been major changes in institutional economic development marked by Nobel prize to R. Cows (1991), D. North (1993), L. Hourvitz, R. Mayerson and E. Muskin (2007), O. Williamson and E. Ostrom (2009). Unfortunately several aspects of conceptual and theoretic apparatus of institutional economics have not been discussed (Popov, 2012a).

It is almost impossible to find theoretic description of the notion “Internet space institution” in academic literature. Modern research in the field of virtual space pays attention not to the system of institutions but to singling out institutional unit of Internet space not related by concrete structure. First of all it is explained by novelty of Internet space phenomenon and changes related to it that are felt in every aspect of modern life including economics relations. Insufficiency of theoretic apparatus does not have negative influence on continuous growth of interest of the academic community to peculiar features of economic, legal and social regulation of virtual space institutions.

The aim of this research is to create a systematization of Internet space institutions. Authors aim at analyzing existing institutional concepts of virtual space, identifying individual elements of Internet space institutions structure and modeling a system of virtual space institutions.

1 Institutional approach in studying IT industry

Internet is available in every country and has billions of users. Besides already well – known electronic mail services Internet offers shopping, banking, voting, discussing, consulting, teaching and learning opportunities, etc. Internet space is growing rapidly. Two decades ago majority of people on the planet knew nothing about Internet technologies. Nowadays Internet is the main place for

advertising for small companies and giant companies, conducting election campaigns, teaching process, etc. Internet has become more integrated with traditional mass media (Graham, 2001).

Institutional theory offers its own view on processes of spreading and adapting information technologies, in particular, Internet technologies.

If we see institution as a sum of stable norms of interaction between economic agents (Popov, 2012b), it leads us to the conclusion that economic institution of Internet space is a sum of stable norms of interaction between agents in virtual sphere.

From the point of view of institutional theory a company with IT infrastructure can be defined as a set of norms and rules emerging between functionally distributed organizational groups which separate formal and informal behavior of members of this computer mediated groups. Institutionalism suggests that organization should develop alongside with creation of collective knowledge (Elsbach, 2002). Such knowledge can be manifested via organizational structures, procedures, traditions and business processes.

Before starting an analysis of Internet space institutions it is worth thinking about development of institutions related to a wider notion of information technologies. Institutional theory implies that changes of company's infrastructure and activities are not always caused by purely economic reasons: quite often they are caused by pressure from external non – economic factors. Legitimacy, prestige and norms pf behavior can be an example of such factors. They can make the company use different information systems.

Organizational changes in companies with developing IT infrastructure are interesting to many authors. One of attempts to describe institutionalization of adapting company's activities to virtual environment was made by a team of researches headed by T. Jensen (Jensen, 2008). Authors used analytical basis suggested by W. Scott. He identifies three main mechanisms intrinsic to any institutional change:

1. The first mechanism has coercive (legal) basis which is related to legal environment of the organization as well as to existing standards.

3. The second mechanism is a normative one and depends on norms related to professional intra – organizational networking, similar educational level, imitative behavior of company employers with the same professional specialization.

2. The third mechanism has mimetic character of a standard answer to uncertainty of external environment (Scott, 1991).

Jensen calls these mechanisms regulative, normative and cognitive relatively. Author draws a parallel between these mechanisms and their instruments as seen in Table 1.

Table 1 – Institutional mechanisms and instruments (Jensen, 2008)

Mechanisms	**Regulative mechanisms**	**Normative mechanisms**	**Cognitive mechanism**
System of symbols (culture)	Rules, laws	Values, expectation	Categories, types
System of relations (social structures)	Governmental system, administrative system	Regimes, administrative bodies systems	Structural isomorphism, identities
Routines	Protocols, manufacturing procedure standards	Conformities, productivity, duties	Action programs, scenarios
Artefacts	Objects with certain characteristics	Objects requiring understanding, standards	Objects with symbolic value

Structure presented by Jensen defines main trends in development of institutes within this area. The drawback of this approach is that authors view institutional structure at large without separate entities and do not see links between separate elements of the system.

Another attempt was made by A. Salazar. His research focused on defining organizational peculiarities of companies acting in the Internet space by identifying different levels of development (networks, markets, branches) (Salazar, 2009). From the point of view of network model authors believes it can be used in virtual

space. Authors points out insufficient research in the field of creating virtual business networks. There are no clear mechanisms for constructing networks like “client – vendor”, “vendor – sponsor” and outsourcing in virtual space.

If we look at the market level Salazar believes that the following questions should be answered first: which aspects of online trade model should be regulated first and which regulation methods are permissible.

From the point of view of branch development Salazar asks about consequences caused by spreading of trade in virtual space. He identifies three levels of factors influencing this branch: country level, technological level, organizational level. Country level factors include culture of society, accessibility of information, market and infrastructure. Countries can react to challenges of informational capitalism by legal and illegal means, creation of new laws, improvement of investment potential, transfer of foreign technologies, etc. Technological factors feature technological globalization, degree of cooperation between companies and international exploitation of national technological potential.

The drawback of Salazar’s research is related to the absence of clear structure of institutions capable of functioning on all three levels.

Another researcher, C. Avgerou analyzed the history of technical, rational and social changes caused by the development of IT infrastructure within the framework of one organization during 30 years. Avgerou studied the connection between development of informational systems and organizational changes which were viewed as two institutional processes: increase of IT innovation impulse and organization effort necessary for replacing of old structures and processes by new ones (Avgerou, 2000). This research does not feature systematization of the institutions involved into or influencing these processes.

Therefore researches described above do not present systematization of virtual space institutions. At present the question of typology of these institutions remains an open one. In the following analysis authors attempt to describe the principle used as the basis for Internet space institutions typology.

2 Institutional isomorphism and virtual space

Researchers J. Salmeron and S. Bueno believe that imitative process related to different environmental factors is one of the main aspects of institutional theory. This imitation is based on probability of survival of organization mainly in high volatility branches. It concerns companies working in IT sphere many of which use modern systems with high complexity of implementation and exploitation (including e-commerce ones). All this alongside with continuous and rapidly advancing process of technology change create a situation where companies in one area are imitating their likes that have already implanted necessary informational technologies (Salmeron, 2006). Institutional theory calls this phenomenon isomorphism. Institutional isomorphism is a process which restrains market participant making it imitate another market member under the influence of similar external environment factors (DiMaggio, 1983). As a result of this isomorphism organizations from one area tend to introduce similar information systems.

According to institutional theory isomorphism within one branch is caused by three already mentioned mechanisms (DiMaggio, 1983; Mignerat, 2009; Scott, 1991): legal, normative and cognitive.

Salmeron singles out three clusters of companies according to the way of introducing informational technologies: innovative, defensive (companies for which informational system or technology is important but they have no opportunity to engage in informational activities and use other informational systems as long as they exist in the market), passive (companies do not consider informational systems related to their activities), consistent (companies that do not have IT departments but use Internet technologies in their activities) (Salmeron, 2006).

Jin and Roby describe the process of emerging online trading from the point of view of institutional isomorphism (Jin, 1999). Authors state that decrease of wholesalers, distributers and other intermediaries in the cost chain was one of the

widest spread forecasts for trade development in the era of informational capitalism.

This “disintermediation” (liberation from intermediary economic agents) has identified perspectives for improving efficacy of procurement and sales channels. Later data demonstrates that these forecasts were premature as today new online agents («cybermediaries») have their place in cost chain between manufacturers and consumers. Jin and Roby explain the phenomenon of economic online agents within the framework of transaction costs economics, consumer economics and several academic theories: institutional theory, social exchange theory, social networking theory and knowledge generation theory. Admitting potential value of these theoretic aspects researchers got a clearer explanation of the economic agents phenomenon in electronic commerce.

In the context of virtual retail sales clients usually have access to broader range of brands and goods as they are not limited by space of traditional shop. Order can be made before the goods are actually manufactures. Credit cards have become standard means of payment revealing client’s identity. Owners of electronic retail sale shops usually do not have much assets, supply goes from manufacturers or distributors with the help of logistic companies.

Institutional theory can help explain phenomenon of electronic retail trade as the result of isomorphism in which structures and functions of traditional trade are preserved in a different context. M. Suchman states that electronic trade preserves forms of traditional trade as they are socially legitimate (Suchman, 1995). As retail sales have easily entered industrial societies as a mechanism of economic exchange we should expect electronic retail sales replicated as an analogue of traditional trade but in the context of using resources and opportunities of virtual space.

Besides demonstrating the fact that such institutions as retail sales remain in the society though in a different form and that organizations imitate each other in order to preserve their legitimacy institutional theory gives an idea of legal and regulative structures of the society. For example, institutional analysis by Bakos (Bakos, 1998) concentrates on laws regulating market through rules concerning

payment mechanisms, fair trade principles, intellectual property rights, etc. Despite the fact that these institutional mechanisms would be preserved in electronic trade they will take quite different form and obtain different functions. For example Internet sellers can be exempt from sales tax on inter – state deals, as they do most part of their business outside state borders without actually changing their geographical location. It is explained by the fact that norms of conducting business were officially formulated in pre – information era when geographic position and physical documents were more significant. At present discussion on introducing Internet sales tax goes as part of changes of institutional and economic life of society in general.

In addition to formal regulative factors academics have studied normative and cognitive base of social stability during informational capitalism era (Scott, 1995). It includes cultural expectations concerning the process of trade in virtual space as well as expectations related to confidentiality, security and ethic use of private information in the process.

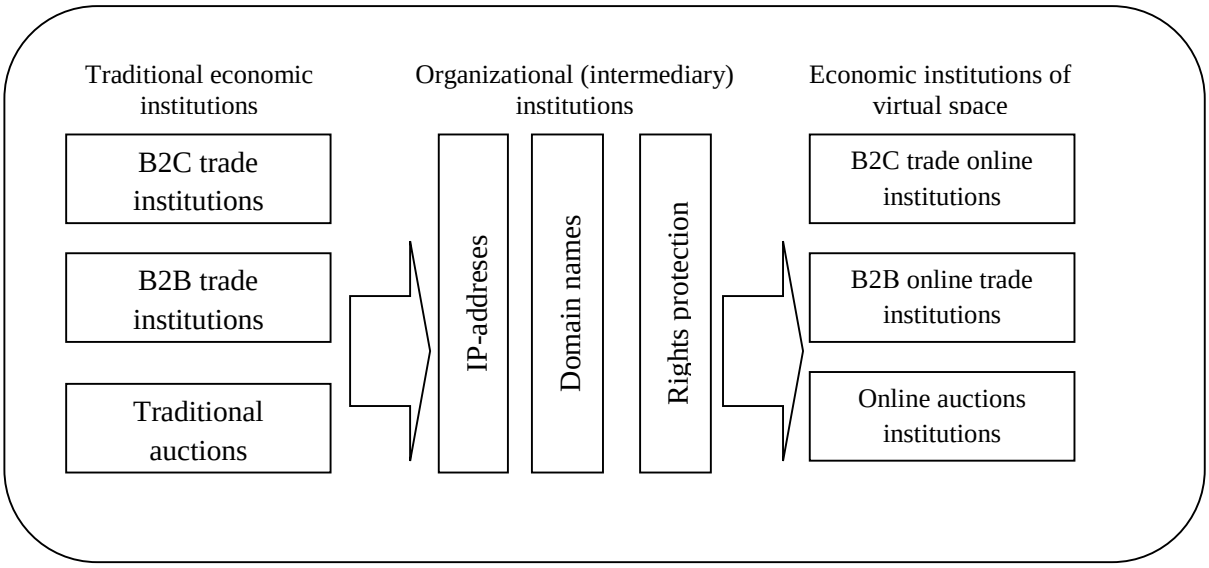
Analysis of the literature has shown that authors tend to see the relation between virtual space institution development and isomorphism process. And now we can move on to the typology of these institutions.

3 Typology of virtual space institutions

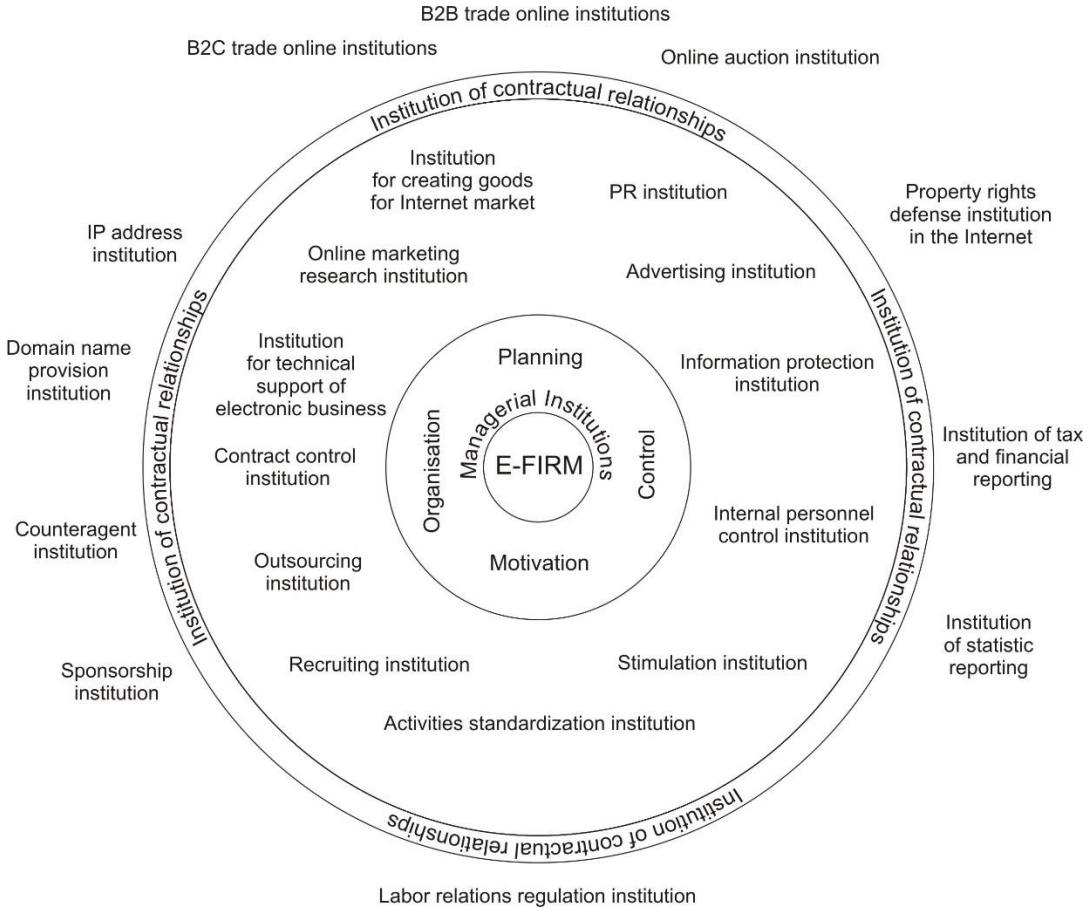
According to the isomorphism principle described above transition from traditional institutions to economic institutions in virtual space can be shown as a scheme on Dr. 1.

From the point of view of institutional theory we can say that company engaged in Internet business has certain institutional environment (Dr.2). As in traditional trade we can point out exogenic institutional environment – a complex of institutions causing external influence on the company and endogenic institutional environment – a set of institutions causing internal influence. Some institutions were present in traditional business, others are new for informational

capitalism era. This model mostly views formal institutions which are built according to political, legal and economic norms and rules. .



Drawing 1 – Isomorphism in Internet trade[1]



Drawing 2 – Institutional environment of Internet company [2]

[1] Compiled by authors.
[2] Compiled by authors.

Table 2 gives typology of these institutions. We use typology of information search institutions (Popov, 2009) as the basis for our analysis.

Table 2 – Typology of virtual space institutions

Institution	Functions	Economic environment
Exogenic institutions		
External control institutions		
Property rights defense institution in the Internet	Defense of property rights of companies acting in virtual space	Virtual
Institution of tax and financial reporting	Providing state control on agent's economic activities	Traditional, virtual
Institution of statistic reporting	Creation of state statistics	Traditional, virtual
Labor relations regulation institution	Provision of state control on labor relations in companies	Traditional
Institutions"company company"		
IP address institution	Providing economic agent with the pool of IP addresses	virtual
Domain name provision institution	Providing economic agent with Internet name recognizable in future	virtual
Counteragent institution	Providing company with necessary initial resources	Traditional, virtual
Sponsorship institution	Providing sponsor support to a company	Traditional, virtual
Communication institutions "company – client"		
B2C trade online institutions	Conducting basic economic activities on virtual retail market	virtual
B2B trade online institutions	Conducting basic economic activities on virtual retail and wholesale market	virtual
Online auction institution	Conducting basic economic activities on the basis of auction model	virtual
Endogenic institutions		
Internal control institutions		
Information protection institution	Preventing information leaks inside the company	Traditional, virtual
Internal personnel control institution	Maintaining corporate culture and ethics	Traditional, virtual
Internal activities organization institutions		
Institution for technical support of electronic business	Providing effective work of electronic business platform	virtual
Contract control institution	Providing contract fulfillment terms	Traditional, virtual
Outsourcing institution	Accepting certain functions of the company by other counteragents	Traditional, virtual
Internet marketing institutions		
Institution for creating goods for Internet market	Creating goods able to create demand at the virtual market	virtual

Online marketing research institution	Conducting research on virtual market	virtual
PR institution	Creating certain company reputation by means of presenting indirect information about its activities	Traditional, virtual
Advertising institution	Providing customers with information about goods and services	Traditional, virtual
Labor relations institutions		
Recruiting institution	Finding appropriate personnel	Traditional, virtual
Activities standardization institution	Defining nom and rules of personnel activities	Traditional, virtual
Stimulation institution	Motivating personnel to work more effectively	Traditional, virtual

This typology can be seen as preliminary systematization of virtual space institutions.

Let's take a closer look at the institutions that can exist only in virtual economic space.

First of all we should analyze institutions dealing with technical aspects such as IP addresses and domain names.

IP addresses institution. Research on the problems of IP addresses from the point of view of institutional economics is presented in paper by Milton Mueller (Mueller, 2010). Internet addresses are usually discussed in technical context and discourse includes several important economics notions such as deficit, external factors, general resources, costs spread conflict. Nowadays special institutions are developing in order to solve these issues.

Internet protocol[1] creates virtual resource, so-called address space of finite size. It looks like a set of radio frequencies according to technical standards. The size of address space is fixed by technical standards related to Internet protocol. If there is a lack of addresses in the Internet then from the economic point of view it can be called virtual resource deficit. In that case certain price of the Internet address appears as a result of continuously growing deficit of this resource. From the point of view of virtual resource addresses are not used as in case of traditional

[1] The Internet Protocol (IP) is rules of interconnection between two objects which are linked to the Internet (Olifer, 2010)

economic resources but occupied or rented. When the rent for one economic agent expires resource becomes available for others.

The problem of IP addresses lack remains acute. There is a suggested solution of introducing new address standard with longer address length IPv6. In this case the quantity of addresses will be so large that every person on earth can have his or her own address. However Mueller states that many organizations that have this virtual resource nowadays are not eager to shift to new IP address standard. The best strategy for those companies would be to wait for one of their competitors to master new standard. This would become a certain stimulus for other companies to adapt to new virtual market context according to the institutional isomorphism described above.

If we suggest that IPv6 settles in virtual environment it would lead to transformation of critical virtual resources management policy from solving the problem of addresses deficit to solving organizational problems of using excessive amount of addresses. From the point of view of institutional economics there are two possible options. On the one hand we might see inertia explained by institutional evolution theory (North, 1990). On the other hand there might be qualitative changes in institutional regimes related to changed balance between supply and demand for this virtual resource (Mueller, 2002).

Domain names institution. Domain names are also a critical resource in the Internet space[1]. Appearance of this institution in the end of XX century lead to institutional innovations. Mueller speaks about a conflict between organizations conducting registration and provision of virtual names for the companies (ISOC, ITU, WIPO), and commercial organizations aiming at supporting their trademark in the Internet (large transnational companies and owners of trademarks defending their rights for intellectual property and electronic trade) (Mueller, 2000). The main requirement of companies is to link the process of domain names registration

[1] Domain name is a symbolic identifier for a computer connecting to IP-address of the computer in accordance with the special tables (Olifer, 2010).

with trademark right defense. Companies had huge transaction costs defending their rights for using certain virtual name in courts.

This problem was solved in 1998 by creating non – profit organization ICANN (Internet Corporation for Assigned Names and Number). ICANN activities have changed Internet. Until 1998 there was only one company in charge of name registration in open domains. This monopoly lead to high price of registration – each domain in zones like .com, .net and .org cost its owner $50 per year. That in turn was one of the reasons hindering the growth of registered domain names: in 1998 there were only 3 million of them.

ICANN corporation started spread system of domain registration which is based on the principle of free access of accredited registrators to domain names lists. This marked the beginning of forming competitive domain market.

ICANN strong side is that all corporate decisions are previously discussed with representatives of Internet community, business and state authorities from different countries. It is necessary in order to provide balanced address space management considering the opinion of all interested parties. Discussion of ICANN documents can take different formats. Before final decision all documents are available at the website of organization.

ICANN is an example of institutional innovation that was used in the context of developing virtual trade space and does not have analogues in traditional economic sector.

Property rights defense institution in the Internet. The problem of property rights in the Internet space have been a topic for discussion for many researches dealing with economics, law and sociology (Flanagan, 2008; Kaetzel, 1996; Mansell, 1998). Therefore we believe it reasonable to single out property rights defense institutions as a separate group.

In his work, E. Brousseau states that digital technologies allow for implementing decentralized system of property rights compared to traditional system offered by state on national level (Brousseau, 2004). Independent use of right for the use of information and development of self – regulation virtual

communities allow economic agents for claiming and managing property rights according to local regulations and individual preferences.

Nevertheless decentralized system has its disadvantages. It might lead to conflict and disappearance of centralized defense bodies which would cause decrease of investments into the virtual market. This might also cause ineffective takeover of public benefits and facilitate emergence of monopoly. Brousseau states that a regulative body is a must. According to the principle of subsidiary responsibility it should monitor behavior of individual persons and communities in order to prevent unlimited takeover of public wealth, in particular, information, solve conflicts between agents on exclusive refight of use as well as guarantee external support in using exclusive rights.

Institutions of creating goods for Internet market. We should pay particular attention to goods and services relevant for virtual market. Besides traditional goods virtual market can boast more and more complex informational and intellectual goods, like different software. An interesting thing is that these goods can be sold at the market at zero price (Kulpin, 2012).

Creation of free software from the point of view of Veblen's social and economic theory (concept of capital, technical knowledge and institutional changes) is described in the work by (Kologlugil, 2012). The author suggests analyzing free software as social and social phenomenon. Development of free software demonstrates that technical knowledge in software industry should be freely available for society as part of common knowledge. In other words he speaks against the use of copyright as aggressive strategy by developers of proprietary software as current technological context in software industry take into consideration institutional mechanism of production and innovations based on joint thinking.

Conclusion

The article is an attempt to create a typology of virtual space institutions.

In authors' opinion development of economic institutions of virtual space is related to the notion of institutional isomorphism. Some institutions of traditional trade have their analogues in the institutes of electronic economic environment.

On the other hand we can identify some institutions typical only of virtual space. IP address institutions and domain name institutions can be ab example of that.

Economic relations existing in the Internet have a slightly different nature compared to traditional interaction between economic agents. Modern science is only starting to understand the phenomenon of virtual world.

Typology of Internet space economic institutions presented in this article can be used by researchers in further analysis of electronic economic environment institutionalization.

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