

SOCIAL CAPITAL AND VIRTUALITY: A CONCEPTUAL FRAMEWORK

Josip Kolarec, Milan Bajić, Ida Popčević

Tehničko veleučilište u Zagrebu

Sažetak

Ovaj članak se temelji na nizu triju povezanih istraživanja provedenih tijekom 2013. na Tehničkom veleučilištu u Zagrebu. Članak istražuje prirodu odnosa između realnosti i virtualnosti, te njezine višeslojne odnose s društvenim kapitalom, poslovnim mogućnostima i dobrovoljnim angažmanom na internetu. Pokazuje da su motivatori za sudjelovanje u društvenom umrežavanju vrlo slični motivatorima za sudjelovanje u pokretu FLOSS (engl. Free/Libre Open Source Software – hrv. softver slobodnog otvorenog koda). Zaključuje da je društveni kapital kao jedna od glavnih pokretačkih snaga ljudskog roda mnogo važnija nego korištene tehnologije. Također upozorava na organizacijsku strukturu i etiku unutar različitih zajednica koje dubinski utječu na procese stvaranja i održavanja društvenog kapitala, kao i na dijalektičko preplitanje koncepta društvenog kapitala s materijalnim dobicima. Na taj način pruža zaokruženi teorijski okvir koji nadilazi rezultate pojedinačnih istraživanja na kojima se temelji, ukazuje na raznovrsna metodološka ograničenja danih zaključaka, te poziva na daljnja istraživanja predodžbe o društvenom kapitalu na granicama između realnosti i virtualnosti.

Ključne riječi: *Realnost, virtualnost, FLOSS, društveni kapital*

Abstract

This article is based on the series of three research studies conducted during 2013 at the Polytechnic of Zagreb. It explores the nature of relationships between reality and virtuality, and its multi-layered relationships with social capital, business opportunities, and voluntary online engagement. It shows that motivators for participation in social networking are very similar to motivators for participation in FLOSS movement. It concludes that social capital, as one of the main driving forces of humanity, is much more important than the used technology. However, it also warns that organizational structure and ethics within a community profoundly impact processes of creating and maintaining social capital, and that the concept of social capital is

dialectically intertwined with material gains. In this way, it provides a whole-rounded theoretical framework unavailable to solitary research efforts, warns about various methodological restrictions to found conclusions, and calls for further investigation of the notion of social capital at the fringes between reality and virtuality.

Key words: *social capital, virtual and real, motivation, networking*

1. INTRODUCTION

This article is based on the series of three research studies, conducted and previously published by its co-authors, about various aspects of the relationships between online and offline social capital, business opportunities, and voluntary online engagement. The first paper, 'Building social capital through social networking: strategy or coincidence' [1], and the second paper, 'The social network is the message: virtual social capital and real world business opportunities' [2], are based on student population at Polytechnic of Zagreb, and compare locally obtained results with similar international research. The third paper, 'Social capital as a factor of motivation for free/libre/open source software development' [3], is detached from the local context and provides a general insight into varieties of individual motivation in FLOSS (free/libre/open source software) for participation in the community.

These papers have a common theoretical framework and broad research interest. However, they explore different research questions, employ different research methods, and are conducted on different research scales. Each paper provides valuable theoretical and practical conclusions. Placed together, however, these research efforts build a wider picture regarding the relationships between reality and virtuality, and its multi-layered relationships with social capital, business opportunities, and voluntary online engagement. Such research approach offers opportunities for generalisation, which are methodologically unavailable to individual research efforts. However, its verifiability is strongly restricted by detachment from empirical studies.

2. METHODOLOGY

This review paper is based on empirical research. By itself, however, is not empirical. The founding studies are conducted at different times, using different methodologies, with different populations of students, and by different (albeit connected) groups of authors. Therefore, possible limitations derived from the used methodology are: (in)commensurability of methodologies used in previous research, accuracy of interpretation of earlier research, and theoretical issues related to type of research. At the other hand, possible advantages of the used methodology include: the effect of synergy (taken together, results from these researches can help us bring some conclusions impossible from each of the papers separately), verification of earlier research results (mostly by comparison), and the opportunity for drawing generalisations.

Obviously, placing results of few narrow positioned research efforts within a common conceptual and interpretational framework may be beneficial for our understanding of the relationships between reality and virtuality. However, theoretical / review approach to scientific research does not have the benefit of 'reality check' in the form of empirical research. Therefore, it should closely observe the identified methodological restrictions, and cross-reference the found conclusions with a wide body of (inter)national research, and retain constant awareness of theoretical and practical limitations to the chosen research method.

3. BUILDING SOCIAL CAPITAL THROUGH SOCIAL NETWORKING: STRATEGY OR COINCIDENCE?

This paper deals with the student approaches to building their social capital. With the expansion of social environment in computer-mediated environments, and thus increased participation and interactions of students in online social networks, there is an emerging question about the relationships between social capital created in the virtual world of Facebook and social capital in the real lives of students. The study also examines whether students use online social networks strategically. It looks into horizontal and vertical trust dimensions, as well as relationships created through formal and informal paths of communication.

Looking at theory, all resources accumulated in the interpersonal relationships constitute social capital [4,5]. They can be placed in reality or

virtuality. Different features of these worlds influence and shape the interpersonal relationships. In case of virtuality, social capital is predominantly formed through social networks. It has a positive effect on network participants [6], although this effect can be used both positively and negatively. Recent research shows a general decline in social capital in the developed world during the past few years [7]. Since the social capital affects different areas of human lives, those who are not part of the social networks do not have access to useful information and therefore cannot take advantage of various benefits of online social capital including job recommendations and information about vacancies [8].

Different theoretical and practical studies on the relationships between the Internet and social capital show different and opposite conclusions, whether it mediates the reduction [9], substitutes, replaces [10], or increases social capital [11,12]. Ellison, Steinfield and Lampe [13] showed the Facebook is mostly used to build up the existing social capital but not in creating new relationships. Such an unclear situation in relations requires further research.

This study is based on quantitative research approach. The survey is conducted using a sample of students at Professional undergraduate study in Information Technologies, Specialist graduate studies in Information Technologies and Specialist graduate studies in Electrical Engineering students at the Polytechnic of Zagreb. Research results are compared to similar surveys in two American universities: Michigan State University [14] and the University of Texas at Austin [15].

In its examination of student approaches to network formation, the study takes into consideration the important concepts that affect personal networks: limitations, opportunities and choices [16]. Individuals generally meet new people by chance [17]. Networks are rather predominantly created by unconscious reaction to opportunities and constraints, and, to a much lesser extent, by conscious strategies. The conducted empirical research is divided into constraints, opportunities and choices. In relation to constraints, networks created by students at the Polytechnic of Zagreb are masculine and generally limited to students in technical professions. In relation to opportunities, students display similar networking choices. In relation to choices, survey shows that studying at the Polytechnic of Zagreb offers opportunities for networking that are comparable to international experiences.

Surveyed students use the Internet in average 4

hours per day. 75% have Facebook profiles. Most of them spend 10 to 20 minutes per day using Facebook. Trust relationships in the real world are a base for creating their community in the virtual world. Research concludes that students feel involvement in the community and that they are satisfied with their existing networks. Based on survey results, it concludes that students use Facebook as a source of additional information rather than to create new ties, whereby they do not exploit virtual network potentials in building social capital.

Comparing differences between student perception of offline and online social capital, results derived from the survey conducted at the Polytechnic of Zagreb and Michigan State University show only minor deviations. This implies students in Croatia and in the USA think in similar ways regarding own social networking. Face to face communication is predominantly used for creating networks, while virtual networking primarily used for maintaining the existing ties. Based on high levels of similarity to international studies, authors are convinced that results of this research can be generalized to the other higher education institutions in Croatia and abroad.

4. THE SOCIAL NETWORK IS THE M(A)SSAGE: VIRTUAL SOCIAL CAPITAL AND REAL WORLD BUSINESS OPPORTUNITIES

This paper presents an inquiry into the impact of various social networks on acquisition of social capital related to business opportunities. It explores the basic relationships between reality and virtuality using the case of real and virtual habitats of students at the Polytechnic of Zagreb. Focusing on a use of social capital for the purpose of acquiring business opportunities, and taking into account that social capital heavily depends on the context of its acquisition [5], the authors consider the assumption that features of the virtual social capital depend on the used virtual platform or environment. Based on this assumption, research explores relationships between social capitals acquired in two different social networks as the means of gaining business opportunities for the students. Conceived as a second part of research series, this study is heavily based on the previous study 'Building social capital through social networking: strategy or coincidence' [1].

Transfer of human interactions and activities from reality into virtuality significantly influences all human activities including social networking, which has an important role in co-creation of social

capital. Because of its productivity social capital is prerequisite for achieving personal or business success [16]. There are two types of social capital: virtual social capital and real social capital. Analysing social networks, scholars describe them as a set of people connected by relations, consists of actors and ties [18]. Ties connect actors by relations. There are two types of ties: strong ties and weak ties. In relation to creating business opportunities, weak ties are as important as strong ties, because they enable people to connect with resources outside of their closed circles thus offering new opportunities [8]. Jobs found through networks of friends, colleagues or relatives bring various advantages such as higher educational adequacy [19].

Strong ties require more time and attention between individuals in the immediate surroundings. In contrast, weak links that connect wider social circles are easy and simple to maintain within online social networks [20]. Bajić, Kolarec and Jandrić [2] post the hypothesis that virtual social capital is not homogenous, and that it heavily depends on the used virtual platform or environment. On this basis, they examine relationships between virtual social capital acquired in two mainstream online social networks, Facebook and LinkedIn, and real world business opportunities. This methodological choice is inspired by conceptual differences between the social networks: Facebook is a social networking service predominantly used for private purposes, while LinkedIn is a professional network.

In this study, Bajić, Kolarec and Jandrić explore business opportunities created by LinkedIn using the same research methodology as in their previous study of Facebook 'Building social capital through social networking: strategy or coincidence' [1]. Furthermore, this study is conducted on the same group of students from Specialist graduate studies in Information Technologies and Specialist graduate studies in Electrical Engineering students at the Polytechnic of Zagreb. In this way, they ensured methodological ground for comparison of survey results and the drawn conclusions.

In this research, LinkedIn is used by 23% of researched population, predominantly on weekly basis, while Facebook use a 77% of students, predominantly on daily basis. Due to anonymity of questionnaires, overlapping between the two groups is not known. While more than 90% of analysed students have less than 50 LinkedIn connections, most students have 50-400 Facebook friends. The survey on LinkedIn shows 29% of students benefit from weak ties that offer new

business opportunities and resources. Furthermore it shows that level of trust in relationships within virtual community is fairly high as within virtual community of Facebook.

Despite differences in number of friends and frequency of usage between Facebook and LinkedIn, there is no significant difference in trust between those two networks. This result contradicts to the initial hypothesis. Therefore the authors concluded that sources of trust lie beyond the choice of tool for social networking. Since the nature of relationships, real-real or real-virtual, is more important than the purpose of a virtual social network, the obtained result is apparently influenced by the fact most students have virtual connections based on their real life connections, hence simultaneously real and virtual nature. Instead of inquiry into differences between various online networks, therefore, it is more opportune to follow the line of reasoning started by Marshall McLuhan and brought into the digital world by Paul Levinson [21], and explore human perceptions of the relationships between reality and virtuality beyond the choice of tools.

5. SOCIAL CAPITAL AS A FACTOR OF MOTIVATION FOR FREE/LIBRE/OPEN SOURCE SOFTWARE DEVELOPMENT

The above studies [1,2] have shown that social capital has an important role for engagement in various social networks and that virtual social capital may have an impact on the real world. In order to broaden these conclusions, this study analyses various motivators for FLOSS development, investigates structure of social capital within the FLOSS movement, and examines connections between motivation for voluntary engagement in free/libre/open source software (FLOSS) movement and social capital.

A socio-history of free software takes us back to late 1950s, in the early years of computer science and culture development at the Massachusetts Institute of Technology (MIT). It was a time of formation of the subculture of hackers: researchers of computers and new technologies dedicated to hardware and software. In the beginning, their research received little institutional support. Therefore, their culture is dominated by academic values such as freedom of information, need for sharing, insistence on openness, and highest respect for technical skills. For the next few decades, software was mainly developed and accessible within academic and large companies' research communities [22].

Free/libre/open source software movement (or, it is more accurate to say, movements) are conceived in diverse theoretical, predominantly philosophical and ethical approaches. The full account of these approaches lies far beyond the scope of this paper. Therefore, here we shall examine only the main streams. In the 1980s, after identifying various ethical problems related to ownership of software, Richard Stallman renews a concept of free open source software, which allows users certain basic freedoms in its usage [23]. Two distinct software development styles differ in an access to the source code. In the "cathedral" model only developer team has access to source code, while in the "bazaar" model the source code is available to each developer within a community [24].

Other theorists deal with the more general concept of the hacker ethic. Usually, hacker ethic is said to be opposite to Protestant work ethic associated with money, profit and duty, and is based on creativity, entertainment and communitarianism. Following this line of argument, employed by some of the most important figures in the history of computing such as Linus Torvalds, hackers are perceived as architects of a new economy in the Information age [25].

Comparing differences between open source software (FOSS) and free (libre) open source software movement (FLOSS) in the concept of their openness, the first is mainly orientated to practical aspect of software development, while the latter is predominantly ideological.

Neglecting those finer differences, the study takes into account the common features of FLOSS movement, and explores motivation of software developers for participation in the movement as a whole. Free software developers are volunteers – therefore, they are not financially rewarded for their work. However, structure of collaboration between developers in the network society actually constructs a global enterprise, thus creating many business-related challenges.

Considering that developers rarely meet each other in person, control over software development is weak, and motivation for participation in free/libre/open source software development is prerequisite for successful development projects. On such basis, authors examine motivation for participation in FLOSS development using Muffatto's multidisciplinary approach [26], and conclude that indirect impact factors such as learning new skills and acquiring (or improving) reputation are more important than economic motivators. Through the concept of social capital, however, non-economic motivators may have significant financial effects.

In this way, Kolarec, Bajić and Jandrić arrive to the dialectic between economic and non-economic motivators, and show the crucial role of social capital within its dynamics [3].

Moving on to research context, authors provide an overview of several studies regarding personal motivation, organizational structures and ethical values [27, 25, 28, 29]. They show that community ethics and organizational structure significantly impact processes of creating and maintaining social capital, and assert that they can be used as predictors of individual and group behaviour. Therefore, FLOSS movement is examined in the context of Castells's network society [30], its dynamics creates a 'global community' [31], and can be generally described by the concept of hacker ethic [25].

Finally, Kolarec, Bajić and Jandrić [3] conclude that individual motivation is dialectically intertwined with organizational structure and ethical values. Motivation for participation in such created complex virtual eco-system of FLOSS community is simultaneously individual and social, economic and political. Refining existing understanding of links between FLOSS movement and social capital, this paper arrives to a multiplicity of social capitals within FLOSS movement. Due to multiple and diverse motives for participation in FLOSS developers' community, various combinations of motivators may create different kinds of social capitals.

6. DISCUSSION

Studies have shown that connections between students at the Polytechnic of Zagreb are primarily created by face to face communication. At the other hand, connections within FLOSS movement are predominantly created by virtual collaboration. The identified types of connections and the resulting limitations, opportunities and choices are highly congruent between students at the Polytechnic of Zagreb and their peers in the USA. Furthermore, the identified motivators for participation in social networking are very similar to the identified motivators for participation in FLOSS movement. Limitations identified at the Polytechnic of Zagreb (dominantly masculine student population, restriction to the field of technical studies) are very similar as limitations identified in FLOSS movement. Researching phenomena which – on the surface – seem very different, our group of authors has found very similar underlying principles.

Certainly, this conclusion is subject to various methodological restrictions. While the nature of connection (real-real or real-virtual) is more important than the choice of tools, the choice of tools still may reflect differences in community ethos. The first two papers [1,2] employ quantitative research methodology (questionnaire), while the third paper [3] is based on critical analysis. While Muffatto's multidisciplinary research approaches [26] can help in bridging the chasm between the two traditions, results conceived in different conceptual frameworks should be used together with great care. Whenever possible, the studies are cross-referenced a wide body of (inter) national research. Therefore, in spite of theoretical and practical limitations arising from the nature of review articles, this research still provides a reasonably sound level of verifiability.

Furthermore, it opens further research questions in various fields from information science to business, and calls for further verification by international research community.

7. CONCLUSION

This review article is based on critical compilation of the series of studies conducted during 2013 by a group of authors from the Polytechnic of Zagreb. This research approach has four main goals: to provide an overview of earlier research, to derive further conclusions using the effect of synergy, to verify research results, and to draw generalisations regarding the nature of relationships between reality and virtuality, and its multi-layered relationships with social capital, business opportunities, and voluntary online engagement. This research cross-links results of previous studies and confirms the drawn conclusions. It compares issues pertaining to social networking and those pertaining to FLOSS development. The identified motivators for participation in social networking are very similar to the identified motivators for participation in FLOSS movement: social capital, as one of the main driving forces of humanity, is much more important than the used technology. However, organizational structure and ethics within a community profoundly impact processes of creating and maintaining social capital. Indirect impact factors such as learning new skills and acquiring (or improving) reputation seem to be more important than economic motivators. However, the concept of social capital connects the two in the dialectic between voluntarism and economy. Through revelation of this

complex dynamics, the review paper provides a whole-rounded theoretical framework unavailable to solitary research efforts.

Looking at social networking, it is useful to look into the seemingly unrelated community of FLOSS developers. Looking at FLOSS developers, it is useful to look into the seemingly unrelated community of social networking. In this way, experiences from the two communities can mutually inform each other, and enrich our understanding of online/offline power dynamics. On such basis, it is reasonable to expect that that social capital might play a similar role in other pairs of contexts residing in reality-virtuality continuum. This study opens two main groups of questions for further research. It is subject to various methodological restrictions that require further elaboration by the research community, and it calls for further investigation of the notion of social capital at the fringes between reality and virtuality.

Acknowledgements

Authors would like to thank Petar Jandrić for valuable criticisms and suggestions in development of this paper.

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AUTORI



Josip Kolarec was born on August 10th, 1990 in Zagreb, where he attended a technical high school Ruder Bošković. After graduating from high school I enrolled Undergraduate professional study in Information Technologies at the Polytechnic of Zagreb, and after three years became Bachelor (baccalaureus) of Engineering in IT Technologies. I then continued studies at the same university enrolling part-time specialist graduate professional study in IT Technologies. During specialist studies I started to research the issues of real and virtual social capital through community social network. With this approach mentored by dr. sc. Petar Jandrić, colleagues and I have published following papers on the international conferences: Building social capital through social networking: strategy or coincidence?, Social capital as a factor of motivation for free / libre / open source software development, The Social Network is the m(a)ssage: virtual social capital and real world business opportunities. I like to hang out with my friends and family, and going to the gym.



Milan Bajić has Bachelor of Engineering in IT, at Polytechnic of Zagreb. He worked as online media producer and freelance cameraman. He is Head of Multimedia Services at Polytechnic of Zagreb since 2012. Mr. Bajić experiments and research in the field of multimedia and educational multimedia content.



Ida Popčević graduated philosophy and indology from the Faculty of Humanities and Social Sciences at the University of Zagreb. Between 2006 and 2011 she was employed as administrator at the Department of Informatics and Computing at the Polytechnic of Zagreb. In 2011 she starts working as teaching assistant at the same department, where she teaches various courses in the field of communications. In 2013 she enrolled Postgraduate Doctoral Study of Information and Communication Sciences at the Faculty of Humanities and Social Sciences at the University of Zagreb. She actively participates in institutional research projects and regularly publishes scholarly papers in the field of communications