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MULTINATIONAL COMPANIES IN UKRAINE AND UNIVERSITY ALUMNI NETWORKS

The paper presents the results of the pilot empirical study of the network structures formed between subsidiaries of multinational companies (MNCs) and Ukrainian universities. Main research questions are as follows: what is the network between MNCs and universities through graduates who possess various employments in MNCs after graduation like; what subgroups/clusters can be defined within interorganizational network; what are the potential paths (accessing actors) for the information transfer and innovations diffusion from the universities to the MNCs and vice versa; what actors and ties are the most central for enhancing cooperation within the network.

The pilot sample included graduates of various disciplines (humanities, social sciences, finance, engineering & computer sciences, and natural sciences) who got diploma within the last 10 years in TOP-7 of Ukrainian universities located in different regions. The crucial characteristics of graduates was current employment or experience of employment in the MNCs. Network affiliation data was collected through online questionnaires, from the CVs of graduates as well as several half-structured interviews with them. The analysis was performed for the 2-mode network first (with regard to the basic network measures) and then – for the interorganizational 1-mode network.

Keywords: interorganizational network, multinational companies, university graduates.

The communication and co-operation structures formed between *multinational companies* (MNCs) and universities in the so-called transition economy have to take into consideration the institutional uncertainty and the lack of formal 'rules of the game' in business activities as well as informal practices of co-operation. This paper does not cover the co-operation of MNCs and other economic entities with state and local authorities for any lobbying activities claimed to be extensively multiplied in different spheres and levels of interaction between political and economic actors. In several path-breaking studies of Granovetter [14; 15] and others [27] the concept of ***social embeddedness*** of economic activities was developed, referring to the social capital and informal relational structure – a foundation for transactions between institutions, organizations and individuals as different agents of business processes on the various levels of interaction.

The paper intends to suggest a research strategy to the analysis of co-operation in networks formed by the subsidiaries of MNCs in Ukraine and national universities that are claimed to become the research scientific centers which should later integrate science into business and vice versa. Specifically, I argue that the potential of such co-operation as well as its main drivers and constrains is possible to evaluate through the horizontal mobility of university graduates currently employed by MNCs. The following research strategy is based on general assumption that changing positions during career path as well as combination of positions can lead to highly centralized information flows and power interlocks. This approach continues previous research on 'interlocking directorates', i. e. between corporations, banks, and state institutions [9; 11; 26].

Major research questions within this paper can be listed as follows:

(1) What kind of connections between university graduates and faculty members link MNCs into *inter-organizational network* on Ukrainian market?
(2) What *subgroups* can be defined within the whole inter-organizational network?
(3) What is the *potential* of each university to impact into network interaction? What connections and actors are the most *central* within interorganizational network?

Corporate Interlocks and Social Capital

During last decades, the topic of *corporate interlocks* has been examined extensively by several US-based researchers from different aspects – from mapping the interlocks to forecasting how network members may behave in the future [8; 11; 5]. In these studies, interlock means a person affiliated with two of more companies or institutions and thus establishing connections between these entities [23, p. 44]. Numerous studies of *interlocking directorates* explore those who sit in the boards of at least two companies simultaneously.

Corporate interlocks of people combining several managing positions in different organizations maintain a more central and important status position of these individuals within the network as well as create denser inter-organizational network structure [20]. American researcher William Domhoff argues that 'interlocks of directors' are resulted with gathering top-manager (not owners) in corporate boards not only because of their professionalism but also due to their interpersonal connections with each other [11]. That is one of the factors of successful functioning of the company. Besides, as argued by some economic sociologists, the more transactions and contracts one is involved in, the wider network he or she has, and the more obligations he or she has exchanged with other actors [1; 2]. Here, two important issues are emphasized – transactions, or relations, and obligations closely connected with trust – as the important for gaining understanding about functionality of interpersonal and interorganizational networks in the society after radical socio-economic changes and under the conditions of institutional uncertainty.

Crucial component of social capital is trust being one of the factors that assist in building social networks due to continuous and reliable interaction, adding density to the network and stability to its structure [7]. As defined by Sztompka [25], two types of trust can be distinguished – personal and institutional – with the former providing the basis for interpersonal connections. Under the circumstances of transition, when changes in social structures are rapid as it was and still is in Ukraine, the importance of interpersonal trust for interactions increases because actors are limited in their ability to appeal to common cultural or social patterns – norms – shared by all instead of relying on particular legal code of rules. Thus, when interpersonal trust serves as a basis for the building and functioning of social networks when institutional trust is low and social norms unstable. If to explore all business actors including the subsidiaries of MNCs along with local SMEs and private entrepreneurs who are connected with each other through ties grounded on interpersonal trust, they would probably feel safer in a collaborative network where even a small piece of information about one`s unreliability or trickery excludes the actor out of the network – a form of punishment that precludes further communication or transactions with network members. Interpersonal trust also might lead to the other important component of network interaction – sharing information and thus its diffusion across the linkages between actors focusing on microlevel knowledge flows [6; 22]. In particular, as claimed in some studies regarding collaboration between local SMEs and national subsidiaries of MNCs, the first one can enhance the welfare of developing regions and countries through direct inclusion "into foreign collaborative networks" [24] to overcome such socio-economic problems as 'brain-drain' due to the establishing and supporting of collaboration between local firms, R&D centres and laboratories of MNCs` subsidiaries. And the reverse process would be enhanced through the interpersonal connections – more intensive influence of international (global) business onto the socio-economic development and innovative capacity of particular region [12]. That is supported by the argument from Uzzi [27] about the close network links to be potentially more useful for transferring knowledge than complex relational structures.

Several authors suggested that the concepts of communication and resource exchange in general, and social capital accumulation in particular, provide a basis for the development of social network analysis as a unique research approach. Thus, Lin and Burt emphasize that network interaction results in creating a rather stable structure; effective capitalization of resources, their accumulation and multiplication – especially in states undergoing transformation and during radical social changes – results in social group cohesion [21, p. 3–25]. They also argue that social capital accumulated through the operation of network ties actually stimulates the circulation of other kinds of resources during interaction. To illustrate the role of social networks in fostering entrepreneurial activity, Andersen and Jack provide an example of significance of social relations as a "resource for social action" in business [3]. They argue that interpersonal connections play a key role in entrepreneurial success, discovering that a particular level of interpersonal trust between economic agents impacts the frequency of transactions due to the reduction of transaction costs associated with trusted parties. Accumulated social capital therefore can stimulate more profitable economic activities.

Methodology: Social network analysis

In this paper, the structure of network ties within multinational companies operating in Ukraine is analyzed using social network analysis (SNA), specifically applying the concept of affiliation networks. SNA is applied for tracking connections between actors of inter-organizational network. Connections are traced within the two-mode network with two types of actors – companies and individuals, enabling further and more thorough analysis of both one-mode networks of interpersonal communication patters and inter-organizational structure.

Reasons for applying SNA approach included but were not limited with the following arguments: first, it allows for the depiction of status-roles interaction between actors who occupy particular positions, especially in the case of *affiliation networks* [28, p. 291–307]. And as mentioned above, the SNA approach is closely connected with research of com-

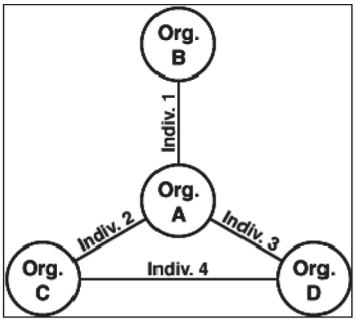
munication processes and resource exchange, including investigations of how social capital is accumulated – particularly given the postulate that network interaction influences the stability of the whole social structure directly [21, P. 3-25]. With regard to the resources exchange between organizations, it is suggested, for instance, that resource mobilization through the relations between individuals and organizations they are affiliated with depends on one's ability to identify other individuals in multiple-relations networks as well as on the opportunity to shift between different types of locally embedded networks [16; 17].

The network approach requires dataset to contain specific information regarding (i) actors and (ii) relations between them. In our study, the first set of actors in the sample covers 50 individuals from TOP7 national universities, 5 of which are located in Kyiv and 2 more are in the Eastern Ukraine (for detailed sample description, see Table A, in Appendix). These individuals were selected with the help of 'snowballing' referring first to the personal contacts of the author of this paper, and thus the sample contains former students of various disciplines graduated during last 10 years: law, humanities, social sciences, engineering and computer sciences, and natural sciences. The main principal of including a person into a sample was current employment in the MNC or experience of employment in such kind of company before [1]. Therefore, the social network exists as layer upon layer of relations built up over time and space in the cognitions of individuals [18, P. 267]. The sources for the data collection included the CVs of the individuals as well as semi-structured questionnaires filled-in by some of them. The information about overlapping periods of graduation from the same university and being employed by the same MNC was used to discover the interlocking individuals between companies and educational institutions.

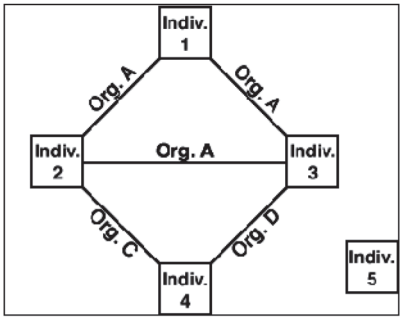
The primary network dataset was compiled in a form of a matrix containing two types of actors and relations linking them marking with "1" if Person 1 was or still is affiliated with particular MNC A, and leaving the cell empty in case of absence of any affiliation, according to the following scheme:

Affiliation Network				
	Company A	**Company B**	**Company C**	**Company D**
Person 1	1	1		
Person 2	1		1	
Person 3	1			1
Person 4			1	1
Person 5				

[1] Unfortunately, limited resources available for the study did not alowed including faculty members of the university department who provide consulting services to different department of multinational companies, or members of top-management of these companies who teach in the universities at the same time, though this limitation might be overcome with further development of the project.



Picture 1.1. Interorganizational network



Picture 1.2. Interpersonal Network

The final matrix contained 63 companies [2] appeared as affiliations of any of 50 individuals included in the sample (full list of MNCs is in Appendix, Table B). For the next stage of the analysis the two-mode graph was separated into two subgraphs that might be visually represented as follows[3] on Pic. 1.1 and 1.2 above, and afterwards only ***interorganizational*** dataset was used for the analysis. The next section contains the empirical results of the analysis conducted to find the answers to research questions listed in the introduction.

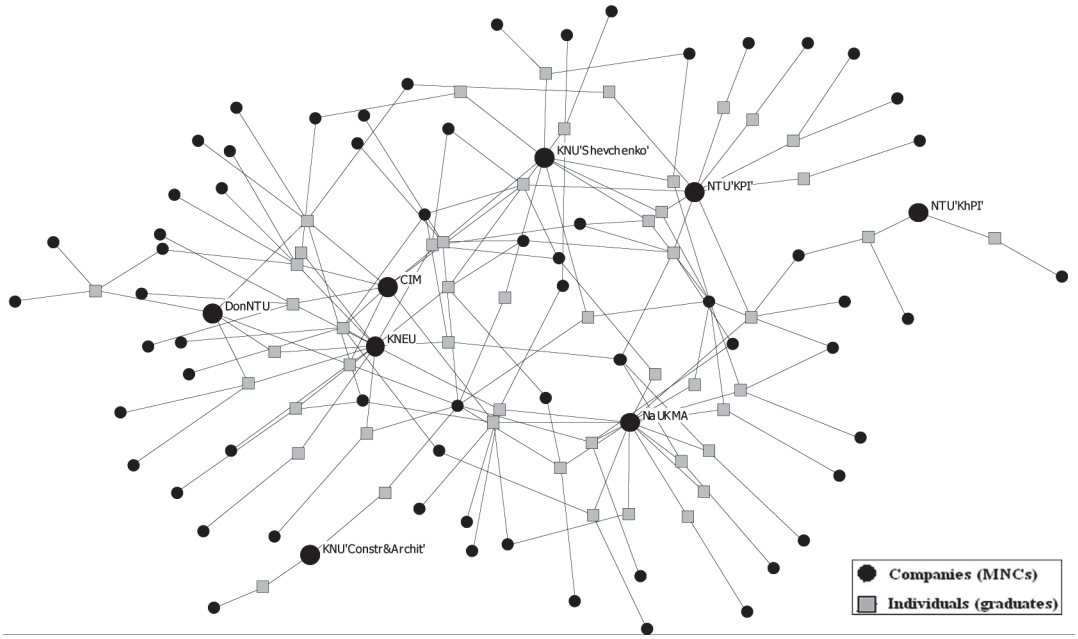
Empirical Results

The analysis was started from the thorough exploration of the employment histories of the graduates along with the comparison between the patterns of employments one-by-one. In addition, the overlapping affiliations with the MNC and common educational background were traced for further filtering of the relational dataset.

At least two common patterns might be distinguished in the career paths of the graduates currently working in MNCs:

[2] Two companies which cannot be called multinationa, though they were decided to be included in the list due to their sphere of operational activities – research & consultancy, their size, and number of MNCs among thier clients. These are UMG (Ukrainian Marketing Group) and KIIS (Kiev International Institute of Sociology).

[3] This methodological illustration rs given by William Domhoff in his on-line publication "How to Do Power Structure Research" (Mode of access: http://sociology.ucsc.edu/whorulesamerica/methods/how_to_do_power_structure_research.html – Назва з екрану. (June, 14, 2011))



Picture 2. Graduates and thier affiliations (2-mode network)

a) they either tended to start or have experience of working in the Research & Consulting Agency, either local of international subsidiary in Ukraine, and
b) they started career path in a local firm (small or medium size private enterprise) and then proceeded with joining to the MNC team in the region.

Such notion leads to another question regarding the embeddedness of the MNCs with the local SMEs: whether the linkages between these two types of business actors (specifically, MNCs and SMEs) are reciprocal or not. Some authors argue that two processes exist simultaneously: local SMEs learn and adopt innovations that come from the regional subsidiaries of global MNCs, as well as MNCs production is internationalized coordinating the global production network with the locals, as this was recently demonstrated in the study of the Taiwanese bicycle industry [18]. As the local SMEs were not included into the network dataset, we can assume rather high centrality of the other agents of adaptation and knowledge distribution, i.e. research & consultancy firms. This assumption is supported by the results of centrality measures analysis (see Table 2 for the centrality values of MNCs below).

After creating the matrix with 'employer-employee' data, 2-mode network was visualized. UCINET software package with its application NetDraw were used for running analytical routines and performing graphical visualization of the networks [1] [4]. The 2-mode network was also split into two one-mode networks – of companies and of individuals, for the analysis of interorganizational connections between MNCs and universities through the graduates. The empirical results are described below according to the order of the research questions listed in the introduction.

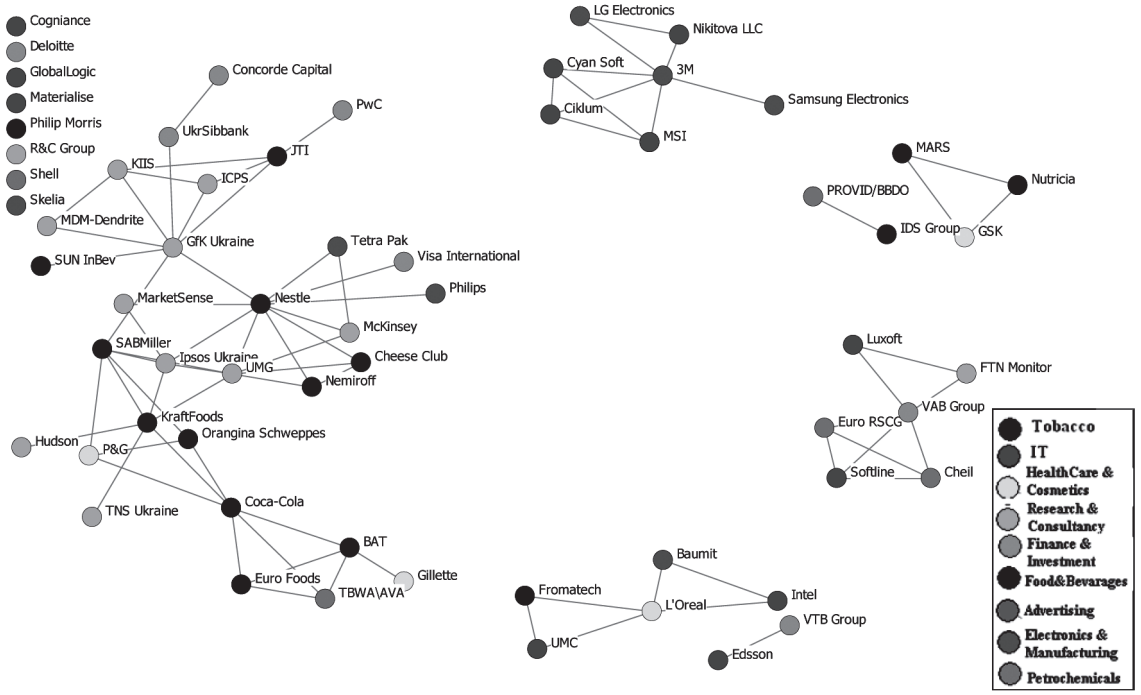
Network of MNCs and connections of affiliation between university graduates; subgroups within the inter-organizational network. As already mentioned above, studying of the *networks* of common *affiliation* allows depicting interlocks among companies, simply evaluating the strength of ties between the organizations due to the number of interlocking persons among them. The Picture 2 below shows the initial picture of 2-mode network of connections between graduates and MNCs.

Visible cohesive 'core' of the network is constituted primarily by the universities – due to the sample design when 9–12 individuals affiliated with different universities were included into the analysis. In order to avoid overestimated centrality of the universities, they were not shown on the graph of interorganizational network (Picture 2, below) and were included as attributes (instead of ties) into the analysis of connections between graduates due to common affiliation with the MNC.

The core of the network contains at least 4 of 7 universities and also a few MNCs – their centrality scores will be explored further in the text basing on the interorganizational network dataset.[2] Remarkably, additional educational institution appeared in the network as relatively central, at least according

[1] The official web-page of the software is http://www.analytictech.com/ ; Borgatti, S. P.. UCINET 6 for Windows: software for social network analysis. / S. P.Borgatti, M.G. Everett, and L.C. Freeman // Harvard: Analytic Technologies. – 2002.

[2] For full names of the universities included as abbreviations on the graph, please, consult with the Table A in Appendix.



Picture 3. Interorganizational network of companies

to the graph above – that is the Chartered Institute of Marketing, CIM, located in the UK but its subsidiary (or licensed representative at the International Institute of Business in Kyiv) has been functioning in Ukraine since 1997. That gives some hints to the understanding of the role of international education standards in terms of MBA or professional diplomas which will be discussed in more details below.

Some measures of cohesion were calculated for this 2-mode network [1], including the basic measures of (i) density showing the percentage of present ties compared to all possible, and (ii) average geodesic distance for each pair of actors which reflects the shortest path from one actor to the other [28], and results are displayed in Table 1.

Table 1. **Basic network measures (2-mode vs. 1-Mode networks)**

	Density	**Average distance**
2-Mode network – universities are included	0.04704	4.43030
2-Mode network – universities are excluded	0.03238	5.15234
1-Mode network – interorganizational, universities are included	0.1151	2.474

Thus, the density of the 2-mode graph is lower when universities as affiliations connecting graduates are excluded. In addition, if to conclude about the overall number of affiliations comparing to all possible ones, the level of mobility of the graduates, despite the fact that universities increase it almost twice (from 3 % to 5 %, in terms of densities) – because in case of high mobility we would get better connected graphs than given in Pictures 2 above.

The average distance of the 2-mode is also closer when the university affiliation is taken into account. These measures are also calculated for 1-mode interorganizational network, with universities included. As can be concluded from Table 1 above, the average number of steps, or ties, needed for the actor to reach the other one is close to 2. That means the necessity for two actors to have a mediator in-between, and this outcome is to be verified later with the centrality measures analysis. If to look at frequencies of geodesic distances distribution for interorganizational network (see Table C in Appendix), about 80 % of companies need 2–3 steps to reach their counterparts, instead 1–2 steps connect over 85 % of the graduates. Obviously, this evidence corresponds with the difference in density measures for interorganizational and interpersonal networks (11.5 % and 53 % respectively). Again, the potential 'gate-keepers' for knowledge distribution or innovation diffusion are to be defined through centrality measures analysis.

Subgroups within the interorganizational network were defined using the graphical representation of the network. The interorganizational network subset contains only MNCs, without educational institutions in order to avoid overestimated centrality of the universities due to the sample design. Additional parameter was added when visualizing the graph – the attribute showing sphere/sector of MNC

[1] Again, for these calculations, the universities were excluded in order to avoid the overestimation of their impact in the network.

Table 2. **Top 15 of the most central MNCs (with sphere of operational activity)**

Multinational Company	Nrm Degree	sphere of operations&production	Multinational Company	Nrm Betweenness	sphere of operations&production
Nestle	**8,06**	**Food&Bevarages**	**GfK Ukraine**	**10,06**	**Research&Consultancy**
GfK Ukraine	**7,26**	**Research&Consultancy**	**Nestle**	**6,72**	**Food&Bevarages**
UMG	**5,65**	**Research&Consultancy**	**SABMiller**	6,45	Food&Bevarages
3M	4,84	Manufaturing & Technologies	KraftFoods	6,43	Food&Bevarages
Coca-Cola	4,84	Food&Beverages	Coca-Cola	5,45	Food&Beverages
KraftFoods	4,84	Food&Bevarages	UMG	3,03	Research&Consultancy
SABMiller	4,84	Food&Bevarages	Ipsos Ukraine	1,58	Research&Consultancy
Ipsos Ukraine	4,03	Research&Consultancy	BAT	1,48	Tobacco
KIIS	4,03	Research&Consultancy	JTI	1,48	Tobacco
VAB Group	4,03	**Finance, Banking, Investment**	**UkrSibbank**	**1,48**	**Finance, Banking, Investment**
BAT	3,23	Tobacco	Orangina Schweppes	0,88	Food&Bevarages
JTI	3,23	Tobacco	P&G	0,88	Cosmetics&HealthCare
L'Oreal	3,23	Cosmetics&HealthCare	3M	0,58	Manufaturing & Technologies
Orangina Schweppes	3,23	Food&Bevarages	VAB Group	0,32	Finance, Banking, Investment
P&G	3,23	Cosmetics&HealthCare	L'Oreal	0,21	Cosmetics&HealthCare

operational activities through different colours. The final picture showing the subgroups (or components) are displayed on the Picture 3 below: 9 colours refer to the sphere of operational activity (see the legend on the graph).

The graph displays a kind of 'professional alliances' between producers, research & consultancy agencies, and IT services. We assumed that research & consultancy companies would have relatively higher importance, but they are clustered mainly in one subgroup, so they might serve as the agents of innovations diffusion primarily for the FMCG producers (which produce food & beverages, tobacco, cosmetics & healthcare products).

A considerable number of companies appear as isolates on the graph, top-left corner, which means that they do not have any interlocking persons with the other MNCs, at least within the sample of this particular study. So, to make any broader conclusions about the possible alliances and connections between competitions within common sphere of operations either a sample of graduates should be increased or the other dimension of ties should be added (i.e. client-supplier-partner relations).

Therefore, the fragmentation shown on the picture below gives the clear evidence of the importance of the universities to be linkages between MNCs – they would increase the density of the interorganizational network. Though their capacity to produce, adopt and spread innovations is arguable due to their budget limitations mainly.

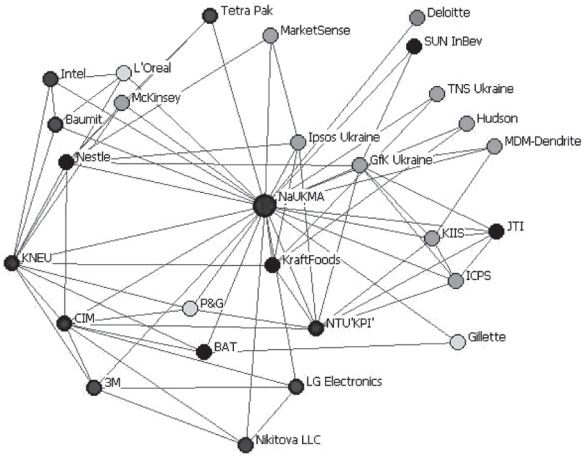
The potential of the university to impact into innovation distribution; the most 'central' actors for enhancing these activities. In order to define actors with the highest possible level of influence, 'centrality' was calculated [1] specifically degree and betweenness centrality measures. They in different ways show the level of influence that depends on: a) an actor`s own connectedness, number of direct ties with alters, and b) one`s position as a 'cut-point' between different dense subgroups of actors [23]. As it is stated by Wasserman and Faust, the measure of degree centrality "is focused on the most visible actors in the network", and the key persons thus can be defined as those who occupy the central network location and appear as the "major channel of relational information" [28, p. 178–180]. These actors can be perceived as the influential and powerful through being well-connected *directly* or *indirectly* with the others thus intensifying information flow within the denser network. Thus, we compare different perspectives on network centrality in order to identify the potential level of influence of the MNCs within the complete inter-organizational network subset. The same routine was run on the subset of individuals as we assume that person with many ties, or one who is a 'gate-keeper' between individuals with multiple ties may be considered influential within a wider community of graduates currently working in MNCs.

Table 2 below contains normalized values of degree vs. betweenness centrality for MNCs, thus ranking actors according to their 'impact' potential within the interorganizational network. Again, universities were excluded from the analysis as they appeared in the top of the list. According to the centrality values of MNCs, research & consultancy

[1] In general, a network measure that determines the relative importance of an actor within the network based on the relational pattern of each actor with regard to the rest of the network (for details, see [13; 23])

agencies prevail over the other MNCs in terms of degree centrality, even over the producers of various FMCG goods (except of *Nestle* – the leader by degree centrality). That shows the potential of research & consultancy companies, for instance, to impact on the activities of their clients directly as suppliers. In contrary, FMCG producers occupy rather in-between positions (though the 'leader' in terms of betweenness centrality is *GfK Ukraine*, a subsidiary of global market research agency GfK Group). So, that might be an additional evidence of a popular recruitment strategy when MNCs aim to hire people with prior experience in R&D or consultancy and proper connections from a previous job-place. They want to recruit not only the skilled but also well-connected employee in order to get advantageous access to the insight information from their suppliers.

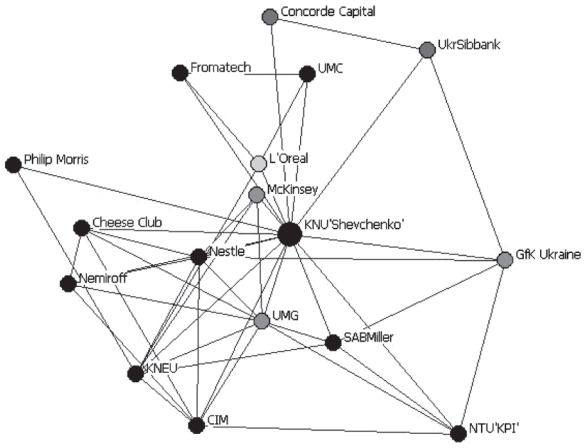
As the ***universities*** were excluded from the analysis of centrality measures, in order to evaluate their ***potential impact into interorganizational network interaction***, the ego-networks were composed (see Pictures 4.1–4.2 and pictures A–C in Appendix).



Picture 4.1. Ego-network of NaUKMA

The most advantageous relational patterns were obtained by Kyiv-Mohyla Academy (NaUKMA) and by Kyiv National Economic University (KNEU) due to numerous direct connections; nevertheless, other two Kyiv-located and quite prestigious universities (Shevchenko National & Polytechnic) have more opportunities to be 'cut-points' between the cohesively connected subgroups of MNCs. Pictures 4.1–4.2 display the differences in relational patterns of NaUKMA and Shevchenko National, and three more ego-networks of universities can be found in Appendix as Pictures A–C. The last two universities (Kyiv Constructions & Architecture and Kharkiv Polytechnic) had very few connections and thus were not included in this paper.

Knowledge exchange in MNCs through the university graduates, between MNCs and universities; sharing visions on co-operation of international business and Ukrainian higher education institutions. Another conclusion that arises from the centrality measures analyses and after comparison of the ego-networks of the universities is that high centrality scores of particular MNCs (research & consultancy companies and FMCG producers) as well as their embeddedness into the relational structures with universities show to what extent the collaboration between all these agents of organizational interaction is important. Thus, in case of one university co-operation with research agencies would be more fruitful (i.e. NaUKMA) – in a form of joint research projects or while providing student grants for the best research paper. These activities would not only assist the MNCs to select perspective students (future graduates and potential employees) and offer them a job after graduation, but also enhance the in-flow of practical knowledge to the university in order to show applicability of theoretical knowledge and practical skills gained during studying. Specifically, this kind of strategy of enhancing co-operation with university students has been started by two international research agencies, *GfK Ukraine* and *TNS Ukraine*: the first one implements it together with the Kyiv Economics University, and the second one – with NaUKMA. From the other point, more intensive collaboration between universities and other kinds of MNCs (IT & Electronics production, or Finance & Investment) can be enhanced directly, without research agencies as mediators.



Picture 4.2. Ego-network of KNU 'Shevchenko'

Moreover, several persons who had graduated from one of the selected universities also gained second diploma– i.e. after the completion of 'system analysis & applied math' MA program at the Kyiv Polytechnic one person also gained diploma in 'economics' from Kyiv Shevchenko University; the other person graduated from 'sociology' in NaUKMA after 'computer design' in Kyiv Poly-

technic. Such diverse education also assists those graduates to enlarge their personal networks and to spread knowledge gained in one university with their group-mates in the other, which also might lead to innovative ideas and decisions production.

Involvement of international educational institutions and business schools is also common practice among MNCs to some extent. Several graduates tend to gain knowledge and skills within international programs, either in Ukraine-based subsidiaries of international business schools or abroad. This notion is illustrated by the case of the Chartered Institute of Marketing (CIM), the UK educational institution which is connected with a number of MNCs within interorganizational network due to the fact that some of the graduates (8 of them, to be precise) gained their second MBA or professional diploma from this institution. It has the official representative office in Kyiv which has been functioning since 1997. The visible similarity of relational patterns is observed between CIM and KNEU as well as overlapping ties between them thus establishing integration of Ukrainian graduates of KNEU into the international network of business school and educational institutions.

Conclusion and discussion

Therefore, we conclude that the network of MNCs, universities and graduates is complex to some extent, so analyzing it on two levels separately – organizational and individual – gives more insights about specific characteristics of the relational patters and actors` characteristics.

Graduates of Ukrainian top-ranking universities are widely represented in the MNCs. Their prior employment experience usually includes working for any kind of research & consultancy organization, or the local firm specialized in this sphere. The 2-mode network with graduates & MNCs and affiliations has displayed the relative importance of Kyiv-located universities. After excluding universities from the network, i.e. transforming university affiliation into an attribute (nodes colour), the graph was disconnected into several subgraphs showing the 'networking' character of the university. In addition, the average shortest distance in the 2-mode network (and 1-mode interorganizational network datasets) is shorter as well as the density is higher when university affiliation is considered.

Due to the interlocking graduates employed in the MNCs, some subsets are formed between companies of such business spheres as FMCG production (food & beverages, tobacco products, and cosmetics / healthcare products) and IT services & computer technologies within the interorganizational network. These subgroups are denser and contain from 1 to 3 central actors that might serve as access points for spreading new knowledge within the cluster.

As already concluded, the role of universities in linking graduates and MNCs in slightly controversial: they make 2-mode network denser and the distance between actors shorter, but at the same time, more cohesive subgroups tend to consider specialization of diploma and common professional occupation more than the affiliation with the same educational institution only, especially when reporting about strong ties with other graduates. 4 out of 7 universities appear to be more central than others, and all four are located in Kyiv. They also might gain innovations from the different 'central' companies, specifically, research & consultancy and FMCG producers for one set of universities, and computer software developers – for the other. Therefore, universities would receive the insight of practical application of possible innovative decisions developed in theory as well as they might enhance financing of their scientific research projects to increase innovative capacity.

Finally, the important factor of obtaining knowledge of international scope is that graduates of Ukrainian universities tend to seek for continuation of their professional training and complete MBA or other programs of this kind. Though, the involvement of international educational institutions is not numerous, it is rather well-spread and prestigious to possess the status of international university alumni (one of the reasons mentioned by the respondents). It is an open question whether these people aimed to gain new knowledge when working in MNC or these second diplomas were formal prerequisites for further career growth; though the networking effect of business schools and other institutions of this kind should not be underestimated, as they support their graduates in different ways, including club-style alumni groups and regular meetings.

All the observations might be an evidence of the commonality of career-building strategies demonstrated by the university graduates working in MNCs in Ukraine. When they lack formal rules of interaction with their counterparts in client/ supplier/ partner organization, they can refer to informal linkages based on studying together in the past, in order to obtain some preferences in the access to resources (information or else). At least, they can recall similar working experience and professional solidarity, i.e. for spreading necessary information within the network of their competitors, but this moment needs further exploration as well.

1. Радаев В. В. Социология рынков: к формированию нового направления. / Вадим Радаев. – М.: ГУ-ВШЭ. – 2003. – 328 р. – ISBN 5-7598-0246-1
2. Радаев В. В. Рынок как переплетение социальных сетей. / Вадим Радаев // Российский журнал менеджмента. – 2008. – Т. 6. № 2. – С. 47-54.
3. Anderson, A. R. The Articulation of Social Capital in Entrepreneurial Networks: a Glue or a Lubricant?/ A.R.Anderson, S. L. Jack // Entrepreneurship and Regional Development. – 2002. – Vol. 14. – P. 193–210.
4. Borgatti, S. P. UCINET 6 for Windows: software for social network analysis. / S. P.Borgatti, M.G. Everett, and L.C. Freeman // Harvard: Analytic Technologies. – 2002.
5. Burt R. Testing a structural theory of corporate cooptation: Inter-organizational directorate ties as a strategy for avoiding market constrains on profits. / Ronald Burt // American Sociological Review. – 1980. – vol. 45. – P. 821-841.
6. Burt, R. S. Structural Holes: The Social Structure of Competition. / Ronald Burt // Harvard University Press. – 1992. – 324 p. – ISBN 9780674843721
7. Burt, Ronald S. The Network Structure of Social Capital / Ronald S. Burt // Research in Organizational Behavior (eds. B. M. Staw and R. I. Sutton). – Amsterdam; London and New York: Elsevier Science JAI. – 2000. – P. 345-423.
8. Davis G.F. The Significance of Boards Interlocks for Corporate Governance. / G.F. Davis // Corporate Governance. – 1996. – Vol. 4. – P. 154–159.
9. Domhoff, G.William. The Higher Circles: The Governing Class in America. / G.William Domhoff. – N.Y.: Vintage Books. – 1970. – 367 p.
10. Domhoff, G. William. How to Do Power Structure Research. – Mode of access: http://sociology.ucsc.edu/whorulesamerica/methods/how_to_do_power_structure_research.html – Назва з екрану. (June, 14, 2011)
11. Domhoff, G. W. Who Rules America: Power and politics. / G.W.Domhoff. – McGraw-Hill Companies, Inc. – 2002. – 288 p. – ISBN 978-0767416375
12. Fleming, L. Small worlds and regional innovative advantage. / L. Fleming, C. King, A. Juda. – Harvard Business School, Boston, MA. – 2004. (Working paper 04-008)
13. Freeman L. C. Centrality in Social Networks: Conceptual Clarification. / L. C. Freeman // Social Networks. – 1979. – Vol. 1. – P. 215–239.
14. Granovetter, Mark S. The Strength of Weak Ties. / Mark S. Granovetter // American Journal of Sociology. – Vol. 78, № 6. – 1973. – P. 1360–1380.
15. Granovetter, Mark S. Economic Action and Social Structure: The Problem of Embeddedness. / Mark S. Granovetter // American Journal of Sociology. – 1985. – Vol. 91, №3. – P. 481–510.
16. Hansen, Jessica "Resource Mobilisation. Networks, Organisations and Positions". Paper presented during XVII ISA World Congress of Sociology, July 11-17, 2010, Gothenburg, Sweden. – 2010. – Abstract ID is 2010S01056.
17. Hsieh, Michelle F. The Ascent of Latecomers in the Global Value Chains. // Paper presented during XVII ISA World Congress of Sociology, July 11–17, 2010, Gothenburg, Sweden – 2010. – Abstract ID is 2010S01155.
18. Kilduff, Martin. Interpersonal Networks in Organizations: Cognition, Personality, Dynamics, and Culture. / Martin Kilduff, David Krackhardt. – New York: Cambridge. – 2008. – 320 p. – ISBN 978-0521866606.
19. Kilduff, Martin. Social Networks and Organizations / Martin Kilduff, Wenpin Tsai. – Thousand Oaks, CA: Sage. – 2003. – 172 p. – ISBN 978-0761969570
20. Knoke, David. Political Networks: the Structural Perspective. Cambridge University Press, 1990 – 308 p. – ISBN 978-0521477628.
21. Lin, Nan. Building a Network Theory of Social Capital/ Nan Lin, Ronald Burt, Karen Cook // Social Capital: Theory and Research. – Chicago: Aldine De Gruyter, 2001. – P. 3–31 – ISBN-10: 0202306445.
22. Rogers, E. M. Diffusion of Innovations. (4th edition) / Everett M. Rogers. – New York: Free Press. – 1995. – 518 p. – ISBN 978-0029266717.
23. Scott, John P. Social Network Analysis: A Handbook / John P. Scott. – Sage. – 2000. – 240 p. – ISBN 978-0761963394.
24. Singh, J. Collaborative Networks as Determinants of Knowledge Diffusion Patterns. / Jasjit Singh // Management Science. – 2005. – vol. 51, № 5. – P. 756–770.
25. Sztompka, P. Trust, distrust and the paradox of Democracy. – Prepared for presentation at the XV World Congress of the IPSY, Korea, Seoul, 17–21 August 1997.
26. Useem, Michael. The Inner circle: Large Corporations and the Rise of Business Political Activity in the U.S. and U.K. / Michael Useem. – New York: Oxford University Press. – 1983. – 258 p. – ISBN 978-0195040333
27. Uzzi, B. The sources and consequences of embeddedness for the economic performance of organizations: the network effect. / Brian Uzzi // American Sociological Review. – Vol. 61, No. 4. – 1996. – P. 674–698.
28. Wasserman, Stanley. Social Network Analysis: Methods and Applications / Stanley Wasserman, Katherine Faust. – Cambridge University Press. – 1994. – 857 p. – ISBN 978-0521387071.

APPENDIX

Table A. **Network sample by university**

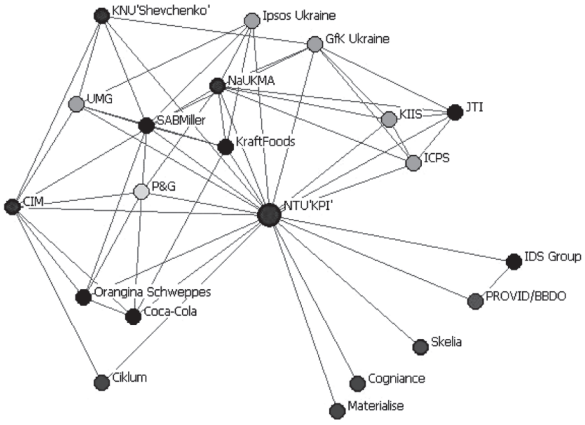
	Name of the university	Abbreviation	Number of graduates in the sample
1.	National University of "Kyiv-Mohyla Academy"	NaUKMA	14
2.	Kyiv National Economics University	KNEU	11
3.	National Technical University "Kyiv Polytechnic Institute"	NTU 'KPI'	8
4.	Kyiv National Taras Shevchenko University	KNU 'Shevchenko'	9
5.	Kyiv National University of Construction & Architecture	KNU 'Constr&Archit'	2
6.	Donetsk National Technical University	DNU	4
7.	Kharkiv National Politechnical University "KhPI"	KhNTU	2
X	The Chartered Institute of Marketing (UK)	CIM	(was added during data analysis)
TOTAL			50

Table B. **Companies listed according to their sphere**

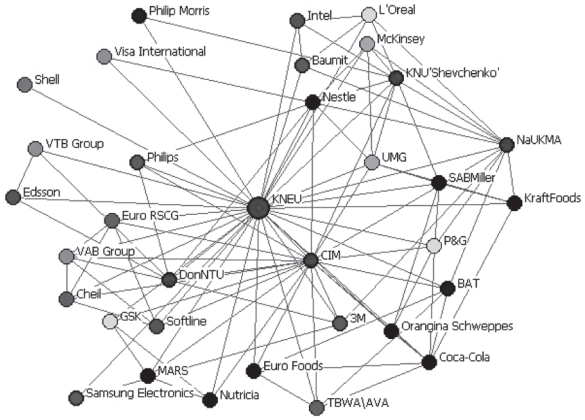
	NAME OF THE MNC	Sphere of operational activities in Ukraine		NAME OF THE MNC	Sphere of operational activities in Ukraine
1	3M	Manufaturing & Technologies	33	MARS Ukraine	Food&Beverages
2	British American Tobacco	Tobacco	34	Materialise	Computer Software & IT services
3	Baumit	Construction Materials	35	McKinsey & Company	Research&Consultancy
4	Cheese Club Company	Food&Beverages	36	Medical Data Management (MDM) -Dendrite	Research&Consultancy
5	Cheil Communications Inc.	Advertising	37	MSI	Computer Components Production
6	Ciklum	Computer Software & IT services	38	Nemiroff	Food&Bevarages
7	Coca-Cola Ukraine Ltd.	Food&Beverages	39	Nestlé Ukraine	Food&Bevarages
8	Cogniance	Computer Software & IT services	40	Nikitova LLC	Computer Software & IT services
9	Concorde Capital	Finance, Banking, Investment	41	Nutricia	Food&Bevarages
10	Cyan Soft	Computer Software & IT services	42	Orangina Schweppes	Food&Bevarages
11	Deloitte	Audit&Consultancy	43	Procter & Gamble	Cosmetics&HealthCare
12	Edsson Software BV	Computer Software & IT services	44	Philip Morris Ukraine	Tobacco
13	Euro Foods	Food&Beverages	45	Philips	Electronics, Other durables
14	Euro RSCG New Europe	Advertising	46	PROVID/BBDO	Advertising
15	Fromatech Ingredients B.V.	Food&Beverages	47	PricewaterhouseCoopers	Audit&Consultancy
16	FTN Monitor	Research&Consultancy	48	Research & Consulting Group AG (R&C Group)	Research&Consultancy
17	GfK Ukraine	Research&Consultancy	49	SABMiller Ukraine	Food&Bevarages
18	Gillette	Cosmetics&HealthCare	50	Samsung Electronics	Electronics, Other durables
19	GlobalLogic Ukraine	Computer Software & IT services	51	Shell	Energy and petrochemicals
20	GlaxoSmithKline (GKS)	Cosmetics&HealthCare	52	Skelia Ukraine	Electronics, Other durables
21	Hudson Global Resources	HR & Recruitment	53	Softline	Computer Software & IT services
22	International Center for Policy Studies (ICPS)	Research&Consultancy	54	SUN InBev Ukraine	Food&Bevarages
23	IDS Group Ukraine	Food&Beverages	55	TBWA\AVA	Advertising
24	Intel	Computer Components Production	56	Tetra Pak Ukraine	Manufaturing & Technologies
25	Ipsos Ukraine	Research&Consultancy	57	TNS Ukraine	Research&Consultancy
26	Japan Tobacco International (JTI)	Tobacco	58	UkrSibbank (BNP Paribas Group)	Finance, Banking, Investment
27	Kiev International Institute of Sociology (KIIS)	Research&Consultancy	59	UMC	Telecommunications
28	KraftFoods	Food&Bevarages	60	Ukrainian Marketing Group (UMG)	Research&Consultancy
29	LG Electronics	Electronics, Other durables	61	VAB Group / VAB Bank	Finance, Banking, Investment
30	L'Oreal	Cosmetics&HealthCare	62	Visa International	Finance, Banking, Investment
31	Luxoft Ukraine	Computer Software & IT services	63	VTB Group / VTB Bank	Finance, Banking, Investment
32	MarketSense	Research&Consultancy			

Table C. **Geodesic distances: frequences and proportion of cases**

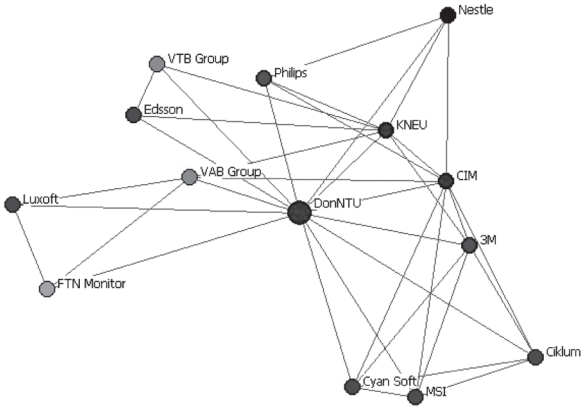
N of steps	Interorganizational network	
	Frequency	Proportion
1	426	0,08571
2	2322	0,46720
3	1746	0,35131
4	398	0,08008
5	72	0,01449
6	6	0,00121



Picture B. Ego-network of NTU "KPI"



Picture A. Ego-network of KNEU



Picture C. Ego-network of DNU

Костюченко Т. С.

МУЛЬТИНАЦІОНАЛЬНІ КОМПАНІЇ В УКРАЇНІ ТА МЕРЕЖІ ВИПУСКНИКІВ УНІВЕРСИТЕТІВ

Стаття містить результати пілотного дослідження мережевих зв'язків між мультинаціональними компаніями (МНК) та українськими університетами. Основні дослідницькі питання: якою є мережа зв'язків між МНК та університетами через випускників, що після отримання диплома виходять на ринок праці та займають різні позиції у міжнародних компаніях; які підгрупи/кластери можна виокремити у міжорганізаційній мережі; якими шляхами (через яких акторів) потенційно може передаватися знання та інновації від університетів до МНК і навпаки; які актори і зв'язки є найбільш важливими для пожвавлення співпраці у цій мережі.

Вибірка включала випускників ТОП-7 українських університетів у різних регіонах та з різних дисциплін (гуманітарні науки, соціальні науки, фінанси, технічні науки, природничі науки), що отримали диплом протягом останніх 10-ти років та працюють чи мали досвід роботи в мультинаціональних компаніях. Дані щодо мереж афіліації було зібрано за допомоги он-лайн анкети, резюме (cv) як задокументованої «кар'єри» та напівструктурованих інтерв'ю з окремими випускниками. Аналіз здійснено спочатку для двомодальної мережі (порівняння базових мережевих показників), потім – окремо для міжорганізаційної мережі.

Ключові слова: міжорганізаційна мережа, мультинаціональні компанії, випускники університетів.