BUSINESS ADMINISTRATION AND IT PROFESSIONALS
A Social Network Analysis Perspective

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Abstract: There is ongoing discussion whether and to which extent and aspects professionals in the field of information technology (IT) and business administration (BA) are different. Often IT people are considered to be introverted while it is assumed that BA professionals are stronger with respect to communication and networking. In our paper we take a social network analysis perspective to examine if this prejudice is true for BA and IT professionals who are members of an online business community.

1 INTRODUCTION

Groucho Marx once said: "I would never join a club that would have me as a member". This seems not to be true for those users who join one of the many popular social network communities, for example Friendster and MySpace.

According to Associated Press (Jesdanun 2006)MySpace now has 2.5 times the traffic of Google, and is the top social networking site on the web. Just over 2 years old, MySpace has outranked other communities such as Friendster and Orkut. While the social network sites mentioned above are suited for everyone and any topic is discussed within the community special purpose networks have emerged also, like Linkedin or openBC.

In our analysis we focus on business (BA) and information technology (IT) professionals who are members of the business community openBC. It is a common cliché that IT professionals have odd social behaviour. They are supposed to stay among their peers and have only rudimentary social contacts to the "outside world". In contrast BA professionals are considered to display a completely different social behaviour. Most jobs in this field require people to be open and likeable, to easily approach others in order to maintain business contacts.

The main objective of this paper is to find out if this cliché is true for members of openBC. The member profiles of IT and BA professionals will be analysed in order to find similarities and differences in the social behaviours of the two groups.

The paper is structured as follows. Section 2 gives a short overview about social network analysis and introduces briefly online business communities. Section 3 will explain limitations and the set-up of the study. Section 4 will show the obtained results and their interpretations. The paper concludes with Section 5.

2 SOCIAL NETWORK ANALYSIS

2.1 Some Foundations

Recently social network analysis (SNA) has gained increasing attention in the information system community (see e.g. Wasserman et al. 1994, Carrington 2005, Scott 2005). Its concept can be applied to many fields. E.g. applying SNA it became possible to map a part of the network centred around the hijackers of the 9-11 attacks (Krebs 2001). Another early popular application area has been citation networks in the scientific community (Garfield et al. 1964, Scharnhorst, Thelwall 2005).

SNA is the mapping, measuring and visualisation of relationships and interactions between information processing entities, e.g. people, organizations.

The entities of such networks are called nodes, the connections between them, links or ties. By

measuring the interactions of the single nodes the relative importance of each node can be determined.

2.2 Online Business Communities

Online social networks have been around for many years but the real boom started about three years ago. They are part of the trend towards a "social web". The enormous popularity has lead to a commercial interest and produced new sites like openBC that charge members by offering extra features. The website claims to connect entre-preneurs, senior managers, freelancers and "tomorrow's executives". But of course there are lots of people with non-management jobs or unemployed, students etc.

However the platform's main target group are people whose business success depends on the ability to manage their network of contacts (partners, customers, former colleagues, fellow students etc.).

3 LIMITATIONS AND SET-UP

3.1 Set-Up of the Study

For our purposes, it was necessary to select those profiles to which the terms BA and IT professional could apply. Therefore the profiles were scanned for keywords related to the education of the member (degree in computer science, information systems on the one hand and business administration, economics etc. on the other hand).

The user profiles were collected between December 2005 and February 2006 from members that joined the network recently. They were re-checked 3 times (after 0.5, 2 and 4 months) in order to find out in which way the number of contacts was increasing within this time period.

For the analysis two classes of questions were developed. The questions of the category A are related to the attributes of a member profile only. The category B question analyse the relationship between the members. The questions and their results will be discussed in the Section 4.

3.2 Limitations of the Study

Data extraction is tedious and time-consuming when examining web-based social networks. Internet based business communities do not provide interface for data export and forbid the use of web crawlers as well as the extensive use of a side that may cause performance slumps. Therefore, in our analysis the

number of data sets has to be restricted to 50 per group. Also the number of contacts of user that will be examined closely with regards to the properties will be limited to 5 per user. Besides not all users' networks will be examined. It will be limited to two-thirds of all users per group.

The paper analyses individuals that have distinguished themselves by joining the community. Therefore it cannot be said that the results also apply to IT and BA professionals in general. Also the amount of data is not representative. Furthermore the interpretation of the results is based on speculation concerning the social behaviour of the individuals. E.g. if a user went to the same university as its contact, it does not necessarily mean that they met there. It can be merely coincidental. The results can represent only tendencies of the examined sub-sets.

Not all common SNA metrics can be apply in our analysis and some do apply but cannot be demonstrated or analysed as the authors had no access to this relational data. Therefore only openly visible data has been analysed.

4 RESULTS

4.1 Attribute Data

Attribute data have information about the user groups that is not related to their contacts.

A.1: Are IT professionals more often freelancers than BA graduates?

Result: 22% of the BA professionals are self-employed, and also 22% of the IT professionals are either freelancers or entrepreneurs.

Interpretation: As there is no difference between the two groups, it can be assumed that this online business community does not attract any particular kind of person with a certain job-status constellation.

A.2: Which occupational group has the higher percentage of premium members?

Result: In the group of BA professionals 24% are premium and 76% non-premium members. In comparison only 12% from the IT professionals are premium members, 88% are regular members.

Interpretation: There is a considerable difference between the two groups. It is possible that IT professionals are more likely in a position to assess the real value of an online service and are therefore not prepared to spend money on it. General reasons to sign-up for a premium-membership that apply to both groups could be the following: (1) People like

to customize their profile according to their preferences (Wildbit LLC 2005). (2) Users become "addicted" to the network and are prepared to spend money to extend their participation. (3) Members want to distinguish from regular members; "premium" is a key-word in this context. (4) Users like to anticipate leadership. The extended membership provides the role of an event manager. People see a possibility to increase their own status within the network.

A.3: Do IT professionals have a higher activity index than BA professionals?

Result: The data show that the average activity index of the two groups has no significant difference. The average activity index for BA professionals is 3.95, for IT professionals 3.85.

Interpretation: The slightly higher activity index of BA professionals could be related to the fact that there are more premium members among them, using the service more frequently.

A.4: Is premium membership related to activity index?

Result: The average activity level of all users is 3.9 (BA professionals 3.95, IT professionals 3.85). The premium users among the IT professionals have an average index of 4.10; the BA professional premium member uses the network at an activity level of 4.30.

Interpretation: This answer confirms the above stated assumed reasons for signing up to premium membership. If somebody spends money on a premium membership to have more possibilities to search etc., she/he will use those extra functionalities. Vice versa the more active a person is in the network, she/he will be more willing to spend money for additional features.

A.5: Are users more often premium members if they are freelancers or entrepreneurs?

Result: This shows clearly that self-employed users are willing to pay for a premium membership. 45% of all BA professionals that are either entrepreneurs or freelancers signed up to the extended membership. This shows a significantly higher percentage compared to the whole group of BA professionals (24%). The analysis of self-employed IT professionals shows the same tendency: 27% of them had the premium membership, compared to 12% of the whole group of IT professionals, who had signed up for it.

Interpretation: An obvious explanation for this finding would be that entrepreneurs and freelancers are willing to spend a small amount of money if they can increase their career opportunities. They want to

use the advanced search capabilities in order to find possible business partners or customers.

A.6: Which group has more language skills?

Result: The language skills are depicted in the following tables.

Table 1: Language skills of BA professionals.

Languages			
Italian	4%	English	92%
French	22%	German	100%

Language profiles	
German	8%
German, English	68%
German, English, French	20%
German, English, French, Italian	2%
German, English, Italian	2%

Table 2: Language skills of IT professionals.

Languages			
Italian	24%	English	96%
French	30%	German	98%

Language profiles	
English	2%
German	4%
German, English	62%
German, English, French	30%
German, English, Italian	2%

Interpretation: The majority of all members speak German. This is resulting from the fact that most of the selected users are located in Germany.

It shows also that the language skills of the two groups are very similar – it is actually not the case that IT professionals are less multi-lingual than BA professionals. IT professionals need to have good language skills, as the industry has a stronger international orientation than other business sectors.

A.7: Which group is more restrictive in terms of privacy settings?

Result: 12% of the BA group are not willing to disclose their contacts' names, whereas only 8% of the IT professionals hide their relations. Regarding their activity meter the two groups show the same results. 20% of each group have concealed their index.

Interpretation: Reason for restricting access to the list of contacts could be that users might fear that they reveal too much of their privacy. It is generally known that head-hunters use the service to track potential employees' personal lives. As a central feature of online business communities is the members' ability to contact other members, the majority of users are prepared to disclose all their

connections. If a person is uncomfortable with revealing too much of one's private life she/he will not join the network in the first place.

4.2 Relational Data

The analysis of the relational data is the actual network research.

B.1: Who has a higher number of contacts?

Result: The average number of contacts of IT professionals it 21. BA professionals have fewer contacts in average: 16.58.

Interpretation: Although one might expect that BA professionals have more contacts, it turns out that this is not the case. One reason could be that IT professionals spend more time in front of the computer and therefore have more opportunities to collect contacts via the Internet.

B.2: Do freelancers/entrepreneurs have more contacts?

Result: The average number of contacts of all selected persons is 18.79. The analysis shows indeed that IT freelancers and entrepreneurs have more contacts than employees – in average 20.36. However self-employed BA professionals show even less contacts (10.55) than the average user.

Interpretation: The higher number of contacts of IT freelancers / entrepreneurs could be an indication that self-employed depend more on contacts than employed. Their relations could be existing customers or potential ones. A high number of contacts could have the meaning of a reference to other users that do not know the person. However that self-employed BA professionals have such a low number of contacts contradicts this assumption. It is possible that some "freelancers" are unemployed and therefore have less contacts.
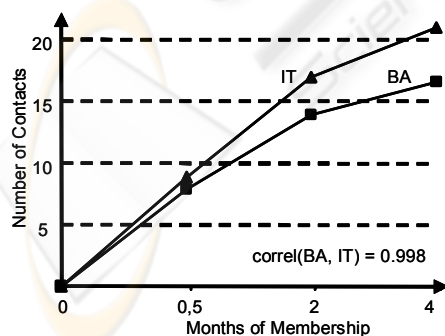

Figure 1: Average Number of Contacts over Time.

B.3: How does the number of contacts correlate to the duration of membership? Who is collecting contacts quicker?

Result: In the beginning BA professionals collect their contacts almost as quickly as IT professionals. However after 4 months the IT professionals have in average 21 contacts, whereas BA professionals have only 16.58 contacts (see Figure 1 for more details).

Interpretation: As already stated above, IT users probably have more opportunity to use the online service to gather contacts. A reason for collecting these contacts quicker could be that they have a greater affinity in adapting new technologies due to their technical background.

B.4: How do contacts relate to the member's residence?

Result: The analysis shows that BA professionals tend to collect their contacts locally. 29% of their contacts live or work in the same city. Another 31% are located in the same region. IT professionals show a similar behaviour regarding their city contacts (also 29%), but only 19% live in the same region.

Interpretation: The high number of local contacts confirms Boyd's statement (Boyd 2004): „Most users begin surfing Friendster by looking for people that they already know, either currently or in the past." Before making contact to unknown persons on the network, users start by mapping their currently existing offline contacts. However a significant difference can be seen between BA and IT professionals. BA professionals have more local contacts. It seems that IT professionals use the business community to keep in touch especially with contacts from whom they are locally separated.

B.5: Which group has more contacts from its alma mater?

Result: Both groups have 33% of contacts that derive from their university.

Interpretation: Again it can be seen that members use this online business community as a tool to maintain existing contacts or to reactivate old contacts from university. This seems to apply for all members regardless of their field of study.

B.6: Do BA professionals have more contacts to BA professionals than to others (or IT professionals to IT professionals)?

Result: In average 42% of all BA professionals' contacts have a degree in Business Administration, too. Only 23% of the contacts of IT professionals have a degree in computer sciences or the like.

Interpretation: As many members do not give their degree, it can only be analysed how many from their contacts have the same degree stated as publish in their profiles. It is possible that the actual number is higher. However it is surprising that the number of

IT professionals' contacts with the same degree is considerably lower. This is contradicting the prejudice that people with a background in computer sciences prefer to stay among their peers.

B.7: How do contacts relate to current or previous jobs?

Result: The below table shows the results for the two groups regarding the number of job-related contacts.

Table 3: Job Related Contacts.

	BA	IT
Same industry	34%	48%
Same current employer	17%	13%
Former colleague of current employer	1%	4%
Contact works for former employer	1%	6%
Contact used to work for former employer	1%	6%

The correlation between BA and IT professionals related to job related contacts is high (correl=0.95).

Interpretation: It is noticeable that few contacts derive from current employers in comparison to university contacts. Many members are young (25–40 years old). Presumably they still have very strong relationships with their fellow students. The online business communities offer an easy tool to keep in touch. Young professionals tend to change jobs, locations often but the online communities are independent from local limitations. Obviously the members see not much need in contacting with colleagues they see at work anyway. Users might seek to gather contacts not related to a current employer to use them for future purposes, e.g. when they decide to apply for a new job.

B.8: Which group has more contacts that are related to membership of an organisation?

Result: Only 3% in average of IT professionals' contacts are a member to the same organisation than the contact's owner. In the group of BA professionals it is even less: 2%.

Interpretation: It seems that people do not use an online community to maintain their co-members of organisations. Besides the behaviour of the two groups is almost the same.

B.9: Which group has more contacts that are related to the membership of a community group (=forum)?

Result: Both groups have only 1% of their contacts that are member of the same community group.

Interpretation: Although the groups are highly frequented in general, the analysed members do not use it to maintain their existing contacts. It is rather employed as a tool to meet new people.

Table 4: Common Backgrounds

	BA	IT
University	33%	33%
Degree	42%	23%
Status (employed, …)	65%	64%
Industry	34%	48%
Current Employer	18%	17%
Former Employer	8%	12%
Group	1%	1%
Organization	2%	3%
City	29%	29%
Area	31%	19%
Other (hobby, …)	4%	1%

B.10: Who has more in common with his contacts? Which group's contacts show more similarities with its owners?

A mutuality is e.g. the same education or age etc. "Behavioural science studies show that in everyday life, people choose friends with similar age, income, gender, marital status, and/or ethnicity, and that similarity of interests is an important factor in liking others." (Cosley et al. 2003)

Result: Table 2 shows how much a member has in common with his contacts. E.g. IT professionals have in average visited the same university as 33% of their contacts. Again the correlation between BA and IT professionals is high (correl=0.91) regarding this question.

If we count how many things a member shares with a contact (e.g. contact x has same degree and lives in same city => 2), we get: BA share 2.8 and IT professionals 2.6 common things in average.

Interpretation: This shows that the kind of contacts a person chooses is irrelevant from her/his profession. In general people tend to make friends with people they have things in common with.

4.3 Relative Strengths

As a summary of the analysis we present a graphical comparison of the relative strengths of some major characteristics of BA and IT professionals as depicted in Figure 2. The chart was built as follows: For each aspect the single group result was divided by the sum of the two corresponding results. Then the questions were put in an order that shows how the groups differ in their results. E.g. consider Question A2: 12% of the IT and 24% of the BA

professionals are premium members. The relative strength of this feature for the IT professionals is calculated as follows: 33.3% = 12% / (12% + 24%).
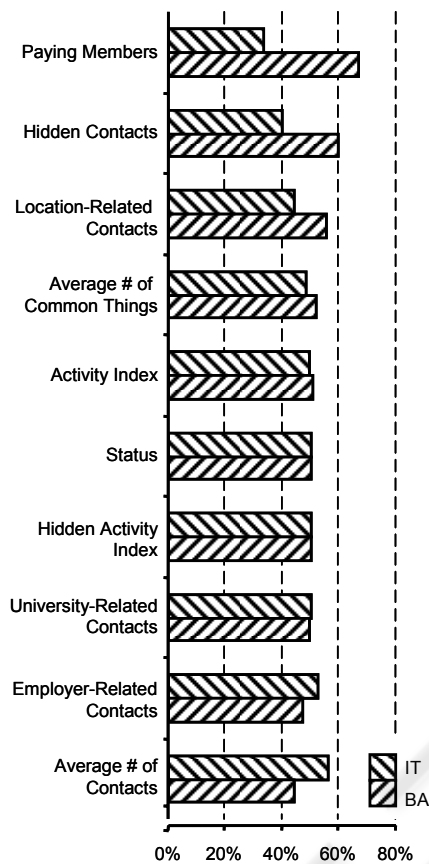

Figure 2: Relative Strengths.

Figure 2 shows that relatively more BA people are willing to pay for the service than IT professionals and have more hidden contacts. In contrast to that the IT professionals only have weak characteristic strength relative to the BA professionals: the relative strength of the employer related contacts and the average number of contacts are slightly more developed in comparison to the BA professionals.

5 CONCLUSION

The common clichés about IT "nerds" could not be verified - at least within the limited framework of our research (see Section 3.2). For example IT professionals do not have fewer contacts, they have even more than BA professionals. They are either equally or more open when it comes to contacting with people from different industries or with different degrees. They seem to be especially

interested in maintaining contacts with people that do not live in their hometown.

A reason why there are not many differences between the two groups could be that the motivations, why people join a business community, are for everybody the same. All users regardless of their profession pursue expanding their personal network. In joining a business community network they fulfil already a certain pre-condition – besides their offline network they want to maintain also an online network. Therefore the findings of this study apply only to the examined BA and IT professionals from openBC. It is not clear if these results can be transferred to BA or IT professionals in general. This question needs to be carried out in a separate analysis.

The data set for this paper was comparatively small; therefore it would make sense to increase the amount of data sets, in a second study, where the technical means are more powerful. It would then be possible to find out, if the results of this study are statistically significant.

REFERENCES

Boyd, D.M. 2004: Friendster and Publicly Articulated Social Networks. CHI2004 - Conference on Human Factors and Computing Systems, Vienna, Austria

Carrington, P.J.; Scott, J.; Wasserman S. 2005: Models and Methods in Social Network Analysis. Cambridge University Press, Cambridge

Cosley, D.; Ludford, P.; Terveen, L. 2003: Studying the Effect of Similarity in Online Task-Focused Interactions. Proceed. International ACM SIG Group Conference on Supporting Group Work 2003, Sanibel Island, Florida, USA, 321-329

Garfield E.; Sher I.H.; Torpie R.J. 1964: The Use of Citation Data in Writing the History of Science. ISI Monograph, Institute for Scientific Information, Philadelphia

Jesdanun, A. 2006: MySpace: A new online star that isn't Google. Feb 12, 2006. Associated Press, New York

Krebs, V.E. 2002: Mapping Networks of Terrorist Cells. Connections 24(3): 43-52

Scott J. 2000: Social Network Analysis - A Handbook. Sage Publications, London

Scharenhorst, A.; Thelwall, M. 2005: Citation and hyperlink networks. Current Science 89(9), 1518-1524

Wasserman, S. Faust, K.; Iacobucci, D. 1994: Social Network Analysis - Methods and Applications. Cambridge University Press, Cambridge

Wildbit, LLC 2005: Social Networks Research Report. [www.wildbit.com/wildbit-sn-report.pdf, 01.06.07]