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ABSTRACT

Information harvested from the LinkedIn profiles for 175 graduates of an Information Systems program at a mid-sized comprehensive university in Southeastern USA are summarized in this investigation. The current investigation was undertaken to examine the extent to which LinkedIn profiles are able to provide a more realistic picture of entry-level jobs held by program alumni and subsequent career progress. In addition, our results suggest that LinkedIn profiles can help answer questions such as: "What jobs do IS graduates get?", "What does the career of an IS professional typically look like?", and "Whether IS graduates can successfully transition from technical to managerial positions?". Our findings also suggest that information in LinkedIn profiles can be used to assess the long-term outcomes of IS programs.

Keywords

Web 2.0, IS career paths, IS recruitment, employment churn

INTRODUCTION

Web 2.0 is increasingly being used by IS educators to enhance student learning experiences. As noted by Richardson (2006), and Solomon and Schrum (2007), the number of educators using blogs, wikis, podcasts, Facebook, Flickr, MySpace and other Web 2.0 technologies continues to climb.

Social networking and the ability to harness network intelligence are common themes across Web 2.0 technologies. Schuen (2007) notes that LinkedIn is a Web 2.0 benchmark for business networking. Although Facebook and Plaxo offer comparable social networking capabilities for business professionals, neither has experienced LinkedIn's rapid growth in usage by business professionals.

Once an individual creates a LinkedIn account, he/she can create a professional profile that includes a photo (optional), education and career history, and professional affiliations. The member can also connect/link to other LinkedIn account holders and can often expand his/her network by gaining access to the connections of the individuals that he/she connects to. Hence, once a profile is created, the LinkedIn member can invite others to 'link' to him/her, accept invitations to link that are initiated by others, join groups (corporate, conference, networking, industry, professional, alumni, etc.), as well as establishing new groups.

Douglis (2010), reflecting on his personal use of LinkedIn, identifies three important roles: as a recipient of an inquiry (for example, from a job hunter); as an intermediary (for example, passing messages along my network on behalf of friends); and as a job hunter (seeking employment). In terms of using LinkedIn for recruitment, Hempel (2010, p74) goes as far as stating: "If you don't have a profile on LinkedIn, you're nowhere." In addition, Schuen (2007) considers LinkedIn to be especially valuable to salespeople seeking contacts with potential clients. In this regard, a key factor feature of using LinkedIn is the ability to find other members. It therefore is not surprising that LinkedIn has been actively updating its search technology, with release of a major revision to their search platform in 2008 (Kozak, 2008). Moreover, this search platform was extended in late 2009 to allow for 'faceted' search (which enables members to create dynamic filters), and a corresponding launch of a premium search service (Kozak, 2009). LinkedIn has also been actively developing a programming API that can be used by independent developers to develop their own LinkedIn-connected applications.

As a dataset, the LinkedIn database is a valuable information repository. In this regard, LinkedIn has established an 'analytics team' (http://sna-projects.com/sna/) of 'LinkedIn data scientists' with a view to mine the data to produce interesting and

valuable insights, as well as developing new services. In this respect, the LinkedIn blog (http://blog.linkedin.com/) has detailed some of the results to date, such as what terms are potentially overused in LinkedIn profiles (see, Sharma, 2010). An example of a new service arising from the data mining initiative is LinkedIn's proposed *Career Explorer*, which is a tool aimed at college students to help them "build their careers" (Watters, 2010). Recognizing the value of the LinkedIn dataset, this study sought to perform an exploratory study the LinkedIn data posted by alumni of an Information Systems program at a mid-sized comprehensive university in Southeastern USA. In particular, we were interested to identify the entry-level jobs held by program alumni, and to develop an understanding of their subsequent career progress.

METHOD

LinkedIn and Plaxo groups for IS program alumni were created in late June 2008. Within a week of its creation, the chair of the IS program utilized the university's alumni databases to identify the names of program alumni (n > 1,200) and subsequently used LinkedIn's People Search function to determine whether each alumnus had created a LinkedIn profile. Program alumni who could be firmly identified (by referring to the university and college and/or major in the Education section of their profiles) were sent invitations to link/connect that also included a request to join the LinkedIn group for program alumni. Approximately 120 alumni accepted the invitation to link and join the group and approximately 55 more accepted the invitation to link/connect, but did not join the alumni group.

The process used to establish connections with alumni with identifiable LinkedIn profiles was time-consuming and cannot be assumed to have captured all program alumni with LinkedIn profiles. There are undoubtedly LinkedIn profiles for much larger set of female alumni whose current last (married) name did not match their last (maiden) name that is included in the university's alumni database (the maiden name is included in the alumni database for any female alumnus who did not voluntarily update her contact information). Other program alumni whose names matched those in the alumni database with abbreviated LinkedIn profiles were not sent invitations to link/connect or join the group. If the alumnus failed to identify the university and college/major and graduation year (that matched that in the alumni database) in the Education section of the LinkedIn profile, a firm determination of his/her status as a program alumnus could not be made.

In December 2008, the following information was harvested from the LinkedIn profiles of the set of IS program alumni who had accepted invitations to link/connect and/or joined the LinkedIn alumni group for program graduates:

- Graduation year;
- Gender;
- Additional education;
- Job title for first job after graduation and first employer;
- Job title and employer for job held five years after graduation;
- Job title and employer for job held ten years after graduation;
- Job title and employer for job held fifteen years after graduation; and,
- Current job title and employer.

The set of LinkedIn profiles examined varied in terms of completeness and richness. In numerous instances, especially for program alumni who were 10+ years into their professional careers, entry-level employment data was sketchy or non-existent. The profiles for numerous program alumni only included information on positions held ten or five years after graduation, and in some instances, only included the current job title and employer of the alumnus. Descriptions of positions held also varied in richness. In some profiles, the description provides a relatively detailed picture of job responsibilities, platforms, development environments/tools, etc., but most were limited to one or two line summaries, or just job titles.

Despite these limitations, the harvested information about first job and employer provided an indication of the jobs that program alums find immediately after graduation and the information about jobs held five, ten, and 15 years after graduation, which provided insight into the nature of career progress.

RESULTS

A total of 175 IS alumni profiles were harvested from the LinkedIn group and personal connections. The mean graduation year was 1997.8 and ranged from 1982 to 2008. Ninety alumni with LinkedIn profiles graduated before 2000, and 85 alumni graduated from 2000 to 2008. There were significantly more male alumni with LinkedIn profiles (n=138; 79%) than female (n=37; 21%).

Educational Attainment

Most alumni profiles (78%) indicated that the BBA in Information Systems was the highest level of education that was achieved. Twenty-two percent (n=38) had gone on to complete at least a masters degree, with 3 alumni completing a Ph.D. in Information Systems and currently hold teaching positions. The vast majority of alumni with a masters degrees had completed an MBA.

First Employment

The professional profiles for 155 alumni included information about the first job held upon graduation. First employment information was not included in the profiles for 20 alums, most of who had graduated before 1990, and in several cases, only the current position held was included in the profile.

Job Title (approximate)	Frequency	Percentage
Account Manager	9	6.0
Analyst (Business/Systems)	23	14.8
Consultant	10	6.5
Database Administrator	2	1.3
Developer/Programmer/Programmer Analyst	40	25.7
Manager/Coordinator/Director	18	11.6
Network Engineer/Manager	15	9.7
Project Manager	4	2.5
Systems Engineer	11	7.1
Technical Support	14	9.0
Webmaster	4	2.6
Other	5	3.2

Table 1: First Job Title after Graduation

As Table 1 indicates, IS program alumni entered the work force in a variety of positions, with more than half (55%) of initial jobs held being technical in nature (e.g. programming; networking, systems engineering, technical support). The rest of the first jobs taken enabled graduates to use a blend of their business and technical skills (being most apparent in the analyst, manager/coordinator, consultant, and project manager positions).

Positions Held Five Years Out

LinkedIn profiles for 125 IS program alumni included information about positions held five years after graduation. Table 2 suggests that within five years of graduation, the percentage of program alumni in clearly technically-oriented positions had declined and the percentage performing more managerial and customer-facing (internal or external) jobs had increased.

Job Title (approximate)	Frequency	Percentage
Account Manager	2	1.6
Analyst (Business/Systems)	15	12.0
Consultant	11	8.8
Developer/Programmer/Software or Systems Engineer	20	16.0
Manager/Coordinator/Director	34	27.2
Network Engineer/Manager	9	7.2
Project Manager	5	4.0

Technical Support	2	1.6
Webmaster	1	0.8
Other – Technical Focus	14	11.2
Other – Non-Technical	12	9.6

Table 2: Employment Pattern Five Years after Graduation

Employment Churn

Table 2 does not capture two important patterns in job changes for program graduates that occur within five years of graduation. One pattern is the emergence of two career tracks: one that is more deeply technical, and one that is more managerial in nature. Both job title and employer changes are common for program alums during the first five years after graduation. Seventy-three percent of the alums experienced job title changes during this time span and almost an equal number (71.5%) haven taken jobs with a different employer, often more than once. This employment churn tends to result is either further deepening of the individual's technical knowledge or migration from more to less technical (and/or from less to more managerial) positions.

Positions Held Ten Years after Graduation

Sixty-eight LinkedIn profiles for IS program alumni contained information about positions held ten years after graduation. As Table 3 illustrates, ten years after graduation finds most program alumni in managerial and customer-facing positions. Less than 20% hold job titles that coincide with a deep technical orientation.

Job Title (approximate)	Frequency	Percentage
Executive Management	10	14.7
Analyst	8	11.8
Consultant	10	14.7
Developer/Programmer/Systems Engineer	8	11.8
Director/Manager	20	29.4
Network Engineer/Manager	2	2.9
Project Manager	9	13.2
Principal Database Administrator	1	1.5

Table 3: Employment Patterns Ten Years after Graduation

Employment churn continued for program alums between five and ten years after graduation. Nearly two-thirds (65.7%) of the individuals providing job information ten years after graduation had changed job titles at least once from the position held five years after graduation. However, the percentage of program alums changing employers during this time span declined to 52.2%.

Positions Held Fifteen Years after Graduation

Thirty-four LinkedIn profiles for IS program alumni contained information about positions held fifteen years after graduation. Ten (29.4%) of the job titles for these alums included the rank/status of "Senior", "Principal" or "Managing". As Table 4 illustrates, fifteen years after graduation finds most program alumni in management or executive management positions. Less than 20% hold job titles that coincide with a clear technical orientation.

Job Title (approximate)	Frequency	Percentage
Executive Management	8	23.5
Analyst	1	2.9
Consultant	4	11.8

Developer	1	2.9
Director/Manager	10	29.4
Project Manager	4	11.8
Systems Engineer/Architect	1	2.9
Other – Technical Focus	4	11.8
Other – Non-Technical	1	2.9

Table 4: Employment Patterns Fifteen Years after Graduation

Employment churn continued for program alums between ten and fifteen years after graduation. Sixty percent of the individuals providing job information fifteen years after graduation had changed job titles at least once from the position held ten years after graduation and the percentage of program alums moving to a different employer during this time frame was 56.7%.

Current Employment Patterns Revealed in LinkedIn Profiles

The current set of LinkedIn profiles for IS program alums includes five CIOs and two executive VPs for IT. Additional job titles, such as Director of IT, suggest that some of the alums hold the highest IT position in their organizations. The 175 alums in the current set of LinkedIn profiles are employed by (or own) 147 different organizations that span a wide range of industries and public sector agencies. Program alums are employed by well-recognized firms within the IT industry (e.g. Cienna, CSC, Dell, EDS, Google, Microsoft, Red Hat, TSYS, VeriSign, WiPro); as well as being employed by prestigious consulting firms (e.g. Accenture, Capgemini, Clarkston Consulting, Slalom); financial services (e.g., E*Trade, Experian, GE Money, Sun Trust Banks, Wachovia); as well as in government agencies, colleges and universities, and well-known companies in the health care, hotel/resort/restaurant, and defense industries. Moreover, the profiles indicate that the vast majority of both recent and older IS program alums remain employed within the field (less than a handful are in non-IT positions), with most occupying positions that enable them to leverage both business and technical knowledge.

CONCLUSION

The LinkedIn profiles that have been assembled thus far provide a much clearer picture about the nature of entry-level jobs accepted by IS program graduates. As indicated in Table 1, the first jobs after graduation are likely to be technical in nature. This insight can potentially be used by academic advisors to encourage majors to master concepts in programming and networking courses and other courses. Because a healthy percentage of program graduates end up in systems/business/programmer analyst positions, advisors can/should encourage majors to master systems analysis and design concepts. The information about first employment after graduation is also useful for developing a realistic picture of employment prospects for prospective majors.

The harvested information also provides insight into the nature of career progress of IS program graduates over time. Table 2 illustrates that within five years of graduation, numerous program graduates migrate from more technically-focused jobs to more managerially-oriented position that enable them to leverage both business and technical knowledge. The migration toward increasingly responsible management positions is evident in both Tables 3 and 4, which summarize the positions held ten or fifteen years after graduation. Hence, the data suggests that it is reasonable to tell current and prospective majors that although they may initially hold technical positions, over time they are likely to move into more responsible (and lucrative) managerial positions and have a good chance of winding up in high-level management positions.

Besides helping to answer "What jobs do IS graduates get?" and "What does the career of an IS professional look like?" questions for current and prospective majors, information in LinkedIn profiles has other potential uses. For example, the data/information could contribute to program assessment, especially to help gain a clearer perspective on long-term program outcomes. Creating IS program alumni groups and LinkedIn connections between faculty and alumni can also enable the creation of alumni-major mentor programs. The ability for current and prospective majors to be mentored by a program graduate could have a positive impact on an IS program's ability to attract and retain majors.

It should be noted that numerous program alumni expressed thanks for the creation of the IS alumni group in LinkedIn. Feedback from many members of the alumni group indicates that group membership helps them feel more connected to the university, college, and department, and also provides a mechanism for them to re-establish connections with program alums that graduated at or around the same time. Accordingly, we expect the goodwill generated by the creation of the group to potentially provide long-term benefits.

LIMITATIONS AND FUTURE RESEARCH

As mentioned in the Method section, there are numerous factors that limit the conclusions that can be reached from the harvested data. The most significant is the wide variation in the completeness and richness of the LinkedIn profiles that IS program alumni have created. A small percentage of these profiles are extremely rich and provide significant insight into the professional development of some of the program alums; while other profiles are very bare bones and only include job title, employer, and length of time the job was held. Most LinkedIn profiles lie somewhere between these extremes, but are generally closer to bare-bones than to extremely rich. Also, some of the profiles for alumni graduating before 1990 fail to include information on entry level positions and only go back to positions held in 1995, 2000, or later; several just list the current position held. These gaps make it difficult to determine the universality of the trends observed across Tables 2, 3, and 4.

Another potential limitation is the fact that LinkedIn profiles are, by nature, self-reports and therefore suffer from possible limitations associated with self-report data. However, while it is possible to lie or exaggerate in the published profile, the likelihood of the information being inaccurate may not be high because of the potential to verify the history/claims via other sources.

The ability to generalize from the LinkedIn data for female alums is a significant limitation. As mentioned in the Method section, there are certainly many more female program alumni with LinkedIn profiles that could not be definitively identified. At a time, when female enrollments in IS programs is low, it is unfortunate that this investigation was unable to provide a more precise picture about the jobs and career progress of female program alums.

This investigation focused only on IS program alums and its results may not generalize to graduates from other computing degree programs, such as computer science. Also, its results are not likely to generalize to IS programs that have focused on preparing graduates for jobs in a limited set of employers.

Despite the limited ability to generalize these findings, the investigation suggests that LinkedIn profiles for program graduates may be a valuable information source for examining the career progress of IS professionals and testing career progress models. Data harvested from LinkedIn profiles also has potential value in the assessment of IS program outcomes.

Planned work includes updating the dataset used in this analysis, as the number of members within the Alumni group continues to grow over time, and members seek new employment opportunities. In addition, we are exploring the possibility of developing visualizations that may aid in the analysis of career progress. Finally, it would be interesting to compare our results to an investigation of career progression in other employment fields. Traditionally, a strong message associated with enrolling in an IS degree is that leveraging a technical/business education will enable a graduate to more quickly and successfully transition from technical into more senior managerial positions, compared with graduates having solely a technical-focused education. Testing this proposition is another potential promising use of the LinkedIn dataset.

REFERENCES

1. Douglis, F. (2010) It's All About the (Social) Network, *IEEE Internet Computing* 14(1), Jan./Feb. 2010, pp. 4-6.
2. Hempel, J. (2010) How LinkedIn will Fire up your Career, *Fortune* 161(5), pp74-82/
3. Kozak, E. (2008) Announcing LinkedIn's New Search Platform [Online] Available at: http://blog.linkedin.com/2008/11/24/announcing-linkedins-new-search-platform/.
4. Kozak, E. (2009) Find People Faster with LinkedIn's new Faceted Search [Online] Available at: http://blog.linkedin.com/2008/11/24/announcing-linkedins-new-search-platform/
5. Richardson, W. (2006) *Blogs, Wikis, Podcasts, and Other Powerful Web Tools for Classrooms*. Thousand Oaks, CA: Corwin Press.
6. Schuen, A. (2007) *Web 2.0: A Strategy Guide*. Sebastopol, CA: O'Reilly Media, Inc.
7. Sharma, M. (2010) Did you use one of these 10 most overused buzzwords in your LinkedIn profile this year? [Online] Available at: http://blog.linkedin.com/2010/12/14/2010-top10-profile-buzzwords/
8. Solomon, G. and L. Schrum (2007) *Web 2.0: New Tools, New Schools*. Eugene, OR: International Society for Technology in Society.
9. Watters, A. (2010) New LinkedIn Tool Helps College Students Visualize Their Career Paths [Online] Available at: http://www.readwriteweb.com/archives/new_linkedin_tool_aims_to_help_college_students_vi.php