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EXPECTATIONS TOWARDS ADEQUACIES OF NEW IT GRADUATES BASED ON SECTOR AND EXPERIENCE OF THE EMPLOYERS

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ABSTRACT: This study analyzes the employer's expectations for new IT graduates in terms of employer's sector and experience level differences. A survey has been conducted among senior professionals and managers working in the IT sector for this purpose. For the analysis, multivariate regression technique has been used. The results indicate significant differences in the adequacies of new IT graduates working in public and private sectors in terms of adapting to new methods and techniques, software development background, software development processes, ethical responsibilities and competency in communication. The experience levels also show significant difference in terms of developing solutions to problems, software development background, using time effectively, ethical responsibilities and competency in communication.

Key words: Employer expectations, multivariate regression analysis, adequacies of graduates

INTRODUCTION

The qualifications of new IT graduates do not always conform with the expectations of employers in the computer industry. Employers look for the knowledge, competence, demeanor, and commercial awareness of new graduates to contribute to the organizations' objectives right after they start their employment (Mason et al., 2009).

Various studies have been conducted on the expected skills of the new IT graduates on different levels (Dravid et al., 2011; Fernandez-Sanz, 2009) analyzing the level of technical, personal and global skills of the engineering graduates. Yet, there have been only a few studies dealing with the Turkish IT graduates in the area of employability (Turhan & Akman, 2012).

In Turkey, only around 30,000-35,000 computer engineers have graduated so far, and from 143 IT-related departments, around 4000 graduates join them every year (Sarrafkioglu, 2012). According to TÜBİSAD's "Information and Communication Technology Sector Market Data Project" report for the year 2012, the Turkish IT sector is worth 78,24 billion TL with a growth of 18% from 2011, and 153,849 people are working as IT specialists in the sector (Tübisad, 2013). According to the report, by the year 2023, marking the 100th year of the republic, 400,000 more IT specialists are expected to join the force. Therefore, a large number of new IT specialists are expected in the sector every year, which implies that the qualifications they need to possess according to the IT employers become an imperative issue.

In this research, a survey has been conducted to investigate employers' expectations for new graduates in the computer industry in terms of the private and public sector differences and experience level of the employers. Different competencies of new graduates such as adapting to the new methods and technologies, software development background, communication competencies, time management skills, etc. have been analyzed in detail, and differences based on the employer's experience level and sector have been examined.

The remainder of the paper is arranged as follows. The next section introduces the research model, followed by the research design. Then, the descriptive and test results are presented which is followed by the conclusion.

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RESEARCH MODEL

The literature provides studies about graduates adequacies from different perspectives. For example in their study, Rao et al. (2008) examined different approaches for estimating the cost of adequacy. In an earlier study, Steinpreis, et al., (1999) investigated the impact of gender and experience on adequacies and reported significant impact for both factors. Kapoor and Chan (2005) stated that it is important to examine the adequacy of university undergraduate programs in preparing students to become professionals with high standards. They also pointed that an inadequate education will eventually reappear in the form of low-quality services offered by professionals. Therefore, adequacy has been included as the independent factor in this study (Figure 1).

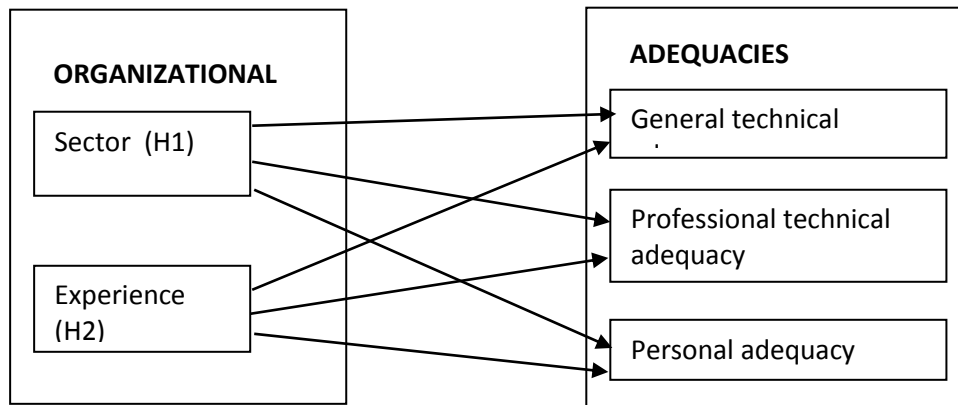


Figure 1. Research Model

The adequacies were grouped in three categories as general technical adequacies (adequacy in adapting to new methods and techniques, adequacy in developing solutions to problems); professional technical adequacies (adequacy in software development background, adequacy in software development processes); personal adequacies (adequacy in using time effectively, adequacy in ethical responsibilities, adequacy in communication). The present study performs a systematic approach to investigate the role of respondents' sector and experiences regarding their expectations in terms of mentioned adequacies of new IT graduates (Figure 1).

Various studies report the importance of organizational characteristics. For example, Jin et al. (2007) pointed that respondents' work place has significant effect in their attitude towards using IT. Additionally, Bonson and Escobar (2006), and Gupta et al. (2004) have been supporters of existence of significant diversity in IT applications between public and private sector organizations. However, the existing literature does not appear to pay attention to the impact of organizational diversity in terms of organizations' expectations from new IT graduates. Therefore, the following hypotheses of the present study were constructed to compare the differences between public -and- private sector establishments in terms of expectations from new IT graduates.

| Hyp. | Definition |
|------------------------------|---|
| H1 _{1i} (i=1, 2) | Expectations on general technical adequacy i (i=1, 2) is changing depending on the sector of organization. |
| H1 _{2i} (i=1, 2) | Expectations on professional technical adequacy i (i=1, 2) is changing depending on the sector of organization. |
| H1 _{3i} (i=1, 2, 3) | Expectations on personal adequacy i (i=1, 2, 3) is changing depending on the sector of organization. |

The experience has always been one of the factors included in many of the studies regarding human behavior. Experience can be measured in several ways, including work experience and computer usage (Shore et al., 2001). Stuart (1990) used experience as years of management in business and reported its significance in relation to performance. Additionally, according to Rice (2010), employees' years of experience should be recognized as a relevant factor in human resource policies. Experience, gained over time, enhances the knowledge, skills, and productivity of workers (Rice, 2010). Therefore, present study proposes experience to be included as an independent variable and the following hypotheses are postulated.

| Hyp. | Definition |
|------------------------------|---|
| H2 _{1i} (i=1, 2) | Expectations on general technical adequacy i (i=1, 2) is changing depending on the experience. |
| H2 _{2i} (i=1, 2) | Expectations on professional technical adequacy i (i=1, 2) is changing depending on the experience. |
| H2 _{3i} (i=1, 2, 3) | Expectations on personal adequacy i (i=1, 2, 3) is changing depending on the experience. |

RESEARCH DESIGN

A survey questionnaire was developed for testing the hypotheses. Initially, a pilot version of this questionnaire was prepared and a group of IT professionals was interviewed to finalize this questionnaire. The questionnaire contains nine items, and each item reflects a discrete variable (Table 1). The variables “sector” and “experience” are the dependent variables, whereas the others constitute independent ones.

Table 1. Summary of Research Instrument

| Quest | Variable | Definition |
|-------|---------------------------|---|
| 1 | sector | Which sector do you work at? (public, private) |
| 2 | experience | What is your management (division/project) experience level? (1-5; 6-10; 11-15; 16-20; >20) |
| 3 | GT_adequacy ₁ | What is the level of new graduates’ adequacies in terms of adapting to new methods and techniques in your organization? |
| 4 | GT_adequacy ₂ | What is the level of new graduates’ adequacies in terms of developing solutions to problems in your organization? |
| 5 | PT_adequacy ₁ | What is the level of the new graduates’ adequacies in terms of software development background in your organization? |
| 6 | PT_adequacy ₂ | What is the level of new graduates’ adequacies in terms of software development processes in your organization? |
| 7 | Per_adequacy ₁ | What is the level of new graduates’ adequacies in terms of using time effectively in your organization? |
| 8 | Per_adequacy ₂ | What is the level of new graduates’ adequacies in terms of ethical responsibilities? |
| 9 | Per_adequacy ₃ | What is the level of new graduates’ adequacies in terms of competency in communication? |

The respondents were either senior IT professionals or IT/Project managers from both major government and private sector establishments. The participant organizations were selected using “judgement sampling”. A total of 72 completed survey questionnaires were received. A 5-point Likert Scale was used for questions 3-9. Multivariate regression analysis technique was utilized to represent the relationships between the dependent and independent variables.

RESULTS

The results of the present survey are presented in the following sequence. Initially, the results of the survey are presented using descriptive analysis. This is followed by the results of regression analysis for each independent adequacy factor.

Descriptive Results

Most of the respondents are from private sector establishments in this research (68%) and observed to be manager (83%) (Table 2) . The percentage of IT graduate respondents is slightly higher than graduates of other fields (59%). This is not surprising since since this was the intention during the sampling procedure and this also meets the sample requirements in this survey. Of the IT graduates, 79% are working in public sector

establishments. This percentage for graduates of other branches is lower (59%). This means that most of the new IT graduates prefer working in private sector organizations since the salary standards are higher in private sector. It is interesting to note that, none of the organizations are fully happy with the qualification of new IT graduates since none of the managers in the survey reported his/her organization's full satisfaction in terms of adequacies. This may be an indication of the fact that IT departments do not consider industry demands in their curriculum designs. However, most of the managers (65%) reported their expectations regarding adequacies were met on average by new IT graduates. This may be an evidence of the fact that the curriculums are almost the same in most of the IT departments in different universities.

Table 2. Descriptive Results

| Variable | Respondents | |
|--|-------------|-----|
| | Number | % |
| Sector | 72 | 100 |
| private | 49 | 68 |
| public | 22 | 31 |
| Unknown | 1 | 1 |
| Position | 72 | 100 |
| unit/project manager | 60 | 83 |
| senior professional | 12 | 17 |
| Graduation of respondent | 72 | 100 |
| IT | 42 | 59 |
| engineering | 13 | 18 |
| others | 16 | 22 |
| Unknown | 1 | 1 |
| Organization's satisfaction from new graduates | 72 | 100 |
| very much | 0 | 0 |
| much | 11 | 15 |
| average | 47 | 65 |
| little | 8 | 11 |
| very little | 4 | 6 |
| Unknown | 2 | 3 |

Table 3. Test Results

| Dependent | Independent variable | Hyp. | coeff. | p-val |
|------------|---------------------------|-----------------|--------|---------|
| Sector | GT_adequacy ₁ | H1 ₁ | -0.251 | 0.042* |
| | GT_adequacy ₂ | H1 ₂ | -0.108 | 0.385 |
| | PT_adequacy ₁ | H1 ₃ | -0.588 | 0.000* |
| | PT_adequacy ₂ | H1 ₄ | 0.216 | 0.046* |
| | Per_adequacy ₁ | H1 ₅ | -0.051 | 0.700 |
| | Per_adequacy ₂ | H1 ₆ | 0.222 | 0.042* |
| | Per_adequacy ₃ | H1 ₇ | -0.339 | 0.016* |
| Experience | GT_adequacy ₁ | H2 ₁ | 0.371 | 0.172 |
| | GT_adequacy ₂ | H2 ₂ | 0.577 | 0.035* |
| | PT_adequacy ₁ | H2 ₃ | -0.449 | 0.054* |
| | PT_adequacy ₂ | H2 ₄ | 0.307 | 0.182 |
| | Per_adequacy ₁ | H2 ₅ | -0.503 | 0.070** |
| | Per_adequacy ₂ | H2 ₆ | 0.380 | 0.067** |
| | Per_adequacy ₃ | H2 ₇ | 0.569 | 0.039* |

*significant at 5% significance level; ** significant at 10% significance level.

Test results

The results of regression tests for the hypotheses are given in Table 3. The inspection of p-values in Table 3

indicated that there is sufficient evidence to accept H₁₁, H₁₃, H₁₄, H₁₆ and H₁₇. This means the variable “sector” has significant impact on the variables “GT_adequacy₁”, “PT_adequacy₁”, “PT_adequacy₂”, “Per_adequacy₂” and “Per_adequacy₃”. In other words, public and private sector managers have significantly different expectations from new IT graduates in terms of adequacies in adapting to new methods and techniques, software development background, software development processes, ethical responsibilities and communication. Similarly, the inspection of p-values in Table 3 indicated that there is sufficient evidence to accept H₂₂, H₂₃, H₂₅, H₂₆ and H₂₇. This means the variable “experience” has significant impact on the variables “GT_adequacy₂”, “PT_adequacy₁”, “Per_adequacy₁”, “Per_adequacy₂” and “Per_adequacy₃”. This means the expectations from new IT graduates regarding adequacies in developing solutions to problems, software development background, using time effectively, ethical responsibilities and communication is significantly changing depending on managers experience.

CONCLUSION

The present study has examined the existence of diversity of managers’ sector and experience in terms of selected adequacy factors of new IT graduates. Interestingly, the results revealed that, except adequacy in developing solutions to problems and adequacy in using time effectively, for all the remaining adequacy factors, the public and private sector managers have significantly different expectations. It was also found that managers’ experience level does not change their expectations in terms of adequacy in adapting to new methods and adequacy of software development process of new IT graduates.

REFERENCES

- Bonson, E., & Escobar, T. (2006). Digital reporting in Eastern Europe: An empirical study, *International Journal of Accounting Information Systems*, 7, 299-318.
- Dravid, R., & Duncan, A. (2011). Engineering soft skills development to avoid hard knocks. *2011 IEEE Global Engineering Education Conference (EDUCON) – Learning Environments and Ecosystems in Engineering Education*, 354-357.
- Fernandez-Sanz, L. (2009). Personal skills for computing professionals. *Computer*, 42(10), 110-111.
- Gupta, P.B., Gould, S.J., & Pola, B. (2004). To pirate or not to pirate: a comparative study of the ethical versus other influences on the consumer’s software acquisition mode decision. *Journal of Business Ethics*, 55(3), 255 – 274.
- Jin, K.G., Drozdenko, R., & Bassett, R. (2007). Information technology professionals’ perceived organizational values and managerial ethics: an empirical study. *Journal of Business Ethics*, 71(2), 149-159.
- Kapoor, M. R., & Chan, K. H. (2005). Education of the professional accountant: An empirical study. *The Canadian Journal of Higher Education*, 15(2), 54-73.
- Mason, G., Williams, G., & Cranmer S. (2009). Employability skills initiatives in higher education: What effects do they have on graduate labour market outcomes? *Education Economics*, 17(1), 1-30.
- Rao, R. R., Naidu, R. S. and Jani, R. (2008). A Critical Review of the Methods Used to Estimate the Cost of An Adequate Education. *Journal of Sustainable Development*, 1(3), 98-102.
- Rice, J. K. (2010). The impact of teacher experience examining the evidence and policy implications. *National Center for Analysis of Longitudinal Data in Education Research*, Retrieved from: <http://www.urban.org/uploadedpdf/1001455-impact-teacher-experience.pdf>.
- Sarıfakioglu, B. (2012). Bilgisayar mühendislerinin örgütlenme atağı. *Elektrik Mühendisliği Journal*, 444, 105-109.
- Shore, B., Venkatachalam, A. R., Solorzano, E., Burn, J. M., Hassan, S. Z., & Janczewski, L. J. (2001). Softlifting and piracy: Behavior across cultures. *Technology in Society*, 23(4), 563-581.
- Steinpreis, R. E., Anders, K. A., & Ritzke, D. (1999). The impact of gender on the review of the curricula vitae of job applicants and tenure candidates: A national empirical study. *Sex Roles*, 41(7/8), 509-528.
- Stuart, R. W. (1990). Impact of entrepreneurial and management experience on early performance. *Journal of Business Venturing*, 5(3), 151-162.
- Turhan, Ç., & Akman, I. (2013). Employability of IT graduates from the industry’s perspective – A case study in Turkey. *Asia Pacific Education Review*, 14(4), 523-536. doi: 10.1007/s12564-013-9278-5
- Tübisad (2013). Bilgi ve iletişim teknolojileri sektörünün büyüklüğü 78,24 Milyar TL. Retrieved from http://www.tubisad.org.tr/Tr/MediaCenter/Sayfalar/sector_verileri_2012_bulten.aspx.