Differences in Wage Level of First Time IT Workers Based on the Interaction Between Employment Type with Job Search Path and Company Type

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Abstract: The objective of this study is to comprehensively understand how the wages of first-time newly employed IT workers are affected by the interaction between not only by the type of employment but also by the job search path and the type of company or business. The research results show there are wage differences for first-time newly employed IT workers according to their employment type and job search path and their employment type and company type. It was also noted that there was an interaction effect between the variables. Particularly in the case of first-time workers in IT fields that were employed through early and regular recruitment, the wages for those under regular full-time permanent terms of employments was higher than non-regular workers. Also, for workers hired through a company's special recruitment methods, the wages were significantly lower for those hired as non-permanent employees compared to regular full-time employees. In addition, although, the wages of non-regular workers in the IT sector was lower than regular full-time workers in private corporations and government-invested enterprises, the wages of non-regular workers was higher than regular full-time workers in government agencies (public servant/military personnel), independent and educational institutes. Therefore, we suggest university students who plan to later work in the field of information communication and for university personnel in student support, to engage and plan differentiated job search activities.

Key words: Employment type, job search method, company type, first time IT worker, wage level, government

INTRODUCTION

Previous research linking educational performance to the labor market has focused primarily on gender wage disparities and wage disparities due to the employment types of regular and non-regular workers (Chai, 2007; Hwang and Baek, 2008; Lee and Kim, 2003). On the other hand while there are claims that the gender wage gap is smaller in the IT industry compared to others due to the small difference in human capital between men and women there are also claims that considering the characteristics of the worker and work tasks, wages differences between regular workers and non-regular workers are not statistically significant (Jae, 2011; Nam, 2007).

This suggests that the employment type of regular worker or non-regular worker does not influence wage levels as a single factor. Therefore, by gaining a comprehensive understanding of how the wages of IT sector workers differ through the interaction of employment type, job search path and business type, the purpose of this study is to suggest job searching activities for job-seeking students and university personnel who support job-hunting students.

Literature review

Characteristics of the South Korean wage structure: The wage structure utilizes seniority-based pay and job-based pay. While the wage structure of developed countries in the US and Europe is largely job-based pay, the wage system in South Korea has long been seniority-based pay (Jang, 2011). The seniority level is a compensation system in which one's base salary is determined according to individual characteristics of the person such as education qualifications, age and years of service or employment, regardless of the work tasks performed (Jin, 2011).

In general, wage decisions based on job-based pay stems from the perspective that wages are determined by the labor productivity of workers whereas wage decisions based on seniority-based pay are determined by discriminatory variables. Therefore, South Korea which uses seniority-based pay to determine wages, cannot escape criticism of discriminatory variables affecting wages.

Influence factors on wages: Studies linking education performance to the labor market were mainly conducted

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focusing on employment status and wage level. The perspective of linking education performance and outcomes with wages is heavily associated with the human capital theory. The theory of human capital regards education as an investment in human capital and accepts the view that wages are the value of improved labor productivity due to education (Lim, 2008).

However, there are criticisms that wages are determined by discriminatory variables unrelated to labor productivity. These studies argue that wages are determined by factors that are not related to individual productivity indicators such as gender, age, period of service or employment, marital status, parental income, parental education level, company location or the number of employees. Among the factors, the gender wage gap (Heo, 2009) and the wage gap due to employment type of regular and non-regular workers receive the most attention (Oh and Lee, 2010; Baek, 2013).

While there are claims that the gender wage gap is smaller in the IT industry when compared to other industries due to the small difference in human capital between men and women there are also claims that considering the characteristics of the worker and work tasks, wages differences between regular workers and non-regular workers are not statistically significant (Park and Cho, 2015). However, the effect of personal characteristics of job search path and the environmental factor of company type on wage level is yet, to be studied.

MATERIALS AND METHODS

Research subjects and steps: This study utilized the data from the 'Graduates Occupation Mobility Survey (GOMS)' conducted by the Korea Employment Information Service on September 1st, 2014. This data is characterized by collecting related data through questionnaires of college graduates who have been employed for at least 2-3 years, a period of time which is considered to be relatively stable in the labor market after graduation.

In this study, only the data where the occupation field was classified as computer related with responses for the current level of income present was selected. Also, the majors of engineering, natural sciences and health and medicine were recoded as engineering and the humanities, social sciences, education and art, music and physical education were recoded as non-engineering. The general characteristics of the analysis material are presented in (Table 1).

Table 1: General characteristics of analysis material

Variables	N (%)
Gender	
Male	1832 (75.7)
Female	588 (24.3)
Total	2420 (100.0)
Day/night	
Day	2174 (89.8)
Night	246 (10.2)
Total	2420 (100.0)
Education	
2 years college	795 (32.9)
4 years college	1625 (67.1)
Total	2420 (100.0)
Employment type	
Permanent full-time	2088 (86.3)
Non-regular	332 (13.7)
Total	2420 (100.0)
Major	
Engineering	1813 (74.9)
Non-engineering	607 (25.1)
Total	2420 (100.0)

Table 2: Wage level of analysis material

Variables/Item	N (%)	Wage on month (1.000 won) M (SD)
Gender		
Female	588 (24.3)	169.25 (57.87)
Male	1832 (75.7)	178.71 (57.73)
Education		
2 years college	795 (32.9)	161.74 (43.13)
4 years college	1625 (67.1)	183.52 (62.67)
Major		
Non-engineering	607 (25.1)	136.97 (32.07)
Engineering	1813 (74.9)	189.79 (58.68)
Day/night		
Night	246 (10.2)	174.16 (37.75)
Day	2174 (89.8)	176.70 (59.71)
Company scale (Number of employees)		
1-4	27 (1.1)	410.00 (0.00)
5-9	278 (11.6)	181.62 (51.21)
10-29	474 (19.7)	154.69 (28.68)
30-49	293 (12.2)	180.76 (80.81)
50-99	445 (18.5)	187.32 (47.97)
100-299	295 (12.3)	191.45 (43.29)
300-499	186 (7.7)	139.76 (23.79)
500-999	141 (5.9)	184.39 (64.52)
1000 over	267 (11.1)	176.45 (57.97)
Employment type		
Non-regular	332 (13.7)	160.75 (78.24)
Permanent full-time	2088 (86.3)	178.97(53.61)
Wage	2405 (100.0)	176.45 (57.97)

Analysis method: In order to analyze the effects how the job search path and company type interact with employment type to affect the wage level of first-time workers in the IT sector, a multi-way analysis of variance was performed with the personal characteristics of gender, education, major and day or night type school and the scale of the company as the covariate. The wage level the subjects are presented in Table 2.

Table 3: Wage level based on employment type and job search path

Employment type job search method	Dependent variable (average monthly income)		
	N	M	SD
Non-regular			
Public recruitment screening	54	285.00	126.17
Special recruitment (scout)	12	90.00	0.000
Recommendation from school (academy) teacher	100	125.80	18.92
Recommendation from family or acquaintance	60	151.73	27.40
Recommendation from someone from current place of work	0	0	0
Online job site	110	144.41	25.88
Internship experience at current place of work	0	0	0
Sum	336	160.83	78.16
Regular			
Public recruitment screening	412	197.68	59.26
Special recruitment (scout)	117	211.54	78.67
Recommendation from school (academy) teacher	510	166.47	50.12
Recommendation from family or acquaintance	230	171.80	29.54
Recommendation from someone from current place of work	80	142.25	40.38
Online job site	704	171.24	51.41
Internship experience at current place of work	29	258.28	65.80
Sum	2082	177.73	55.62
Total			
Public recruitment screening	466	207.80	75.51
Special recruitment (scout)	129	200.23	82.85
Recommendation from school (academy) teacher	610	159.80	48.83
Recommendation from family or acquaintance	290	167.65	30.19
Recommendation from someone from current place of work	80	142.25	40.38
Online job site	814	167.62	49.59
Internship experience at current place of work	29	258.28	65.80
Sum	2418	175.38	59.53

RESULTS AND DISCUSSION

Wage difference based on employment type and recruitment method: Table 3 and 4 present the results of analyzing whether the wages of first-time workers in the IT field differ based on employment type and the job search path which show that differences are present. It was also, found that there is an interaction effect between employment type and job search path.

Generally, the wage of non-regular workers who gained employment through online job sites, teacher recommendations and recommendations from family or acquaintances were lower than that of full-time workers (Fig. 1).

In particular, it was found that the wages of non-regular workers who were hired under the company's special recruitment methods were significantly lower than the wages of full-time workers. An unusual result is that

Table 4: Wage difference based on employment type and job search path

Variable	F-values	p-values	η^2
Covariate/personal characteristic			
Gender (male/female)	2.806	0.094	0.001
Education (2 year degree/4 years and above)	35.063	0.000	0.014
Major job match (major/non-major)	268.874	0.000	0.101
Day or night school (day/night)	0.224	0.636	0.000
Covariate/company characteristic			
Company type	9.172	0.002	0.004
Company scale (number of employees)	1.560	0.212	0.001
Independent variable			
Employment type (full-time/temporary)	6.461	0.011	0.003
Job search path	67.547	0.000	0.144
Full-time status (Yes/No)*job search method	46.262	0.000	0.072

Explanatory power/goodness of fit: $R^2 = 0.322$, Adj. $R^2 = 0.318$
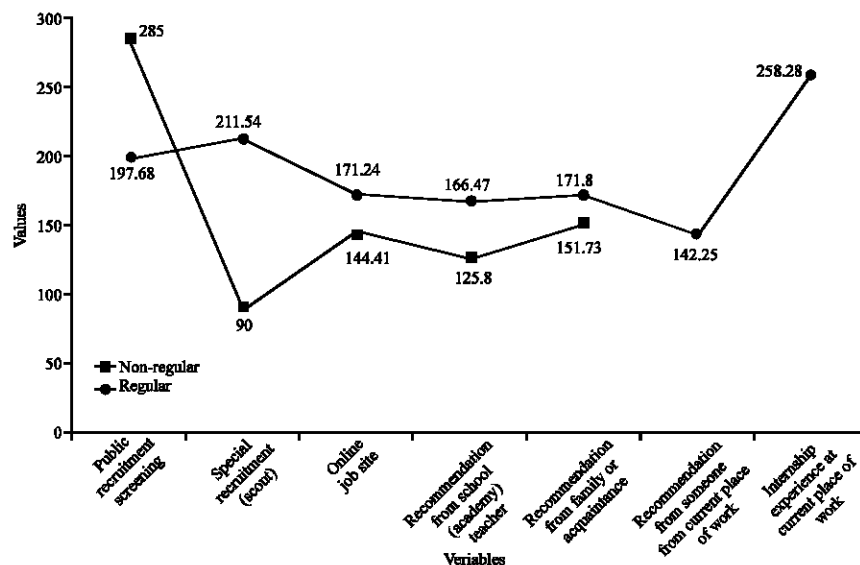F-values = 98.426***, *p<0.05, **p<0.01, ***p<0.001

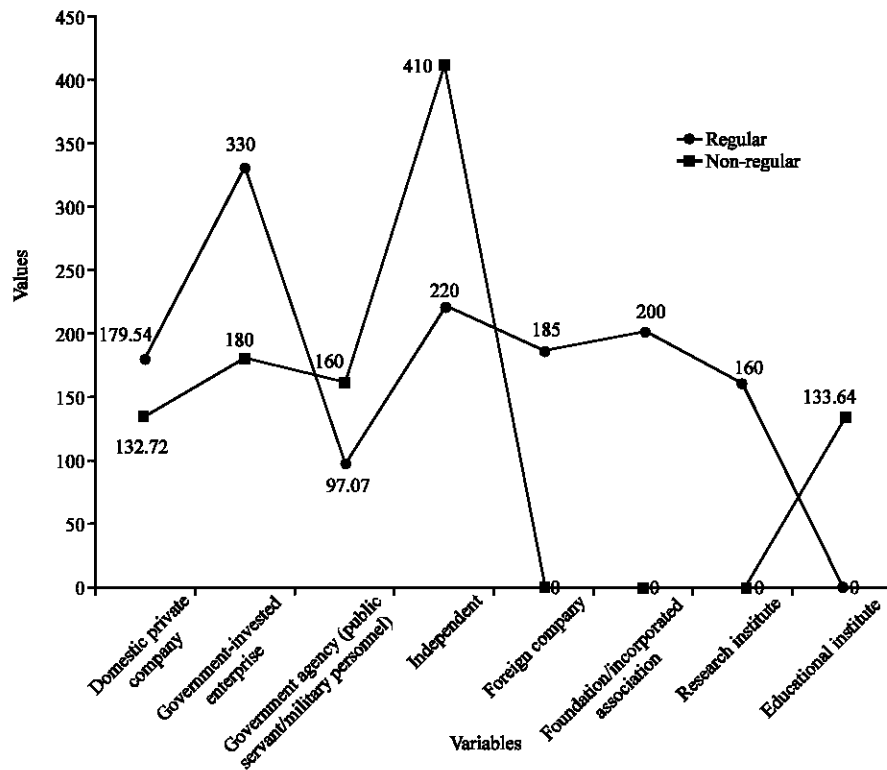Fig. 1: Wage level by employment type and job search path

Fig. 2: Wage levels based on employment type and company type

Table 5: Wage level based on employment type and company type

Employment type/company type	Dependent variable (average monthly income)		
	N	M	SD
Non-regular			
Domestic private company	213	132.72	24.65
Foreign company	0	0	0
Government-invested enterprises	25	180.00	0.000
Foundation/incorporated association	0	0	0
Government agency (public servant/military personnel)	27	160.00	0.000
Educational institute	44	133.64	27.035
Research institute	0	0	0
Independent	27	410.00	0.000
Sum	336	160.83	78.16
Regular			
Domestic private company	1918	179.54	53.30
Foreign company	13	185.00	0.000
Government-invested enterprises	13	330.00	0.000
Foundation/incorporated association	13	200.00	0.000
Government agency (public servant/military personnel)	70	97.07	51.77
Educational institute	0	0	0
Research Institute	42	160.00	0.000
Independent	13	220.00	0.000
Sum	2082	177.73	55.62
Total			
Domestic private company	2131	174.86	53.05
Foreign company	13	185.00	0.000
Government-invested enterprises	38	231.32	72.12
Foundation/incorporated association	13	200.00	0.000
Government agency (public servant/military personnel)	97	114.59	52.25
Educational institute	44	133.64	27.03
Research institute	42	160.00	0.000
Independent	40	348.25	90.13
Sum	2418	175.38	59.53

Table 6: Wage difference based on employment status and company type

Variable name	F-values	p-values	η^2
Covariate/personal characteristic			
Gender (male/female)	4.061	0.044	0.002
Education (2 years degree/4 years and above)	63.807	0.000	0.026
Major job match (major/non-major)	392.409	0.000	0.141
Day or night school (day/night)	2.515	0.113	0.001
Covariate/company characteristic			
Job search path	0.700	0.403	0.000
Company scale (number of employees)	18.707	0.000	0.008
Independent variable			
Employment type (full-time/temporary)	2.362	0.124	0.001
Company type	83.695	0.000	0.196
Full-time status (Yes/No)*company type	111.861	0.000	0.123

Explanatory power/goodness of Fit: R^2 = 0.449; Adj. R^2 = 0.445; F = 23.360***; *p<0.05; **p<0.01; ***p<0.001

the wage of first-time workers in the IT sector who were hired through early and regular recruitment is higher for non-regular than full-time workers.

Wage differences based on employment type and company type: Table 5 and 6 show the results of analyzing whether the wages of first-time workers in the IT sectors differ according to employment type and company type. The results show the wages of first-time workers in the IT industry were different based on the company type. Addition, it was noted that there was an interaction effect between employment type and company type.

In general, wages of non-regular workers in the IT sector is lower than regular full-time workers for domestic private companies and government investment institutions (Fig. 2). On the other hand, the wages of non-regular workers in the IT field for government agencies (civil servants/military), independent and educational institutions were higher than those of full-time workers.

CONCLUSION

It was found that wage differences exist for first-time newly employed IT workers according to their employment type and recruitment method and their employment type and type of business and an interaction effect was present between the variables. Regardless of the job search path and job search path, the wage of regular, full-time permanent workers was higher than that of non-regular workers.

For first-time workers in IT fields employed through early and regular recruitment, the wages for workers with regular permanent full-time employment was higher than those non-regular terms of employment and for workers hired through a company's special recruitment methods, the wages were significantly lower for those hired as non-permanent employees compared to regular full-time employees.

Additionally, although, the wages of non-regular workers in the IT sector was lower than regular full-time workers in private corporations and government-invested

enterprises, the wages of non-regular workers was higher than regular full-time workers in government agencies (public servant/military personnel), independent and educational institutions.

SUGGESTIONS

Therefore, we suggest university students who plan to later work in the field of information communication or university personnel who support students, to engage and plan differentiated job search activities.

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