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Determinants of Job Mismatch Among Graduates: A Case Study of Clerical Workers at Lahore, Pakistan

Penentu Ketidakpadanan Pekerjaan dalam Kalangan Graduan: Kajian Kes Pekerja Perkeranian di Lahore, Pakistan

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ABSTRACT

Job mismatch among graduates reflects inefficiencies in the labor market. An imbalance between the demand and supply of graduates in the labor market leads to a horizontal mismatch. Nations make progress based on knowledge and education but despite obtaining higher education individuals are unable to find a job related to their field of study. This phenomenon occurs when educational institutes produce a large number of graduates while on the other hand, the supply of graduates exceeds the demand for graduates. This study aims to find out the determinants of horizontal mismatch and to analyze the reasons why workers have accepted the mismatched job. By using the worker's self-assessment method required data is collected from the clerical workers of public and private sector universities at Lahore in 2019. These universities include the University of the Punjab, Lahore, and the University of Management and Technology, Lahore. Results of Logistic Regression analysis concluded that cost of job search, asymmetric information, and methods used to find a job are the most important determinants of job-mismatch. This study has also analyzed the reasons why workers have accepted their present mismatched job. Findings concluded that individuals accepted mismatched-job due to pay and promotion opportunities and a good working environment. This study suggested establishing linkages between educational institutes and industries to better formulate the policy that reduces the extent of horizontal mismatch.

Keywords: Job-mismatch; logistic regression; worker's self-assessment approach; graduates; asymmetric information

ABSTRAK

Ketidakpadanan pekerjaan mencerminkan ketidakcekapan dalam pasaran buruh. Ketidakseimbangan antara permintaan dan penawaran graduan dalam pasaran buruh membawa kepada ketidakpadanan mendatar. Negara maju berdasarkan pengetahuan dan Pendidikan tetapi walaupun memperoleh Pendidikan tinggi individu tidak dapat mencari pekerjaan yang berkaitan dengan bidang pengajian mereka. Fenomena ini berlaku apabila institut pendidikan mengeluarkan sejumlah besar graduan tetapi pasaran buruh tidak dapat menyerapnya dengan cekap kerana keterbatasan pekerjaan yang tersedia. Matlamat kajian ini adalah untuk mengetahuif aktor-faktor penentu ketidakpadanan mendatar dan menganalisis sebab-sebab pekerja telah menerima pekerjaan tidak sepadan. Dengan menggunakan kaedah penilaian kendiri pekerja, data yang diperlukan dikumpulkan daripada pekerjaper keranian universiti awam dan swasta di Lahore pada 2019. Universiti yang disasarkan termasuk Universiti Punjab, Lahore dan Universiti Pengurusan dan Teknologi. Keputusan analisis Regresi Logistik menunjukkan bahawa kos pencarian kerja, maklumat asimetri dan kaedah yang digunakan untuk mencari pekerjaan adalah penentu paling penting ketidakpadanan kerja. Kajian ini juga menganalisis sebab-sebab pekerja telah menerima pekerjaan mereka sekarang jika kerja itu tidak berkaitan dengan bidang pengajian mereka. Sebab-sebabini termasuk: disebabkan peluang gaji dan kenaikan pangkat, persekitaran kerja yang baik, lokasi pejabat, sekatan keluarga, perubahan minat kerjaya. Pekerjaan yang berkaitan dengan bidang pengajian tidak tersedia. Dapatan menyimpulkan bahawa individu menerima pekerjaan tidak sepadan kerana peluang gaji dan kenaikan pangkat serta persekitaran kerja yang baik. Kajian mencadangkan bahawa mesti ada hubungan yang kuku hantara institut pendidikan dan industri untuk merumuskan dasar yang lebih baik yang mengurangkan tahap ketidakpadanan mendatar.

Kata kunci: Ketidakpadanan kerja; Regresi Logistik; Pendekatan Penilaian Kendiri Pekerja; Graduan; Maklumat Asimetri

INTRODUCTION

Expansion in higher education has led to an increase in the number of graduates entering the labor market. This positive development is expected as an increase in the demand for skilled workers that will cater the industry's need but in reality, these qualified graduates are unable to find jobs related to their field of study. Which indicates a mismatch between qualifications and jobs (Li & Wang 2020). It reflects a very alarming situation because a considerable amount of investment is made either by graduates or by the government to prepare them to serve in the future. Problem of job mismatch exhibits a wastage of the country's scarce resources due to the misallocation of human capital (Shahidan and Ismail 2021).

Research on job-mismatch emerged in the late 1980s when developed countries, especially US and UK started to invest in higher education to increase the supply of graduates. Freeman (1976) was the first to raise his concern over this expansion in his research entitled 'Overeducated Americans'. Initial studies consider it a temporary phenomenon but it was not empirically supported (Groot and Brink 2000).

The concern of every government is to raise the level of higher education (Rose et al. 2020). People invest in higher education to secure sophisticated jobs in the future but when these graduates enter the labor markets, they are unable to find jobs related to their field of study. This phenomenon is called job-mismatch (Veselinović et al. 2020). The European Center for the Development of Vocational Training divides job mismatch into two types such as vertical mismatch and horizontal mismatch. Vertical mismatch occurs when an individual's educational level is higher or lower than that required by an employer, company, or firm. (Chevalier and Lindley 2009; Meroni & Vera-Toscano 2017; Samudra 2018; Bol et al. 2019).

Horizontal mismatch takes place when worker's work is unrelated to their field of study. Alternatively, they have inadequate skills needed for these jobs (Robst 2007; Chevalier & Lindley 2009; Montt 2017; Shahidan and Ismail 2021). The problem of horizontal mismatch (job-education or occupation-education mismatch) is less studied due to the lack of relevant data on selfevaluated mismatched or incapability of building of statistical measures (Rudakov et al. 2019).

Many studies find out the determinants of job-mismatch. Individual's demographic, educational and employment characteristics contributed to job-mismatch (Dibeh et al. 2019) Literature shows that particular fields of study such as natural sciences provide occupational specific skills but graduates with general degree programs such as social sciences and humanities have general skills so horizontal mismatch is higher among those who graduated in general degree programs (Robst 2007; Caroleo & Pastore 2018; Rudakov et al. 2019).

The job-education mismatch can be viewed as the imbalances between demand and supply (Ozer 2019a) and lack of vacancies for particular jobs (Suna et al. 2020). From this point of view, it may be expected that different effects of a job-education mismatch for different fields of study. On the one hand, some fields of study (Medicine, Computer Science, STEM, Law) imply the accumulation of occupation-specific skills most of which are non-transferable to other sectors (Robst 2007; Boudarbat & Chernoff 2012). On the other hand, there are some fields of study which mainly develop general skills (social sciences, arts and humanities). These general skills are easily transferable across sectors (Robst 2007; Boudarbat & Chernoff 2012). As a result, graduates in these fields are relatively more likely to be mismatched.

Job mismatch happens when educational institutes produce a large number of graduates, creating an oversupply of graduates in the labor market. Whereas job creation is not kept in pace with the existing supply of graduates which compels graduates to accept a job that is not related to their field of study just to reduce the time of unemployment (Suna et al. 2020). Job mismatch also occurs due to asymmetry information related to the labor market. Hence due to lack of information graduates are unable to absorb in the labor market efficiently (Green andMcIntosh 2007). Moreover, methods used to find a job play a significant role in determining job-mismatch. Carroll and Tani (2015) found that graduates who found jobs through campus placement agencies have a lower probability of job-mismatch as compared to those finding jobs through advertisement.

The job-education mismatch has an impact on individuals, firms, and society. At the individual level, it reduces the marginal product of labor (McGowan2017). Educated individuals are unable to get the reward of their surplus education (Robst 2007). Over-educated workers are dissatisfied with

their job, which leads them to quit jobs (Farooq 2011; Brunello & Wruuck 2021). At the firm level, it leads to lower productivity, reduces worker participation, and results in the form of high turnover rates. Firms have to bear the additional cost in the form of screening, training of newly appointed workers (Smoorenburg and Velden 2000). In the case of society, it reduces productivity that would have been generated by allocating workers with real matches (Chevalier 2003; McGowan & Andrews 2015a).

CASE OF PAKISTAN

In the case of Pakistan, very few studies have tried to find out the rigidities and imperfections in the labor markets. However, there exists an awareness on the issue of education-job mismatch. Educational institutions are producing a large number of graduates each year but when these graduates enter the labor market, they are unable to find a job in which they can use their knowledge. Hence in order to remain unemployed over a longer time in search of a career-oriented job they opt for the job which they find in a shorter time.

Various social and demographic attributes are responsible for job mismatch such as institutional barriers, race, gender, etc. These socio-demographic constraints restrict female labor force participation (Nazli 2004; Farooq 2017). Despite the rising labor force, Pakistan's labor markets also suffer from severe imbalance and imperfections such as a longer job search period, a growing share of the informal sector, and lower productivity. This study will answer the following research questions:

1. What are the main determinants of job mismatch?
2. What are the reasons for the employee to accept a mismatched job?

Apart from individuals' demographic, educational, and employment characteristics this study aims to contribute to the existing literature by incorporating additional variables such as methods used to find jobs, asymmetric information, and cost of job search.

The structure of this paper is as follows. Section 2 presents the literature review. Section 3 explains the Theoretical framework whereas section 4 provides Data and Methodology and section 5 illustrates results of logistic regression and section 6 provides conclusion.

LITERATURE REVIEW

The issue of job mismatch attracts considerable attention among researchers as well as policymakers because it reflects the disconnect between the demand and supplyside stakeholders such as academia and industry (Shahidan and Ismail 2021). Job mismatch among graduates can be vertical as well as horizontal. The vertical mismatch has been widely discussed in the literature Wolbers (2003) McGuiness (2006); Lindley (2009); Robst (2007); Mavromaras et al. (2013); Meroniand Vera-Toscano (2017); Bol et al. (2019) while on the other hand, few researchers studied horizontal mismatch such as Robst (2007); Croce and Ghignoni (2015) due to non- availability of relevant data on subjective approach (Gimpelson et al. 2010).

Several studies find out the determinants of job mismatch including demographic, educational as well as employment characteristics. Demographic characteristics include gender, age, and marital status which have a significant association with job mismatch. Looking at demographic determinants of job mismatch different studies found contradicting results. Akhtar et al. (2018) finds out the probability of job mismatch is higher among older individuals as compared to young college graduates. Whereas Pholphirul (2017) found the opposite results which stated that an increase in age led to a reduction in the extent of job mismatch up to 2% to 4%.

On the other hand, gender has a significant impact on the likelihood of being mismatched with the job. Robst(2007) adopted a novel approach by studying the reasons for accepting mismatched jobs among men and women separately in the case of the United States. The author explored that a significant gender differential exists across the reasons for accepting the mismatched job. Men were more likely to be mismatched than women due to pay and promotion opportunities or changes in career interest. Whereas women reported that family restrictions, job location, and working conditions were the most prevalent reason behind accepting jobs different from their field of study. Other studies found opposite results Mavromaras et al. (2013); Medina (2015); Park (2018) pointed out female college graduates have a higher probability of being a mismatch.

According to these studies, females face a higher mismatch as they are less likely to switch job due to socio-economic constraints. Whereas Garcia-Espejo & Ibanez 2006 find out that gender does not have an

impact on the likelihood of being a mismatch. Dolton and Silles(2001) revealed that married graduates face higher mismatch as compared to unmarried due to family responsibilities while Chernoff (2009) explored that marital status does not have an impact on job-mismatch.

Concerning employment characteristics, graduates who work in the public sector have a higher likelihood of being mismatched with their job as compared to those working in the private sector (Wolbers 2003). This can be attributed to the fact that public sector organizations employ graduates who received vocationally oriented education. Heijke (2003); Robert (2014) found that graduates with study-related work experience during their study time have a higher likelihood of being matched with their job.

Literature conducted on studying the impact field of study on job mismatch pointed out similar properties. Wolbers (2003); Garcia-Espejo and Ibanez (2006); Robst (2007); Storen and Arneson (2006); Rudakov et al. (2019) showed that graduates who belong to natural sciences background obtain a higher match. Similarly, Dezelan et al. (2014) examined that graduate of humanities, fine arts and social sciences programs are less related to their jobs as compared to graduates of education, engineering and math programs. These authors were of the view that graduates with social sciences background learned general skills as compared to natural sciences graduates. Besides the field of study, the probability of being horizontally mismatched is determined by the level of education. Wolbers (2003); Krahn and Bowlby (1999) and Robst (2007) specifically examined that the higher the level of education, the more likely the match.

Apart from demographic, educational and employment characteristics, there exist other factors that affect the incidence of job mismatch. Carmichael et al. (2021) studied the impact of methods used to find a job on the likelihood of being a mismatch. The author finds out that finding a job through social contacts reduces the extent of job-education mismatch. In contrast to this Carroll and Tani (2015) explored those graduates who found job through university's campus placement agencies are less likely to be mismatched with their job whereas those who found a job through advertisement and personal contacts are more likely to be mismatched with their jobs. Mahmud et al. (2020) found out career counselling in educational institutes equip graduates with job market skills through career fairs, resume writing, career talks etc.

Empirical work relied on three methods regarding the measurement of mismatch. These methods are Job Analyst method, Realized Match (RM), and worker's self-assessment method (WSA). Among these methods worker's self-assessment method is considered most efficient as it is a subjective method where questions related to job mismatch are directly asked from the respondents. The self-assessment method allows one to better understand the concerned problem due to direct interaction with respondents (Robst 2007). Meroni and Vera-Toscano (2017) particularly emphasized that the subjective method provides measures that are easily observable and provide up-to-data estimates whereas job analysis and realized matches methods assume that all jobs within a given occupation have the same requirements.

The present study extended the study conducted by Farooq (2011) in the case of Pakistan and explored the determinants of job mismatch more comprehensively as in this study the author is unable to study the several important dimensions of job mismatch such as the method used to find a job, asymmetric information based on job signaling theory and cost of job search based on job matching theory. Hence present study fills the literature gap by examining the impact of these determinants on the incidence of job mismatch.

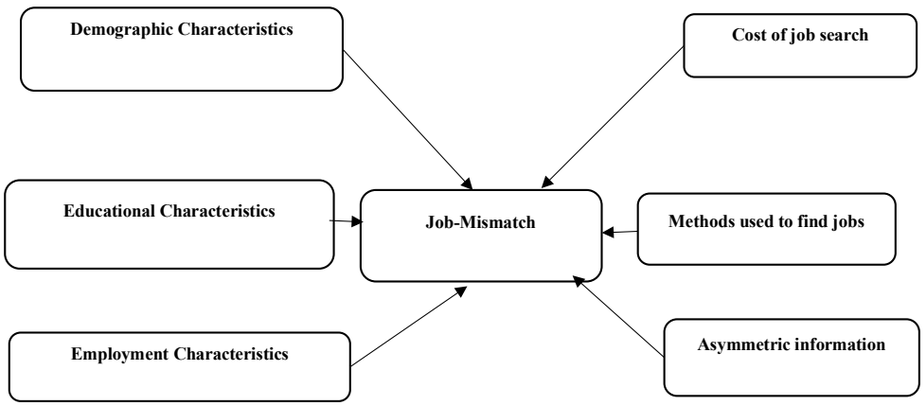

FIGURE 1. Theoretical Framework
Source: Author's Preparation

Figure 1 shows a theoretical framework based on existing literature. It indicates the link between job-mismatch and its determinants. Several factors lead to job mismatch such as asymmetric information, methods used to find jobs, cost of job-search, demographic, educational and employment characteristics, etc.

THEORIES RELATED TO JOB MISMATCH

There exist several theories related to job mismatch such as Human Capital Theory (Gray, Becker, 1964); Job Competition Theory (Thurow, 1975); Job Matching Theory (Jovanovic, 1979); Credential theory (Collins, 1979) as well as Job Signaling Theory (Spence, 1973) but in the context of present study Job Matching theory is most approporiate.

The concept of job match theory was given by Jovanovic in 1979. This theory explains that there is a cost of job search to find the right man for the perfect job. Due to this both employees and employers might have a mutual incentive in a non-optimal match. This theory explains that there is a problem in allocating workers to jobs that require different skills. Education-job mismatch happens when the job structure is inelastic with the changes in the supply of educated individuals.

METHODOLOGY

Due to the non-availability of secondary data, the primary data is collected from clerical workers working at the University of the Punjab, Lahore and University of Management and Technology, Lahore having a minimum of 14 years of education. Fourteen years of education is called bachelor's degree in Pakistan. This study has selected clerical workers as a sampling unit to collect required data. The reason for collecting data from clerical workers is that since we have selected higher education institutes as an area of study so the problem of job mismatch prevails among workers with lower designation instead of workers with higher designations such as lecturers and professors. Farooq et al. (2009) also used the clerical workers as a sample unit. Another study conducted by Akhter et al. (2018) also confirmed that the problem of job-education mismatch is prevalent among administrative staff. The total population of clerical workers in these institutes is 1413. This study has adopted purposive sampling. Using this technique, we selected people according to preselected criteria (Mack 2005). Hence in this study respondents must have two characteristics such that their job designation must be clerical workers, their qualification must not be less than graduation. A detailed and comprehensive

closed-ended questionnaire was designed containing questions related to respondents' demographic, educational and employment characteristics, cost of job search, asymmetric information and methods used to find jobs. The sample size (Tahir et al. 2016) is selected by using the following formula:

$$n = \frac{NZ^2V^2}{Nd^2 + Z^2V^2}$$

Where n = Sample size
N = Total population
Z = Normal variate at 95 percent precision level
d = acceptable error i.e 7.7percent
V= Guess variability (50 percent)

The question asked from the respondents was 'Do you think knowledge required in doing this job is different from what you had acquired' it has two categories yes and no. If respondents respond 'yes' they are considered as a mismatch and coded as '1' and if they respond 'No' they are considered as matched and coded as '0'.

MODEL SPECIFICATION

The model used for the job mismatch is as follows:
Probability (Job-mismatch)$_{ij}$ = $X_i \beta + \varepsilon_i$

Where 'X' includes all the factor affecting determinants of job-mismatch such as Demographic Characteristics includes Gender, Age, Marital status. Educational characteristics include Field of study and level of education. Employment characteristics include Sector of employment, previous work experience. Cost of job search and asymmetric information is the binary variables method used to find jobs including finding a job through advertisement, through campus placement agencies, through reference.

As the dependent variable is binary, therefore logistic regression analysis is used to find an association between independent and dependent variables. Hence the calculated sample size is 145.

TABLE 1. Demographic Profile of respondents

Demographic variable	Number (N)	Percentage (%)
Respondents	145	100%
Sector of Employment		
Public sector	98	68%
Private sector	47	32%
Gender		
Male	98	69%
Female	47	33%
Age		
Less than 30	80	55%
30-40	45	31%
40 and above	20	14%
Marital Status		
Married	80	55%
Unmarried	65	45%

Source: Primary date collected through questionnaire

Table 1 presents the demographic profile of respondent participated in the survey. Here out of total respondents 68% were from public sector whereas 47% were from private sector. Out of the total sample 69% were male and 33% were female. The reason behind lower percentage of female respondents is that in Pakistan the trend of female labor force participation is quite low as compared to male.

TABLE 2. Results of Logistic Regression

Variables		Marginal Effects	Standard Errors	P-Value
Dependent variable: Job-Mismatch				
Independent variables				
Demographic characteristics	Age (in years)	-.014	.003	0.000*
	Reference(unmarried)			
	Marital Status	.083	.070	0.239
	Reference (Female)			
	Gender	-.020	.079	0.797
Educational char.	Highest level of education	-.004	.026	0.863
Field of study	Reference(naturalsciences)			
	Social sciences	.144	.061	0.018**
	Management Sci.	.136	.080	0.089***
Job Characteristics	work experience	-.033	.053	0.534
	Esector	-.126	.057	0.028**
	Ref. Category: Through advertisement			
Job search method	Through Reference	-.095	.052	0.067***
	Campus-placement agencies	.043	.052	0.410
Cost of job search	Ref. Category: No cost of job search			
	Cost of job search (Yes=1)	.108	.056	0.052**
Information related to labor market	Symmetric Information			
	Asymmetric Information	.104	.051	0.043**

Results of binary logistic regression reported in Table 2, showed that among demographic characteristics age has a significant and negative impact on job mismatch such that a 1% increase in age leads to reduce job mismatch by 1.4 percent whereas marital status and gender are found insignificant in this analysis. Moreover, variables related to educational characteristics such as field of study have a significant and positive impact on the dependent variable. Results indicate that the probability of job mismatch among social sciences graduates is 14 percent higher as compared to natural sciences graduates and similarly probability of job mismatch among management sciences graduates is 13 percent higher as compared to natural sciences graduates whereas the level of education is found insignificant in this analysis.

Estimates of employment characteristics of graduates such as the sector of employment has a significant and positive relationship with job mismatch indicating that the probability of job mismatch is 13 percent higher among those working in the public sector as compared to those working in the private sector. Results of methods used to find a job indicate that the likelihood of job mismatch is 95 percent lower among those who found a job through reference as compared to those who found through advertisement whereas finding a job through a career placement agency is found insignificant in this analysis. Cost of job search also has a significant impact on dependent variable such that the probability of job mismatch is 10 percent higher among workers who face cost of job search similarly likelihood of job mismatch is 10 percent higher among those who have asymmetric information related to the labor market. Therefore, the most important determinants of job mismatch are the cost of job search, asymmetric information.

The second objective of this study is to find out the reasons why workers have accepted their present mismatched job. In this context graduates who responded that their work is not related to their field of study were also asked several reasons. These reasons are: Due to pay and promotion opportunities, Due to good working environment, office location, Due to family's restrictions, change in career interest, Jobs related to their relevant degree not available. Respondents were also asked to choose the most important reason for the mismatch. Robst (2007) found these reasons in case the U.S.

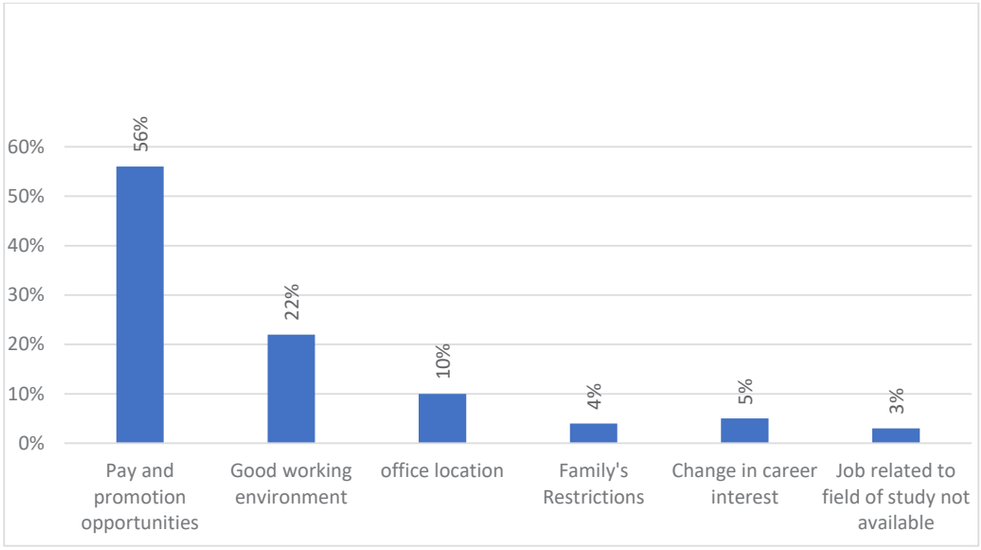

FIGURE 2. Reasons why workers have accepted their present job
Source: Primary data collected through questionnaire.

Figure 2 shows that out of the total sample 56% of respondents responded that they have accepted the present job because it offers reasonable pay and promotion opportunities. 22% of respondents have accepted a job because it has a good working environment. 10% of individuals prefer job closer to their residence so by doing this they try to save the cost of time and traveling. Very few workers report other reasons such as accepted jobs due to family restrictions and jobs related to their degree not being available.

DISCUSSION

Findings indicate that with an increase in age the likelihood of job mismatch decreases. It is due to the fact that with time individuals specialize in their opted jobs so they never consider it a mismatched job. Robert (2014) found the same relation. While on the other hand job mismatch is higher among female graduates (Robst 2007). The reason behind this is that male graduates don't have to face gender and social norms as compared to females because woman prefer a job that offers a good working environment, flexible working hours, and a suitable office location.

In the case of the field of study both social sciences and management sciences, graduates face a higher mismatch as compared to natural sciences. This is because graduates with more general degree programs face a higher mismatch (Robst 2007). As the level of education was found insignificant. Because individuals consider their highest level of education just as a signal to secure a job. But when they enter in the labor market, they realize that their highest level of education is not the requirement to secure a job. Individuals opt for a job that offers attractive wages even though their present job is unrelated to their field of study. This result supports the job signalling model.

The cost of job search is positively and significantly related to job-mismatch. It shows graduates who face a cost of job search have a higher probability of job-mismatch. This indicates as the cost of job search increases the likelihood of job mismatch also increases. This result supports job matching theory. The reason behind this is that if individuals spend a long time in search of a career-oriented job the cost of job search increases. Hence to shorten the job search period individuals accept a job that they find first even though it is unrelated to their field of study. Graduates who have asymmetric information related to the job market have a higher likelihood of being mismatched with their job (Kang 2019). Because degree-awarding institutions are not linked with firms, organizations, and offices that can recruit their graduates (Nordin et al. 2020). Hence after the completion of their degree graduates have poor information related to the labor market.

Results further reveal that graduates who found a job through references are less likely to be mismatched with their job. These findings are consistent with Affum-Osei et al. (2019). Whereas obtaining a job through a campus placement agency is found insignificant. This may be due to the fact

that campus placement agencies don't help their graduates to find career-oriented jobs. During the data collection process, most of the mismatched respondents responded that as they don't have a strong reference therefore, they are not able to find a well-suited job.

CONCLUSION

Based on these results several conclusions can be drawn relating to the job education mismatch among graduates. Firstly, it can be concluded that the problem of job education mismatch exists in the case of Lahore, Pakistan. Findings further reveal that there exists a cost of job search regarding finding job-related to the field of study. Searching for jobs is costly as well as time taking tasks that unemployed graduates are unable to afford. Hence to reduce the cost of job search and to shorten the time of unemployment, graduates are compelled to opt for jobs that they can find over a shorter space of time. It has been further proved that after completion of their studies graduates have poor information about the labor market regarding the new job opening. So, the poor information related to the labor market leads to job education mismatch. Estimated insignificant role to campus placement agencies reveals that in universities campus placement agencies are unable to bridge the gap between academia and industry.

The findings of this study contributed to the existing literature by incorporating additional variables that have an interestingly significant impact on job-education mismatch. These variables include asymmetric information, cost of job search, and methods used to find a job. Results have practical implications on policymakers, employers as well as on job seekers. This study suggests policymakers to make policies that bridge the gaps between academia and industry as the findings of cost of job search and asymmetric information reflect a severance of the relationship between both stakeholders. The functioning of university's campus placement agencies mayserve as a medium to reduce the extent of job-education mismatch which in turn helps employers to reduce the cost incurred to train newly hired workers. This study also analyzed the preferences of graduates who accept mismatched jobs. These findings are the excellent premier for employers to formulate policies that hire workers. In the case of society, better matched workers will be able to contribute towards productivity. Hence producing graduates as per the need of labor markets will bring a fruitful contribution towards economic growth. Hence the way forward is that there must be a strong linkage between academia and industries that will help the educational institutes to prepare graduates as per the requirement of labor markets. Further research can be done at a large scale by incorporating demand-side factors such as barriers faced by employees to find suitable candidates for their industries.

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