

The Effect of Labor Market Conditions on Enrollment Rate in Iran's Distance Universities: A Case Study of Payame Noor University

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ABSTRACT

Background: Education, labor market, and social behaviors of young people are among the key factors in a country's scientific and administrative policy making. The level of public knowledge and the skills of specialists in all sectors of a national economy are the determinants of successful development. This study aims to identify the most crucial labor market conditions affecting students' enrollment at Payame Noor University (PNU) in Iran.

Methods: To fulfil the research objectives, the data were analyzed using a qualitative method (content analysis). At first, the indicators and variables were extracted using Delphi method and document examination, and then these indicators were distributed among 15 professors of higher education, economics, and social sciences to be reviewed and corrected. The required data were collected from the Statistical Center of Iran, Ministry of 'Cooperatives, Labor and Social Welfare' and the Center for Statistics at PNU. The Ordinary Least Square regression model (OLS) was used to analyze the data collected from undergraduate students attending the PNU courses between 2001-2014.

Results: The OLS results showed that the total labor force (Beta=2.824, P=0.017) and high school workforce population (Beta=0.399, P=0.007) had a positive and significant effect on student enrollment at PNU. The number of industrial workshops (Beta=-0.078, P=0.649) had a negative impact on student enrollment at PNU.

Conclusions: The total labor force and high school workforce population had a significant impact on student enrollment at PNU. Therefore, strategic planners in open and distance universities should consider the market conditions in their academic strategies. The policy makers at Payame Noor University should focus their plans on the areas that appeal to all high school graduates. Also, they need to provide training opportunities for the people already working in the industrial sector.

Keywords: Labor Market Conditions, Payame Noor University, Distance University

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Introduction

Since the 1990s, researchers have turned their interest towards understanding the factors associated with student participation in higher education (1, 2). Economists often search for an underlying theory and assume that enrollment decisions are a function of monetary and non-monetary factors, such as the ranking of the university, the value of alternative education opportunities (2), demographic changes (1), current levels of income and salaries (2), and perceived earnings (3), expected future earnings and labor market conditions (4). Much of the research on enrollment requests have focused on how students respond to price changes (2-5). When a university raises its tuition rate, the institution should expect the enrollment demand to decline; subsequently, enrollments should increase if the adjacent institution increases its tuition value.

Compared to other factors influencing the enrollment demand, no extensive research has been conducted on the non-value factors, such as opportunity costs, demographic changes, and labor market conditions. Levels of income and local wages can calculate in-demand models with opportunity costs associated with continuing education. If one can earn high levels salaries without further education, then the demand for university education may decline in high-income areas. Demographic changes can be another factor in the studies on enrollment demand, because universities in the regions that have experienced growth or decline in enrollment should expect higher or lower demand for their education services.

Increasing levels of unemployment can send unnecessary market signals to employed or unemployed people, but given the future employment options, they can be an incentive for people to invest in human capital, in order to prepare for changes in the labor market. As labor market conditions weaken, employment levels decline, and the opportunity cost of university education declines; as a result, many people will invest in higher levels of education. Therefore, rising unemployment leads to a rise in enrollments, since many

students opt for full-time enrollment to reduce opportunity costs. If people have a low or zero chance of full-time employment, then they are willing to enroll full-time (6).

The relevance of education, the labor market, and the social behavior of young people is critical in practical and scientific policy issues. The determinants of successful development in a country are the level of public knowledge and the characteristics of the specialists in all sectors of national economy. Progress in this area is impossible if young people lack interest in education. There are currently high expectations about studying at higher education institutions. Data analysis shows the level of dependence and type of training activity. Many students have no plans to enter college by the end of middle school, but after secondary school, they focus on higher education (7).

Investment in the return of human capital for social development is increasing globally. Successful development and effective use of human resources will lead to continued growth and equilibrium in the distribution of benefits. The investment crisis and the decline in the efficiency of education systems are among the issues that are on the rise (8). The issue of graduate unemployment underscores the severe gap between education, real-life and the level of scientific knowledge. In the Russian labor market, people with secondary or higher vocational training have an eminent status. In modern times, the unemployment rate among young people comprises a significant proportion of total unemployment worldwide. A similar trend can be observed in Russia in general and in Tatarstan in particular. Comparing the critical indicators of the youth labor market in Russia, the Volga Federal District and Tatarstan, demonstrates that the level of young people's economic status in the active population varies between 57.8 and 59.8, which is lower than the data for the entire population. This is justified by the fact that a significant proportion of young people, especially those between 15 and 24 years, study at various educational institutions. Students and graduates are

facing a decline in job offers in the market. The severity of the issue depends not only on the level and duration of unemployment rate but also on the quality of work performed by the youth. The results showed that the highest job demand rate was among graduates of economics and personnel management, and the highest salaries were earned by information technology professionals and personnel management (8).

Several studies have been conducted on analyzing the factors affecting demand for higher education. Pacurariu (9), Jackson and Tomlinson (10), Dorazzi (11), Tavares (12), and Donald et al. (13) show that job placement is the main reason for enrollment in higher education. Students' awareness of market conditions also enables them to find employment within a short time of graduation, thereby raising their awareness of their career path and enhancing their active participation in career planning. Boccanfuso et al. (14), Okolie et al. (15), Franco et al. (16), Agyeman and Malherbe (17) and Aracil et al. (18) believe that holding internships in all disciplines and establishing links between higher education institutions and industries will make students more skilled and better able to enter the job market. Others have stated that universities have an essential role in building confidence and leadership, which are essential elements in enhancing students' motivation to create a business, participate in entrepreneurship programs, and expand their vision of starting their own business (19, 20). Another study shows that individuals' intrinsic motivation to engage in teaching or training profession will lead them to take up that profession even in challenging market conditions. Given the high unemployment risks, teaching is a less likely option, especially for those with external job security incentives (21). Changes in relative income returns do not appear to affect educators' decision-making when changes in unemployment have significant effects on women's post-secondary education decisions. Female students with lower-class backgrounds have proved to be more responsive to changes in unemployment rates

than their upper-class peers (22).

Oppedisano (23) indicated that government policy significantly increases university enrollment in areas where higher education opportunities are more accessible, reducing the supply of high school graduates. Politics can change people's views of workforce and nonproductive activities with more significant long-term effects. Creating new learning environments encourages those who have little opportunity to enroll in universities. The results of Albert's research (24) have shown that the signals from the Spanish labor market influence the demand for higher education both for the purpose of finding a job even though not attending university and for fulfilling the employment expectations for each appropriate education level. The share of labor force production has damaged college enrollment demand (6). Konstantinovskii and Popova believed that one of the reasons for young people to pursue education was to find a job that suits their interests and characteristics and that they can earn a decent income (7).

The active population plays an important role in the area of enrollment in higher education (8). Students' decision to study in higher education are analyzed within the framework of human capital theory. Many studies analyzing the impact of labor market expectations on educational decisions, have examined the return to education of graduates with similar characteristics as an indicator of expected returns. The results of Varga's research (25) show that expected salaries and demand probabilities determine the student demand strategies, and students' irrational preferences in institutions/orientations with undesirable labor market opportunities may result in rational decision-making processes.

According to the Statistics Center of Iran, 3794420 students are studying at the country's universities, of which 1723269 are female, and 2071151 are male students. Out of 12.5 million graduates of higher education institutions, about 7.1 million people (56.9%) are economically active, of which 5.7 million (80.6%) are employed, and 1.4 million people

(19.4%) are unemployed. Also, 5.4 million people (43.1%) are economically inactive (26). Payame Noor University (PNU) is one of the largest universities in the country, receiving a large number of higher education applicants. With almost 32 years of educational experience, PNU has been operating since 1989 and is currently hosting about 530000 students.

Therefore, the primary purpose of this study is to examine the key factors in the labor market that affect enrollment in open and distance universities. Based on the available literature, it appears that most studies in this area have focused on public universities, but no research has been conducted on similar subjects in open and distance universities. Accordingly, the researchers in this study tried to evaluate the useful indicators and variables of the labor market in open and distance universities. The main research question is: What are the key labor market factors affecting students' entry into open and distance education institutions?

Methods

The research method is documentary, and the data were collected and analyzed using a documented procedure. In the analytical documentary research method, the researcher collects research data about the actors, events, and social phenomena from among the available sources. Such a method could provide the techniques needed to study the research background (27). In this method, first, the indicators and variables were extracted using the Delphi method and document examination technique. Then these indicators were distributed among 15 professors of higher education, economics, and social sciences to be corrected and reviewed. The Delphi method was used to select the variables. In this method, various articles were examined to extract the variables and indicators that are important in university enrollment. Then these indicators were provided to the university professors so that they can make alterations at their discretion. Finally, we put those indicators in the regression model and

performed the estimate. The main goal of the Delphi method is to predict the future based on the convergence of expert ideas. In this way, individual assumptions about future evolution can be rectified. The emergence of a specialized group norm is the desired result. Other important goals of this method are to help make decisions about complex problems and solve these problems. This method is designed to be used to solve complex and urgent problems that go beyond the capabilities of a single individual. This method is used in planning, management, and administrative matters, and can be used by a variety of disciplines including business, politics, industry, medicine, educational planning, urban planning and regional planning. Delphi technique relies on anonymity, controlled feedback, and statistical group response, and therefore avoids individuals' influence on group discussions, or group pressures to conform. In this way, it helps with achieving a reliable consensus of expert opinions.

The data were collected from the Center for Statistics of Iran, the Ministry of 'Cooperatives, Labor and Social Welfare', and the Center for Statistics of PNU. Data from 2001 to 2014 were reviewed because the data form this period were fully available to the researchers. 33 index with a linear regression analysis is below:

$$DLNS1=C+LBT+LYK+LU+DLNT+DLCPI+DLYF+DLN2+DLBA$$

Where;

DLNS1 refers to the number of undergraduate students at PNU; C refers to intercept; LBT refers to the total state budget; LYK refers to the average income of productive workers; LU refers to unemployment rate among 15-24 year olds; DLNT refers to the total population; DLCPI refers to consumer price index; DLYF refers to the income of master's graduates; DLN2 refers to workforce with high school diploma and DLBA refers to tertiary budget.

$$DLNS2=C+DLSE+LSEE+DLCT+LGDP+LGNP+DLNEE+LYA+DLYD$$

Where;

DLSE refers to total industrial workforce;

LSEE is the ratio of educated employees to total workforce; DLCT refers to student loan; LGDP refers to gross domestic product; LGNP refers to gross national product; DLNEE refers to the active labor force; LYA refers to the average family income; DLYD refers to average income with a high school diploma.

$$DLNS3=C+LB1+LS3+LCA+LYL+LNE+DLN3$$

Where;

LB1 refers to the number of urban family members; LS3 refers to elementary school student population; LCA refers to family expenditure; LYL refers to average salary with a bachelor's degree; LNE refers to the number of people employed in industries; DLN3 refers to workers with a higher education degree.

$$DLNS4=C+LB2+DLS2+LS1+LSK+DLSA+DLSAE+DLN1+LYE+LSF$$

Where;

LB2 refers to the number of rural family members; DLS2 refers to the number of junior school students; LS1 refers to the number of high school students; LSK refers to tuition for agricultural students; DLSA refers to tuition fees for students of experimental sciences; DLSAE refers to tuition for humanities students; DLN1 refers to the population of students or graduates in the labor market; LYE refers to national income; LSF return to tuition fees for technical and engineering students.

In order to analyze the data, the ordinary least squares regression model was used. Time series econometric techniques may lead to false, unstable regression. Extended Dickey-Fuller test must be used to ensure that this method would accurately evaluate the variables. In this test, the Dickey-Fuller test statistic is associated with a significant amount evaluated by McKinnon. If the resulting number is higher than the numerical value of the McKinnon test, then the null hypothesis will not be accepted for a unit root. To determine the independent variables, the determination coefficient and the determination adjustment coefficient were used. The variables depend on two components,

which are divided according to the explained and unexplained changes. The degree of the abovementioned changes would affect and increase the determining factor. Therefore, using the changes in coefficients helps with determining the type of variables based on redundancy and usefulness of these variables. Also, efforts have been made to reduce diversity of independent variables. These variables are divided into economic, social, and labor market variables and are interpreted after estimating their effect on the number of students. Since the use of an unstable time series in conventional econometric methods may lead to false regression, it is necessary to ensure that the time series used in estimating the pattern parameters under consideration is first performed before making any estimates. One of the most common methods is the generalized Dickey-Fuller test. In this test, the statistics related to the generalized Dickey-Fuller test are compared with the critical values of McKinnon's table. If the absolute t-value of the calculations is higher than the absolute value of the McKinnon statistics, the null hypothesis based on the existence of a unit root is rejected, indicating that the time series is stable. Otherwise, the time series will be unstable and the time series stability must be examined by differentiating them. MICROFIT and MIPLE software were used to evaluate the variables. The value of the above variables is effective in increasing the amounts of factors. The number of students was the reason for using a time series of independent variables. Accordingly, to evaluate the variables and their impact on each other, all variables must be evaluated in combination to obtain their value. Therefore, in these analyses, only economic, cultural and social factors remain unaffected, but a combination of these factors must be evaluated. The data and factors in this article have been adapted from Farajollahi and colleagues (28).

Data Collection Centers

In this study, data were collected from various centers. The data obtained from Payame Noor University are as follows: the number of

undergraduate students at PNU, student loan, tuition for agricultural students, tuition fees for students of experimental sciences, tuition for humanities students, and tuition fees for technical and engineering students.

The data obtained from the Statistics Center of Iran are as follows: total state budget, average income of productive workers, unemployment rate among 15-24 year olds, total population, consumer price index, tertiary budget, total industry workers, the proportion of trained workers to total workers, gross domestic product, gross national product, average family income, urban family members, population of primary students, family expenditure, undergraduate degree income, number of workers employed in industries, workers with a higher education degrees, rural family members, number of middle school students, number of high school students, national income.

The data obtained from the Statistics Center of the Ministry of 'Cooperatives, Labor and Social Welfare' are as follows: population of active labor force, population of students or

graduates in the labor market, master's degree income, workers with high school diploma, and high school diploma income.

Results

Enrollment in higher education is influenced by labor market conditions, and for that purpose researchers evaluate various indicators in their research. In this paper, we have identified eight factors as the labor market indicators influencing students' entry into open and distance institutions (Table 1).

Table 1, shows the mean, median, and standard deviation of the variables in this study. For example, the mean, median, and standard deviation of the number of undergraduate enrollees at PNU are measured at 662863, 75637805 and 287264 respectively.

The question raised in this study is: What are the practical labor market factors influencing student enrolment in open and distance education institutions?

Table 2 examines the coefficients, standard error, t-ratio, and P-value of labor market conditions to answer the research question.

Table 1: Descriptive Statistics of Variables

Variable	Mean	Median	Standard deviation
Number of undergraduate enrollees at PNU (DNLS) (People)	662863	75637805	287264
Average income of productive workers (LYK) (Rials)	400193378.8	283313955	304644192.5
Population of students or graduates in the labor market (DLN1) (People)	4233406.889	4210030	691785.63
Active labor force (DLNEE) (People)	23518118.1	23484068	297589.7
Workers with higher education degrees (DLN3) (People)	4233406.8	4210030	691785.63
Workers with high school diploma (DLN2) (People)	237885.33	191252	131528.3
Number of workers employed in industries (LNE) (People)	1897934.3	1214237	2588008.1
Total industrial workforce (DLSE) (%)	31.7	31.8	1.36
Proportion of trained workers to total workers (LSEE) (%)	18.24	18.24	3.48

Table 2: Labor market factors coefficients

Variable	Coefficients	S.E	T-Ratio	P value
LYK	0.0066	0.044	0.150	0.888
DLN1	4.406	2.984	1.476	0.214
DLNEE	2.824	0.723	3.903	0.017
DLN3	0.045	0.140	0.320	0.758
DLN2	0.399	0.077	5.144	0.007
LNE	-0.078	0.164	-0.475	0.649
DLSE	8.458	2.553	3.312	0.030
LSEE	0.087	0.051	1.692	0.166

Table 2 shows that the active labor force (DLNEE) (Beta= 2.824, P=0.017) and workers with high school diploma (DLN2) (Beta= 0.399, P=0.007) had a positive and significant effect on students' entry into open and distance institutions, but the number of workers employed in industries (LNE) (Beta=-0/078, P=0.649) had a negative impact on students' entry into open and distance institutions.

Discussion

This study utilizes a qualitative method and OLS model to analyze the data collected from 2014-2001 and to identify practical labor market factors affecting enrollment at Payame Noor University. The results show that the active population and the workers with high school diplomas have a significant impact on student enrollment in open and distance learning institutions. The results of this study are consistent with that of konstantinovski and Poipova (7), Kolesnikova et al. (8), Albert (24) and Varga (25). Accordingly, when the market conditions are inadequate or poor, employment levels decline and opportunity costs of participating in higher education are also reduced; thus many people prefer to invest in higher education.

The number of workers employed in industries has lowered student enrollment in open and distance education institutions. The results of this study were consistent with the result of the studies by Hillman and Orians (6) and Oppedisano (23). Therefore, if people can earn more income without adequate education, the demand for higher education in areas with high incomes will decline. The results in this section are inconsistent with studies by Boccanfuso et al. (14), Okolie et al. (15), Franco et al. (16), Agyeman and Malherbe (17), and Aracil et al. (18).

Students' understanding of the realities of the contemporary job market is instilled in them through educational institutions, and there is no academic discipline dedicated to this purpose. Given the job market uncertainties for graduates, those students who internalize the importance of putting

more effort into career planning will be more inclined towards planning and goal-oriented activities. The internalization of responsibility for managing career paths leads to a desirable level of career path management. Introducing industrial complexes, professional institutions and chambers of commerce into academic environments enhances students' perceptions of relevant career aspirations and complement practical strategies for investing in job market opportunities.

Policies to improve the quality of education at the university level can lead to significant developments. Therefore, more attention should be paid to the quality of education at all levels. If this is taken into account, governments can potentially improve the labor market conditions for highly skilled people in different ways, such as better employment prospects, higher-quality jobs, and higher wages and greater job security.

Various studies indicate that, in view of the job market demands, higher education graduates must enhance employment-related skills such as general and specific skills appropriate to the growing needs of the market. These skills include teamwork, communication, organizing, planning, decision making, leadership, problem-solving, information technology management, self-motivation, innovation skills, creativity skills, time management, computer literacy, skillful use of tools, reviewing, productivity, quality control, entrepreneurial skills, foreign language skills, interpersonal skills, adequate reading and writing skills, adaptability skills, and analytical skills.

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Availability of data

The data that support the findings of this study are available from the corresponding author on request.

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Authors' Contributions

Dr. M F devised the study concept, designed the study and critically revised the manuscript. A Sh collected data, performed the analyses and revised the manuscript.

Ethical Considerations

In this study, the researchers used data from the Statistics Center of Payame Noor University and the Statistics Center of Iran and the Ministry of Cooperatives, Labor and Social Welfare and did not use human subjects for research.

Conflict of interests

The author declares that they have no conflict of interests.

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