

Market Demand of Private University Graduates: An Empirical Analysis Using Skills Needed for Development Partner

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ABSTRACT

In the onset of 1980, Government, educators, and employers prepared a series of reports identifying key skills and implementation strategies to guide students, workers towards meeting the demands of the changing world. Finally, the abridged list of skills refers to the learning skills, literacy skills, and life skills which are felt important for the success of students in the current situations. The students required these skills when shift to college, university, workplace and in full-aged life. The components of those skills were: creative thinking, collaboration, communication, creativity, technical literacy, media literacy, computer literacy, flexibility, initiatives, social-skills, productivity, and leadership.

To provide knowledge and training on those skills individual academic institutions required standards capacity level for producing the right graduates. In our society a significant level of gaps persistently lying between the demand and supply of human resources. This may result large percentage of structural unemployment. As a result, it is felt to design the study for finding out the immediately needed skills, and skills to be made available in the moderate time frame, and skills to be made available in the remote time frame. These have been worked out by interviewing 300 passed out graduates from 10 selected universities functioning in our society. The study validates the data collected from the students holding discussions with employer's representatives and organizing FGD.

A binary logistic-regression model along with PCA techniques were deployed for grouping the skills into immediate, moderate time remote time frame. The estimated results of the parameters of the model are found very significant which means that the model fitted to the data significantly.

On the basis of the estimated model, the immediately, needed skills are identified as communication, creativity, initiative and media literacy. The second group of skills that should be made available in the moderate time frame is included as: critical thinking, information literacy, leadership and productivity. Lastly, the study suggested that the skills on technology literacy, collaboration, flexibility and social-skills should be made available for building a complete man in the long time frame because these concepts, knowledge, and skills depend on learning and practices with sincerity.

Keywords: Logistic Regression, Odds ratio, Principal Component Analysis, Eigen values.

1. INTRODUCTION

Introduction Bangladesh is a country comprising of labour force size of 62.2 million estimated in 2015-2016. The unemployment size of labour force traditionally estimated for three different age groups such

as: 15-29, 30-64, and 64+. The unemployment size of labour force in the age groups 15-29,30-64 and +64 were estimated at 8.7%, 1.90% and 0.92 respectively. The survey also estimated a total unemployment rate at 4.2%. These large sizes of unemployment deserve planning to avoid disaster in the economic growth arises due to unemployment. These gloomy pictures of unemployment deserve analysis on supply and demand sides of labor force in a strong coordination manner. As a part of policy, Green University of Bangladesh a privately-owned university takes an initiative to know about the persistent level of demand and supply levels of graduates passed out from private universities feeding the local and overseas employment market with skills level needed for sustainable employment market in the 21st century. The Green Business School under the Business Faculty took initiatives to find out how the knowledge levels on identified 12(Twelve) skills influencing the job market. The study also attempted to know that knowledge required immediately, in the medium time frame, and in the long distance time frame in the 21st century.

The analysis shown off that the higher level of performance on all the twelve skills influence the employment level significantly. The analysis estimated ODDs ratio to know if the increasing levels of knowledge influence the employment market. The results have been showing that the training, knowledge and skills can improve the employment size by 4.85 times higher compared to the existing level. The study also attempted to reveal the employment levels of the respondents and test the consistency levels of the current employment with the academic achievements,exposures of employers about the knowledge and skills required for hiring, estimates aggregate and average skill levels, and capacity levels of the institutions for providing knowledge and skills continuously to the knowledge thirsting young people.

2. BACKGROUND

Bangladesh has a huge burden consisted with huge educated unemployed graduates passed out from the higher education institutions (HEI). The policy makers are continually doing exercises on how the number of employments can be enhanced to insure development and make it sustainable for the future generation. For the promotion of employment levels policy makers, business organizations and researchers suggested to produce human resources having skills that can play vital role in creating more employment opportunities. It is indeed that the infrastructure and related facilities are not found available in the institutions giving higher education in the society. As a result, institutions have to work for developing required facilities to create appropriate human resources according to the emergence of domestic and international needs. So, the infrastructure needed to be made available in individual institutions for building capacities to provide knowledge and skills to the knowledge thrusting young people of the country. The needed skills and the availabilities of capacities may be classified as: short run, midterm and long run. This situation induces us to know the position of identified individual skills in our necessities in different time frame. As a result, this study has been formatted also to suggest that the capacity levels of institutions to be improved at such a level that an individual can obtain better knowledge and skills to fit them in the employment market.

3. LITERATURE REVIEW

Mazumdar Quamrul H (2014) undertaken a study entitled “Analysis of Quality in Public Private Universities in Bangladesh and U.S.A.” The results of the study delineated that the students attending in private universities in Bangladesh are more satisfied than the students attending in public universities.

The study suggests that the result can be used by both public and private universities of Bangladesh for improving the quality of Higher Education.

HK Jeffrey (2015) investigates and finds support for the hypothesis that the demand for human resource managers is largely derived from the relative demand for professional, managerial, and technical employees with high levels of occupationally specific human capital. Strong demand for these employees significantly increases both employment and earnings of human resource managers, reflects the growing importance of occupational specific capital of firm performance and the practice of human resources.

Zewude BT, Ashine KD (2016) undertook study using Binary Logistic Regression Analysis in the assessment and identification of factors that influence students' academic achievements.

AlamMahabubul Gazi and Parvin Morshed (2017) undertaken a research entitled "Quality of Higher Education in Private universities in Bangladesh". The research is a qualitative study using interviews, perception, and observation conducted in private universities covering 71% of the university students. The result shows that the legislators, stakeholders, students, parents and academics consider private Higher Education as a tool for individual gain without deliberating HE as public goods which is vital for national development.

BIDS (2018) revealed in a tracer study that employment rate among graduates of HEI is higher in case of private university graduates. This was estimated at 44%, whereas the study found the percentage of employment level in case of public university graduates at 32%.

Radhika Kapur (2019) pointed, it is vital for individuals to obtain good educational qualifications, enhance their skills and apply for employment opportunities. The main aspects that have been considered in this research paper include, ensuring student success in employment opportunities, strategies for preparing students for employment opportunities, and development of skills for acquisition of employment opportunities.

Wadud, Mushfiq (2019) performed a study entitled "The Global on High Education". The report shows that the employment rate among graduates of private universities in Bangladesh is higher than that of graduates from public universities.

Hossain MM, Hossain MA (2019) pointed that the quality of private university is related more to its administrative activities than to its curricula. The results show that the quality management in higher education is reflected by educational, administrative and social qualities.

4. OBJECTIVES

The basic aim of the study was to identify successively important skills needed in the employment market in 21st century. With a view to raising suggestions for creating optimum level of employment the study attempted to fit a logistic regression model and used principal component analysis method on collected sample data. The study also collects and analyzes data on some vital social indicators that can reveal individual and institutional capacities.

The specific objectives of the study are as follows:

- (a) To assess the market demand of Private University graduates incorporating value of total skills levels through five different ordinal variables, aggregate the individual performance and threshold levels of knowledge and skills and testing a binary logistic regression model taking employments as dependent variable and test the significance of the parameter and odds ratio.
- (b) To know the persisting levels of skills gaps through the exposure of employer's representative.

- (c) To test the joint influence of persisting knowledge levels of private university graduates with total and threshold levels of skills (Considering 60% of ordinal total).
- (d) To classify the 12 different skills of 21st century for different time frame such as the skill needed in short time, mid-term, and in remote time frame using PCA technique and drawing scree plot graph of eigenvalues against the corresponding PC number.
- (e) To test if the persisting levels of knowledge, skills of graduates are consistent with the academic achievements.
- (f) To prepare a list of suggestions on the basis of the estimated results so that a congenial environment in higher education sector can be continued.

5. DATA AND METHODOLOGY

5.1 Data

The study used primary data collected through on-line and personal interview from the unemployed graduates and graduates working under different companies and organizations after completing graduation from private universities. The study also attempted to collect data from the employers and conducted FGD for validating the information provided by the employed and unemployed graduates under primary sample units. Regarding the selection of primary sample units and secondary sample units' conventional scientific techniques were applied.

5.2 Methodology

The methodologies of the study were based on the approaches and strategies drawn in the line with objectives and scope of the study. The tools for different activities under methodologies adopted as felt appropriate. The methodologies for different activities were: preparation of study design, review of secondary documents, estimation of sample sizes, and preparation of sample frame, field visits, processing of primary data and writing report. The study used a quantitative data collection tool (Semi-structured questionnaire) and qualitative data collection tool (open ended checklist for administering FGD). Both the tools have been developed using persistent indicators to be required to achieve the objectives of the study.

- i. Collection of data from secondary source such as from the documents of Labor Force Survey, Annual Report of UGC, Economic Review, Annual Report of Selected Private Universities and other necessary publications were reviewed for interpretation of the results.
- ii. Selection of primary sample units which is the universities from where the respondents were graduated. The data has been collected using pre-tested questionnaire and interviewing graduates of 10(Ten) randomly selected Private Universities.

5.3 Selected Universities

For selecting universities, random number table was used giving priorities to the universities having inception year earlier to 2010. The main reason for this approach was that the universities having the inception years after 2010 were not found able to provide sufficient information required to be used in the analysis of the study.

The primary sample includes the following private universities:

(1) University of Development Alternatives	(6) Pondru University of Science and Technology
(2) Presidency University	(7) Bangladesh Islami University
(3) Green University of Bangladesh	(8) Independent University, Bangladesh
(4) Metropolitan University, Sylhet	(9) Sylhet International University
(5) East West University	(10) Dhaka International University

5.4 Estimation of sample size

The numbers of sample units for the study were selected using the following scientific formula:

$$n = \frac{z^2 PQ}{d^2}$$

$$z = 1.96$$

P = Passed out students from private university (0.20464)

$$Q = 1 - P = 1 - 0.20464 = 0.79536$$

d = Error level between actual and estimates (d=0.05). n = 250

It was felt necessary that there should be an adjustment in the sample size raising the number to 300 adding more 50 to the estimated number. The changes have been made for the convenience of allocation of the sample units over the primary sampling units i.e. the individual private universities.

5.5 Allocation of Sample for different Universities

The universities are the government approved private universities. In this regard, for selecting the primary sample units list of approved private university was used, which is moving forward with approved curricular and co-curricular activities and got permission before 2010. On the other hand, respondents, the graduated students of private universities were selected randomly detaining the order to build information.

Table 1: Selected private universities for collecting data

Sl.No.	Selected University	Students on roll (2019)	Passed out (2019)	Sample size
1.	University of Development Alternative	2406	654	19
2.	Presidency University	2185	490	15
3.	Green University of Bangladesh	4343	826	24
4.	Metropolitan University	1863	775	23
5.	East west University	12432	2073	60
6.	Pondru University of Science and Technology	1739	372	11
7.	Bangladesh Islami University	2349	1406	42
8.	Independent University, Bangladesh	6739	1166	35
9.	Sylhet International University	890	361	11
10.	Dhaka International University	6466	2007	60
	Total	41412	10130	300

Source: Passed out and on roll graduates, UGC report.

Table 1 is showing the number of primary sample and secondary sample units. The sample is estimated using number of students passed out from Privet Higher Education Institution. The numbers of respondents were selected using the ratio of passed out students from the selected private Higher Education Institutions.

5.6 Data Collection

A tanning for data collection team was organized where the faculty experts indifferent fields, organizing field work, and collection of data from the field played active role for providing the training. The training was organized with a view to provide sufficient knowledge to the data collection team members. Three sets of questionnaires were prepared: one for collecting information from passed out graduates, one for conducting FGD and last one for collection of exposures from employer's representatives. The collected data was checked and validated before performing analysis.

5.7 Identification of Multivariate Model

The objective of the study was to check if the knowledge levels of 21 century plays vital role for increasing the persistent employment level or reducing the unemployment level of the country. As a result, the problem has been formulated to find the effect of predictand Y of a change in predictors(X). Moreover, to test the expected change in Y arising from a change in X, when Y is binary, its conditional expectation is the conditional probability and that is equals to 1, so the expected change, in arising from a change in X is the change in the probability that $Y = 1$.

To deal the problem of this type the statistical theory suggests using binary logistic regression model to fit the generated data and drawing conclusions. The dependent variable can be coded as $Y=1$, if the respondents is employed and $Y= 0$ if unemployed for a given particular set of values of predictor. The problem is defined by the binary dependent variable. The predators are defined by the knowledge levels of the respondent. These knowledge levels are attempted to capture by asking about the standard of knowledge levels on 12(Twelve) different skills and standardized in Likert scale. Those standardized knowledge levels again categorized by another binary predictor. As the main objective was to identify and capture the standard levels of knowledge for initiating skill development activities of the country. Of the independent variables x_1 , x_2 , and x_3 the interpretation of $E(Y)$ is the probability of the regression model naming the logistic regression equation and is defined as:

$$E(Y) = P (Y=1/ x_1, x_2, \text{ and } x_3)$$

$$E(\hat{Y}) = \frac{e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2}}{1 + e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2}}$$

Where,

$y = 0$ if the person is unemployed and 1 if the person is employed,

$x_1 =$ average levels of skills,

$x_2 =$ achieved standard of 21st century skills levels,

$x_3 = 0$ if the respondent does not have particular knowledge level and 1 if the respondent has particular knowledge level.

5. 8 Estimation of parameters of the Logistics regression model

The parameters of the model are estimated using SPSS for drawing conclusions about the problem designed by the binary logistic regression. The values on Cox and Snell; Nigelkerke and -2 Log likelihood, and Hosmer and Lemeshow test were estimated and recorded for making comments about the variation happened in dependent variable and its significance level on changes happened on independent variables. These types of parameters are usually suggested when binary logistic regression is used to capture the problem.

5.9 Estimation of Parameters of the Logistics Model

The parameters of the model are estimated using SPSS for drawing conclusions about the problem designed by the binary logistic regression. The values on Cox and Snell R^2 ; Nigelkerke R^2 and -2 Loglikelihood, and Hosmer and Lemeshow test were estimated and recorded for making comments about the variation happened in dependent variable and its significance level on changes happened on independent variables. These types of parameters are usually suggested when binary logistic regression is used to capture the problem.

Table 2: Estimated values of the parameters of the model

Predictor	Co-efficient	Stand. Error	Wald	DF	Sig.	“Exp β ”	95% CI for “Exp β ”	
							Lower	Upper
Constant	-7.753	1.571	23.006	1	0.000	0.001	-	-
Knowledge	0.226	0.052	19.231	1	0.000	1.254	1.133	1.388
Threshold knowledge level	1.934	0.587	9.853	1	0.002	6.917	2.068	23.138
Cox and Snell $R^2 = 0.460$; Nigelkerke $R^2 = 0.642$; -2 Loglikelihood = 192.784 Hosmer and Lemeshow Test: Chi-square 30.493; DF=7; Sig. = 0.000								

Source: Using the collected data through administering questionnaire.

Table 2 is representing the values of the estimated parameters. The Wald tests are showing that all the parameters are significant. The estimated values of Cox and Snell R^2 , Nigelkerke R^2 and Hosmer and Lemeshow Chi-square values are showing that the fitted model is significant. On the other hand, the log-likelihood value of a regression model is a way to measure the goodness of fit for a regression model. The value of loglikelihood for a model ranges from negative infinity to positive infinity. The estimated value is showing significantly higher value. Thus, it can also be concluded that the model fits the data set significantly.

The estimated values also explaining that the probability in favor of winning employment at the down of threshold skill level is estimated at 0.650. On the other hand, the probability of obtaining an employment at the considered threshold skill level is estimated at 0.91. It is pointed that the threshold skill level is considered 0.60 percent (36 out of aggregates accounted at 60). Thus, it can be concluded that the odds of obtaining an employment who have threshold levels of skills consistent with the skills required in 21st century is 4.85 times higher than the odds who does not have threshold level of skills.

5.10 Test the Significance level of parameters

(I) Hypothesis

$$H_0: \beta_2 = 0, H_A: \beta_2 \neq 0 \text{ and } H_0: \beta_3 = 0, H_A: \beta_3 \neq 0$$

The significance levels of the independent variables at 5% level are tested and results are presented in above table. The estimated values of the parameters of the variables are showing that the independent variables x_1, x_2, x_3 are found statistically significant.

5.11 Test the overall significance of the parameter

$H_0: \beta_2 = \beta_3 = 0$

H_A : One or both of the parameter is not equal to zero.

The test for overall significance levels of the selected model is based upon Hosmer and Lemeshow Chi-square test statistic. The estimated chi-square value is 30.493 with df 7 at 5% level of significance is much higher than the critical value. Thus, the null hypothesis may be rejected and it can be concluded that the model is significant.

5.12 Identification of immediate needed skills in 21st century

The upcoming sections show output of analysis to find the immediately needed skills in the 21st century. The main task in this section is to find out the important and successive less important demanding skills of 21st century using the Principal Component Analysis technique through Extraction Method.

5.12.1 Pertinence for testing consistence of FAT

To test whether the factor analysis technique is consistent to find the important and successive less important demanding skills out of the identified skills for the 21st century for achieving sustainable economic development KMO and Bartlett’s test were performed.

5.12.2 Results of KMO and Bartlett’ Test

Kaiser-Mayer-Olkin Measure of Sampling Adequacy		0.719
Bartlett’s Test of Sphericity	Approx. Chi-Square	284.368
	df	66
	Stg.	.000

The approximate value of KMO test is found very close to 1, which represents that factor analysis technique, is applicable for sorting the factors. On the other hand, the estimated value of approximate chi-square statistic is 284.368 with 66 degrees of freedom at 5% level of significance the p-value is less than 0.05. Thus, there is significant correlation among variables.

5.12.3 Estimation of Communalities

The values in the **Table 3** are showing the proportion of variance explained by each factor. It is noted that communalities are defined as the sum of squared factor loadings for the variables. The variance of each factor is standardized to unity and partitioned into two parts such as: communality of the factor and specific variance of that factor which is accounted to 1. Therefore, the maximum value of communality a factor can take be accounted to 1, which is also correlation among the variables.

Table 3: Results on estimation of Communalities for extraction of factors

Sl.No.	Factors	Initial	Extraction
1.	Critical Thinking	1.000	0.527
2.	Creativity	1.000	0.579
3.	Collaboration	1.000	0.337
4.	Communication	1.000	0.607
5.	Information Literacy	1.000	0.512

6.	Media Literacy	1.000	0.589
7.	Technological Literacy	1.000	0.435
8.	Flexibility	1.000	0.390
9.	Leadership	1.000	0.464
10.	Initiative	1.000	0.558
11.	Productivity	1.000	0.494
12.	Social-Skills	1.000	0.339

N.B. Results on Principal Component Analysis.

Table 4: Value of total variance explained by the factors

Total Variance									
Factor	Initial Eigen Values			Extraction Sum of Squared			Rotation Sum of Squared		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.392	19.933	19.933	2.392	19.933	19.933	2.078	17.318	17.318
2	1.265	10.543	30.476	1.265	10.543	30.476	1.464	12.202	29.520
3	1.109	9.241	39.717	1.109	9.241	39.717	1.168	9.729	39.249
4	1.083	9.021	48.740	1.083	9.023	48.740	1.139	9.491	48.740
5	0.974	8.119	56.859						
6	0.940	7.831	64.690						
7	0.871	7.257	71.947						
8	0.815	6.795	78.742						
9	0.748	6.231	84.973						
10	0.661	5.507	90.481						
11	0.592	4.929	95.410						
12	0.551	4.590	100.000						

Source: Results obtained from Principal Component Analysis.

Table 4 shows the results of factor analysis using PCA technique. The initial number of factors is accounted 12. However, all the factors will not be retained. The most favorable factors are identified considering the Eigenvalues, of the correlation matrix. As a result, Eigenvalues are considered where the Eigenvalues of the correlation matrix is more than 1. The analysis is showing that out of twelve Eigen value four of them have number more than 1 in correlation matrix. These four factors explain 48.74% of variation. The extraction sum of squared panel of the table corresponding to the number of factors can be given priority. The panel rotation sum of squared loadings is obtained rotating factor loading orthogonally using varimax rotation. The total variance is accounted for redistributing over the four extracted factors. The result is showing that 48.74% variance is redistributed over the four factors.

Figure 1: Scree plot obtained by using eigenvalue and corresponding factor numbers.

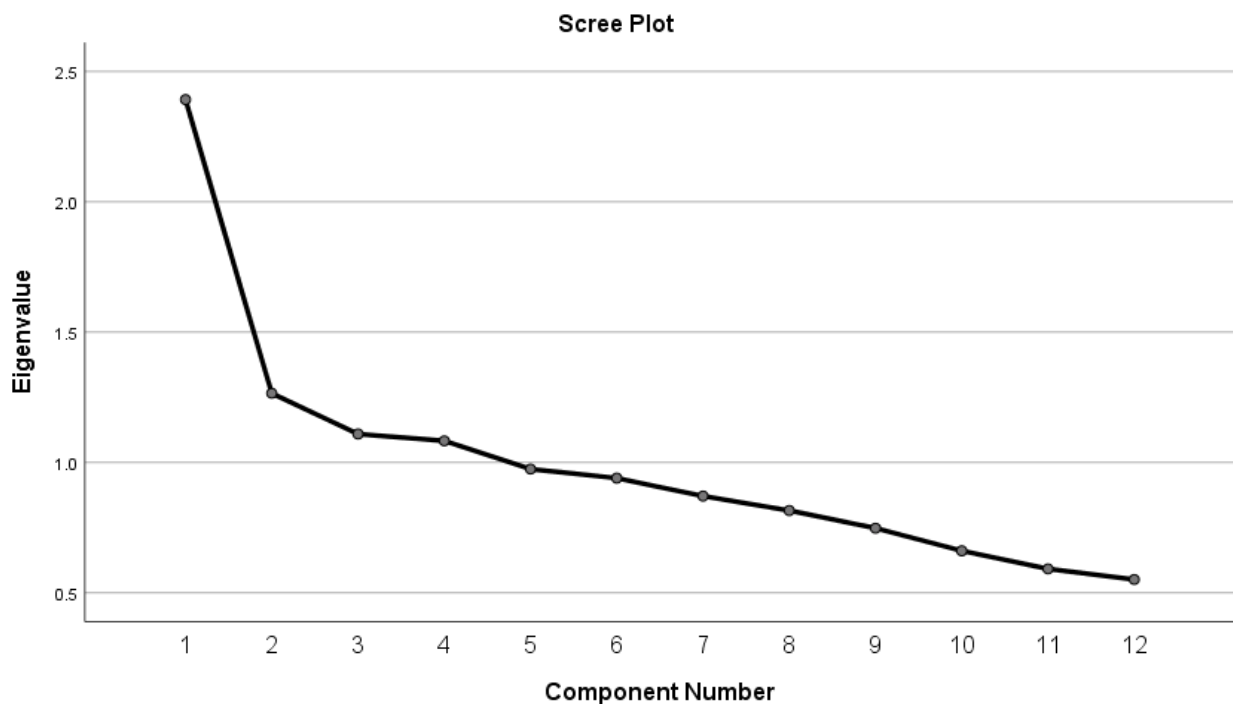


Figure 1: Representing the ‘Scree’ Plot between the eigenvalue and factor numbers. It is clear from the figure that from the 9th factor and on the line is almost flat .This means that each successive factor is accounting for smaller amount of total variance.

This plot is called “ Scree plots because it is looking like “scree” sloping , where rocks falls down and accumulated in the side of a mountain.

6. EMPLOYMENT AND UNEMPLOYMENT LEVELS

The study looks at the employment position of the respondents, consistency of academic requirements with academic achievements.

Table 5 is carrying the numbers of employed, un-employed, and self-employed respondents. Out of 300 respondents 68.33% were found employed in different sectors, 26.66% found un-employed, and other 5% reported that they have been involved in their own business. Thus, it is very promising that the respondents who are operating their own business amongst them 20% are female whereas 80% of them are male.

Table 5: Employment position of the respondents

Employment Level	Male	Female	Total
Employed	166	39	205
Un-employed	68	12	80
Self-employed	12	3	15
Total	246	54	300

Table 6: Consistency of current employment with academic achievements

Respondent	Yes	No	To some extent	Total
Male	169	47	30	246
Female	31	16	7	54
Total	200	63	37	300

Table 6 is representing the number of respondents classified according to the nature of works of current employment with their academic achievements. Out of total respondents 66.67% have mentioned that their training & education are very consistent with work they are performing. The next 21% have mentioned that their education and training are not at all consistent and last 12.33% have mentioned training & education are consistent to some extent. To check the strength of the results a hypothesis is tested stating whether or not the persisting education process is matching with the market demand.

Decisions: The estimated value of Chi-square is less than the critical value at 5% level with 2 degrees of freedom. Thus, it can be concluded that the persisting levels of training and education are not matching completely with the market demand.

7. AGGREGATE AND AVERAGE LEVELS OF SKILLS

Respondent attended in the FGD entreated to mention the personal competency levels on required skills of 21st century. Investigated aggregate highest levels are found 40.5. The estimated average of aggregate skills investigated at 33 which are found very close to the hypothetical threshold skill levels used for testing the logistic regression model.

8. EMPLOYERS EXPOSURE

Employer’s exposure can play a vital role on the creation of graduates by public/private HEI (Higher Education Institution). In this regard, a questionnaire was administered for knowing their preferences to: types of graduates they are very likely to select for giving employment, priorities on perceptive skills, observed skills gaps, and skill and training under possessions. It is found that all these attributes can keep the graduates comfortable in their working place. The employers’ representative has given answer on all those attributes according to the structured and un-structured questions.

8.1 Considerations of Employers on Recruitment

The opinion of employer’s representatives has been recorded on the selected issues which are highlighted in the up-coming sections.

i. Preference on Fresh Graduates

Employers representatives were entreated question to know about the types of graduates such as: fresh graduates, graduates with experience and neither fresh nor graduate with experience to fill up the entry level position. About 40% representatives mentioned that they do not give such preference for filling up the entry level position. The rest 60% of the participants have mentioned that they give preference to fresh graduates for filling up the entry level positions.

ii. Major Skills

Employer's representatives mentioned the major skills they give preference for selecting candidates. The representatives have mentioned that they usually give preference to the candidates having the following skills: Critical thinking, Communication skills, Knowledge on information technology, Stress tolerance, Professional knowledge, leadership skills, and hardworking people.

iii. Visible Skill Gaps

To know the persisting skill gaps on graduates an open-ended question was administered during the interview session with the employer's representatives. They have pointed some specific gaps, these are: punctuality, dedication, leadership, information technology, communication skills and stress management.

iv. Skills Requirement on Fresh Graduates

Employers' representatives shared about the skills required on fresh graduates to perform better in the work place. This is also another open-ended question. The employer's representatives have also mentioned that some types of skills/ training can make employees comfortable in the workplace. These are: Computer skills, Communication skills, Management skills, Team works, Time management, and Cloud accounting.

9. FOCUS GROUP DISCUSSION

The qualitative approaches such as FGD were undertaken with a view to validate the information collected directly from the field. Ten participants attended and expressed their opinion according to the structured and unstructured questions.

The participants were asked about their employment status, time required for obtaining employment, types of organization they are working, awareness about the requirement of skills for the 21st century, and about the most pertinent skills required on every individual for getting employment. The participants were also entreated if they had any plan for developing their own enterprise with a view to develop an enterprising society.

- i.** About the time required for obtaining employment, 20% mentioned that they are trying for a job for more than a year, 20% mentioned they had to wait for the job for long 4 -6 months. Out of the participants of FGD the 30% mentioned that had to wait for long 7-9 months, and the last 30% mentioned they required more than one year for obtaining their jobs.
- ii.** Participants supplied information about the usual skill required for getting promotion in the work place. The responses come from the participants consisting with the skills required for 21st century.
- iii.** Participant's entreated information about the usual skills required for promotion in the work place. The responses come from the participants consisting with skills required for 21st century. The verbatim of respondents about the successive skills required for promotion are: soft skills, previous experience, creativity, leadership, and communication.

10. CAPACITY LEVELS OF INSTITUTIONS GIVING HIGHER EDUCATION

The capacity levels of higher education institutions comprised of the task preparing efficient future professionals, conducting meaningful research, engagement with community and stake holders to tackle individual, local, national, regional and global challenges. As a result, it was attempted to know from the graduates about the capacity levels of the institutions of graduates from where they have been educated asking very short anticipated questions and answer was collected in scale. Out of 300 respondents about 34.66% respondents have mentioned that the respective institutions have only 50% capacity to provide skills to their graduates. On the other hand, 28% of respondents have mentioned that their institutions have 25% capacity levels and about 21% respondents have pointed that their institutions possess 75% capacity for providing knowledge and skills. Last 16.33% respondents have mentioned that they observed more than 75% capacity in their institutions for providing knowledge and skills to their students.

11. CONCLUSIONS

Creation of employment is a vital part of overall economic development. The positive growth on this macroeconomic indicator is a very tedious job. Considering, there should be a balance in the supply and demand sides of the Human Resources. Currently, many private and public institutions are working for taking care of the supply sides. On the other hand, demand is based on the volume of domestic consumptions and production in national and international markets. The demand in global market during 21st century has been identified the skill levels: Communication, Creativity, Initiative, Media Literacy, Critical Thinking, Information Literacy, Productivity, Leadership, Technology Literacy, Collaboration, Flexibility, and Social Skills.

In Bangladesh, private higher education institutions along with government higher education institutions have been working for creating the human resources. As a result, question comes forward that how well the graduated students have been able to cope up the demand sides within their knowledge and skills. This study has been designed to prepare visibility of this question.

To find the visibility, 10(ten) private universities and 300 graduated students of those institutions regardless on employment or unemployment and working in their own farm were intervened with questionnaire having structured and unstructured format.

The collected data are used to develop a binary logistic regression model and estimate the parameters of the model. The estimated values of the parameters have shown that the model fits the data very significantly. The estimated results have shown that the required skills for 21st century can successively be chosen by the institutions in their curriculum to participate in the activities on sustainable development. It is mentioned that the estimated results were also validated undertaking qualitative analysis such as: Single unit Focus Group Discussions (FGD). The collected data were found consistent with the parameters estimated in the analysis. The study helps drawing conclusive recommendations on capacity of the individual institutions for education and training, requirements for promotion, time required for obtaining employment.

12. RECOMMENDATIONS

Based on the examination of the estimated values of the parameters of the model, opinion of employer's representatives, and opinion of graduated and aspiring graduates participated in FGD the study proposed the following recommendations for further treatment.

- i. To add new HE institutions to the existing numbers attention to be given on proper uses of national endowment for ensuring sustainable development.
- ii. On the basis of information supplied by the respondents about the available market demand of knowledge and skills can be made available in the curricular activities of HE institutions classifying the necessities into short term, medium term, and long term.
- iii. In short term skills deliberation process may include: communication, media literacy, creativity, and initiative. The medium-term plan for adopting skills development program may include critical thinking, information literacy, productivity, and leadership. Finally, the long-term skill development program may include management of flexibility, technology literacy, social skills, and collaboration.
- iv. The analysis have shown that the odds of obtaining an employment who have threshold levels of skills consistent with the skills required for 21st century is 4.85 times higher than the odds who does not have threshold level of skills. Thus, the proper management on demanded skills will be helpful to increase the employment opportunities for the graduates of higher education institutions.
- v. Individual institutions needed to be enhanced the capacity levels for providing better skills to the graduates.

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