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Effects of cognitive ability on improving employment skills among post graduate students at the university level

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Abstract---Background: Cognitive skills determine how a person thinks, learns, and understands things. A student's success may be determined by the strength of cognitive skills. Employment has become a very sensitive issue for graduates in recent times. The researcher examined the effects of cognitive ability on improving employability skills among postgraduate students in a university. Aim of the Study: This study was conducted to see the effects of cognitive and employability skills. Methods: The authors applied the descriptive survey method in order to convert the data into natural log units. The Likert scale method was used to collect primary data on cognitive ability and employability skills in a survey research method that used a questionnaire. The simple random sampling technique was used in the present study. Results: It is inferred that among the six predictors, one dimension of numerical reasoning had the highest standardized coefficients beta, which indicates that it was the most important factor contributing to outcome-based education followed by spatial reasoning, logical reasoning, non-verbal reasoning, verbal reasoning, and abstract reasoning. It is observed that among the six predictors, one dimension personal management skill had the highest and standardized coefficients beta, which indicates that it was the most important factor contributing to the outcome-based education followed by fundamental skills, positive attitude, ICT skills, teamwork skills, and resilience. Conclusion: Universities, schools, colleges, and other institutions must undertake special programs to improve and evaluate the cognitive ability of postgraduate students other than their employability skills in order to prepare them adequately for future jobs.

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Introduction

Cognitive ability is defined as a general mental capability involving reasoning, problem-solving, planning, abstract thinking, complex idea comprehension, and learning from experience (Gottfredson, 1997). Employability skills refer to a set of transferable skills and key personal attributes which are highly valued by employers and essential for effective performance in the workplace. Unlike professional or technical skills, these employability skills are generic in nature, rather than job-specific, and are common to all work roles and workplaces across all industry types - for instance, communication and teamwork. Students with strong cognitive ability can learn quickly, handle multiple complex tasks simultaneously and be highly productive without needing much supervision. Cognitive ability start developing in childhood. They include abilities such as remembering, imagining, reasoning, perceiving, and problem-solving (Christian Fisher, 2022). As adults, we tend to be more set in our learning habits, though we're still able to adapt to increased pressures and challenges that require us to change. Cognitive ability can decline in adults from a variety of age-related causes, including hormonal imbalances, developmental disorders, diabetes, anxiety, and depression.

According to Saadat and Khatun, the process of job creation and job destruction in any labor market is based on a matching procedure that may involve hiring unemployed graduates, and there can be a significant lag in the process when there is an extensive amount of skill mismatch (Khatun & Saadat, 2020). Cognitive abilities have also been associated with specific decision-making processes in older adults, such as information search and strategy use. Mata et al. (2007) asked participants to select the most expensive diamond based on clues and assessed the relationship between cognitive ability and decision-making strategies. They found that fluid intelligence and reasoning abilities specifically accounted for the age-related variance in strategy selection during the decision-making process. Employability skills are indispensable in the current era of technological disruption and globalization. Employers complain about the insufficiency of skills among workers (Mourshed, M., Farrell, D., & Barton, D, 2012).

Methods

This was a descriptive survey method research study conducted with graduates who held a minimum of postgraduate students and had studied either in a university. A simple random sampling technique was used for the selection of the sample size, and the sample size was determined as 80 with a confidence level of 95%. Therefore, the value of $p < 0.05$ is taken to be significant. The research design was a survey method, where a prepared questionnaire was used to collect primary data. Numerical reasoning, verbal reasoning, abstract reasoning, logical reasoning, non-verbal reasoning, and spatial reasoning all of these were recognized as cognitive ability dimensions, and personal management skills,

teamwork skills, positive attitude, fundamental skills, re-silence, and ICT Skills all of these were recognized as employability skills dimensions. Multiple regression techniques were used to cognitive ability on improving employability skills.

Results

The above regression table summarizes the model performance with relevant analysis. R represents the multiple correlation coefficient with a range lies between -1 and +1. The R-value of the linear equation is (0.563) which shows that there is a moderate correlation among all the dimensions of cognitive ability. The coefficient of multiple determination of adjusted R square is (0.317). It can be, therefore, said that nearly 31.7 percent of variation is predicted in the dimensions of cognitive ability among postgraduate students [Table 1]. From the above ANOVA table, the 'F' value is significant (p-value is less than 0.05) which means the dependent variable outcome-based education is more reliable. Table showing that the significance value of 0.000 indicates that the combination of these dimensions significantly predicted the outcome-based education of postgraduate students [Table 2].

Table 1
Model summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.563	0.317	0.314	17.643

Table 2
ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4084.855	6	680.809	5.022	0.000
	Residual	149933.583	1104	135.564		
	Total	154018.438	1109			

Table 3
Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	96.358	1.059		90.969	0.000
NR	0.530	0.252	0.080	2.102	0.036*
VR	-0.300	0.263	-0.046	-1.143	0.253
AR	-1.001	0.284	-0.138	-3.526	0.000*
LR	-0.139	0.272	-0.021	-0.511	0.609
NVR	-0.343	0.306	-0.045	-1.120	0.263
SR	0.309	0.330	0.037	0.934	0.350

NR-Numerical reasoning, VR-Verbal reasoning, AR-Abstract reasoning
LR-Logical reasoning, NVR-Non-verbal reasoning, SR-Spatial reasoning

The above table shows that numerical reasoning and abstract reasoning had a significant prediction on the cognitive ability of postgraduate students at a 5% level of significance. It is inferred that among the six predictors, one dimension of numerical reasoning had the highest standardized coefficients beta, which indicates that it was the most important factor contributing followed by spatial reasoning, logical reasoning, non-verbal reasoning, verbal reasoning, and abstract reasoning.

Table 4
Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.513	0.263	0.259	10.130

From the above table, the multiple R of the linear equation is (0.513) which shows that there is a moderate correlation among all the dimensions of employability skill. The coefficient of multiple determination of adjusted R square is (0.259). It can be, therefore, said that nearly 25.9 percent of variation is predicted in the dimensions of employability skills of postgraduate students.

Table 5
ANOVA[a]

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	40523.303	6	6753.884	65.816	0.000
	Residual	113495.136	1104	102.618		
	Total	154018.438	1109			

Table showing that the significance value of 0.000 indicates that the employability skills dimensions significantly predicted the outcome-based education of postgraduate students.

Table 6
Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	41.582	2.652		15.677	0.000
PMS	0.668	0.098	0.231	6.830	0.000**
TS	0.328	0.114	0.103	2.878	0.004**
PA	0.446	0.128	0.117	3.478	0.001**
FS	0.344	0.084	0.157	4.085	0.000**
R	-0.307	0.108	-0.098	-2.841	0.005**
ICT	0.258	0.087	0.105	2.972	0.003**

PMS-Personal management skills, TS-Teamwork skills, PA-Positive attitude, FS-Fundamental skills, R-Resilience, ICT-ICT skills

The above table shows that all the dimensions of employability skills had a significant prediction on the outcome-based education of postgraduate students at a 1% level of significance. It is inferred that among the six predictors, one dimension personal management skill had the highest and standardized coefficients beta, which indicates that it was the most important factor contributing followed by fundamental skills, positive attitude, ICT skills, teamwork skills, and resilience.

Discussion

Chockalingam Viswesvaran et al. (2017) compared cognitive ability, the big five, task, and contextual performance of a meta-analysis. The findings of the study relationships between predictors such as cognitive ability and personality variables and the two outcome variables were assessed. The current study results obtained predicted the dimensions of cognitive ability among postgraduate students. Can and Derya (2020) studied the mediator effect of reading comprehension in the relationship between logical reasoning and word problem-solving. As a result of the study, the relationships between the variables were found to be positively significant. The present study's conclusion of the study revealed that there is a significant positive relationship exists between Cognitive ability and Employability skills among postgraduate students. Dania et al. (2014) observed the factors influencing the acquisition of employability skills by students of selected technical secondary schools in Malaysia. The results also obtained that the best predict students' acquisition of employability skills. The present study has also found that all the dimensions of employability skills had a significantly predicting of the outcome-based education of postgraduate students at a 1% level of significance.

Conclusion

Based on the current results, the researcher believes that postgraduates must emphasize improving their cognitive ability on employability skills. Universities, schools, colleges, and other institutions must undertake special programs to improve and evaluate the cognitive ability of postgraduate students other than their employability skills in order to prepare them adequately for future jobs. An enterprise-based survey (2013) on the assessment of skills of formal labor in the job of Bangladesh discovers that the current education system provides the skills which students demand and on the other hand, there is a greater need for cognitive ability to succeed in the employability skills yet current education system doesn't emphasize enough on these types of soft skills.

Recommendations

Cognitive abilities contribute to the gathering and organizing of knowledge, to the repeated accumulation and reconstruction of progressive knowledge, to the acquiring and retrieval of knowledge, and to its use in problem representation and solution. Cognitive abilities play a central role in both the attainment and

organization functions of educational achievement. It is merely a graduation certificate from a degree engineering college that can fetch a job him. Today a graduation certificate is of no value if it cannot imbibe the basic soft skills among the students. Academic studies can take the students to the fundamentals of the subject but developing the skills is more or less with the students to take it to the next level. Developing employability skills requires students with suitable skills, resources, and awareness of university practice. Students' employability skills will also be strengthened when students have access to relevant work experience through quality work-integrated learning programs, cooperative learning, or mentoring programs. Graduates must also be provided the opportunity of career counseling. To investigate the effect of cognitive ability on improving employability skills and employment outcomes of postgraduate students in the presence of dimensions, further research is suggested.

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