International Journal of Social Science and Education Research

ISSN Print: 2664-9845
ISSN Online: 2664-9853
Impact Factor: RJIF 8.42
IJSSER 2025; 7(2): 978-989
www.socialsciencejournals.net
Received: 21-09-2025
Accepted: 23-10-2025

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Employability Perceptions of Higher Education Graduates in India: A Case Study of Meerut District in Uttar Pradesh

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DOI: https://doi.org/10.33545/26649845.2025.v7.i2l.467

Abstract
The present paper examines the perception of employability in higher education graduates of public and private universities in Meerut, Uttar Pradesh. The perception of graduate students regarding on-campus support and its impact on employability has been discussed based on the primary data for the sample size of 450 students through a structured questionnaire. To assess the universities' performance, we have constructed an Education Development Index (EDI) by considering six parameters for both universities. The analysis employs a logit regression model to identify key factors influencing graduate employability in the selected region, such as family size, father's education, and university facilities. The findings emphasize the significance of these variables in determining job willingness while highlighting disparities between public and private universities in promoting employability skills. The study also contrasts the effectiveness of public and private universities in promoting skill development, providing valuable recommendations for policymakers and universities to enhance employability outcomes in the region. The paper provides actionable insights for policymakers and educational institutions to align their curricula and resources with labor market demands, thereby enhancing graduate employability in the Western Uttar Pradesh region of India.

Keywords: Higher Education. Employability, Education Development Index (EDI), Perceptions

Introduction
India is one of the highest populated countries, with the largest demographic dividend, and education is a cornerstone for India's development, addressing economic, social, and technological challenges (Ministry of Education 2020). By investing in education and implementing effective policies, India can harness the potential of its large population to drive sustainable development and improve living conditions (World Bank, 2019). Higher education plays an important role in converting this demographic dividend into working capital (Singh & Sharma, 2021) [18]. While India‘s higher education has rapidly expanded over the past 20 years, fewer graduates are coming out of Indian higher education universities with employable skills (FICCI & EY, 2020). The education system faces a shortage of skilled faculty to assist learners in acquiring the skills required to thrive in any industry (Agarwal, 2018) [1]. However, due to various issues like rigid schedules and outdated curriculums, the employability gap is widening in the market (NASSCOM, 2022).
Uttar Pradesh, India's most populous state with over 220 million residents as of 2021 (Census of India, 2021), grapples with significant challenges in education and employability. Despite efforts to improve education infrastructure, issues such as classroom shortages and a lack of qualified teachers persist, particularly in rural areas where accessibility remains a concern (District Information System for Education [DISE], 2020). Quality of education is another pressing issue, as highlighted by the Annual Status of Education Report (ASER) 2020, which revealed low literacy and numeracy rates among children (ASER Centre, 2020). Youth unemployment stands as a major challenge, with the state's youth unemployment rate of 13.6 percent exceeding the national average (PLFS, 2020). The informal sector dominates Uttar Pradesh's economy, providing employment to a large segment of the workforce, but often lacking stability and social protections (MOSPI, 2021). Gender disparities persist, with lower literacy rates among females exacerbating the issue (NFHS, 2019-20).

While urban areas witness infrastructural development, rural regions still lack basic amenities like electricity (Ministry of Rural Development, 2021). Political intricacies further complicate governance and policy implementation, impacting the effectiveness of interventions aimed at addressing these challenges. Addressing these multifaceted issues requires concerted efforts from policymakers, educators, and communities to ensure equitable access to quality education and sustainable employment opportunities across Uttar Pradesh. In Western Uttar Pradesh, Meerut district emerges as a microcosm of this educational renaissance, boasting a plethora of universities catering to diverse academic interests (Sharma & Gupta, 2021) [19]. Despite the educational abundance, graduates often encounter hurdles in securing meaningful employment opportunities, signaling a disconnection between academic training and industry demands (Kumar, 2020) [12]. To comprehend the intricacies of this issue, it is essential to dissect the current employment landscape and trends in Meerut district (Rana, 2019) [17]. This nexus takes center stage with its burgeoning higher education sector and the aspirations of its diverse student populace (Mehta & Singh, 2022). Furthermore, the employment landscape in Meerut District is predominantly characterized by informal sectors such as agriculture and small-scale industries, posing additional challenges for graduates seeking professional roles (Tripathi, 2018) [20].

In response to these challenges, higher education universities in Meerut district are re-evaluating their strategies to equip graduates with the requisite skills and competencies demanded by employers in an evolving job market (Verma & Chauhan, 2023) [20]. With a comprehensive understanding of the context and significance of the study, this paper embarks on a journey to explore the employability of higher education graduates in Meerut District, focusing on two selected universities. Through primary data collection methods, including surveys and interviews, the study aims to identify these challenges and needs, thereby informing policy interventions and educational reforms aimed at enhancing graduate employability and fostering inclusive economic growth in the region (Gupta & Yadav, 2024) [11].

Literature Review

Bell and Blanchflower (2011) [8] identify youth unemployment as a persistent global issue, driven by both cyclical economic changes and deeper structural problems in labour markets, and advocate for targeted policy interventions, including educational reforms and apprenticeships. Gender inequality in employment remains widespread, Blau and Kahn (2017) [9] underscoring the barriers women face in securing equal job opportunities and wage parity. A critical challenge in today's labour market is the mismatch between the skills that employers require and those available in the workforce, as highlighted by OECD (2019). Similarly, Rodrik (1997) and Feenstra and Hanson (1999) argue that globalization has altered employment patterns, affecting job creation, labour market structures, and income distribution across nations. According to Acemoglu and Autor (2011) [7], education and vocational training are essential to improving employability by providing individuals with the skills needed for the modern economy. The Shane (2009) and Acs and Szerb (2007) highlight the growing importance of entrepreneurship and self-employment as alternatives to traditional jobs, promoting innovation and economic self-sufficiency. Autor, Levy, and Murnane (2003) [6] emphasize how technological advancements, particularly automation and artificial intelligence (AI), have transformed employment, creating opportunities in some industries while displacing jobs in others. Government policies, as discussed by Romer (2012), are vital in promoting full employment through initiatives such as fiscal stimulus, labour market reforms, and social protection systems. Henley (2020) also points out that with the rise of the gig economy and evolving employment dynamics, there is a growing need for inclusive strategies that accommodate older workers. This review synthesizes the latest research on employment and employability, providing insights into the necessary policy interventions to manage the complexities of today's labour markets. Tiwari & Malati (2020) [21] emphasize the critical role of skill-based and vocational programs in enhancing employability in India, highlighting both public and private universities' contributions. Agrawal & Agrawal (2017) [1] find that private universities generally offer better employment outcomes due to stronger industry connections. Hussain Ansari (2018) [3] discusses the urgent need to improve access to education and skill training to address India's skilled labour shortage. Finally, Jyoti Deka & Batra (2016) [10] stress the importance of vocational training in private sectors for preparing the workforce for job opportunities in manufacturing, thereby improving overall employability in the country. Employability skills are crucial for graduates to secure and maintain employment, contributing to economic growth and personal development. Western Uttar Pradesh, with its diverse educational infrastructure, offers a unique context for examining the role of these skills. While there has been significant research on employability skills in general, specific gaps remain in understanding how these skills differ between graduates of private and public universities in this region. Regional studies focus on employability skills in various parts of India but often overlook specific regions like Western Uttar Pradesh. Limited research exists comparing the employability skills of graduates from private versus public universities in Western Uttar Pradesh. Setting clear and focused research objectives is crucial for addressing the identified gaps.

Objective of the Study

This paper delved into the trends of various indicators of higher education and employability in India, with a specific focus on Western Uttar Pradesh (WUP) universities. It seeks to identify and analyze students' perceptions of on-campus support while developing an Education Development Index for each participating university. Additionally, the study will use a logit model of regression analysis to identify the most suitable determinants of student employability. Furthermore, it will examine the role of public and private university in enhancing students' skills.

Materials and Methods

The present paper mainly focuses on primary data collected from a sample of 450 students from two universities to accurately represent their experiences and perceptions regarding future employability. Variables were meticulously selected based on their potential impact on students' skills, encompassing categories such as campus amenities (both general and employability-specific) and students' self-

perceptions. To analyze students' perceptions of employability in higher education, a survey was conducted in Uttar Pradesh from two universities, including one public university one private university from Meerut. A total sample of 450 students was surveyed using a structured questionnaire between February and July 2024. The collected primary data was entered into an MS Excel spreadsheet. After data cleaning and processing, students' perceptions of employability were analyzed using SPSS software.

Database: The study is grounded on a primary database collected from Western Uttar Pradesh (WUP) from university levels through a well-structured questionnaire. A stratified random sampling design was adopted for primary data collection. Secondary data was sourced from various reports, including the All-India Survey on Higher Education Report (AISHE, 2019), India Skills Report (2018, 2019), District Information System for Education (DISE, 2021), which offers insights into educational infrastructure and accessibility. Additionally, the Annual Status of Education Report (ASER) (2020) highlights literacy and numeracy rates among children, while the Periodic labour Force Survey (PLFS) (2021) supplies data on youth unemployment rates. The Ministry of Statistics and Programme Implementation (MOSPI, 2021) contributes valuable information on employment patterns, and the National Family Health Survey (NFHS, 2021) addresses gender disparities in literacy rates

To interpret the data effectively, the analysis employs several basic statistical tools, including descriptive statistics to summarize key metrics such as means, medians, and standard deviations. Logistic regression analysis is utilized to examine the relationship between various independent variables and dependent variable

Growth Estimation

A widely accepted exponential model, $y = ab^te^u$ has been fitted to the time series data for estimating the Compound Annual Growth Rate (CAGR) of various education parameter viz., gross enrolment ratio (GER), gender parity index (GPI), education wise student enrolment in India and Uttar Pradesh during 2010-11 to 2020-21. The compound annual growth rate is usually estimated by using the following semi log functional form.

$$\mathrm{Ln}(y) = \mathrm{Ln}(a) + t\,\mathrm{Ln}(b) + u$$

Where, y is the dependent variable whose growth rate is to be estimated, t is the independent variable (time). The compound annual growth rate (CAGR) in per cent term is estimated as

Compound Annual Growth Rate equation

$$(CAGR) = \{antilog\,(b) - 1\} * 100$$

Education Development Index (EDI)

The Education Development Index (EDI) is a composite index that measures the overall educational development of a region. To create an Education Development Index (EDI) equation based on the variables you've provided, you can structure it as a weighted sum of the factors contributing to education development. This index will aggregate the contributions of Technical Skills, Communication Skills, Computer Skills, Classroom Interaction, Teaching Quality, and Provided Guidance into a single score.

The equation for calculating EDI is:

$$EDI = w_1(TS) + w_2 \cdot CmS + w_3 \cdot CS + w_4 \cdot CI + w_5 \cdot TeQ + w_6 \cdot PG$$

Variables:

- **Technical Skills (TS):** Score or level of proficiency in technical skills (continuous or categorical).
- **Communication Skills (CmS):** Score or level of communication proficiency (continuous or categorical).
- **Computer Skills (CS):** Score or level of proficiency in computer-related tasks (continuous or categorical).
- **Classroom Interaction (CI):** Measure of interaction between students and teachers (continuous, e.g., frequency or quality).
- **Teaching Quality (TQ):** Index or score measuring the quality of teaching provided (continuous).
- **Provided Guidance (PG):** Measure of the amount and quality of guidance provided to students (continuous or binary).

Education Development Index (aggregated score or index for education development). w_1, w_2, w_3, w_4, w_5 and w_6 equal weights assigned to each variable, reflecting their relative importance in contributing to education development.
The sum of these weights should typically be 1 (i.e)

$$w_1 + w_2 + w_3 + w_4 + w_5 + w_6 = 1$$

Each index is calculated based on relevant educational metrics, providing a holistic view of educational development.

Logistic Regression Model: The logistic regression model is employed to analyze the factors influencing employability among students. The model can be expressed as:

$$\begin{aligned}\text{Logit (P)} = {} & \beta_0 + \beta_1 \cdot \text{FE} + \beta_2 \cdot \text{FO} + \beta_3 \cdot \text{FS} + \beta_4 \cdot \text{MHI} \\ & + \beta_5 \cdot \text{CDF} + \beta_6 \cdot \text{CPS} + \beta_7 \cdot \text{TLI} + \beta_8 \cdot \text{II} \\ & + \beta_9 \cdot \text{FI}\end{aligned}$$

[Note: {P= Employability of Students (ES)}, Fathers Education (FE), Fathers Occupation (FO), Family Size (FS), Monthly Household Income (MHI) Charges for Development Facility (CDF) College Provide Skills (CPS) Teaching Learning Index (TLI) Infrastructure Index (II) Facilities Index (FI)]

Where:
P = Probability of being employed; β_0= Intercept
β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8, β_9 = Coefficients for independent variables

This logistic regression analysis provides insights into the significance and impact of various factors on employability, thereby informing targeted educational reforms and policy interventions. Overall, this methodology outlines a structured approach to analyzing educational development and employability in Western Uttar Pradesh, utilizing robust data sources and statistical tools to derive meaningful insights. This study provides a detailed examination of the

factors influencing students' perceptions of employability, offering valuable insights for educational universities aiming to enhance their employability initiatives.

Result Discussion

The outcomes and preferences of graduates regarding skills enhancement highlight the importance of practical, industry-aligned training programs. The increasing number of educated youth in Western Uttar Pradesh is a positive trend, driven by educational expansion, government initiatives, and societal awareness

Table 1: Trends of Gross Enrolment Ratio (GER), Gender Parity Index (GPI) in higher education and Population (in crore) of age group 18-23 in India and Uttar Pradesh

Year	India			Uttar Pradesh		
	GER	GPI	Population(Age Group 18-23 in India)	GER	GPI	Population (Age Group 18-23 in India)
2010-11	19.4	0.86	13.67	16.3	1.14	2.24
2011-12	20.8	0.88	14.03	17.4	0.98	2.37
2012-13	21.5	0.89	14.06	19.5	1.09	2.39
2013-14	23.0	0.92	14.08	21.6	1.13	2.41
2014-15	24.3	0.92	14.10	25.0	1.04	2.43
2015-16	24.5	0.92	14.13	24.5	1.03	2.45
2016-17	25.2	0.94	14.15	24.9	1.03	2.47
2017-18	24.6	1.01	14.92	23.2	1.09	2.78
2018-19	24.9	1.05	15.00	23.0	1.17	2.81
2019-20	25.6	1.06	15.08	22.5	1.20	2.83
2020-21	27.3	1.05	15.16	23.2	1.09	2.86
2021-22	28.4	1.01	15.24	24.1	1.02	2.89
CAGR	**2.95**	**1.96**	**1.01**	**2.84**	**0.25**	**2.43**

Sources: - Author's calculations based on AISHE database.

The table 1 presents trends of Gross Enrollment Ratio (GER), Gender Parity Index (GPI), and population within the age group 18-23 for both India and Uttar Pradesh from 2010-11 to 2021-22. Across the years, both India and Uttar Pradesh show a rising trend in GER, signifying an increased proportion of the population within this age bracket enrolled in education. While the Gender Parity Index fluctuates, it generally hovers around 1.0 for both entities, indicating a relatively balanced enrollment between genders. However, Uttar Pradesh consistently exhibits lower GER and occasionally deviates from gender parity, suggesting disparities in educational access compared to the national average. Despite fluctuations, the population within the specified age group in India continues to grow steadily over the years.

Table 2: Trends of Estimated Student Enrolment at various levels during 2010-11 to 2021-22 (in numbers)

Year	India			Uttar Pradesh		
	Ph.D.	Post Graduate	Under Graduates	Ph.D.	Post Graduate	Under Graduates
2010-11	77844	3269669	21972260	6312	323386	3512809
2011-12	81430	3367190	23174950	7627	400644	3573548
2012-13	95425	3448151	23890309	8588	402625	4079022
2013-14	107890	3822219	25500325	10823	442885	4539628
2014-15	117301	3853438	27172346	10888	471055	5290799
2015-16	126451	3917156	27420450	11552	545110	5144321
2016-17	141037	4007570	28348197	13227	592095	5224448
2017-18	161412	4114310	29016350	15408	637473	5446769
2018-19	169170	4042522	29829075	19119	597049	5467296
2019-20	202550	4312535	30647287	23764	569151	5401536
2020-21	211852	4716649	32657509	19806	631538	5548184
2021-22	212568	5217753	34139233	21713	760115	5779098
CAGR	10.38	3.65	3.81	12.36	6.65	4.44

Sources: - Author's calculations based on AISHE database.

Table 2 explains trends of estimated student enrollment at various levels in India and the state of Uttar Pradesh from the academic years 2010-11 to 2021-22. In 2010-11, India had an estimated enrollment of 77,844 in Ph.D. students, 3,269,669 in postgraduate students, and 21,972,260 in undergraduate students. In comparison, Uttar Pradesh had 6,312 in Ph.D. students, 323,386 in postgraduate students, and 3,512,809 in undergraduate students.

India's estimated enrollment reached 212,568 in Ph.D. students, 5,217,753 in postgraduate students, and 34,139,233 in undergraduate students. In the same year, Uttar Pradesh had 21,713 in Ph.D. students, 760,115 in postgraduate students, and 5,779,098 in undergraduate students. This trend reflects the efforts made by educational universities and the government to provide accessible and quality education to students. While on the other hand CAGR of UP is higher in all category as a significant contributor to student enrollments as compare to the India. With substantial numbers in each category, Uttar Pradesh plays a crucial role in shaping the educational landscape of the country.

The table 3 explain the trends of Student Teacher Ratio (STR) across various educational universities in India and Uttar Pradesh from the academic year 2011-12 to 2021-22.

In 2011-12, the STR for all universities in India stood at 23, contrasting with Uttar Pradesh's ratio of 32. For universities and colleges, India maintained an STR of 24, while Uttar Pradesh had 32 STR.

Table 3: Trends of Student Teacher Ratio (STR) in India and Uttar Pradesh during 2011-12 to 2021-22

State/UTs	All Universities		University & Colleges		University & its Constituent Units	
Year	India	Uttar Pradesh	India	Uttar Pradesh	India	Uttar Pradesh
2011-12	23	32	24	32	42	18
2012-13	23	37	24	37	41	17
2013-14	24	39	25	40	41	18
2014-15	23	39	24	41	37	18
2015-16	23	34	24	36	37	17
2016-17	26	42	28	44	26	21
2017-18	29	60	34	74	46	23
2018-19	26	46	33	57	39	21
2019-20	26	40	32	49	38	20
2020-21	27	38	27	36	38	20
2021-22	26	36	28	38	36	20
CAGR	1.81	1.53	2.73	2.52	-0.89	1.93

Sources: - Author's calculations based on AISHE database.

However, the STR for universities and their constituent units in India was notably higher at 42 compared to Uttar Pradesh's 18. Over the years, while India's overall STR remained relatively stable, Uttar Pradesh saw fluctuations, with a notable decrease by 2021-22. This shift suggests either improved teacher availability or a reduction in student enrollment, reflecting changing educational dynamics. Despite these variations, both regions maintained similar STRs for universities and colleges, underscoring a balanced distribution of teachers in higher education.

Table 4: Trends of Workforce and Unemployment Rate by Education Level during 2017-18 to 2020-21(in percent)

Year/ Level of education	2020-21		2019-20		2018-19		2017-18	
	WF	UR	WF	UR	WF	UR	WF	UR
All	52.6	4.2	50.9	4.8	47.3	5.8	46.8	6
Secondary & above	46.5	9.1	56	10.1	43.4	11	43.2	11.4
Post graduate & above	59.4	12.5	59.5	12.9	59.3	14.4	57.9	14.6
Graduate	51.8	15.5	50.6	17.2	49.6	16.9	49.7	17.2
Diploma/ certificate course	64.2	14.2	63.8	14.2	60.6	17.2	56.4	19.8
Higher secondary	39.7	6.6	38.8	7.9	36.2	9.2	35.8	10.3
Secondary	44.9	3.8	44.5	4.1	411.1	5.5	41.6	5.7
Middle	55.5	2.5	53	3.4	50.1	4.8	48.7	5.5
Literate & upto primary	61.7	1.4	59.5	1.4	56.1	2.4	54.6	2.7
Not Literate	53.6	0.4	51.3	0.6	45.2	1.1	45.3	1.2

Sources: - Author's calculations based on AISHE database

The table 4 presents a trend of workforce participation rates and unemployment rates categorized by different education levels in India over the years 2017-18 to 2020-21. Overall, the workforce participation rate for all education levels combined ranged from 46.8 percent in 2017-18 to 52.6 percent in 2020-21, with unemployment rates fluctuating between 6.0 percent and 4.2 percent over the same period. When examining workforce participation and unemployment rates by education level, several trends emerge. Individuals with higher education levels, particularly those with postgraduate qualifications and above, consistently displayed higher workforce participation rates, ranging from 57.9 percent to 59.4 percent. However, despite their higher participation rates, individuals with postgraduate qualifications also faced elevated unemployment rates, ranging from 14.6 percent to 12.5 percent. Graduates experienced fluctuating workforce participation rates above 50 percent, but their unemployment rates ranged from 17.2 percent to 15.5 percent, indicating significant challenges in securing employment despite educational attainment.

Vocational education, represented by diploma or certificate courses, demonstrated relatively high workforce participation rates, reaching as high as 64.2 percent in 2020-21. However, individuals in this category also experienced significant improvement in unemployment rates, ranging from 19.8 percent to 14.2 percent, suggesting potential mismatches between skill sets and labour market demands. Lower educational attainment levels, such as middle and primary education, exhibited varying workforce participation and unemployment rates. While individuals with middle-level education consistently showed workforce participation rates above 50 percent, their unemployment rates ranged from 5.5 percent to 2.5 percent over the years. Similarly, individuals who were literate and had completed primary education displayed workforce participation rates above 50 percent and relatively low unemployment rates ranging from 2.7 percent to 1.4 percent.

On the other hand, individuals who were not literate had slightly lower workforce participation rates above 50 percent but extremely low unemployment rates, indicating potential challenges in accessing employment opportunities for this group despite their labour force participation. Overall, the data shows the complex relationship between education and employment outcomes, emphasizing the need for comprehensive approaches to education and employment policies that consider market conditions and industry demands.

Table 5: Gender wise perception of students for on campus support in two different universities of Meerut (in percent)

Universities		Public University		Private University	
Gender		Male	Female	Male	Female
On-campus support	Education Level/ Level of satisfaction	UG	UG	UG	UG
Mismatch	Strongly agree	18.03	23.38	18.67	24.00
	Agree	34.43	18.18	32.00	24.00
	Neutral	26.23	18.18	25.33	36.00
	Disagree	16.39	22.08	22.67	16.00
	Strongly disagree	4.92	18.18	1.33	0.00
Course curriculum	Strongly agree	4.92	23.38	10.67	4.00
	Agree	37.70	38.96	34.67	48.00
	Neutral	29.51	19.48	25.33	24.00
	Disagree	19.67	14.29	25.33	20.00
	Strongly disagree	6.56	3.90	4.00	4.00
Classroom interaction	Strongly agree	9.84	41.56	13.33	16.00
	Agree	37.70	41.56	45.33	48.00
	Neutral	29.51	10.39	25.33	24.00
	Disagree	18.03	6.49	13.33	12.00
	Strongly disagree	4.92	0.00	2.67	0.00
Teaching quality	Strongly agree	44.26	54.55	36.00	52.00
	Agree	37.70	28.57	45.33	28.00
	Neutral	14.75	11.69	16.00	20.00
	Disagree	3.28	5.19	1.33	0.00
	Strongly disagree	0.00	0.00	1.33	0.00
Teachers provide	Strongly agree	8.20	42.86	14.67	28.00
	Agree	29.51	35.06	40.00	20.00
	Neutral	39.34	11.69	25.33	44.00
	Disagree	11.48	7.79	14.67	4.00
	Strongly disagree	11.48	2.60	5.33	4.00
Classroom assignments	Strongly agree	8.20	37.66	10.67	0.00
	Agree	42.62	37.66	36.00	44.00
	Neutral	24.59	18.18	28.00	40.00
	Disagree	14.75	6.49	20.00	8.00
	Disagree	9.84	0.00	5.33	8.00
Teachers encourage	Strongly agree	8.20	38.96	9.33	20.00
	Agree	40.98	38.96	38.67	16.00
	Neutral	29.51	14.29	24.00	40.00
	Disagree	13.11	7.79	22.67	16.00
	Strongly disagree	8.20	0.00	5.33	8.00
Provide guidance	Strongly agree	6.56	41.56	12.00	8.00
	Agree	34.43	35.06	32.00	36.00
	Neutral	26.23	10.39	33.33	28.00
	Disagree	16.39	11.69	14.67	16.00
	Strongly disagree	16.39	1.30	8.00	12.00
Robust peer interaction	Strongly agree	11.48	37.66	8.00	12.00
	Agree	26.23	27.27	34.67	24.00
	Neutral	27.87	23.38	37.33	44.00
	Disagree	21.31	7.79	13.33	8.00
	Strongly disagree.	13.11	3.90	6.67	12.00
Senior students' guidance	Strongly agree	4.92	15.58	8.00	8.00
	Agree	31.15	36.36	41.33	28.00
	Neutral	31.15	18.18	24.00	40.00
	Disagree	21.31	20.78	18.67	20.00
	Strongly disagree.	11.48	9.09	8.00	4.00

Sources: - Author's calculations based on primary survey database

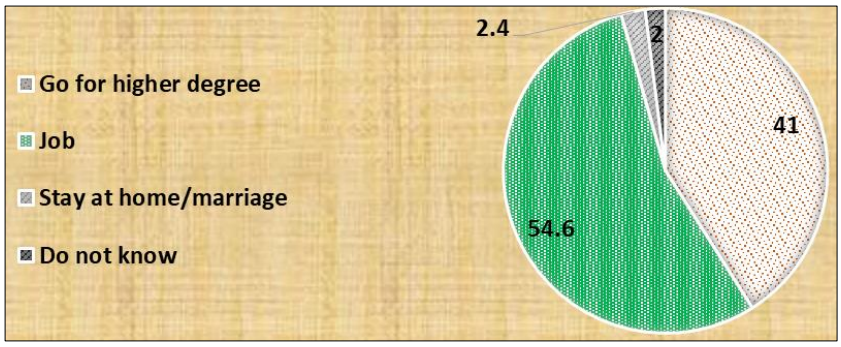
The table 5 explains the student satisfaction at public university and private university, focusing on gender differences across various educational aspects. Regarding the mismatch between education and industry needs, a higher percentage of females at both universities strongly agree, with 23.38 percent at public university and 24 percent at Private University, compared to their male counterparts. Classroom interaction is rated positively, especially by females at public university, where 41.56 percent strongly agree, contrasting with 16 percent of females at Private University. Teaching quality stands out as a strength across both universities, with over 54.55 percent of female students at public university and 52 percent at Private University strongly agreeing that it is of high quality. However, satisfaction with classroom assignments and robust peer interaction is more varied, with significant neutral and disagree responses, particularly at Private University, where no females strongly agree with the quality of classroom assignments. The table 6 explains a comprehensive breakdown of sectorial job preferences categorized by gender, revealing distinct patterns and disparities in occupational inclinations. In the agriculture and allied activities sector, males demonstrate a marginally higher preference across all three categories compared to females.

Table 6: Gender wise sectorial Job Preference (In percent)

Sectorial Job Preference	First preference		Second preference		Third preference	
	Male	Female	Male	Female	Male	Female
Agriculture and allied activities	11.32	7.23	3.30	2.98	1.42	6.38
Manufacturing and production	16.51	5.96	17.45	12.34	9.43	8.09
Social services (Health and sanitation)	7.08	14.47	7.55	12.34	9.91	12.77
financial services	20.75	16.60	17.45	21.28	6.13	11.49
IT/ITES	15.09	4.68	8.02	12.34	14.62	8.94
Education/training/Research	20.28	41.28	15.57	17.87	12.74	12.77
Travel/tourism/entertainment	3.30	3.83	3.30	4.68	4.72	5.96
Any other	5.66	5.96	27.36	16.17	41.04	33.62
Total	100	100	100	100	100	100

Sources: - Author's calculations based on primary database

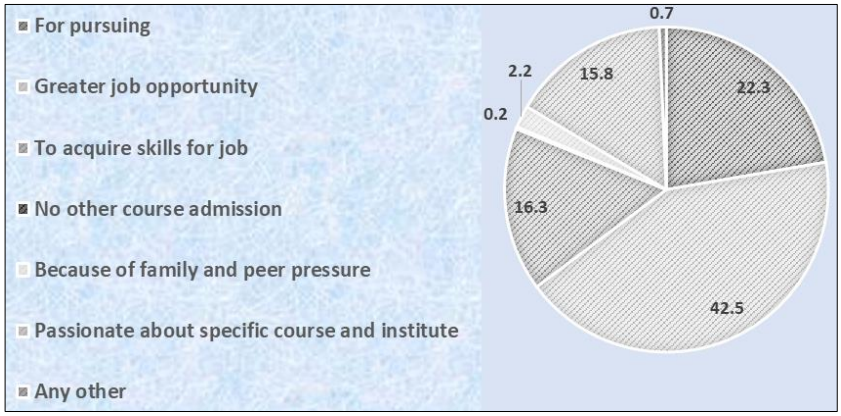
Conversely, in manufacturing and production, males exhibit a notably stronger preference across all three preferences, indicating a gender skew in this field. Social services, particularly in health and sanitation, showcase a contrasting trend, with females exhibiting a significantly higher preference in all categories compared to males. Financial services depict a nuanced picture, with males showing a slightly higher percentage in first and followed by second and third preference, while females have high percentage in the second preference and followed by the first and third preference. The IT/ITES sector stands out for its significant gender gap, with males showing notably higher percentage in first and third preferences as compared to female. In contrast, education, training, and research emerge as domains predominantly favored by females, who exhibit substantially higher preferences across all three categories compared to males. Preferences in travel, tourism, and entertainment appear relatively balanced between genders, with minor variations in each category.



Sources: Author's calculations based on primary database

Fig 1: Post course desire of students (In PERCENT)

The figure 1 outlines the post-course desires of students, offering a glimpse into their aspirations following the completion of their current educational endeavors. Among those surveyed, the majority, comprising 54.6 percent of respondents, expressed a keen interest in transitioning into the workforce and securing employment opportunities aligned with their qualifications. Concurrently, a notable portion, constituting 41 percent of the cohort, expressed a desire to pursue advanced education. A smaller fraction, representing 2.4 percent of respondents, indicated an intention to remain at home or prioritize marriage post-course completion, suggesting a divergence in career trajectories among the surveyed population. Collectively, these insights underscore the multifaceted nature of individuals' aspirations and highlight the varied paths pursued upon the culmination of their educational pursuits.



Sources: Author's calculations based on primary database

Fig 2: Reason of Students for Course Chosen (in percent)

The figure 2 presents an insightful breakdown of the reasons individuals have chosen their current course of study, each reason expressed as a percentage of the total surveyed population. A significant proportion, comprising 42.5 percent of respondents, cited the pursuit of greater job opportunities as their primary motivation, underlining the strong link between education and employment prospects in decision-making. Additionally, 16.3 percent of individuals indicated a desire to acquire specific skills tailored to their desired career path, emphasizing the pragmatic approach. Notably, 22.3 percent of respondents stated they chose their course simply for the sake of pursuing it, underscoring the importance of personal interest and curiosity in educational pursuits. Meanwhile, a smaller percentage, accounting for 2.2 percent of participants, admitted to choosing their course due to external pressures from family or peers, highlighting the influence of social factors on educational decision-making. Moreover, 15.8 percent of individuals expressed a genuine passion for their chosen course and university, emphasizing the significance of personal passion and affinity for the subject matter in shaping educational choices. Finally, a small fraction, comprising 0.2 percent of respondents, selected their course due to limited admission options in other courses. Collectively, these insights underscore the complex interplay of personal, professional, and social factors influencing individuals' decisions regarding their educational pathways.

Table 7: Gender Wise Reason for Course Chosen (In Percent)

	Male			Female		
Preferences	1st	2nd	3rd	1st	2nd	3rd
For pursuing	25.94	8.49	15.57	18.72	9.79	12.77
Greater job opportunity	41.51	25.00	8.49	43.40	26.38	12.77
To acquire skills for job	16.98	26.42	16.04	15.74	34.47	17.02
No other course admission	0.00	1.42	1.89	0.43	3.83	3.83
Because of family and peer pressure	2.36	0.94	6.60	2.13	4.26	4.68
Passionate about specific course and university	11.79	13.21	15.57	19.57	8.51	22.13
Any other	1.42	24.52	35.84	0.01	12.76	26.80
Total	100.0	100.0	100.0	100.0	100.0	100.0

Sources: - Author's calculations based on primary survey database

The table 7 provides a comprehensive breakdown of the motivations behind course selection, segmented by gender and ranked preferences. Notably, both males and females exhibit common themes in their decision-making process, yet variations emerge in their prioritization of certain factors. For instance, while pursuing the course itself is deemed significant by both genders, males tend to express a stronger preference for this reason across all rankings compared to females. Conversely, females show a higher inclination towards selecting courses based on the potential for acquiring skills tailored to future job prospects, consistently ranking it higher in their preferences than males. While reasons such as family and peer pressure play a relatively minor role overall, females tend to prioritize this factor more in their third preference compared to males. Overall, the table underscores the complex interplay of individual preferences, societal influences, and career aspirations shaping course selection decisions, with nuanced differences observed between genders.

Table 8: Gender-wise Skill Preferences Academic Excellence

	Female												
	Academic Excellence	Technical Skills	Communication Skills	Computer Skills	People Related	Managerial	Conceptualizing Skills	Personal Skills	Citizenship Skills	Numeric Skills	Foreign Language Skills	Sector Specific Skills	Ability Adapt Situation
Highly important	48.0	76.0	64.0	56.0	36.0	36.0	44.0	52.0	44.0	32.0	12.0	40.0	64.0
Important	40.0	20.0	28.0	28.0	52.0	52.0	40.0	28.0	28.0	48.0	20.0	44.0	28.0
Neutral	12.0	4.0	8.0	16.0	12.0	12.0	16.0	20.0	20.0	12.0	48.0	16.0	4.0
Less important	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	8.0	16.0	0.0	0.0
Not important	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	4.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100
	Male												
Highly important	48.0	57.3	54.7	42.7	41.3	36.0	44.0	42.7	22.7	28.0	18.7	25.3	48.0
Important	33.3	32.0	36.0	46.7	38.7	48.0	50.7	41.3	46.7	46.7	45.3	46.7	42.7
Neutral	13.3	9.3	8.0	9.3	16.0	14.7	5.3	14.7	28.0	21.3	18.7	22.7	8.0
Less important	5.3	1.3	1.3	1.3	2.7	1.3	0.0	1.3	2.7	2.7	13.3	1.3	0.0
Not important	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	1.3	4.0	4.0	1.3
Total	100	100	100	100	100	100	100	100	100	100	100	100	100

Sources: - Author's calculations based on primary database

The table 8 presents a comprehensive insight into the perceived significance of diverse skills and attributes, dissected by gender categories (Female and Male). Noteworthy is the universal recognition of Technical Skills as paramount, endorsed by both genders albeit with a marginally higher esteem from females (76.0 percent vs. 57.3 percent). Similarly, Academic Excellence commands substantial attention from both cohorts, although females appear to accord it a slightly greater emphasis than their male counterparts (48.0 percent for both groups). Communication Skills follow suit, with females attributing a marginally higher value compared to males (64.0 percent vs. 54.7 percent). The scarcity of neutral and less important ratings across the board underscores a broad consensus regarding the significance of the evaluated skills. These findings unveil nuanced gender-specific preferences in skill prioritization, potentially influenced by societal norms or individual predilections.

Education Development Index

The table 9 evaluate the Education Development Index (EDI) and presented the educational quality and effectiveness of two universities: public university and private university. The index is derived from several key variables that reflect different aspects of education, including technical skills, communication skills, computer skills, classroom interaction, teaching quality, and provided guidance.

Table 9: University-wise Education Development Index and its Components (2024)

Index Components	Public University, Meerut	Private University, Meerut
Technical skills	3.52	3.52
Communication skills	3.51	3.47
Computer skills	3.31	3.33
Classroom interaction	3.68	3.57
Teaching quality	4.20	4.18
Provided guidance	3.55	3.22
Education development Index	3.108	3.041

Source: - Author's calculations based on primary database

Technical skills assess students' proficiency in technical areas relevant to their field of study, while 'communication skills' measure their ability to effectively convey information. 'Computer skills' evaluate students' competence in digital tasks, crucial in today's technologically-driven job market. 'Classroom interaction' looks at the engagement between students and teachers, essential for an enriching educational experience. Teaching quality assesses the effectiveness of the faculty, and 'provided guidance' measures the quality of academic advising and career counseling available to students. The table represents that, public university has an EDI of 3.108, slightly higher than private university has 3.041. This marginal difference suggests that both universities perform similarly across the assessed variables, indicating comparable overall educational quality and effectiveness.

Logistic Regression Analysis

The table 10 explains the results of the five combinations of variables in logistic regression analysis that examines the impact of various factors on the employability of students. The coefficients for each factor indicate the direction and strength of their relationship with employability. For instance, the level of education has a coefficient of -0.355, suggesting that higher levels of education are associated with an increase in the odds of employability, although this result is statistically significant ($P > 0.05$) in step 1. Similarly, factors such as gender, permanent residency, and the gender of the head of the household show negligible effects on employability, with coefficients of -0.041, -0.024, and 0.168, respectively, all of which are not statistically significant.

Table 10: Effect of university General Facility Index (GFI), General profile of student (GPS), and Infrastructure index (II), Teaching Learning Index (TLI), university providing skill, for the employability of students

Factors	Step 1 (Beta 1)	Step 2 (Beta 2)	Step 3 (Beta 3)	Step 4 (Beta 4)	Step 5 (Beta 5)
Level of education	-0.355*	-0.221	-0.255	-	-
Gender	-0.041	-0.041	-	-	-
Permanent resident	-0.024	-0.01	-	-	-
Gender of head of household	0.168	-0.023	-	-	-
Family type	0.149	-0.011	-	-	-
Family size	-	-0.144	-0.142	-0.817**	-0.828**
Fathers' education	-	0.205**	0.174**	0.432**	0.441**
Fathers' occupation	-	0.019	0.019	0.083	0.085
Mothers' education	-	-0.03	-	-	-
Mothers Occupation	-	-0.002	-	-	-
Monthly household income	-	-	0.04	-0.098	-0.1
Course enrolled	-	-	0.083	-	-
Monthly educational expenditure	-	-	0.056	-	-
Charge development facility	-	-	-	0.399	0.371
College provides skills	-	-	-	0.891*	0.912*
Teaching Learning Index	-	-	-	-	0.135
Infrastructure index	-	-	-	-	0.055
Facilities index	-	-	-	0.367**	0.359**
Constant	0.504	0.211	-0.402	0.396	0.258

Pseudo R^2	0.012	0.06	0.056	0.297	0.299
Correct prediction (percent)	55.6	56.9	56.9	70	71
*=*P*>0.05, **=P<0.05					

Source: Authors calculation base on primary Database.

Family size emerges as a significant factor, with coefficients of -0.144 and -0.817, indicating that larger family sizes are associated with a decrease in employability odds, particularly the latter coefficient, which is statistically significant ($P < 0.05$) in subsequent steps. In contrast, the education level of fathers shows a strong positive relationship with employability, with coefficients of 0.205, 0.174, 0.432, and 0.441, all statistically significant, suggesting that higher paternal education levels enhance employability odds. Other factors, such as the father's occupation and mother's education, show negligible effects, while the charge development facility and college skills provision indicate positive relationships with employability, with the latter being statistically significant.

The model fit statistics across Steps 1 to 5, as represented by Pseudo R^2 values ranging from 0.012 to 0.299, indicate varying proportions of variance in employability explained by the model. Model 5, with the highest Pseudo R^2 value, suggests the best fit, reflecting a stronger relationship between the predictors and employability outcomes. Correct prediction percentages across the steps range from 55.6 percent to 71 percent, with Model 5 showing the highest accuracy. Overall, Table 1 emphasizes significant predictors of employability, particularly family size and father's education, while demonstrating that Model 5 is the most effective in explaining the variability in employability outcomes.

Best Fit Model

Table 11 provides the estimated parameters from a logistic regression analysis focused on the employability of students, detailing the relationship between various independent variables and the likelihood of being employed. Each variable is accompanied by its coefficient, standard error (S.E.), Z-value, P-value, and the exponential coefficient, which indicates the odds ratio. The variable Father's Education has a coefficient of 0.441, with a standard error of 0.172, a Z-value of 6.566, and a P-value of 0.01.

Table 11: Estimated parameters of Logistic regression of two universities

Independent Variables	**Dependent variable: Employability of students**				
	Coefficient	**S.E.**	**Z- Value**	**P value**	**Exp.(B)**
Fathers Education (FE)	0.441	0.172	6.566	0.01	1.554
Fathers' occupation (FO)	0.085	0.113	0.565	0.452	1.089
Family size (FS)	-0.828	0.27	9.384	0.002	0.437
Monthly household income (MHI)	-0.1	0.166	0.365	0.546	0.905
Charges for development facilities (CDF)	0.371	0.488	0.58	0.446	1.450
College provides skills (CPS)	0.912	0.549	2.761	0.097	1.402
Teaching Learning Index (TLI)	0.135	0.425	0.101	0.751	1.145
Infrastructure index (II)	0.055	0.195	0.079	0.778	1.247
Facilities index (FI)	0.359	0.172	4.378	0.036	1.698
Constant	0.258	1.888	0.019	0.891	1.294
Number of observations	450		-2 Log likelihood		112.088
Pseudo R^2	0.297		Correct prediction (percent)		71

Source: Authors calculation base on primary Database.

This indicates a statistically significant positive relationship with employability, suggesting that for each unit increase in the father's education level, the odds of the student being employed increase by approximately 1.554 times. Father's Occupation shows a coefficient of 0.085, with a standard error of 0.113 and a P-value of 0.452, indicating a non-significant effect on employability. The odds ratio suggests a slight increase in odds, but it is not statistically meaningful. Family Size has a coefficient of -0.828, with a standard error of 0.27, a Z-value of 9.384, and a P-value of 0.002, indicating a statistically significant negative relationship with employability. This suggests that as family size increases, the odds of employability decrease significantly, with an odds ratio of 0.437, meaning larger families are associated with lower employability odds. Monthly Household Income has a coefficient of -0.1, a standard error of 0.166, and a P-value of 0.546, indicating a non-significant negative effect on employability. The odds ratio suggests a slight decrease in odds, but again, this is not statistically significant. The variable, CDF has a coefficient of 0.371, a standard error of 0.488, and a P-value of 0.446, indicating a non-significant positive effect on employability, with an odds ratio of 1.45. College Provide Skill has a coefficient of 0.912, a standard error of 0.549, and a Z-value of 2.761, with a P-value of 0.097. While this indicates a positive relationship with employability, it is marginally non-significant. The odds ratio suggests that access to skills provided by the college increases the odds of employability. The Teaching Learning Index has a coefficient of 0.135, a standard error of 0.425, and a P-value of 0.751, indicating a negligible and non-significant effect on employability. The Facilities Index has a coefficient of 0.359, a standard error of 0.172, and a P-value of 0.036, indicating a statistically significant positive relationship with employability, with an odds ratio of 1.698, suggesting that better facilities are associated with higher odds of employability. The model includes 450 observations, with a -2 Log likelihood of 112.088 and a Pseudo R^2 of 0.299, indicating that the model explains approximately 29.7 percent of the variance in employability outcomes. The correct prediction percentage of 71 suggests that the model is reasonably effective in predicting employability based on the included factors. Overall, Table 2 highlights significant predictors of employability, particularly the father's education, family

size, and facilities index, while demonstrating the logistic regression model's effectiveness in explaining employability outcomes.

Conclusion and Suggestions

The research paper analyses the intersection of education, employability, and economic development in India, particularly focusing on the state of Uttar Pradesh. Over the years, the workforce participation rates and unemployment statistics reveal significant disparities based on educational attainment. The data indicates that while the overall workforce participation rate has shown a gradual increase from 46.8 percent in 2017-18 to 52.6 percent in 2020-21, the unemployment rates have remained a concern, fluctuating between 4.2 percent and 6.0 percent during the same period. This suggests that merely increasing educational enrolment is insufficient there is a immediate need for educational reforms that emphasize skill development, curriculum improvement, and faculty training align with the demands of the labour market. The findings underscore the importance of equipping graduates with relevant skills and competencies that meet the evolving needs of employers. This research emphasizes the necessity for higher education universities in Meerut District to reassess their strategies to enhance graduate employability. This involves not only improving teaching quality and classroom interaction but also fostering an environment that encourages practical learning experiences through internships and apprenticeships. Furthermore, the differences in employability skills between graduates from public and private universities underscore the necessity of focused interventions to close this gap. Several important policy recommendations can be put into practice to improve employability in Uttar Pradesh. First and foremost, it is crucial that educational universities and industry stakeholders enter into Memorandums of Understanding (MOUs) that align university curricula with industry requirements. Through these partnerships, job readiness will eventually increase among the students. Second, increasing the number of vocational training programs will give students real-world skills that will increase their employability, particularly in rural areas. Last but not least, specific programs to aid women's employment and education can aid in addressing gender inequality, fostering a more inclusive labour market and boosting the local economy. The universities and industries partnerships, will greatly increase employment of students and increase the effectiveness of education in preparing graduates to become a most capable working capital.

Acknowledgment

We extend our sincere gratitude to the public and private universities involved in this research project for their invaluable support, particularly the faculty, administrative staff, and students who contributed significantly to the primary data collection. Special thanks go to the Chaudhary Charan Singh University Grant Scheme, as well as to our colleagues, Nikita Chaudhary and Ashutosh Pandey for their insightful feedback, all of which greatly enhanced the quality and outcomes of this research.

Disclosure statement

No potential conflict of interest was reported by the author (s).

Funding Declaration: This research received no external funding.

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