

Mapping Employability and Skill Development across Regions: A Geo-Spatial Study of Workforce Competencies in Odisha

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ABSTRACT

Employability and skill development have emerged as critical determinants of economic growth, workforce productivity, and inclusive regional development. Despite increasing emphasis on skill-oriented education and vocational training in India, regional disparities in access to skill development opportunities, educational infrastructure, digital capabilities, and employment prospects continue to pose significant challenges. Against this backdrop, the present study aims to map employability and skill development across different regions of Odisha using a geo-spatial approach to understand the distribution of workforce competencies and identify regional variations in employment readiness. The study considers five geographical regions of Odisha-North, South, East, West, and Central Odisha-to examine differences in skill acquisition, educational exposure, technical competencies, digital literacy, and employability potential. A structured research framework incorporating geographical location, settlement patterns, and workforce characteristics is proposed to assess the relationship between regional development and employment-oriented skills. The study adopts a descriptive and analytical research design, supported by primary data collection and geo-spatial mapping techniques, to identify skill gaps and variations across rural, semi-urban, urban, and city-periphery areas. The regional sample framework comprises 72 respondents from North Odisha, 62 from South Odisha, 62 from East Odisha, 56 from West Odisha, and 51 from Central Odisha, resulting in a proposed total sample of 303 respondents. The geographical mapping is expected to reveal variations in workforce competencies, access to skill development initiatives, and employment opportunities across the selected regions. The study seeks to contribute to evidence-based policymaking by identifying spatial concentrations of skill deficiencies and highlighting areas requiring targeted interventions. Its findings are expected to provide useful insights for educational institutions, policymakers, skill development agencies, and employers in designing region-specific training programmes and strengthening the alignment between workforce capabilities and labour market requirements. Ultimately, the study aims to support a more inclusive, geographically balanced, and employment-oriented skill development ecosystem in Odisha.

Keywords: Employability, Skill Development, Geo-Spatial Mapping, Workforce Competencies, Regional Disparities, Odisha, Employment Readiness.

Introduction

In the current economic climate, employability and skill development have become crucial aspects of

workforce development. The relevance of both technical and behavioural competences among individuals has risen due to changes in technology, occupational structures, workplace expectations, and the nature of employment. A combination of knowledge, skills, attitudes, adaptability, work ethics, leadership, decision-making, communication, and ongoing learning that allow people to effectively participate in employment and adapt to changing workplace requirements are all included in employability, which is not limited to having academic credentials.

The link between education, skills, and employment has grown in significance in India due to the workforce's varied socioeconomic and geographic features. The development of worker competences may be impacted by regional variations in access to education, training opportunities, employment exposure, digital resources, and institutional support. Thus, analysing employability and skill development from a regional standpoint offers a chance to comprehend how workforce traits and attitudes change in various places.

Odisha's unique geographic and socioeconomic conditions make it a suitable environment for this kind of investigation. Respondents from rural, semi-urban, urban, city, and city-periphery regions are taken into account in this study, which also looks at how they are distributed throughout North, South, East, West, and Central Odisha. Of the 303 responses, 72 are from North Odisha, 62 are from South Odisha, 62 are from East Odisha, 56 are from West Odisha, and 51 are from Central Odisha.

The research also takes into account demographic factors such as gender, age, marital status, income, and residence. The cross-tabulation findings show that respondents are distributed differently across demographic and geographical groups. Rural respondents, for example, account for 82 of the 303 respondents, followed by city peripheral (64), and city (62).

The study looks at respondents' perceptions of the skill environment and developmental patterns related to employability in addition to demographic and regional factors. Work ethics, accountability, leadership, decision-making, delegation, flexibility, growth mindset, ongoing learning, and adaptation are all given special consideration. These factors are crucial because employability may be viewed as a dynamic skill rather than a fixed set of credentials.

The empirical investigation employs reliability testing alongside exploratory factor analysis to explore the foundational structure of the chosen skill-related variables. The findings reveal a Cronbach's Alpha of 0.819 for the ten-item construct, with a KMO value of 0.836, and Bartlett's test of sphericity showing statistical significance. The factor analysis additionally uncovers five components, each with eigenvalues exceeding one, which together account for 61.167% of the total variance.

Against this background, the present study attempts to map the employability and skill-development environment across geographical and demographic dimensions of Odisha and identify the major competency dimensions associated with workforce development.

Need and Significance of the Study

The changing nature of employment has created a need to understand employability beyond formal educational qualifications. Individuals are increasingly expected to demonstrate a combination of professional, managerial, behavioural and adaptive competencies. Consequently, understanding the existing skill environment becomes important for identifying the competencies that contribute to effective participation in employment.

The geographical aspect is notably important in a state like Odisha, where participants may come from distinctly contrasting rural and urban settings. Variations in location can be linked to variations in access

to training, job opportunities, institutional resources, and workplace settings. A geo-spatial viewpoint enables the analysis of employability and skill enhancement across various geographical contexts instead of viewing the workforce as a uniform entity.

This study is important as it merges demographic and geographic analysis with a statistical evaluation of skill-related views. The research examines 303 participants spread across five geographic areas of Odisha and five residency classifications. The study also explores how gender, age, marital status, and income relate to characteristics of domicile.

The research could also offer valuable insights for educational institutions, skill-development organizations, employers, and policymakers by revealing the competency aspects that participants link to employability and growth patterns.

Literature Review

Alam (1990) examined the relationship between education and occupational structure in India using manpower forecasting techniques. The study found that changes in educational attainment significantly influence workforce demand and occupational distribution. It emphasized the importance of long-term educational planning for improving employment opportunities and manpower development.

Becker (1993) explained the importance of human capital investment in improving productivity and employment outcomes. The study argued that education, training, and skill development enhance individual capabilities and economic growth. The human capital theory provides the foundation for analysing the relationship between skill acquisition, employability, and labour market performance.

Mincer (1995) examined the relationship between education, training, and earnings. The study found that individuals with higher levels of education and occupational skills achieve better employment opportunities and income growth. The research highlighted the importance of continuous skill development for improving labour market competitiveness.

The World Bank (1998) emphasized that knowledge, education, and skill formation are essential components of economic development. The report highlighted that investment in human capital improves productivity and employment opportunities. It recommended strengthening education and vocational training systems to support workforce development.

The United Nations Development Programme (2000) emphasized that human development depends on education, skills, employment, and income generation. The report highlighted that investment in education and vocational skills enhances productivity, reduces poverty, and promotes sustainable economic growth. It recommended strengthening human capital through continuous learning and skill development.

Psacharopoulos and Patrinos (2004) analysed the economic returns of education across countries. The study revealed that education significantly contributes to employment opportunities and income improvement. The authors emphasized that skill-oriented education plays a crucial role in enhancing workforce productivity.

UNESCO (2005) examined the role of technical and vocational education in developing skilled human resources. The report highlighted that vocational training improves employability, reduces unemployment, and supports economic development. It recommended strengthening links between education systems and labour market requirements.

McQuaid and Lindsay (2005) developed a conceptual framework of employability and identified individual factors, personal circumstances, and external labour market conditions as major determinants of employment success. The study emphasized that employability depends on both skills and socio-

economic factors.

Yorke (2006) analysed employability in higher education and highlighted the importance of transferable skills such as communication, teamwork, problem-solving, and adaptability. The study suggested that universities should focus on developing graduates with both academic knowledge and workplace competencies.

The Confederation of Indian Industry (2006) examined the skill requirements of Indian industries and identified a significant gap between graduate capabilities and employer expectations. The report recommended industry-oriented curriculum development, practical training, and stronger collaboration between educational institutions and industries.

Research Gap

The existing literature establishes the importance of education, human capital, training and transferable skills in improving employability and workforce productivity. However, limited attention has been given to the geographical variation of employability and skill development within Odisha. Previous studies also provide limited empirical evidence on how skill-related competencies differ across rural, semi-urban, urban, city and city-periphery areas. Further, the underlying dimensions of employability-related competencies such as leadership, work ethics, accountability, adaptability, continuous learning and growth mindset have not been sufficiently examined using multivariate techniques. Therefore, the present study addresses this gap by analysing the geographical and competency dimensions of employability and skill development across different regions of Odisha using Principal Component Analysis.

Objective of the Study

1. To examine the major dimensions of skill environment and developmental trends influencing employability among the respondents in Odisha.
2. To identify and analyse the underlying factors of skill environment and developmental trends using Principal Component Analysis.

Scope of the Study

The study focuses on employability and skill development among respondents across different geographical regions of Odisha. It covers five regions—North, South, East, West and Central Odisha—and considers respondents from rural, semi-urban, urban, city and city-periphery areas. The study examines demographic characteristics and key employability-related competencies such as accountability, work ethics, leadership, decision-making, delegation, flexibility, growth mindset, continuous learning and adaptability. The scope further includes assessing the reliability of these skill-related variables and identifying their underlying dimensions through Principal Component Analysis. Thus, the study provides a geographical and competency-based understanding of employability and skill development in Odisha.

Limitations of the Study

The study has certain limitations. First, the analysis is based on 303 respondents, and therefore the findings should be interpreted within the context of the selected sample. Second, the geographical distribution of respondents is not identical across the five regions of Odisha. Third, the study relies on respondent perceptions regarding skill environment and developmental trends, which may be influenced by individual experiences and circumstances.

Further, the present factor analysis identifies five components explaining 61.167% of the total variance; therefore, a portion of the variance remains unexplained by the extracted components. Future studies may use larger samples and more extensive geographical coverage to examine whether the identified component structure remains consistent across different populations.

Research Design

The present study adopts a descriptive and analytical research design. The descriptive component is used to understand the demographic and geographical characteristics of the respondents, while the analytical component is used to examine the relationships and underlying dimensions associated with skill environment and developmental trends.

The study follows a quantitative approach in which information collected from respondents is subjected to statistical analysis. Cross-tabulation is used to examine the distribution of demographic variables across domicile categories, while reliability analysis and Principal Component Analysis are used to examine the skill-related construct.

Study Area

The study was conducted in Odisha, India. For geographical analysis, the respondents were considered from different regions of Odisha, namely North Odisha, South Odisha, East Odisha, West Odisha and Central Odisha.

The study also categorises respondents according to five domicile classifications:

- Rural
- Semi-Urban
- Urban
- City
- City Periphery

This classification provides a basis for examining employability and skill development across different geographical environments.

Sample Size

The study consists of a total sample of 303 respondents. The regional distribution consists of 72 respondents from North Odisha, 62 from South Odisha, 62 from East Odisha, 56 from West Odisha and 51 from Central Odisha.

The domicile-wise distribution consists of 82 rural respondents, 49 semi-urban respondents, 46 urban respondents, 62 city respondents and 64 city-periphery respondents.

Statistical Tools Used

The collected data were analysed using descriptive and multivariate statistical techniques. Cross-tabulation was used to examine the distribution of demographic characteristics across different domicile categories. Reliability analysis using Cronbach's Alpha was applied to assess the internal consistency of the ten items under the construct "Skill Environment and Developmental Trend."

The suitability of the data for factor analysis was examined through the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. Principal Component Analysis (PCA) was subsequently employed to identify the underlying dimensions within the ten skill-related variables.

Sources of Data

The study primarily uses respondent-level data for empirical analysis. The collected information includes demographic characteristics and perceptions relating to skill environment and developmental trends. The demographic variables considered in the analysis include gender, age, marital status, income and domicile.

Table 1 : Geo Specific Study of Respondents across Odisha

Geo-Specific Region	Number of Respondents	Percentage
North Odisha	72	23.76%
South Odisha	62	20.46%
East Odisha	62	20.46%
West Odisha	56	18.48%
Central Odisha	51	16.83%
Total	303	100.00%

Variables Considered for Skill Environment and Developmental Trend

The study considers ten variables under the construct of skill environment and developmental trend:

- V1: Skill environment is essential for better employability.
- V2: Accountability and honesty in skills have significant impacts.
- V3: Work ethics is important in every skill.
- V4: Leadership qualities play an important role in employability.
- V5: Decision-making, leadership skill and motivation are important for effective operations.
- V6: Delegation skill and effective management are essential in employment and jobs.
- V7: Flexibility in employability and training needs to be adaptable.
- V8: A growth mindset supports good

Table 2 Cross relation of Marital Status and Domicile

Marital status		Domicile					Total
		Rural	Semi Urban	Urban	City	City periphery	
Married	No. of respondents	56	41	30	47	56	230
	% within Marital status	24.30%	17.80%	13.00%	20.40%	24.30%	100.00%
Unmarried	No. of respondents	26	8	16	15	8	73
	% within Marital status	35.60%	11.00%	21.90%	20.50%	11.00%	100.00%
Total	No. of respondents	82	49	46	62	64	303
	% within Marital status	27.10%	16.20%	15.20%	20.50%	21.10%	100.00%

Here, Table 2 indicates the cross relationship between Marital Status and Domicile of the respondents. Out of the total 303 respondents, 230 respondents are married and 73 respondents are unmarried, showing that married respondents form the majority of the sample.

Among the married respondents, the highest proportion belongs to Rural and City Periphery areas, each accounting for 56 respondents (24.3%), followed by City areas with 47 respondents (20.4%), Semi-Urban areas with 41 respondents (17.8%), and Urban areas with 30 respondents (13.0%). Among the unmarried respondents, the highest proportion belongs to Rural areas with 26 respondents (35.6%), followed by Urban areas with 16 respondents (21.9%), City areas with 15 respondents (20.5%), while Semi-Urban and City Periphery areas each account for 8 respondents (11.0%). Overall, the findings reveal that rural areas have the highest representation among both married and unmarried respondents, while urban areas have comparatively lower representation.

Gender wise Status with Domicile

Table 3 Cross relationship of Gender and Domicile

Gender		Domicile					Total
		Rural	Semi Urban	Urban	City	City periphery	
Male	No. of Respondents	49	33	27	34	44	187
	% within Gender	26.2%	17.6%	14.4%	18.2%	23.5%	100.0%
Female	No. of Respondents	33	16	19	28	20	116
	% within Gender	28.4%	13.8%	16.4%	24.1%	17.2%	100.0%
Total	No. of Respondents	82	49	46	62	64	303
	% within Gender	27.1%	16.2%	15.2%	20.5%	21.1%	100.0%

Table 3 indicates the cross relationship between Gender and Domicile of the respondents. Out of the total 303 respondents, 187 are male and 116 are female. Among the male respondents, the highest proportion belongs to the Rural category, with 49 respondents (26.2%), followed by City Periphery with 44 respondents (23.5%). The lowest proportion is found in the Urban category, with 27 respondents (14.4%). Among the female respondents, the highest proportion belongs to the Rural category, with 33 respondents (28.4%), followed by the City category with 28 respondents (24.1%). The lowest proportion is observed in the Semi-Urban category, with 16 respondents (13.8%). Overall, the findings reveal that rural respondents constitute the largest share among both male and female groups, indicating greater representation of rural areas in the study

Table 4 Crosstab of Marital Status based on Income

		Income				
		<2lakhs	2-4 Lakhs	4-6 lakhs	6-8 Lakhs	
Gender						Total
Male	No. of Respondents	56	97	26	8	187
	% within Gender	29.9%	51.9%	13.9%	4.3%	100.0%
Female	No. of Respondents	40	57	14	5	116

	% within Gender	34.5%	49.1%	12.1%	4.3%	100.0%
Total	No. of Respondents	96	154	40	13	303
	% within Gender	31.7%	50.8%	13.2%	4.3%	100.0%

Table 4 indicates the cross relationship between Gender and Income of the respondents. Out of the total 303 respondents, 187 are male and 116 are female. Among the male respondents, the highest proportion belongs to the ₹2–4 lakhs income category with 97 respondents (51.9%), followed by less than ₹2 lakhs with 56 respondents (29.9%). The ₹4–6 lakhs category includes 26 respondents (13.9%), while only 8 respondents (4.3%) belong to the ₹6–8 lakhs category. Among the female respondents, the highest proportion also belongs to the ₹2–4 lakhs income category with 57 respondents (49.1%), followed by less than ₹2 lakhs with 40 respondents (34.5%). The ₹4–6 lakhs category includes 14 respondents (12.1%), while only 5 respondents (4.3%) belong to the ₹6–8 lakhs category. Overall, the findings reveal that the ₹2–4 lakhs income group dominates among both male and female respondents, indicating a similar income distribution across gender groups.

Table 5 Crosstab of Gender and Age

		AGE					Total
		Less than 20 years	21-30	31-40	41-50	above 50	
Male	No. of Respondents	20	49	32	45	41	187
	% within Gender	10.7%	26.2%	17.1%	24.1%	21.9%	100.0%
Female	No. of Respondents	22	38	31	22	3	116
	% within Gender	19.0%	32.8%	26.7%	19.0%	2.6%	100.0%
Total	No. of Respondents	42	87	63	67	44	303
	% within Gender	13.9%	28.7%	20.8%	22.1%	14.5%	100.0%

Table 5 indicates the cross relationship between Gender and Age of the respondents. Out of the total 303 respondents, 187 are male and 116 are female. Among the male respondents, the highest proportion belongs to the 21–30 years age group with 49 respondents (26.2%), followed by the 41–50 years age group with 45 respondents (24.1%) and the above 50 years age group with 41 respondents (21.9%). The 31–40 years age group accounts for 32 respondents (17.1%), while only 20 respondents (10.7%) belong to the less than 20 years age group.

Among the female respondents, the highest proportion belongs to the 21–30 years age group with 38 respondents (32.8%), followed by the 31–40 years age group with 31 respondents (26.7%). The less than 20 years and 41–50 years age groups each account for 22 respondents (19.0%), while only 3 respondents (2.6%) belong to the above 50 years age group. Overall, the findings reveal that the majority of both male and female respondents belong to the 21–30 years age group. However, male respondents have a higher

representation in the older age categories, whereas female respondents are more concentrated in the younger and middle age groups.

Skill Environment and Developmental Trend

Table 6 Reliability Statistics Skill Environment and Developmental Trend

Cronbach's Alpha ^a	N of Items
0.819	10

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

Table 6 The reliability of the " Skill Environment and developmental trend " construct was tested using Cronbach's Alpha. The obtained Cronbach's Alpha value is 0.819, which is higher than the acceptable level of 0.70. This indicates that the items included under this construct have strong internal consistency and are strongly related to one another. Therefore, the reliability of the scale is considered acceptable for further studies.

Table 7 KMO and Bartlett's Test Skill Environment and developmental trend		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.836
Bartlett's Test of Sphericity	Approx. Chi-Square	123.784
	df	45
	Sig.	.000

This table 7 shows KMO and Bartlett's Test on "Skill Environment and Developmental Trend". The Kaiser-Meyer-Olkin Measure of Adequacy indicates that the proportion of variance in variables of perception on "Skill Environment and developmental trend" indicate 0.836 which indicate strong relation with variables with sample adequacy for this study that might be caused by underlying ten factors. Further, Bartlett's test of sphericity tests the correlation matrix, which indicates that variables are related and suitable for structure detection as the value is 0.836. So, it indicates that factor analysis may be useful with input variables of perception on "Skill Environment and developmental trend"

Table 8 Communalities Skill Environment and Developmental Trend

		Initial	Extraction
V1	Skill environment is essential for better employability	1.000	.879
V2	Accountability and honesty in skills are some significant impacts	1.000	.714
V3	Work ethics is important in every skill	1.000	.730
V4	Leadership qualities are most important role in every employability	1.000	.718
V5	Decision-making in leadership skill and motivation are most important factor in effective operations.	1.000	.770
V6	Delegation skill and effective management in employments and jobs are highly essential	1.000	.740
V7	Flexibility in employability with trainings must be much adoptable	1.000	.787
V8	A growth mindset can uphold a good employability always	1.000	.797

V9	A continuous learning attitude in every skill and jobs be there to mark growth and perfection	1.000	.796
V10	Adaptability valued by employers are always important because of change in skills	1.000	.786

Extraction Method: Principal Component Analysis.

Table 8 Communalities C on Skill Environment and developmental trend indicates the communalities of factors by using Principal Component Analysis. Communalities indicate the proportion of variance in response to factor, which have been explained in the above table. Here the initial value of each factor is 1.00, but the highest extraction value is C1 Skill environment is essential for better employability 0.879, second highest factor extracted C10 Adaptability valued by employers are always important because of change in skills 0.786. Above all, all the factors are above 0.7 which is fit to be used in factorial analysis as the value shows above 70 percent level. For further explanations of these ten factors on Skill Environment and Developmental Trend.

Table 9 Total Variance Explained on Skill Environment and Developmental Trend									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.673	16.730	16.730	1.673	16.730	16.730	1.414	14.137	14.137
2	1.195	11.949	28.679	1.195	11.949	28.679	1.264	12.638	26.776
3	1.171	11.707	40.387	1.171	11.707	40.387	1.162	11.616	38.392
4	1.062	10.622	51.009	1.062	10.622	51.009	1.160	11.599	49.990
5	1.016	10.158	61.167	1.016	10.158	61.167	1.118	11.176	61.167
6	.974	9.739	70.906						
7	.870	8.698	79.604						
8	.786	7.858	87.462						
9	.647	6.473	93.935						
10	.606	6.065	100.000						

Extraction Method: Principal Component Analysis.

Table 9 indicates total variance analysis on Skill Environment and Developmental trend where the initial Eigen values which show the variance explained by the initial solution and sum of squared loadings. In the initial Eigen values for 10 factors, those were above one can be taken to further study. Out of the total 10 factors. 5 factors have been extracted here as the sum of square values is more than one. Only 61 percent of data seems to be valid in total cumulative variances and rest 39 percent indicate a loss of data in the factor analysis and can be analyzed in the following tables

Table 10 Component Matrix Skill Environment and Developmental Trend

		Component				
		1	2	3	4	5
V1	Skill environment is essential for better employability	.176	.404	.077	.742	.358
V2	Accountability and honesty in skills are some significant impacts	.710	.041	-.034	.037	.076
V3	Work ethics is important in every skill	-.106	.679	.031	-.371	-.345
V4	Leadership qualities are most important role in every employability	.555	-.048	.063	.488	-.256
V5	Decision-making in leadership skill and motivation are most important factor in effective operations.	.330	.417	.195	-.144	.477
V6	Delegation skill and effective management in employments and jobs are highly essential	.623	-.055	.346	-.253	.254
V7	Flexibility in employability with trainings must be much adoptable	-.477	-.423	.270	-.116	.307
V8	A growth mindset can uphold a good employability always	.296	-.386	-.507	.038	.037
V9	A continuous learning attitude in every skill and jobs be there to mark growth and perfection	-.076	-.078	.492	.187	-.555
V10	Adaptability valued by employers are always important because of change in skills	.009	.235	-.655	.001	-.045

Extraction Method: Principal Component Analysis.^a

a. 5 components extracted.

Table 10 reported the component wise values those are mostly correlated with the C Skill Environment and Developmental Trend which are indicated in the matrix form. Out of 10 factors, 5 factors have been extracted those have more significant values in both the columns of components and to justify the control variable. Here the five significant factors are “C2 Accountability and honesty in skills are some significant impacts 0.710, followed by the second highest factor C6 Delegation skill and effective management in employments and jobs are highly essential 0.623, C4 Leadership qualities are most important role in every employability 0.555, C8 A growth mindset can uphold a good employability always 0.296. C1 Skill environment is essential for better employability 0.176. Although the linear correlation between the components have been measured the related component values, which are higher .and show significant to the solution. So, it is concluded that the Skill Environment and developmental trend mostly marked supports on the efficient Trend Analysis for Employability and Skill Development in India.

Findings of the Study

1. The study is based on 303 respondents drawn from five geographical regions of Odisha—North, South, East, West and Central Odisha.
2. North Odisha has the highest representation with 72 respondents (23.76%), while Central Odisha has the lowest with 51 respondents (16.83%).
3. Rural respondents constitute the largest domicile category, accounting for 82 respondents (27.1%) of the total sample.

4. The sample comprises 187 male and 116 female respondents, with rural areas showing the highest representation among both genders.
5. The ₹2–4 lakh income group is the dominant income category among both male and female respondents.
6. The 21–30 years age group is the largest age category, comprising 87 respondents (28.7%).
7. The ten-item skill environment and developmental trend scale demonstrates good internal consistency, with a Cronbach's Alpha value of 0.819.
8. The KMO value of 0.836 and statistically significant Bartlett's Test of Sphericity ($p < 0.001$) confirm that the data are suitable for factor analysis.
9. The communalities for all ten variables are above 0.70, indicating that the extracted components explain a substantial proportion of variance in the observed variables.
10. Five components with eigenvalues greater than one explain 61.167% of the total variance, indicating that the ten skill-related variables can be represented through a smaller set of underlying dimensions. The component structure highlights variables relating to accountability and honesty, work ethics, leadership, delegation and effective management, and the overall skill environment as important aspects of the employability construct.

Conclusion

The present study examined employability and skill development from a geographical and competency-oriented perspective using data from 303 respondents across different regions and domicile categories of Odisha. The geographical distribution of the sample provides representation from North, South, East, West and Central Odisha, while the domicile classification incorporates rural, semi-urban, urban, city and city-periphery respondents. This geographical structure provides a basis for examining workforce characteristics across diverse environments.

The demographic analysis indicates that rural respondents constitute the largest domicile group. The analysis also shows that the ₹2-4 lakh income category is dominant among both male and female respondents and that the 21-30 years age group represents the largest age category in the sample. These findings provide an important demographic context for understanding the workforce competencies examined in the study.

The analysis of the skill environment and developmental trend construct provides evidence of acceptable internal consistency, with a Cronbach's Alpha value of 0.819. The KMO value of 0.836 and significant Bartlett's Test of Sphericity further establish the suitability of the dataset for Principal Component Analysis.

The Principal Component Analysis identifies five components with eigenvalues greater than one, collectively explaining 61.167% of the total variance. The component structure highlights the relevance of accountability and honesty, work ethics, leadership, delegation and effective management, decision-making, and the broader skill environment in understanding employability and developmental trends.

Overall, the findings suggest that employability should be viewed as a multidimensional construct involving not only occupational or technical capabilities but also behavioural and developmental competencies. The geographical perspective adopted in the study further demonstrates the importance of considering regional and domicile diversity when examining workforce skills and employability in Odisha.

Suggestions and Policy Implications

Based on the findings, the following suggestions may be considered:

1. Strengthening skill-development programmes: Skill-development initiatives should incorporate both technical competencies and behavioural competencies such as leadership, accountability, work ethics and decision-making.
2. Greater geographical coverage: Skill-development programmes should be designed to reach respondents in rural, semi-urban, urban and city-periphery areas so that opportunities are not concentrated only in major urban centres.
3. Emphasis on continuous learning: Training programmes should encourage continuous learning and adaptability because changing employment environments require individuals to update their competencies.
4. Leadership and management development: Greater attention may be given to leadership, delegation and effective management skills as these variables demonstrate meaningful relationships within the component structure.
5. Employability-oriented education: Educational institutions may integrate employability skills with academic curricula through practical training, internships, industry interaction and experiential learning.
6. Regional skill mapping: Regional-level mapping of workforce competencies may help institutions identify differences in skill requirements and design more context-specific interventions.

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