

Assessing the Effectiveness of the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) in Enhancing Employability: A Study of Haryana

Raj Kumar¹, Vinod Kumar Bishnoi²

¹Research Scholar

Haryana School of Business

Guru Jambheshwar University of Science & Technology, Hisar

E-mail: rajkumar92807@gmail.com

² Professor

Haryana School of Business

Guru Jambheshwar University of Science & Technology, Hisar

E-mail: bishnoi29@gmail.com

KEYWORDS

PMKVY, Impact, Effectiveness, Skill Development, Perceived Training Effectiveness, Career Advancement through Training, and Job Placement and Practical Exposure.

ABSTRACT

The Skill India campaign, launched by Prime Minister Narendra Modi on July 15, 2015, aims to provide training to over 40 crore individuals across various skill sets by 2022. The Pradhan Mantri Kaushal Vikas Yojana (PMKVY) campaign commenced in the year, 2015 in India with the objective of encouraging and promoting skill development to improve employability among the youth. PMKVY focuses on providing quality, hands-on training to enhance employability and empower individuals to succeed in the workforce by aligning their skills with the needs of the job market. This research delves into the effectiveness of the PMKVY in the state of Haryana, aiming to understand the scheme's role in enhancing skill development and employment outcomes. By utilizing both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), the study identifies three key dimensions—perceived training effectiveness, career advancement through training, and job placement with practical exposure—that form the foundation for evaluating PMKVY's impact in the region. Data was gathered from a representative sample of 300 individuals across Haryana, with 280 participants providing complete and reliable responses. A structured questionnaire consisting of 10 targeted items captured data on these essential areas, helping to uncover the effectiveness of PMKVY interventions. The findings indicate that perceived training effectiveness, career advancement potential, and practical exposure through job placements are pivotal to the scheme's success in Haryana, highlighting the program's ability to foster employability among participants. Further, Welch ANOVA tests reveal significant differences in employment outcomes across various demographic factors, including age, gender, marital status, educational background, and annual family income, suggesting that PMKVY's impact may vary among different population segments. This study provides valuable insights into how PMKVY contributes to employment generation and economic growth in Haryana, emphasizing the scheme's role in addressing regional skill gaps and advancing workforce development.

Introduction

Youth play a pivotal role in the growth and development of any country, often shaping its future trajectory. The vast number and quality of young people can significantly influence a nation's success. A well-educated and skilled youth population drives innovation, economic expansion, and social advancement (Schultz, 1961; Becker, 1993). Conversely, neglecting the needs and potential of young individuals can lead to stagnation and social regressions, manifesting as economic and social challenges (World Bank, 2012). This comprehensive nurturing ensures that young people are equipped with the skills and knowledge required to make meaningful contributions as adults (Mincer, 1974). As peoples transition into adulthood, typically around the age of 18, their responsibilities increase substantially. They are expected to secure employment, support themselves and their families, and contribute to the nation's progress (Henderson, 2015). This shift from a protected childhood to the realities of adult responsibilities can be challenging, as young adults face new demands such as financial management and balancing personal and professional life (Saxberg & Sorkhabi, 2016). Society's role in supporting this transition is crucial, providing opportunities and resources to help young adults succeed (Rosenbaum, 2001). In today's global landscape, there is a notable disconnect between educational systems and the skills needed for employment (ILO, 2017). This gap has resulted in high levels of unemployment among the educated youth, particularly in developing countries where barriers to access—including limited healthcare, education, and job opportunities—exacerbate the situation (UNICEF, 2020). Many young people also confront severe issues such as poverty, hunger, and discrimination, which are compounded by inadequate educational and developmental resources (World Bank, 2018). In India, for instance, the disparity between job vacancies and the number of individuals hired is not due to a lack of manpower but rather a shortage of relevant skills (Kumar & Singh, 2021). Despite a large pool of eager, educated youth, many remain unemployed due to an education system that fails to align with current job market requirements (Sharma, 2019). This mismatch between educational outcomes and industry needs results in underutilized human resources, impeding economic growth and causing frustration among the youth (Rajput & Mehta, 2020). Addressing this issue necessitates a comprehensive overhaul of the education system, including updating curricula to meet industry demands, increasing vocational training opportunities, and fostering stronger partnerships between educational institutions and the private sector (Jain & Gupta, 2022). By bridging the gap between education and employment skills, countries can better harness their youthful populations, reduce unemployment, and drive economic and social development (Siddiqui & Singh, 2023). Investing in relevant skill development and aligning education with job market needs are crucial steps toward creating a dynamic and prosperous workforce (Hussain & Ahmad, 2024).

The Unemployment Dilemma in India

Unemployment is a major concern that affects countries around the world, whether they are developed or developing. Both types of nations experience this problem, though the nature and impact of unemployment may vary. In developed countries, unemployment might be due to economic shifts, technological advancements, or structural changes in the job market (OECD, 2019). In developing nations, the issue might be compounded by factors such as population growth, inadequate education systems, and limited job opportunities (UNDP, 2018). Despite differences in circumstances, unemployment remains a significant challenge that demands attention and effective solutions globally. In India, unemployment often leads to significant hardship and suffering. It is described as a circumstance in which individuals who are able and wanting to work are unable to locate acceptable employment. The nature of unemployment

varies between countries. In developed nations, unemployment is "open," meaning people are aware of their joblessness and actively seek employment. However, in developing countries like India, unemployment can be "disguised." This means that people may appear to be working or self-employed but are actually underemployed or not generating sufficient income. For instance, a family might all work on a small farm that could be managed by just a few people. In this case, many family members are essentially redundant, as their work does not significantly contribute to income or productivity (Bhattacharya, 2017).

The Importance of Skill Development

Skill development refers to the process of acquiring and enhancing abilities and competencies that are crucial for the workforce. It plays a vital role in boosting individual employability, enhancing productivity, and improving the competitiveness of businesses (World Bank, 2020). Effective skill development helps reduce un-employment, poverty, and social exclusion while fostering innovation and attracting investment (Singh & Verma, 2019). Additionally, it supports the transition from informal to formal economic activities, helping to integrate workers into more stable and regulated employment. India's skill development programs aim to create a workforce with the abilities, know-how, and globally recognized credentials needed to land a solid job and boost the nation's competitiveness in the global economy. Both wage and self-employed workers in the organized and unorganized sectors are to benefit from these initiatives' increased productivity and employability. They focus on increasing participation from youth, women, disabled individuals, and other disadvantaged groups. Additionally, the programs seek to coordinate efforts across different sectors and update the current system to better adapt to evolving technologies and labor market needs. From an Indian perspective, skill development is crucial for several reasons. With the rapid economic growth following liberalization, India's economy has shifted from agriculture to more value-added industry and service sectors. Workers in these areas—such as machine operators, technicians, craftsmen, salespeople, professionals, and managers—require a range of advanced skills, education and training compared to those in an agriculture-dominated economy. As the economy evolves, developing these skills becomes essential to meet the demands of the industrial and service sectors and to support sustained economic growth.

Government Initiatives and Programs

Recognizing the critical need for skill development, the Government of India established the Ministry of Skill Development and Entrepreneurship on November 10, 2014. This ministry was created to enhance and expand skill development initiatives across the country. It aims to address the growing demand for skilled employs and support India economic transformation. To meet the ambitious target of training 402 million people by 2022, as set out in the National Policy on Skill Development 2015, the Ministry has been working in coordination with other central ministries and state governments. This collaboration is crucial for scaling up skill development efforts and ensuring they reach various regions and communities. In July 2015, the government launched the Skill Development Mission, a nationwide campaign designed to promote skill enhancement and reflect the spirit of a "New India." This mission involves multiple union ministries and state governments, each contributing to various programs aimed at improving skills and increasing employment opportunities. Among the key initiatives are the Prime Minister's Kaushal Vikas Yojana (PMKVY), which focuses on providing industry-relevant training (Kumar & Soni, 2018); the Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDUGKY), targeting rural youth (Sharma & Dubey, 2019); and the Integrated Skill Development Scheme (ISDS) and Samarth Schemes, which cater to the textile industry (Mishra & Srivastava, 2020). Other notable

programs include Seekho aur Kamao, aimed at minority communities, and the Employment Skill Training and Placement (ESTP) under DAY-NULM, which focuses on the urban poor (Choudhury & Sahu, 2021). These initiatives collectively contribute to India's efforts to build a skilled workforce and boost economic growth.

Literature Review

Research consistently shows that skill development interventions can significantly enhance employment outcomes and earnings, with notable effects in low and middle-income countries compared to developed nations. For instance, Kluve conducted a comprehensive 67 skill training interventions were meta-analyzed, and the results showed that these programs generally led to improved employment outcomes and increased earnings across diverse economic contexts (Kluve et al., 2017). Similarly, Glick found that skills training had a notably positive effect on incomes in low- and middle-income nations. with a 5% increase in the probability of employment following training (Glick et al., 2015). However, in the context of developing countries like India, there are ongoing challenges despite substantial investments in skill development programs. Chakravorty and Bedi noted that while significant materials have been allocated to skill development initiatives, there is limited evidence on their effectiveness in reaching the intended targets and generating meaningful work opportunities (Chakravorty & Bedi, 2019). This observation highlights a gap in program implementation and outcomes, calling for a more nuanced understanding of program effectiveness in the Indian context. Program-specific studies provide further insights into the successes and limitations of skill development initiatives. For example, the National Skill Development Corporation evaluated the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) 2.0 and found that while over 90% of respondents were satisfied with aspects such as trainer quality and curriculum adequacy, there was a notable dissatisfaction with placement assistance. The study also highlighted that the majority of beneficiaries reported increased self-confidence and improved technical knowledge but expressed a preference for self-employment over wage employment (National Skill Development Corporation, 2020). Similarly, Lalitha examined the Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDUGKY) and found that skill training significantly improved job prospects and livelihoods for rural youth, though the benefits were often tied to local socio-economic conditions (Lalitha V, 2019). Additional research emphasizes the importance of aligning training programs with industry needs and addressing gaps in post-training support. Nair & Tripathi argue that industry partnerships are crucial for ensuring the relevance of skill development programs and enhancing their effectiveness (Nair & Tripathi, 2021). Kumar & Singh similarly found that while skills training programs improved employability, there were significant gaps in post-training support and job placement services, which need to be addressed to maximize the programs' impact (Kumar & Singh, 2018). Overall, while skill development programs have demonstrated progress in enhancing employability and technical skills, there is a clear need for ongoing reforms. Bridging the gap between training outcomes and labor market demands, improving placement support, and fostering stronger industry partnerships are essential steps for optimizing the effectiveness of these programs and achieving sustainable economic and social benefits (World Bank, 2015; Bhattacharya & Sengupta, 2020).

The Objective of Study

- The study aims to evaluate the factors influencing the effectiveness of the PMKVY scheme in Haryana.
- The study explores how socio-demographic factors affect the outcomes of the PMKVY scheme in Haryana.

Hypothesis of the Study

- **H₀₁:** Age of participants have no significant affect on the outcomes of PMKVY scheme in Haryana.
- **H₀₂:** Gender of participants have no significant affect on the outcomes of PMKVY scheme in Haryana.
- **H₀₃:** Marital status has no significant affect on the outcomes of PMKVY scheme in Haryana.
- **H₀₄:** Educational qualifications have no significant affect on the outcomes of PMKVY scheme in Haryana.
- **H₀₅:** Family income has no significant affect on the outcomes of PMKVY scheme in Haryana.

Research Methodology

Research methodology is a structured approach that researchers use to collect, analyze, and interpret data to answer research questions or test hypotheses. It includes research design, sampling techniques, data collection methods, and analysis procedures. Methodology ensures that research is valid, reliable, and ethical by following systematic procedures and ethical guidelines. By providing a clear framework, it helps researchers achieve their objectives and draw meaningful conclusions that contribute to the field of study.

Data and Sample

A structured questionnaire was carefully designed and administered on a group of 280 students enrolled in the PMKVY scheme using the multistage sampling and random sampling method. Respondents were selected from six administrative divisions of Haryana: Hisar, Ambala, Gurgaon, Karnal, Faridabad, and Rohtak, with one district chosen from each division. Additionally, two villages were selected from each district to gather a comprehensive perspective of participants from rural areas, contributing to the skill development programs under the PMKVY initiative. To ensure comprehensive data collection, the survey was conducted in both offline and online formats, providing greater flexibility and reaching a diverse group of respondents with varying access to technology. To maintain the integrity and quality of the data, any incomplete or partially filled responses were excluded from the analysis. This exclusion process helped ensure that only fully completed and reliable responses were considered for further evaluation.

Analysis of Data

The analysis of demographic and socio-economic factors, including age, gender, marital status, education, and income, reveals their significant impact on various outcomes. Using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), we identify underlying constructs such as socio-economic status and PMKVY skill development program. The demographic data table highlights the composition of the sample based on these variables. T-tests and ANOVA are used to examine the influence of these factors on specific outcomes.

Table: 1 Demographic Profile of Research Data

Demographic profile	Variables	Frequency	Percent
Age Groups	15-18	3	1.1
	19-24	73	26.1
	25-30	144	51.4
	Above 30	60	21.4
Gender	Male	191	68.2
	Female	89	31.8
	Unmarried	126	45.0

Marital Status	Married	154	55.0
Educational Qualification	Below 8 Class	11	3.9
	9 th -12 th Class	141	50.4
	Under Graduate	108	38.6
	Post Graduate	14	5.0
	Other	6	2.1
Annual Family Income (Rs.)	Less than 75000	46	16.4
	75001 to 150000	93	33.2
	150000 to 225000	92	32.9
	225001 to 300000	44	15.7
	More than 300000	5	1.8

The Table 1 demographic profile presents a predominantly youthful sample, with 51.4% aged between 25-30 years, while 26.1% belong to the 19-24 age groups. A conspicuous gender imbalance is noted, with males representing 68.2% and females 31.8%. Marital status shows a near parity, with 55% of respondents married and 45% unmarried. The majority of respondents (50.4%) had an educational qualification of 9th-12th class, followed by undergraduates (38.6%), while smaller proportions included postgraduates (5%), those below 8th class (3.9%), and others (2.1%). Annual family income is largely concentrated in the Rs. 75,001 to 1,50,000 range (33.2%), followed closely by 32.9% in the Rs. 1,50,001 to 2,25,000 bracket, reflecting a socio-economic stratification skewed toward lower-middle income demographics.

Reliability Statistics

Assessing the data's internal consistency is crucial to this study since it shows how coherent the variables under analysis are as a whole. A statistical metric called Cronbach's Alpha has been used to assess this internal consistency.

Cronbach's Alpha

One commonly used metric for internal consistency is Cronbach's Alpha, with values greater than 0.8 indicating strong internal consistency and a high correlation between variables. Moreover, a value above 0.7 is generally considered to show a good level of internal consistency, making the data both acceptable and reliable (Gliem & Gliem, 2003). This threshold is commonly adopted in social science research to assess the reliability of scales and questionnaires.

Table: 2 Reliability Statistics

Cronbach's Alpha	N of Items
.813	10

The Table 2 results reveal a Cronbach's alpha value of 0.813, indicating a high level of internal consistency. This suggests that the data is reliable, allowing the study to confidently move forward with the KMO and Bartlett's test.

Kaiser-Meyer-Olkin: Measure of sampling adequacy

The percentage of variance among variables that may be ascribed to underlying causes is evaluated by the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy. Higher KMO values are appropriate for exploratory factor analysis (EFA) since they show that the variables account for a greater proportion of the variance. Given its strong explanatory power for the underlying components, the high KMO value in this instance indicates that the variables are well-suited for EFA.

Table: 3 KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.763
Bartlett's Test of Sphericity	Approx. Chi-Square	1891.763
	df	45
	Sig.	.000
Source: Primary Data		

The variables in Table 3 have a modest degree of shared variance, which makes them appropriate for component analysis, as indicated by the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy of 0.763. The results of Bartlett's Test of Sphericity showed that there are substantial correlations between the variables and that the correlation matrix is not an identity matrix, with a Chi-Square value of 1891.763 with 45 degrees of freedom and a significance level of 0.000. All of these findings support the data's suitability for additional factor analysis.

Table: 4 Communalities		
	Initial	Extraction
The PMKVY training improved my confidence in securing employment.	1.000	.794
The PMKVY training program significantly improved my technical skills	1.000	.754
The skills learned during the PMKVY training were highly relevant to my current or desired job role..	1.000	.824
I found the course content under PMKVY to be well-structured and easy to follow.	1.000	.882
PMKVY provided adequate practical experience for real-world job applications.	1.000	.771
I am satisfied with the effectiveness of the PMKVY training in advancing my career prospects.	1.000	.870
The PMKVY training was effective in providing networking opportunities with employers.	1.000	.837
The training program helped me acquire skills that are in demand in the industry.	1.000	.746
The training I received through PMKVY has made me more employable in the job market.	1.000	.864
The program's job placement services were helpful in finding employment after the training.	1.000	.658
Source: Primary Data		Extraction Method: Principal Component Analysis

Communalities measure the degree of variance that a variable shares with all other variables, reflecting the extent to which one attribute is related to others. Each factor's communalities are presented in the Table 4 above. Initially, communalities start at a value of one because unity values are included on the diagonal of the correlation matrix. Extraction communalities represent the proportion of variance in each variable that is accounted for by the extracted factors in a factor analysis. They provide valuable insight into the extent to which each variable contributes to the overall factor solution. High communalities suggest that a variable is well-represented in the factor model, while low communalities indicate that the variable may not align strongly with the extracted factors, potentially reducing its contribution to the model's explanatory power.

Table: 5 Total Variance Explained

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	3.960	39.604	39.604	3.960	39.604	39.604	3.241	32.414	32.414
2	2.648	26.483	66.087	2.648	26.483	66.087	2.399	23.988	56.402
3	1.391	13.914	80.001	1.391	13.914	80.001	2.360	23.599	80.001
4	.510	5.099	85.100						
5	.378	3.782	88.882						
6	.331	3.311	92.193						
7	.294	2.939	95.132						
8	.206	2.060	97.192						
9	.180	1.798	98.990						
10	.101	1.010	100.000						

Source: Primary Data Extraction Method: Principal Component Analysis

The Table 5 shows the results of Principal Component Analysis (PCA), where the first three components together explain 80% of the total variance. Initially, Component 1 accounts for 39.60%, Component 2 for 26.48%, and Component 3 for 13.91%. After extraction, these components still explain 80% of the variance. Following rotation, the variance is redistributed for better interpretability, with Component 1 explaining 32.41%, Component 2 23.99%, and Component 3 23.60%. This indicates that the first three components capture the most significant patterns in the data, making them essential for further analysis.

Table: 6 Rotated Component Matrix^a

	Component		
	1	2	3
I found the course content under PMKVY to be well-structured and easy to follow.	.926		
The skills learned during the PMKVY training were highly relevant to my current or desired job role.	.893		
The training program helped me acquire skills that are in demand in the industry.	.857		
The PMKVY training program significantly improved my technical skills	.852		
I am satisfied with the effectiveness of the PMKVY training in advancing my career prospects.		.929	
The training I received through PMKVY has made me more employable in the job market.		.926	
The PMKVY training improved my confidence in securing employment.		.796	
The PMKVY training was effective in providing networking opportunities with employers.			.886
PMKVY provided adequate practical experience for real-world job applications.			.835
The program's job placement services were helpful in finding employment after the training.			.791

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Source: Primary Data

The Table 6 Rotated Component Matrix from the Principal Component Analysis (PCA) using Varimax rotation reveals three key factors related to the PMKVY training program. Factor 1 is associated with the Perceived Training Effectiveness, with high loadings such as 0.926 for the statement about the course being well-structured and 0.893 for the relevance of skills to job roles, indicating a strong correlation between effective training and the acquisition of pertinent skills. Factor 2 focuses on Career Advancement through Training, featuring a loading of 0.929 for satisfaction with the training's effectiveness in enhancing career prospects, alongside high loadings for employability and confidence in securing jobs. Lastly, Factor 3 pertains to Job Placement and Practical Exposure, with significant loadings of 0.886 for networking opportunities and 0.835 for practical experience relevant to real-world applications. The analysis utilized PCA for extraction and Varimax rotation, converging in 5 iterations, suggesting a stable solution that underscores the importance of training quality, career support, and practical application in the overall effectiveness of the PMKVY program.

Confirmatory Factor Analysis

Confirmatory factor analysis, a component of factor analysis, was used in the study to assess the consistency of construct (factor) measurement and ascertain whether the data fit an expected measurement model. This study employed explanatory factor analysis for the first time in order to distinguish between the various facets of PMKVY scheme vulnerability. Three elements were shown to be potentially responsible for the PMKVY scheme. Three factors were found to be helpful in describing the overall effectiveness of the PMKVY scheme among respondents: PTEF (Perceived Training Effectiveness), CATR (Career Advancement through Training) and JPPEX (Job Placement and Practical Exposure). By using the First Order Measurement model in confirmatory factor analysis, these three elements were verified and approved. The CFA calculates covariance values, assesses each model construct's validity and reliability, and looks at how much the suggested model affects the model fit evaluation. It measures the model using the theory or already discovered analytical investigation.

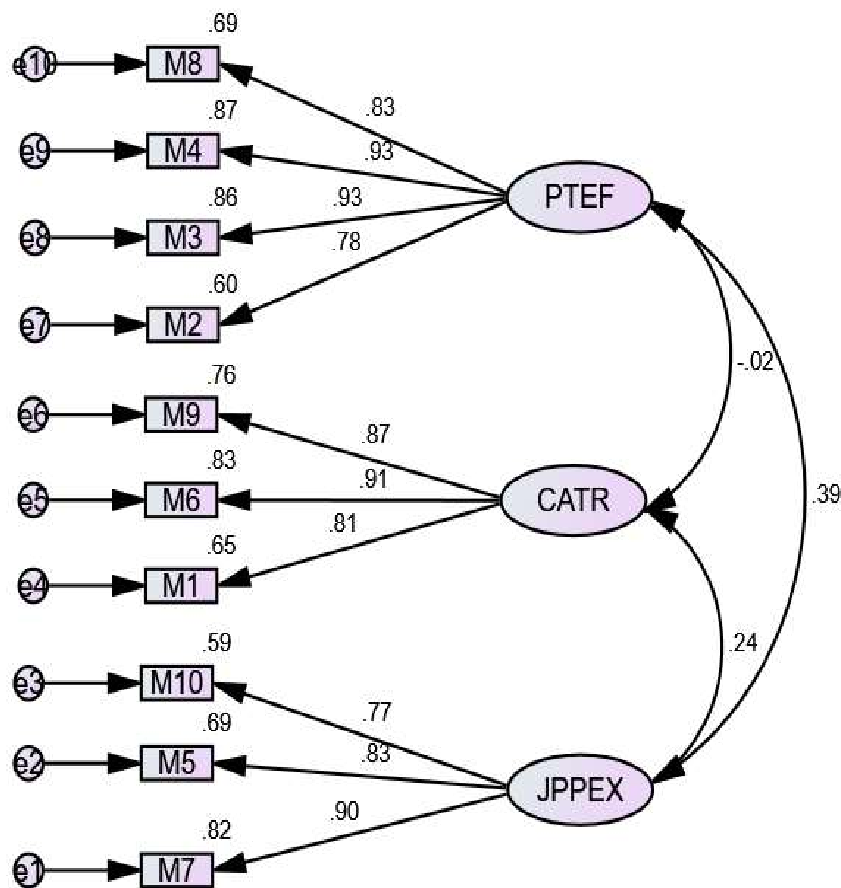


Table: 7 Models Fit Indices of First Order Confirmatory Factor Analysis

Model Outcomes	No. of Items	Indices	Recommended Value	Model Fit Indices
Proposed model CMIN= 110.442 DF= 32	10	CMIN/DF	<5	3.451
		GFI	>.90	0.932
		CFI	>.90	0.960
		IFI	>.90	0.961
		TLI	>.90	0.944
		RMSEA	<.10	0.094
Source: Primary Data				

The Table 7 shows that the model fit indices for a proposed structural or measurement model derived from a primary survey comprising 10 items. The CMIN value of 110.442, in conjunction with 32 degrees of freedom (DF), yields a CMIN/DF ratio of 3.451, which is below the recommended maximum of 5, indicating a reasonable fit between the model and the data (Kline, 2011). The Goodness of Fit Index (GFI) is 0.932, exceeding the acceptable threshold of 0.90, which suggests that the model accounts well for the variance in the observed data (Hu & Bentler, 1999). Similarly, the Comparative Fit Index (CFI) at 0.960 and the Incremental Fit Index (IFI) at 0.961 both surpass the 0.90 threshold, indicating a strong fit relative to baseline models (Bentler, 1990). The Tucker-Lewis Index (TLI) of 0.944 further supports this, as it also exceeds the acceptable limit, reflecting a well-fitting model that takes complexity into account (Byrne, 2016). Finally, the Root Mean Square Error of Approximation (RMSEA) value of 0.094 is below the upper limit of 0.10, suggesting a good approximation of the model to the population covariance matrix (MacCallum, Browne, & Sugawara, 1996). Overall, these indices collectively indicate that the proposed model fits the data well, demonstrating its effectiveness for further analysis and interpretation.

Table: 8 Indices of Divergent and Discriminant Validities

	CR	AVE	MSV	MaxR(H)	PTEF	JPPEX	CATR
PTEF	0.925	0.757	0.153	0.944	0.870		
JPPEX	0.875	0.700	0.153	0.891	0.391	0.837	
CATR	0.899	0.748	0.060	0.908	-0.019	0.244	0.865
Source: Primary Data							

The Table 8 shows that indices supporting both divergent and discriminant validity for the constructs PTEF, JPPEX, and CATR. High Composite Reliability (CR) values (PTEF: 0.925,

JPPEX: 0.875, CATR: 0.899) indicate strong internal consistency across all constructs. Average Variance Extracted (AVE) values exceed 0.50 for each construct, confirming adequate convergent validity (PTEF: 0.757, JPPEX: 0.700, CATR: 0.748). Maximum Shared Variance (MSV) is lower than AVE for each construct, supporting discriminant validity by demonstrating that each construct explains more variance in its indicators than in other constructs. Additionally, high MaxR(H) values (PTEF: 0.944, JPPEX: 0.891, CATR: 0.908) reinforce reliability. Low inter-construct correlations further confirm that these constructs are distinct from each other, with correlation values (e.g., PTEF and JPPEX: 0.391) lower than the square root of AVE for each construct, as recommended by the Fornell-Larcker criterion. Together, these indices affirm the constructs' reliability and validity, showing they measure unique aspects of the underlying theoretical model.

Table: 9 Results of One-Way Anova (Analysis of Variance) on the basis of Age

	Age	N	Mean	S.D.	Levene	Sig.	F Value	Sig.	Welch	Sig.	Hypothesis H ₀
Perceived Training Effectiveness	15-18	3	3.17	1.25	1.053	0.369	3.431	0.018*	N/A		Rejected
	19-24	73	2.92	1.12							
	25-30	144	2.87	1.18							
	Above 30	60	3.42	1.08							
Career Advancement through Training	15-18	3	3.55	0.38	2.727	^0.044	N/A	3.145	0.67		Accepted
	19-24	73	3.10	1.23							
	25-30	144	2.81	1.13							
	Above 30	60	3.05	1.11							
Job Placement and Practical Exposure	15-18	3	3.36	0.19	3.864	^0.010	N/A	40.050	0.000*		Rejected
	19-24	73	3.88	1.12							
	25-30	144	4.04	1.12							
	Above 30	60	3.99	1.10							
Source: Primary Survey ^homogeneity of variance is significant * Significant at 0.05 level of significance											

This Table 9 demonstrates a one-way ANOVA analysis examining age-based differences in three factors related to the PMKVY scheme: Perceived Training Effectiveness, Career Advancement through Training, and Job Placement and Practical Exposure. Notably, homogeneity of variance reveals significant results for Career Advancement through Training and Job Placement and Practical Exposure ($p = 0.044$ and 0.010 , respectively), leading to the use of the Welch test for those factors. Results indicate that Perceived Training Effectiveness varies significantly across age groups, with an F-value of 3.431 ($p = 0.018^*$), suggesting that participants' perceptions of training effectiveness differ by age. Similarly, Job Placement and Practical Exposure shows a highly significant difference with an F-value of 40.050 ($p = 0.000^*$), indicating that age has strongly influences on perceived job placement and practical experience. However, Career Advancement through Training does not show a significant difference by age, suggesting that participants across age groups have no significant impact on career advancement. These findings

suggest that age have significant influence on the perceptions of training effectiveness and job placement, while it has no significant affect on perceived career advancement. Participants who belong to age group above 30, showed the highest mean for perceived training effectiveness (3.42), while those aged 25-30 had the highest mean for job placement and practical exposure (4.04), indicating a significant impact of age on PMKVY outcomes.

Table: 10 Results of T-test on the basis of Gender

	Gender	N	Mean	S.D.	Levene	Sig.	t	Sig. (2-tailed)	Mean Difference	Hypothesis H ₀
Perceived Training Effectiveness	Male	191	2.88	1.15	1.033	0.310	-2.526	.012*	-.373	Rejected
	Female	89	3.25	1.13			-2.546	.012*		
Career Advancement through Training	Male	191	2.87	1.12	1.567	0.212	-1.634	.103	-.241	Accepted
	Female	89	3.11	1.20			-1.598	.112		
Job Placement and Practical Exposure	Male	191	2.82	1.11	1.751	0.187	-3.669	.000*	-.517	Rejected
	Female	89	3.34	1.05			-3.746	.000*		
Source: Primary Survey ^ homogeneity of variance is significant * Significant at 0.05 level of significance										

Table: 11 Results of T-test on the basis of Marital Status

	Marital Status	N	Mean	S. D.	Levene	Sig.	t	Sig. (2-tailed)	Mean Difference	Hypothesis H ₀
Perceived Training Effectiveness	Unmarried	126	2.78	1.13	0.190	0.664	-2.863	0.005*	-0.394	Rejected
	Married	154	3.17	1.15			-2.868	0.004*		
Career Advancement through Training	Unmarried	126	2.94	1.18	0.149	0.700	-0.088	0.930	-0.012	Accepted
	Married	154	2.95	1.13			-0.088	0.930		
Job Placement and Practical Exposure	Unmarried	126	2.92	1.14	0.138	0.710	-0.886	0.377	-0.119	Accepted
	Married	154	3.04	1.10			-0.883	0.378		
Source: Primary Survey		^ homogeneity of variance is significant					* Significant at 0.05 level of significance			
significance										

The Table 10 result shows that T-test analysis comparing gender-based perceptions of the PMKVY scheme across three factors: Perceived Training Effectiveness, Career Advancement through Training, and Job Placement and Practical Exposure. Results indicate a significant difference in perceived training effectiveness, with females (M = 3.25) rating it higher than males (M = 2.88), as evidenced by a t-value of -2.526 and p = 0.012. For Job Placement and Practical Exposure, females (M = 3.34) also rated this factor significantly higher than males (M = 2.82), with a t-value of -3.669 and p = 0.000. However, no significant gender difference was found in Career Advancement through Training (p = 0.103), suggesting that both genders view

career advancement opportunities from the training similarly. These findings highlight that females perceive the PMKVY scheme as more effective in training and job placement than males, though both genders share similar views on career advancement outcomes.

This Table 11 presents a T-test analysis comparing perceptions of the PMKVY scheme based on marital status across three factors: Perceived Training Effectiveness, Career Advancement through Training, and Job Placement and Practical Exposure. The results show a significant difference in perceived training effectiveness, with married participants ($M = 3.17$) rating it higher than unmarried participants ($M = 2.78$). This difference is evidenced by a t-value of -2.863 and a p-value of 0.005, which confirms statistical significance. However, there is no significant difference between married and unmarried participants regarding Career Advancement through Training ($p = 0.930$) and Job Placement and Practical Exposure ($p = 0.377$), suggesting similar perceptions across marital statuses for these factors. Overall, the findings highlight that marital status influences perceived training effectiveness, with married individuals viewing the training as more effective, while career advancement and job placement perceptions remain consistent regardless of marital status.

Table: 12 Results of One-Way Anova (Analysis of Variance) on the basis of Education

	Education	N	Mean	S.D.	Levene	Sig.	F Value	Sig.	Welch	Sig.	Hypothesis H ₀
Perceived Training Effectiveness	below 8 class	11	2.93	0.98	4.138	^0.003	N/A		9.357	0.000*	Rejected
	9th- 12th class	141	3.05	1.16							
	Under Graduate	108	3.11	1.15							
	Post Graduate	14	2.14	1.02							
	Other	6	1.91	0.46							
Career Advancement through Training	below 8 class	11	3.15	1.06	1.138	0.339	0.663	0.618	N/A		Accepted
	9th- 12th class	141	3.00	1.14							
	Under Graduate	108	2.92	1.18							
	Post Graduate	14	2.71	1.06							
	Other	6	2.38	1.30							
Job Placement and Practical Exposure	below 8 class	11	2.93	1.20	5.335	^0.000	N/A		22.934	0.000*	Rejected
	9th- 12th class	141	3.00	1.09							
	Under Graduate	108	3.13	1.12							
	Post Graduate	14	2.30	1.04							
	Other	6	1.77	0.27							
Source: Primary Survey ^homogeneity of variance is significant * Significant at 0.05 level of significance											

The Table 12 one-way ANOVA analysis reveals significant differences in the affect of education level on the outcomes of PMKVY scheme for three factors: Perceived Training Effectiveness, Career Advancement through Training and Job Placement and Practical Exposure. Levene's test indicated heterogeneity of variances for Perceived Training Effectiveness ($p = 0.003^*$) and Job Placement and Practical Exposure ($p = 0.000^*$), leading to use of welch test for those factor. Results indicate that Career Advancement through Training varies significantly across education groups, with an F-value of 0.663 ($p = 0.618$), suggesting that participants' perceptions of training effectiveness differ by education. Respondents with an undergraduate qualification reported the highest mean scores for Perceived Training Effectiveness (3.11) and Job Placement and Practical Exposure (3.13), whereas those with "Other" educational backgrounds scored the lowest (1.91 and 1.77, respectively). These findings were statistically significant (Welch = 9.357, $p = 0.000^*$ for Perceived Training Effectiveness; Welch = 22.934, $p = 0.000^*$ for Job Placement and Practical Exposure). However, perceptions of Career Advancement through Training remained consistent across all education levels ($F = 0.663$, $p = 0.618$). Overall, higher education levels are linked to more favorable Perceptions Training Effectiveness and Job Placement opportunities, while Career Advancement perceptions appear unaffected by education level.

Table: 13 Results of One-Way Anova (Analysis of Variance) on the basis of annual Family Income

	Annual Family Income	N	Mean	S.D.	Levene	Sig.	F Value	Sig.	Welch	Sig.	Hypothesis H_0
Perceived Training Effectiveness	Below 75000	46	2.85	1.13	0.155	0.960	5.201	0.000*	N/A		Rejected
	75001-150000	93	2.62	1.10							
	150001-225000	92	3.32	1.13							
	225001-300000	44	3.22	1.15							
	Above 300000	5	3.45	1.19							
Career Advancement through Training	Below 75000	46	2.90	0.98	1.941	0.104	1.348	0.252	N/A		Accepted
	75001-150000	93	2.85	1.19							
	150001-225000	92	2.90	1.19							
	225001-300000	44	3.31	1.14							
	Above 300000	5	2.86	0.90							
Job Placement and Practical Exposure	Below 75000	46	2.84	1.11	0.983	0.417	0.588	0.672	N/A		Accepted
	75001-150000	93	2.92	1.15							
	150001-225000	92	3.08	1.10							
	225001-300000	44	3.06	1.14							
	Above 300000	5	3.26	0.89							

Source: Primary Survey

^ homogeneity of variance is significant

* Significant at 0.05 level of significance

This Table 13 provides a one-way ANOVA analysis examining the impact of annual family income on three factors of the PMKVY scheme: Perceived Training Effectiveness, Career Advancement through Training, and Job Placement and Practical Exposure. Results show that Perceived Training Effectiveness significantly varies by income level ($F = 5.201$, $p = 0.000$), with participants from higher-income families rating it more positively, especially those earning above 300,000. This finding suggests that individuals from wealthier backgrounds perceive the

training as more effective. However, income level does not significantly impact perceptions of Career Advancement through Training ($p = 0.252$) or Job Placement and Practical Exposure ($p = 0.672$), indicating similar views on these aspects across all income groups. Levene's tests support the assumption of equal variances for all three factors, with non-significant results for each. Overall, the data suggest that while income influences perceptions of training effectiveness, it has no significant effect on perceived career advancement or job placement opportunities.

Conclusion of study

A study on the effectiveness of the PMKVY program in Haryana identified three key areas: perceived training effectiveness, career advancement through training, and job placement with practical experience. Initially, independent t-tests were used to assume equal variances, which showed no significant differences across demographic variables for these measures. However, post hoc testing revealed that the assumption of equal variances was violated, leading to the use of the Welch ANOVA test. This analysis revealed significant differences across demographic groups, particularly in factors such as age, gender, marital status, educational background, and annual family income. These factors were found to influence the effectiveness of the program, indicating that while a diverse range of individuals contribute to performance outcomes, the quality of the program may not have the same impact across all regions. In conclusion, although the PMKVY program shows effectiveness in terms of training outcomes, career progression, and job placement, the analysis highlights that demographic factors such as age, gender, marital status, educational background, and income significantly affect program outcomes. This suggests that the impact of the program may not be uniformly experienced across all states, and future interventions could benefit from targeting these demographic variables to improve the overall effectiveness of the PMKVY program. Several respondents have raised concerns regarding the lack of alignment between training programs and the emerging technologies that are in demand in the market. It seems that the curriculum may need to be periodically updated to stay in sync with current industry requirements. Additionally, training programs should be closely linked with apprenticeships, and trainees should be given opportunities for live internships in their respective fields. This approach would better equip individuals with the skills necessary to meet industry standards and improve their employability.

References

- Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago press.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological bulletin*, 107(2), 238.
- Bhattacharya, R. (2017). Understanding Unemployment in India: An Economic Perspective. *Economic & Political Weekly*, 52(12), 56-64.
- Bhattacharya, R., & Sengupta, S. (2020). Challenges in Skill Development Programs: Mismatched Curricula and Industry Partnerships. *Journal of Vocational Education and Training*, 72(4), 568-585.
- Byrne, B. M. (2016). *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming* (3rd ed.). New York: Routledge.
- Centre for Economic Policy and Research. (2019). Impact Assessment of PMKVY: A Study in Five States. *CEPR Report*.
- Chakravorty, A., & Bedi, A. S. (2019). Effectiveness of Skill Development Programs in India: A Critical Review. *Indian Journal of Labour Economics*, 62(3), 485-502.

- Choudhury, P. R., & Sahu, A. K. (2021). "Skill Development and Employment Generation in India: Challenges and Way Forward." *International Journal of Social Sciences and Economic Research*, 6(2), 1121-1134.
- Glick, P., Roubaud, F., & Verner, D. (2015). The Impact of Skills Training on Employment: Evidence from Latin America. *Labour Economics*, 35(3), 40-50.
- Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. *In Midwest research-to-practice conference in adult, continuing, and community education* 7(1), 82-87.
- Henderson, M. (2015). Transitions to Adulthood and the Role of Education and Employment. *Educational Research Review*, 10(2), 88-102.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, 6(1), 1-55.
- Hussain, S., & Ahmad, M. (2024). Aligning Education with Job Market Needs: A Strategic Approach. *Journal of Vocational Education and Training*, 76(1), 72-89.
- ILO (2017). World Employment and Social Outlook: Trends 2017. *International Labour Organization*.
- Jain, A., & Gupta, R. (2022). Reforming Education Systems to Meet Industry Demands. *International Journal of Educational Management*, 36(2), 234-248.
- Kline, R. B. (2011). Principles and Practice of Structural Equation Modeling (3rd ed.). New York: Guilford Press.
- Kluve, J., Puerto, S., Robalino, D., Romero, J. M., Rother, F., Stöterau, J., & Witte, M. (2016). Do youth employment programs improve labor market outcomes. *IZA, DP*, 10263.
- Kumar, R., & Singh, A. (2018). Evaluating the Effectiveness of Skill Development Programs in India: A Comprehensive Study. *International Journal of Skills and Workforce Development*, 9(2), 121-134.
- Kumar, A., & Soni, P. (2018). "Skill Development in India: Challenges and Opportunities." *International Journal of Innovative Research in Science, Engineering and Technology*, 7(6), 6707-6712.
- Kumar, R., & Singh, A. (2021). Skills Mismatch and Youth Unemployment in India: An Empirical Analysis. *Indian Journal of Labour Economics*, 64(3), 587-603.
- Kumar, S., & Sharma, P. (2021). Skill Development in India: Impact and Policy Recommendations. *Economic & Political Weekly*, 56(9), 25-33.
- Lalitha, V. (2019). Skill Training for Rural Youth under DDUGKY: A Case Study of NAC in Telengana. *International Journal of Advanced Research in Commerce, Management & Social Science*, 2(2), 155-160.
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological methods*, 1(2), 130.
- Mincer, J. (1974). Schooling, Experience, and Earnings. *Human Behavior & Social Institutions* No. 2.
- Mishra, A., & Srivastava, S. (2020). "The Role of Government Initiatives in Promoting Skill Development: An Analysis of PMKVY and Other Schemes." *Asia-Pacific Journal of Management Research and Innovation*, 16(2), 155-163.

- Nair, S., & Tripathi, P. (2021). Enhancing the Relevance of Skill Development Programs: The Role of Industry Partnerships. *Journal of Development Policy and Practice*, 6(1), 54-67.
- National Skill Development Corporation. (2020). Impact Evaluation of PMKVY 2.0. *NSDC Report*.
- Economic Commission for Latin America, & CAF Development Bank of Latin America. (2019). *Latin American Economic Outlook 2019 Development in Transition*. OECD Publishing.
- Rajput, N., & Mehta, S. (2020). Educational Outcomes and Labour Market Alignment in Developing Economies. *Journal of Economic Policy*, 45(1), 121-137.
- Rosenbaum, J. E. (2001). *Beyond college for all: Career paths for the forgotten half*. Russell Sage Foundation.
- Saxberg, H., & Sorkhabi, R. (2016). Navigating Adulthood: Challenges and Supports for Young Adults. *Youth Studies Australia*, 35(4), 15-29.
- Schultz, T. W. (1961). Investment in Human Capital. *American Economic Review*, 51(1), 1-17.
- Sharma, P. (2019). Education and Employment in India: Bridging the Skill Gap. *Indian Journal of Management*, 14(4), 456-472.
- Sharma, R., & Dubey, D. (2019). "Evaluating the Impact of the National Skill Development Mission in India." *Journal of Public Affairs*, 19(1).
- Siddiqui, M., & Singh, R. (2023). Skill Development and Economic Growth: The Case of Youth Employment. *Development Economics Journal*, 48(2), 215-230.
- Singh, R., & Verma, R. (2019). Skill Development and Economic Growth in India: Challenges and Opportunities. *Journal of Indian Business Research*, 11(3), 112-128.
- UNICEF (2020). The State of the World's Children 2020: Children, Youth, and COVID-19. United Nations International Children's Emergency Fund.
- World Bank (2012). World Development Report 2013: Jobs. World Bank Group.
- World Bank (2018). Youth and Skills: Putting Education to Work. World Bank Group.
- World Bank (2020). Skills for Employability: The Role of Skill Development in Economic Growth. World Bank Group.
- World Bank. (2015). Labour Market Impacts and Effectiveness of Skill Development Programmes in India. World Bank Report.