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MGNREGA-LED PROGRAMME ON EMPLOYMENT GENERATION AND RURAL DEVELOPMENT IN KARNATAKA: A CORRELATION ANALYSIS

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Abstract—**The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is one of India's major rural employment and livelihood-security programmes, providing a legal guarantee of wage employment to rural households whose adult members volunteer to undertake unskilled manual work. The programme aims to provide up to 100 days of wage employment in a financial year while also promoting the creation of durable rural assets, strengthening livelihood resources, enhancing social inclusion, and supporting decentralised planning through Panchayati Raj Institutions. Karnataka has implemented MGNREGA as an important instrument for generating rural employment, strengthening livelihoods, improving natural-resource management and supporting decentralized rural development. Person-days generated and expenditure is considered the principal indicators for assessing the employment and financial performance of the programme during the study period.**

The study focuses on two key employment indicators, namely person-days generated and the number of households employed under the MGNREGA fund utilisation. Descriptive statistics indicate that the mean MGNREGA fund utilisation was ₹438,550.73 lakh, with a standard deviation of ₹180,892.45 lakh, reflecting considerable variation in expenditure across the study period. The mean person-days generated was 1,067.23 lakh, with a standard deviation of 364.05 lakh, while the mean number of households provided employment was 23.03 lakh, with a standard deviation of 7.56 lakh. Pearson correlation analysis revealed a strong positive and statistically significant relationship between fund utilisation and person-days generated ($r = 0.898$, $p < 0.001$). Similarly, a very strong positive and statistically significant relationship was observed between fund utilisation and households provided employment ($r = 0.960$, $p < 0.001$). These findings indicate that higher utilisation of MGNREGA funds is strongly associated with increased employment generation in Karnataka. Therefore, the null hypothesis of no significant relationship is rejected at the 1 per cent level of significance. The study concludes that effective utilisation of MGNREGA funds plays an important role in strengthening rural employment and livelihood security in Karnataka.

Index Terms—**MGNREGA, Objectives, Fund Expenditure, Fund Utilisation, Employment Generation, Rural Development, Person-Days, Households Employment and Correlation Analysis**

I. Introduction

Rural unemployment, underemployment, seasonal employment, and livelihood insecurity remain important challenges in India's rural economy as well as Karnataka's rural economy. The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), enacted in 2005, represents a major institutional response to these challenges by providing a statutory framework for rural wage employment and strengthening the livelihood security of rural households. MGNREGA is a demand-driven wage-employment programme that provides employment to rural households while also promoting the creation of productive and durable rural assets. The programme supports various activities, including water conservation, land development, irrigation-related works, plantations, natural-resource management, and rural infrastructure development. These activities not only generate wage employment but also contribute to strengthening the rural resource base and improving livelihood opportunities.

The Ministry of Rural Development describes MGNREGA as a demand-driven programme that serves as a livelihood-security fallback for rural households when alternative employment opportunities are limited. Its implementation is supported by an end-to-end Management Information System (MIS), geo-tagging of works, social audits, and other monitoring mechanisms. MGNREGA has particular significance in Karnataka because a considerable proportion of the rural population depends directly or indirectly on agriculture and allied activities. Recurrent drought conditions, seasonal variations in agricultural employment, and regional disparities in rural employment opportunities make the programme an important instrument for providing wage employment and strengthening rural livelihoods. It also contributes to the development of rural infrastructure and the sustainable management of natural resources. According to the Karnataka Economic Survey (2025), MGNREGA as an important wage-employment programme for strengthening rural livelihoods. During 2024–25, Karnataka had an outlay of Rs.8,015.37 crore, of which Rs.5,879.65 crore had been released and Rs.5,404.54 crore had been utilized up to December 2024. During the same period, the programme generated 1,014.50 lakh person-days of employment.

II. Research Objectives

1. To study the performance and objectives of MGNREGA in Karnataka.
2. To analyse the impact of MGNREGA on socio-economic indicators of rural development in the state.
3. To examine the growth in trends of expenditure and employment generation under MGNREGA in Karnataka.

III. Materials and Method

The study is primarily based on secondary sources of information. The data has been collected from various reports - Ministry of Rural Development, Government of India, Mahatma Gandhi NREGA official MIS (2025), Press Information Bureau, Government of Karnataka - Karnataka Economic Survey (2025), Directorate of Economic and Statistics (2025), Department of Rural Development and Panchayat Raj, Official government reports, articles publications, newspapers, books, websites, etc. The study covers ten years of data from 2015–16 to 2024–25.

Statistical Tools of Analysis: The statistical techniques were used to analyse and interpret the data relating to the MGNREGA fund allocation and expenditure under the TSP. These include percentage analysis, growth rate, Compound Annual Growth Rate (CAGR), trend analysis, and Pearson's Correlation Coefficient. The analysis was carried out using Microsoft Excel, SPSS 21, and EViews to examine the trends and growth in MGNREGA fund allocation and employment generation during the last few years. **Compound Annual Growth Rate (CAGR):** It is suitable for analysing the growth in trends of MGNREGA fund allocation and employment generation under MGNREGA in Karnataka during the last few years. CAGR can be calculated as:

CAGR = [(Ending Value / Beginning Value)^(1/n) – 1] × 100

Pearson's Correlation Coefficient: Pearson's correlation coefficient (r) is used to measure the strength and direction of the linear relationship between MGNREGA expenditure and employment generation in Karnataka during the study period. It helps determine whether higher expenditure is associated with higher employment generation.

The formula is:

$$r = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x^2)]\,[n\sum y^2 - (\sum y^2)]}}$$

Where:

r = Pearson's correlation coefficient

X = MGNREGA expenditure

Y = Employment generation (person-days or households provided employment)

n = Number of observations/years

ΣX = Sum of expenditure values

ΣY = Sum of employment-generation values

ΣXY = Sum of the products of X and Y

ΣX^2 = Sum of squared expenditure values

ΣY^2 = Sum of squared employment-generation values

The value of **r** ranges from –1 to +1. A positive value indicates that expenditure and employment tend to move in the same direction, while a negative value indicates an inverse relationship.

Hypothesis

IV. There is a significant positive relationship between MGNREGA expenditure and employment generation in Karnataka during the study period.

Historical Background and Major Objectives of MGNREGA in Karnataka:

The MGNREGA, 2005 is a rights-based rural employment programme intended to enhance the livelihood security of rural households by providing guaranteed wage employment. The Act was notified on 7 September 2005 and came into force on 2 February 2006. It guarantees at least 100 days of unskilled manual employment in a financial year to every rural household whose adult members volunteer to undertake such work. In Karnataka, MGNREGA serves as an important instrument of rural development by combining employment generation, poverty reduction, natural-resource management and creation of durable community assets. The programme follows a demand-driven approach, whereby rural households can demand employment and the implementing authorities are required to provide work within the prescribed period.

V. Major Objectives

The major objective of the MGNREGA, implemented as MGNREGS in Karnataka through the Rural Development Commissionerate, is to strengthen rural livelihood security by guaranteeing at least 100 days of wage employment in a financial year to every rural household whose adult members are willing to undertake unskilled manual work. They are briefly explained below:

1. The principal objective is to provide up to 100 days of guaranteed wage employment to rural households seeking unskilled manual work. This provides income security, particularly during periods of limited agricultural employment.
2. MGNREGA supplements household income and strengthening rural livelihood-security base of economically vulnerable rural households.
3. MGNREGA generates wage employment at the local level, thereby contributing to rural income generation and serving as an important social security mechanism for economically vulnerable households.
4. Under the scheme, employment is linked with the creation of productive and durable assets, including water-conservation structures, land-development works, rural infrastructure and other approved community assets.
5. MGNREGA supports activities such as water conservation, drought-proofing, land development and other works that strengthen the natural-resource base and contribute to sustainable rural development.
6. The programme seeks to include economically vulnerable and socially disadvantaged groups. Its self-targeting and demand-driven character enables participation by groups that require employment support.
7. MGNREGA encourages women's participation in rural employment and provides opportunities for women to obtain independent wage income, thereby contributing to their economic empowerment.

8. Gram Panchayats and Gram Sabhas have an important role in planning, implementing and monitoring MGNREGA works. This promotes decentralised and participatory rural development.

VI. Role of MGNREGA in Socio-economic Indicators of Rural Development in Karnataka

MGNREGA plays a significant role in promoting rural development across Karnataka by providing a legal guarantee of up to 100 days of unskilled wage employment to rural households, reducing seasonal distress migration, strengthening livelihood security, and creating durable community assets and rural infrastructure. MGNREGA programme as a rights-based safety net rooted in constitutional directives, providing a demand-driven approach to poverty eradication and rural employment. His research highlights the scheme's role in empowering women, curbing migration, and driving inclusive growth, while navigating debates on its financial relevance (Keshava S.R (2014). Some key contributions of MGNREGA to rural development in rural areas are as follows:

Livelihood Security: MGNREGA serves as an important social safety net during periods of limited agricultural employment, providing wage income to rural households and strengthening their livelihood security.

Asset Creation: The programme promotes the creation of durable public and individual assets, including water conservation structures, farm ponds, rural connectivity roads, land development, and afforestation activities implemented in coordination with relevant departments such as the Karnataka Forest Department.

Social Inclusion: MGNREGA promotes inclusive development by encouraging the participation of women, Scheduled Castes (SCs), Scheduled Tribes (STs), and other vulnerable sections of rural society, thereby ensuring that wage employment benefits reach disadvantaged communities.

Decentralized Governance: The programme places Gram Panchayats at the centre of planning and implementation, enabling local institutions to identify community needs, prioritize works, and execute projects based on local demand and development requirements.

VII. Results and Discussion

Growth in Trends of Expenditure and Employment Generation under MGNREGA in Karnataka

This section analyse the growth in trends of expenditure and employment generation under MGNREGA in Karnataka. Under MGNREGA in Karnataka, against a total allocation of Rs.5,800.00 crore, an amount of Rs.3,404.13 crore was released, of which Rs.2,918.97 crore was utilised up to December 2025. During this period, the programme generated 680.35 lakh person-days of employment and provided employment to 21.5 lakh households. A total of 8.93 lakh works were undertaken, comprising 2.94 lakh completed works and 5.99 lakh ongoing works. These figures highlight the significant contribution of

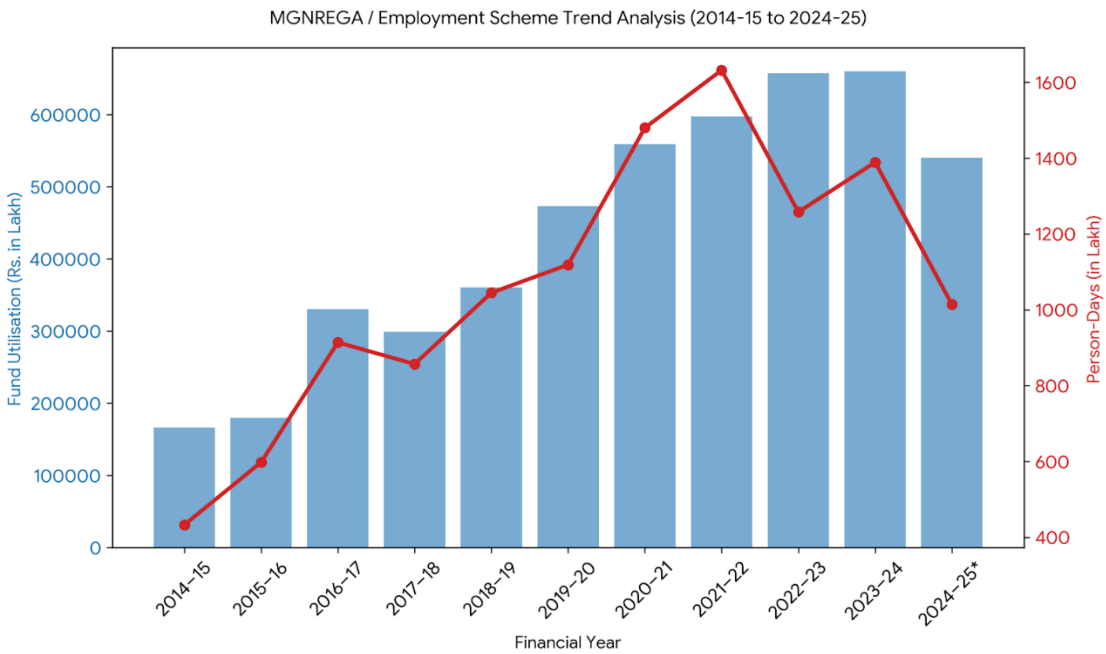
MGNREGA to rural employment generation and the creation of rural assets in Karnataka, as reported in the Economic Survey of Karnataka (2025).

Table-1 MGNREGA Fund Allocation, Utilisation, Person-Days and Households Provided Employment in Karnataka (2014 to 2023)

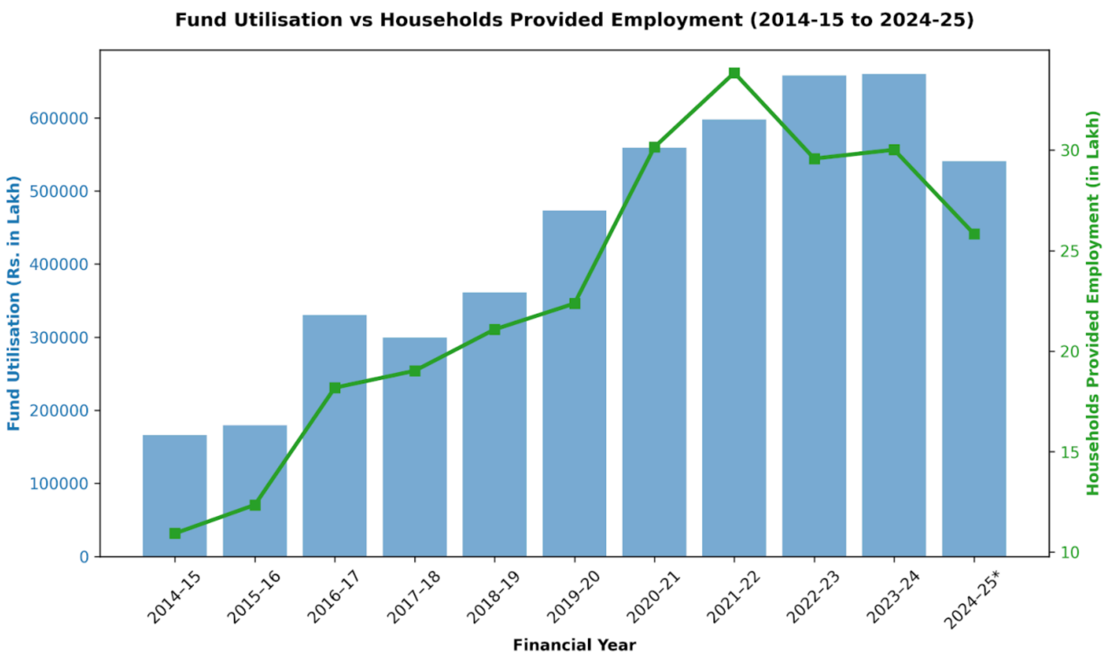
Year	Fund Allocation (Rs.in lakh)	Fund Utilisation (Rs.in lakh)	Person-Days (In lakh)	Households Provided Employment (In lakh)
2014–15	172,999.65	166,049.44	433	10.93
2015–16	190,005.82	179,586.23	598	12.35
2016–17	337,693.13	330,148.15	914	18.18
2017–18	306,879.78	299,060.63	857	19.02
2018–19	367,483.75	360,834.48	1,045	21.08
2019–20	483,290.21	473,087.01	1,119	22.37
2020–21	567,651.45	559,009.20	1,480*	30.15
2021–22	604,967.57	597,849.90	1,632	33.85
2022–23	688,477.39	657,800.39	1,258	29.58
2023–24	659,240.16	660,178.56	1,389	30.02
2024–25*	801,537.00	540,454.00	1,014.50	25.83

Source: Compiled from MGNREGA programme data and Karnataka Economic Survey 2024–25.
Note: * Data up to December 2024. *Person-days for 2020–21 are marked as reported in the supplied data. Fund utilisation in 2023–24 is marginally higher than the reported allocation.

The above table presents the fund allocation, fund utilisation, person-days generated and households provided employment under MGNREGA in Karnataka during 2014–15 to 2024–25. The data indicate a substantial expansion of the programme in terms of financial allocation, expenditure, employment generation and household coverage. In 2014–15, the fund allocation sharply increased from Rs.172,999.65 lakh to Rs.801,537.00 lakh in 2024–25 in Karnataka. The fund utilisation also increased substantially, from Rs.166,049.44 lakh in 2014–15 to ₹540,454.00 lakh in 2024–25. The highest utilisation during the period was recorded in 2023–24 at Rs.660,178.56 lakh, followed by Rs.657,800.39 lakh in 2022–23. The data indicate that a large proportion of the allocated funds was utilised in most years. This suggests a relatively high level of implementation of MGNREGA activities.



Under MGNREGA in Karnataka, person-days increased from 433 lakh in 2014–15 to 1,014.50 lakh in 2024–25. The highest employment generation was recorded in 2021–22, at 1,632 lakh person-days. This was followed by 1,480 lakh person-days in 2020–21. The sharp increase during 2020–21 and 2021–22 can be associated with the increased demand for rural employment during the COVID-19 period, when MGNREGA became an important source of livelihood support for rural households. After reaching its peak in 2021–22, person-days declined to 1,258 lakh in 2022–23, before increasing to 1,389 lakh in 2023–24. The provisional 2024–25 figure of 1,014.50 lakh indicates a further decline. Over the 10-year period from FY 2014–15 to FY 2023–24, fund utilization grew at the CAGR of 16.57%, while person-days generated expanded at 13.83% per annum.

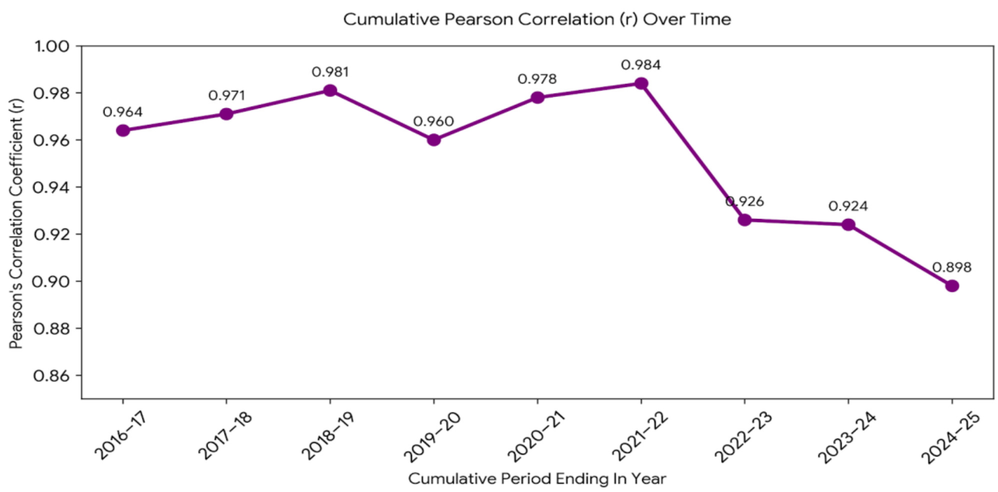


The number of households provided employment increased from 10.93 lakh in 2014–15 to 33.85 lakh in 2021–22. This represents a substantial expansion in the reach of the programme. After reaching the highest level of 33.85 lakh households in 2021–22, the number declined to 29.58 lakh in 2022–23, increased slightly to 30.02 lakh in 2023–24, and stood at 25.83 lakh in 2024–25. Between FY 2014–15 and FY 2023–24, households provided employment expanded at the CAGR of 11.88%, while fund utilization grew at 16.57%.

Table-2 Pearson-Days Correlation between MGNREGA Fund Utilisation and Employment Generation in Karnataka (2016 to 2024)

Correlation calculated Year	No. of Observations (N)	X	Y	Pearson's *r*	Relationship
2016–17	3	Fund Utilisation	Person-Days	**0.964**	Very Strong Positive
2017–18	4	Fund Utilisation	Person-Days	**0.971**	Very Strong Positive
2018–19	5	Fund Utilisation	Person-Days	**0.981**	Very Strong Positive
2019–20	6	Fund Utilisation	Person-Days	**0.960**	Very Strong Positive
2020–21	7	Fund Utilisation	Person-Days	**0.978**	Very Strong Positive
2021–22	8	Fund Utilisation	Person-Days	**0.984**	Very Strong Positive
2022–23	9	Fund Utilisation	Person-Days	**0.926**	Very Strong Positive
2023–24	10	Fund Utilisation	Person-Days	**0.924**	Very Strong Positive
2024–25	11	Fund Utilisation	Person-Days	**0.898**	Strong Positive

Source: Compiled Data from Researcher



As shown in the table and graph, Pearson's correlation coefficient (r) remains consistently high, moving from 0.964 (N=3) to a peak of 0.984 (N=8) before gradually easing to 0.898 (N=11). This reflects an overwhelmingly strong linear co-movement between financial allocation and physical employment generation, though structural cost inflation in recent years has slightly moderated the degree of proportional linkage.

Table-3 Pearson-Days Correlation between Fund Utilisation and Households Provided Employment in Karnataka (2016 to 2024)

Correlation calculated Year	N	X	Y	Pearson's *r*	Relationship
2016–17	3	Fund Utilisation	Households Provided Employment	**0.994**	Very Strong Positive
2017–18	4	Fund Utilisation	Households Provided Employment	**0.969**	Very Strong Positive
2018–19	5	Fund Utilisation	Households Provided Employment	**0.980**	Very Strong Positive
2019–20	6	Fund Utilisation	Households Provided Employment	**0.956**	Very Strong Positive
2020–21	7	Fund Utilisation	Households Provided Employment	**0.973**	Very Strong Positive
2021–22	8	Fund Utilisation	Households Provided Employment	**0.977**	Very Strong Positive
2022–23	9	Fund Utilisation	Households Provided Employment	**0.963**	Very Strong Positive
2023–24	10	Fund Utilisation	Households Provided Employment	**0.961**	Very Strong Positive
2024–25	11	Fund Utilisation	Households Provided Employment	**0.960**	Very Strong Positive

Source: Compiled Data from Researcher

Pearson's Correlation Analysis:

The formula is:

$$r = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x^2)]\,[n\sum y^2 - (\sum y^2)]}}$$

Where:

X = MGNREGA Fund Utilisation (₹ lakh)

Y = Employment-generation indicator

n = 11 observations (2014–15 to 2024–25)

Table-4 Fund Utilisation (X) and Person-Days (Y)

S. No	Statistical Components	Correlation Values
1	n	11
2	ΣX	4,824,057.99
3	ΣY	11,739.50
4	ΣXY	5,739,614,884.12
5	ΣX^2	2,442,814,931,780.43
6	ΣY^2	13,854,043.25

Source: Compiled Data from Researcher

Substituting these values:

$$r = \frac{11(5,739,614,884.12)-(4,824,057.99)(11,739.50)}{\sqrt{[11\ (2,442,814,931,780.43)-(4,824,057.99)^2][11(13,854,043.25)-(11,739.50)^{2]}}}$$

$$r = 0.898$$

Table-5 Fund Utilisation (X) and Households Provided Employment (Y)

S. No	Statistical Components	Correlation Values
1	n	11
2	ΣX	4,824,057.99
3	ΣY	253.36
4	ΣXY	124,239,953.34
5	ΣX^2	2,442,814,931,780.43
6	ΣY^2	6,407.25

Source: Compiled Data from Researcher

Substituting these values:

$$r = \frac{11(124,239,953.34)-(4,824,057.99)(253.36)}{\sqrt{[11\ (2,442,814,931,780.43)-(4,824,057.99)^2]\ [11(6,407.25)-(253.36)^{2]}}}$$

$$r = 0.960$$

Hypothesis Testing

Hypothesis - I

H0: There is a significant positive relationship between MGNREGA fund utilisation and employment generation in Karnataka during the study period.

H1: There is a significant positive relationship between MGNREGA expenditure and employment generation in Karnataka during the study period.

Table-6

Pearson-Days Correlation between MGNREGA Fund Utilisation and Employment Generation in Karnataka (2016 to 2024)

Variables	**Mean**	**Std. Deviation**	**Pearson Correlation (r)**	***Sig.* (2-tailed)**
Fund Utilisation (Rs.in Lakh)	438,550.73	180,892.45	***0.898****	***0.000***
Pearson-Days (In Lakh)	1,067.23	364.05		

*. Correlation is significant at the 0.01 level (2-tailed).
Note: Correlation is significant at the 0.01 level (2-tailed). The exact p-value is approximately 0.000003, which is conventionally reported as 0.000 in statistical table.

As shown in table, the mean MGNREGA fund utilisation was Rs.438,550.73 lakh, with a standard deviation of Rs.180,892.45 lakh, indicating considerable variation in expenditure across the study period. The mean Person-Days generated was 1,067.23 lakh, with a standard deviation of 364.05 lakh, showing variation in employment generation. The Pearson correlation ($r = 0.898$) indicates a strong positive relationship, and the relationship is statistically significant ($p < 0.000$). Thus, higher fund utilisation was strongly associated with higher person-days of employment generation in Karnataka. Therefore, the null hypothesis of no linear correlation is rejected, indicating that the relationship between fund utilisation and person-days is statistically significant at the 1% level. Hence, there exists a strong and statistically significant positive correlation between MGNREGA fund utilisation and person-days generated in Karnataka ($r = 0.898$, $p < 0.000$, two-tailed).

Hypothesis - II

H_0: There is no significant relationship between MGNREGA fund utilisation and household employment generation in Karnataka during the study period.

H_1: There is a significant positive relationship between MGNREGA fund utilisation and household employment generation in Karnataka during the study period.

Table-7

Correlation between MGNREGA Fund Utilisation and Households Provided Employment in Karnataka (2016 to 2024)

Variables	N	Mean	Std. Deviation	Pearson Correlation (r)	*Sig.* (2-tailed)
Fund Utilisation (Rs.in Lakh)	11	438,550.73	180,892.45	***0.960****	***0.000***
Household Employment Generation (In Lakh)	11	23.03	7.56		

*. Correlation is significant at the 0.01 level (2-tailed).
Note: Correlation is significant at the 0.01 level (2-tailed). The exact p-value is approximately 0.000003, which is conventionally reported as 0.000 in statistical table.

The Pearson correlation coefficient of 0.960 indicates a very strong positive relationship between MGNREGA fund utilisation and the number of households provided employment in Karnataka during 2016–2024. The mean fund utilisation was Rs.438,550.73 lakh, with a standard deviation of Rs.180,892.45 lakh, while the mean household employment generation was 23.03 lakh households, with a standard deviation of 7.56 lakh. Since the significance value ($p < 0.001$) is below the 0.01 level, the relationship is statistically significant. Thus, higher utilisation of MGNREGA funds was strongly associated with higher household employment generation during the study period.

VIII. Major Results

Based on the analysis of MGNREGA in Karnataka from 2014-15 to 2024-25, the major findings are as follows:

1. MGNREGA fund allocation increased substantially from Rs.1,72,999.65 lakh in 2014–15 to Rs.8,01,537.00 lakh in 2024–25, indicating a significant expansion of financial support for rural employment and development.
2. Fund utilisation increased from Rs.1,66,049.44 lakh in 2014–15 to Rs.5,40,454.00 lakh in 2024–25. The highest utilisation was recorded in 2023–24 at Rs.6,60,178.56 lakh, followed by ₹6,57,800.39 lakh in 2022–23.
3. Under the scheme, person-days generated increased from 433 lakh in 2014–15 to 1,014.50 lakh in 2024–25. The highest level of 1,632 lakh person-days was recorded in 2021–22, reflecting the increased demand for rural employment during the COVID-19 period.
4. Under the MGNREGA, households provided employment increased from 10.93 lakh in 2014-15 to 33.85 lakh in 2021–22. Although the number declined thereafter, it remained substantially higher than the initial level.
5. During 2014-15 to 2023-24, fund utilisation recorded a CAGR of 16.57%, while person-days increased at 13.83% and households provided employment at 11.88%. This demonstrates considerable long-term expansion of the programme.

6. The study results that the Pearson correlation analysis produced r = 0.898, indicating a strong positive relationship between fund utilisation and person-days generated. The relationship was statistically significant at the 1% level ($p < 0.01$).
7. The study found that the correlation between fund utilisation and households provided employment was r = 0.960, indicating a very strong positive relationship. The relationship was statistically significant at the 1% level ($p < 0.01$).

IX. Conclusion

MGNREGA has emerged as an important instrument for employment generation, livelihood security and rural development in Karnataka. The study reveals a substantial expansion in fund allocation, fund utilisation, person-days generated and household coverage during the study period. Although employment generation fluctuated across years, particularly during and after the COVID-19 period, the overall long-term trend demonstrates significant expansion of the programme. The correlation analysis provides strong empirical evidence of the association between financial utilisation and employment outcomes. The Pearson correlation of 0.898 between fund utilisation and person-days and 0.960 between fund utilisation and households provided employment, both statistically significant at the 1% level, demonstrate that higher utilisation of MGNREGA funds is strongly associated with greater employment generation.

The findings therefore establish that effective financial utilisation is an important factor influencing the employment-generating capacity of MGNREGA in Karnataka. At the same time, correlation should be interpreted as an association rather than proof of direct causation, since employment outcomes may also be influenced by factors such as rural employment demand, agricultural conditions, wage rates, climatic conditions and implementation efficiency. Finally, MGNREGA has made a significant contribution to strengthening rural employment and livelihood opportunities in Karnataka. To enhance its future effectiveness, greater emphasis should be placed on timely release and utilisation of funds, timely payment of wages, transparent implementation, social auditing, effective monitoring and creation of durable productive rural assets. Strengthening these measures can help ensure that MGNREGA continues to function as an effective instrument of inclusive and sustainable rural development in Karnataka.

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