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The Free Food Initiatives canAddress the High-scale Migration of Labourers: A Statistical Significance of Muzaffarpur-based Study

Dr. Mukesh Yadav
Associate Professor in Geography, Government College for Women, Hisar, Haryana

ABSTRACT

Background: The demography of the Indianlabour market is unstructured because ofhuman resource mismanagement.Due to the issues like COVID-19, the country witnessed a mass influx of labourer migrants in their home states of Uttar Pradesh and Bihar. However, this trend continues today; therefore,this study studied different parameters to exhibit their impact on the "Return of Migrants" (RoM).
Methods: An MLR-based approach was employed to predict the cause of RoMin the Muzaffarpur district of Bihar, India.
Results: All four selected factors, namely: Daily wage, Work days in a year, Free food in a month, and Daily expenses, correlated statistically with the RoM strongly; however, onlyFree food in a month ($p < 0.05$)was significant in predicting the RoM.
Conclusion: The study focussed on the factors affecting the increased RoM and inferred the exciting findings that can be used in addressing the existingcomplications in developing human labourresources.

Keywords:*Labour; Migrant; Daily wage; Free food; Daily expenses; Multiple Linear Regression*

1. Introduction

Millions of people in developing and wealthy nations use migration as a well-known means of subsistence. A large portion of this migration is made in developed areas for employment or small enterprise (Massey, 1988; Sanyal, 2018). According to reports, 232 million people—or around 3.2% of the world's population—migrated overseas in 2013. It means that about one in every 32 people is an immigrant from another country (Kunuroglu et al., 2018). Due to the significant differences in the economic and social conditions between the points of origin and destinations, internal migration occurs inside the nation as both "immigration" and "emigration" (Massey, 1988). In wealthy countries, the pull factors of the destination are the primary driver of migration.

In contrast, in emerging nations like India, where poverty, unemployment, and underdevelopment are widespread, people migrate to survive (Sinding, 2009; Dumont, & Gilles, 2010). Migration is often considered the first anti-poverty measure. However, it cannot be denied that individuals move from underdeveloped and underdeveloped regions to prosperous and established regions to improve their living standards in both developing and developed nations.

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Numerous research and definitions of the causes of migration have been produced (Castelli, 2018). India's male and female interstate migration still predominantly serves survival and developmental needs. Rural workers use seasonal and circular migration as a means of subsistence. However, when the global economy changes, such as when GDP growth rates slow down or the unemployment rate in the destination place rises, the migrants are forced to return home (Skeldon, 2010). According to census reports, there were 30% more internal migrants in India in 2011 than in 2001. The primary migration sources are Uttar Pradesh (UP), Bihar, Punjab, Rajasthan, Uttarakhand, Jammu and Kashmir, and West Bengal. The major migration destinations are Delhi, Maharashtra, Tamil Nadu, Gujarat, Andhra Pradesh, and Kerala (Chandramouli, 2011).

The return migration has brought different fears amongst the rural labour migrants, and they are seen to be returning to their native place (Borelli, & Vitucci, 2019). Therefore, this study aims to gather and analyzethe return migration data. These data are crucial for a compelling study into addressing the issues affiliated with sustainable human resource development, so creating a method that works well is necessary.

2. Materials and Methodology

2.1 Study area and data

The study was conducted in the Muzaffarpur district of Biharstate, located at26°07'17.3028" N and 85°22'07.5072" E, with a geographical area of 3,122.56 square kilometres in the eastern part of India. The study aims to analyze the potential cause of labour migrant influx in the district from different cities or states of India. The primary or field data was collected between October 2018 and December 2018 at different entry points of the district. A total of 25 responses were recorded in the tenure of 90 days. The group of returning labourers were identified and asked for the reasons for their return. The most frequently delivered reasons are mentioned in Table 1, along with the responses. The study used the random sampling approach to record the data. In this study, multiple regressions analysis is performed between the dependent variable,RoM (n) and a set of independent variables such as Daily wage (□), Work days per year (days), Free food per month (kg), and Daily expenses(□)

Table 1: The table showing the responses of returning labourers groups collected between October and December 2018

Daily wage (□)	Work days/year (days)	Free food/month (kg)	Daily expenses (□)	Return of Migrant (n)
949	164	8	458	21
984	149	11	651	23
859	167	17	458	17
950	150	8	651	21
700	151	9	658	24

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950	170	17	464	17
954	154	5	548	21
952	157	9	551	20
944	151	11	961	18
786	189	21	894	22
957	102	11	653	19
974	144	12	597	23
975	155	12	652	23
589	137	12	563	22
944	200	9	651	21
652	155	8	549	22
699	164	12	455	22
702	198	12	563	21
949	156	8	657	23
855	169	20	657	17
894	134	18	560	19
985	152	12	962	23
699	163	11	651	23
990	151	17	566	21
930	156	14	663	22

Source: Field Survey in Muzaffarpur District, Bihar

2.2 Empirical method

The study employed MS-Excel tool and linear mathematical model to explore the relationship between RoMand different associated factors; the algorithm, thus followed is as follows:

$$Y_{RoM} = \alpha W + \beta D + \gamma F + \delta E + \varepsilon$$

Where $Y_{RoM}$is the dependent variable denoting RoM and $\alpha, \beta, \gamma,$ and δrespectively, are the coefficients of Daily wage, Work days per year, Free food per month, and Daily expenses. The constant term or intercept is denoted as$'\varepsilon'$.The multiple regression analysis introduces one independent variable at each stage. The coefficient of correlation (multiple R) and coefficient of determination (R^2) is calculated mainly to assess the percentage of explanation provided by each independent variable on the dependent variable.

3. Results and Discussion

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The descriptors used in the study significantly affect the RoM in the district. These factors were studied in an MLR model to exhibit their role in predicting the influx of migrant labourers:

3.1 Effect of different climatic factors on the RoM

The factors incorporated in the study to build a relationship with the RoM were found to be either positively or negatively correlated with the latter. The factors like Work days per year (0.001695793) and Daily expenses (0.004288875) are positively correlated with the RoM, which means that an increase in any of thesewill increase theRoM. However, these two factors are insignificant in predicting the RoM as their p-value is more significant than 0.05.On the other hand, Daily wage (-0.004485031)and Free food per month (-0.238143759) are found to downregulate the RoM, i.e., these factors increase to decrease the RoM. However, only the factor of free food is found to be significant in predicting the RoM (p-value less than 0.05). Rest, all other factors are insignificant in predicting the RoM (with a p-value higher than 0.05). The entire output data of multiple linear regression is reflected in Table 2.

The significantRoM-associated factor, Free food per month, was also studied for its impact on the dependent variable, where it exhibited a similar trend. The representation of thisrelationshipis shown in Figure 1 with the help of an X-Y plot.It can be inferred that if any labourer residing in any geographical area is provided with regular free food under any initiative, this can address the issue of the mass immigration of labourers and the related disturbances.

Table 2: The output summary of the MLR analysis of the RoM-associated factors

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.548494512
R Square	0.30084623
Adjusted R Square	0.161015476
Standard Error	1.908783782
Observations	25

ANOVA

	Df	SS	MS	F	Significance F
Regression	4	31.35561606	7.838904016	2.151502594	0.111867734
Residual	20	72.86911054	3.643455527		
Total	24	104.2247266			

	Coefficients	P-value
Intercept	24.81188063	4.25266E-05

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Daily wage (□)	-0.004485031	0.180321203
Work days/year (days)	0.001695793	0.933950734
Free food/month (kg)	-0.238143759	0.023909066
Daily expenses (□)	0.004288875	0.155554642

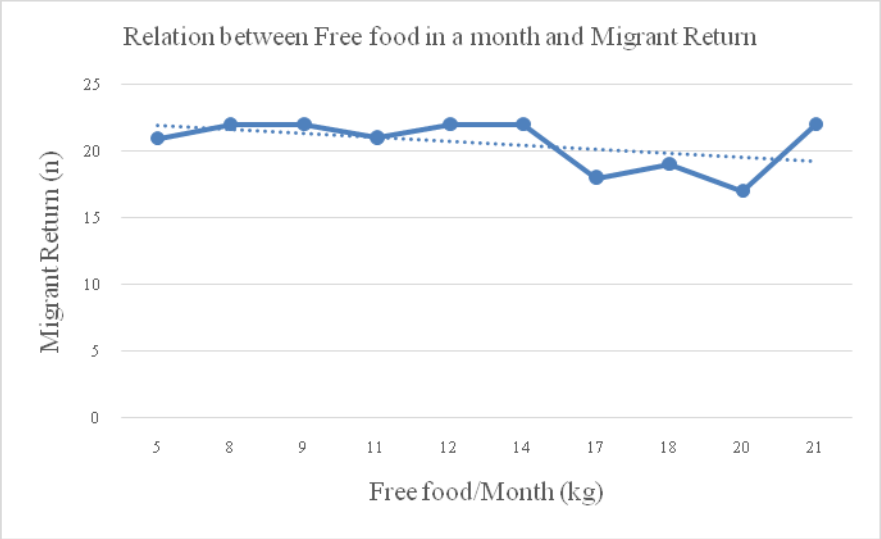

Figure 1: Relation between Free food in a month (kg) and Migrant Return (n)

3.2 Equation of Prediction

The multiple regression model has provided the coefficient values to each independent variable which can be aggregated to form the Equation of Prediction;

$$Y_{RoM} = -0.004485031W + 0.001695793D - 0.238143759F + 0.004288875E + 24.81188063$$

The factors, Daily wage, Work days in a year, and Daily expenses,are not noteworthy in the equation as theydo not hold any significance in the prediction.The data model's coefficient of correlation (multiple R) is also found to be reasonable, with a value above 0.54 (Table 2).It is significant in assessing the percentage of explanation provided by each independent variable on the dependent variable.

4. Conclusion

The ongoing crisis of COVID-19 has tremendously changed the demography of the country. A large number of migrants were returning to their native place in fear of the pandemic. The phenomenon of reverse migration, however, is not always induced by fear but also by other factors like the daily wages and expenses, along with different facilities made available to them by the competent authorities. Similarly, this study identified that food availability is one of the primary reasons for the "return of labour". Therefore, different governments must look after the severe implementation of free-food initiatives to address the existing labour resource complications in the country.

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