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A study on factors influencing livelihood security among agricultural labourers in rainfed situation of Karnataka

[1]Mamathalakshmi N, [2]Jayalaxmi B Pawar and [3]BS Lakshman Reddy

[1]Assistant Professor, Department of Agricultural Extension, College of Horticulture, Yalachahalli, University of Horticultural Sciences, Bagalkot, Karnataka, India

[2]Assistant Professor, Department of Agricultural Extension, College of Horticulture, Kolar, University of Horticultural Sciences, Bagalkot, Karnataka, India

[3]Associate Professor & Head, Department of Agricultural Extension, HEEU, RHREC, UHS Campus, GKVK Post, University of Horticultural Sciences, Bagalkot Karnataka, India

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Corresponding Author: Mamathalakshmi N

Abstract

Agricultural labourers constitute by far largest segment in unorganized sector. Impacts of government have not adequately protected agricultural laborers interests. This research has been conducted with objectives of assessing livelihood security status of agricultural labourers in a rainfed situation, determining the extent to which independent variables influence the livelihood security status of agricultural labourers, and identifying factors that discriminate between those with different livelihood security statuses. R^2 value showed that all 29 independent variables had contributed to tune of 83.70% of variation in livelihood security. Statistic value Mahalnobis 'D^2' and 'F' ratio calculated has been 46.57 and 31.83, respectively. 'F' ratio is highly significant ($p < 0.01$). That percentage ranking of distance measured by important variables indicated that first 9 ranks including of self confidence (43.54%), determination in work situation (21.47%), management orientation (10.97%), land holding (7.03%), training received (6.98%), farming system practiced (3.97%), indebtedness (3.87%), dependency ratio (1.63%), and savings (1.02%) has been identified as primary contributors to discriminating agricultural laborers with low and high livelihood security levels compared to other variables.

Keywords: Agricultural Labourers, livelihood security, discriminating factors, rainfed situation

Introduction

Dr. M. S. Swaminathan, a visionary farm scientist and food policy expert, asserts that "India's agriculture is currently at a crossroads." Rural households acquire livelihoods through 4 principal methods: labor-based livelihoods, production-based livelihoods, exchange or market-based livelihoods, and transfer-based entitlements. In transfer-based entitlements, people mainly depend upon social security as well as food assistance programmes of the government for fulfilling their livelihood necessities Acharya (2006) [1].

Few research were performed on livelihood security for agricultural labourers in Karnataka State. Transition from green revolution to evergreen revolution needed a broadening of focus on livelihood diversification to adopt sustainable livelihood approach. Agriculture remains primary source of livelihood for agricultural labourers. Livelihood security is a crucial mechanism for economic growth, supported by technology advancements, shifts in consumer demand, appropriate government policies, and development of necessary infrastructure. Within this framework, current study aimed at studying livelihood security of agricultural labourers in rainfed situation. Considering these facts, current research is designed with certain objectives, namely, (i) "to know extent of impact of independent variables on livelihood security status of agricultural labourers and (ii) to identify discriminating features inducing livelihood security status of agricultural labourers. By reviewing above researches, hypotheses framed for present research H_0 (1): There is no relationship between independent variables and dependent variable, H_0 (2): There is no influence of independent variables on dependent variable".

Materials and Methods

Ex-post-facto design research design was followed in current investigation to collect data as phenomenon had already occurred. Two districts, namely Kolar and Chickaballapur, have been selected as they represent rainfed situations. From each district 35 agricultural labourers were selected thus total 70 respondents. Likert (1932) [11] summated rating scale method has been followed to advance livelihood security scale as well as used to measure livelihood security. By using a structured schedule and standardized scales, 29 independent variables were quantified. Personally, data was collected by following simple random technique and analyzed collected data by administering appropriate statistical tests like correlation coefficient test (r) (to calculate r-value), which assists in

identifying relationship between livelihood security as well as independent variables. Multiple linear regression coefficient (R^2) test has been conducted to ascertain combined contribution of every independent variable on dependent variable by subjecting variables to multiple linear analysis. Simple discriminant function analysis has been carried out in identifying factors (independent variables) that discriminate between low livelihood security status and high livelihood security status among agricultural labourers. The analysis has been done following procedure described by Overall and Klett (1972) and Mahalanobis D^2 method in order to find out the co-efficients for the variables included in the study.

Table 1: Relationship between Independent Variables and Livelihood Security Status of Agricultural Labourers in Rainfed Situation (n=70)

Sl. No.	Characteristics	Correlation Coefficient (r)
1.	"Age	-0.094 NS
2.	Education	0.050 NS
3.	Land holding	0.352**
4.	Livestock possession	0.158 NS
5.	Caste	-0.286*
6.	Family size	0.442**
7.	Family type	0.161 NS
8.	Dependency ratio	-0.383**
9.	Adjustability	0.455**
10.	Participation in developmental process	0.107 NS
11.	Farming system practiced	0.102 NS
12.	Determination in work situation	0.535**
13.	Savings"	0.481**
14.	"Indebtedness	-0.301*
15.	Training received	0.019 NS
16.	Information seeking behaviour	0.156 NS
17.	Self confidence	0.255*
18.	Risk orientation	-0.250*
19.	Scientific orientation	0.310**
20.	Value orientation	0.248*
21.	Social participation	0.006 NS
22.	Extension participation	0.075 NS
23.	Economic motivation	0.068 NS
24.	Achievement motivation	0.334*
25.	Deferred gratification	0.042 NS
26.	Innovative proneness	0.482**
27.	Cosmopoliteness	0.141 NS
28.	Mass media utilization	0.012 NS
29.	Management orientation"	0.281*

** "Significant at 1%level
* Significant at 5% level
NS: Non-Significant"

Correlation test has been conducted to identify relationship type between independent and dependent variable.

Relationship between independent variables of agricultural labourers with livelihood security in rainfed situation is described in Table 1. Independent variables, including land holding (r=0.352), family size (r=0.442), adjustability (r=0.455), determination in work situation (r=0.535), savings (r=0.481), scientific orientation (r=0.310), and innovative proneness (r=0.482), had positive as well as significant relationships with livelihood security at 1% level. Only dependency ratio (r=-0.383) had negative and significant relationship with livelihood security at 1%. Correspondingly, self-confidence (r=0.255), value orientation (r=0.248), achievement motivation (r= 0.334) and management orientation (r=0.281) had positive as well as significant relationships with livelihood security at 5 percent level. Other variables like caste (r=-0.283), indebtedness (r=-0.301), and risk orientation (r=-0.250) had negative as well as significant relationship with livelihood security at 5 percent level. Remaining variables namely, education (r= 0.050), livestock possession (r=0.158), family type (r=0.161), participation in developmental programmes (r=0.107), farming system practiced (r=0.102), training received (r=0.019), information seeking behaviour (r=0.156), social participation (r=0.006), extension participation (r= 0.075), economic motivation (r=0.068), deferred gratification (r=0.042), cosmopoliteness (r=0.141) and mass media utilization (r=0.012) had positive and only age (r=-0.094) had negative non-significant relationship with livelihood security of agricultural labourers.

Land holding of agricultural labourers had positive as well as significant relationship with livelihood security. Possible reason may be that land holding is significant benefit that gives continued income to family, thereby securing livelihood.

Individuals from SC/ST, Category I, and OBC castes are more willing to engage in hard work compared to those from the general category; hence, a negative and significant correlation has been found between caste as well as livelihood security of agricultural labourers.

Individuals from SC/ST, Category I, and OBC castes are more willing to engage in hard work compared to those from the general category; hence, a negative and significant correlation has been found between caste as well as livelihood security of agricultural labourers.

Significant and positive relationship between family size and livelihood security was observed, as an increase in family size corresponds with a greater number of earning individuals.

Dependency ratio had negative as well as significant relationship with livelihood security of agricultural labourers. Likely reason may be that as dependency ratio rises livelihood security reduces because of dependency of non earning members on earning ones.

Adjustability exhibited a positive and significant relationship with livelihood security of agricultural labourers. This might be because flexible nature of respondents leads to more effective output by agricultural labourers in job scenarios.

Determination in work situation had positive as well as significant relationship with livelihood security of agricultural labourers. Possible reason may be that as determination on work situations results in high output by agricultural labourers in working situations, it also discovers employment's novel opportunities for extra income.

Savings exhibited positive and significant relationship with livelihood security of agricultural laborers. It may be because of fact that savings offer security for addressing other family needs and managing crisis circumstances.

Indebtedness had negative as well as significant relationship with livelihood security of agricultural labourers. Likely causes may be that as indebtedness increases, incomes are allocated to settle loans, resulting in poor security for lives of respondents and their families.

Self-confidence exhibited a positive and significant relationship with livelihood security of agricultural labourers. This may be because self-confidence is an essential characteristic necessary to confront any scenario and navigate life effectively. Hence, self-confidence results in better livelihood security.

Risk orientation exhibits negative as well as significant relationship with livelihood security of agricultural labourers. This may be because risk orientation of respondents increases security for their living standards.

Scientific orientation exhibits a positive as well as significant relationship with livelihood security of agricultural labourers. Possible reasons include that a scientific orientation facilitates the discovery of new opportunities, aids in acquisition of innovative farming practices, and boosts skills for diverse tasks.

Value orientation influences, guides, and directs the behaviour of the respondents; hence, positive as well as significant relationship between value orientation and livelihood security of agricultural labourers in rainfed situations has been found.

Achievement motivation exhibits positive and significant relationship with livelihood security of agricultural labourers. This can result from emphasis on achievement motivation, which prioritizes pursuit of perfection to obtain personal fulfillment in life.

Innovative proneness exhibited positive and significant relationship with livelihood security of agricultural labourers in rainfed situation. An appropriate reason may be that an individual's propensity for innovation is closely linked to adaptability, embracing novel concepts and activities; thus, security for life is enhanced.

Management orientation exhibited a positive and significant relationship with livelihood security of agricultural labourers. This can be because orientation towards managerial factors increases income from their agricultural production.

Research performed by "Anand Rathod (2007) [2], Geetha (2007) [6], Hardeep Kaur and Talukdar (2007) [7], Basavaraj Biradar (2008), Chandrani Saha (2008) [3], Lakshmi Narayani (2009) [9], Biswarup Saha and Ram Bahal (2010), Devarajaiah (2010) [4], Ereneus Marbaniang (2010) [5] and Lavanya (2010) [10]" agree findings of current research.

Independent variables exhibited a "significant relationship with livelihood security of agricultural labourers in rainfed situations; hence, null hypothesis H_0 (1) that there is no relationship between independent and dependent variables was rejected. Therefore, the alternative hypothesis stating that there is relationship between independent and dependent variable was accepted".

Table 2: Extent of Contribution of Independent Variables to Livelihood Security of Agricultural Labourers in Rainfed Situation (n=70)

Sl. No.	Independent Variables	Regression coefficients (b)	Standard error (SE_b)	t- value
1.	"Age	-0.0452	0.2386	0.19NS
2.	Education	0.0288	0.1671	0.17 NS
3.	Land holding	0.6499	0.1551	4.19**
4.	Livestock possession	0.0573	0.1712	0.33 NS
5.	Caste	-0.3186	0.1455	2.19*
6.	Family size	0.9084	0.2254	4.03**
7.	Family type	0.5819	0.3785	1.54 NS
8.	Dependency ratio	-0.7620	0.2065	3.69**
9.	Adjustability	0.4749	0.1690	2.81**
10.	Participation in developmental process	0.6313	0.6137	1.03 NS"
11.	"Farming system practiced	0.2585	0.2856	0.91 NS
12.	Determination in work situation	0.9790	0.1931	5.07**
13.	Savings	0.7580	0.2223	3.41**
14.	Indebtedness	-1.0861	0.2821	3.85**
15.	Training received	2.6208	0.6285	4.17**
16.	Information seeking behaviour	0.0584	0.2088	0.28 NS
17.	Self confidence	0.7912	0.1490	5.31**
18.	Risk orientation	-0.3921	0.1876	2.09*
19.	Scientific orientation	0.7031	0.2232	3.15**
20.	Value orientation	0.3058	0.1463	2.09*
21.	Social participation	0.5575	0.2208	0.56 NS
22.	Extension participation	0.2142	0.2002	1.07 NS
23.	Economic motivation	0.1868	0.1767	1.06 NS
24.	Achievement motivation	0.5785	0.2441	2.37*
25.	Deferred gratification	0.1656	0.1303	1.27 NS
26.	Innovative proneness	0.4718	0.1479	3.19**
27.	Cosmopoliteness	0.1791	0.1705	1.05 NS
28.	Mass media utilization	0.1224	0.2383	0.51 NS
29.	Management orientation"	1.0192	0.2119	4.81**

R^2 = 0.8370, a = -1.607, F = 11.59**

** "Significant at 1% level

* Significant at 5% level

NS: Non-Significant"

Multiple linear regression analysis has been conducted to determine extent of contribution of independent variables to dependent one, and outcomes attained were presented in Table 2.

Contribution of independent variables to dependent variable of agricultural labourers in a rainfed situation is illustrated

in Table 3. The findings conveyed that independent variables such as caste, dependency ratio, land holding, adjustability, family size, determination in work situations, indebtedness, savings, self-confidence, scientific orientation, training received, value orientation, innovative proneness achievement motivation, risk orientation, management orientation have been found to be significantly contributing to livelihood security of agricultural labourers in rainfed situation.

R^2 value showed that all 29 independent variables contributed to 83.70 percent tune variation in livelihood security.

Credible reasons may include personal, psychological, motivational, situational, socio-economic, and external factors that determine livelihood security. In rainfed situation, independent variables significantly contributed to livelihood security; therefore, null hypothesis H0 (2), which asserted no influence of independent variables on livelihood security, was rejected. Therefore, alternative hypothesis suggesting that independent variables influence livelihood security was accepted.

Table 3: Discriminating the Independent Variables Responsible for High and Low Livelihood Security Levels of Agricultural Labourers in Rainfed Situation (n=70)

Sl. No.	Order	Independent Variables	di	't' Value	Li	di×Li	% of the total	Rank
1.	X_{17}	Self confidence	9.52	6.28**	3.30	31.42	43.54	I
2.	X_{12}	Determination in work situation	9.56	5.14**	1.62	15.49	21.47	II
3.	X_{29}	Management orientation	15.22	4.89**	0.52	7.91	10.97	III
4.	X_3	Land holding	8.31	5.20**	0.61	5.07	7.03	IV
5.	X_{15}	Training received	2.27	3.85**	2.22	5.04	6.98	V
6.	X_6	Farming system practiced	2.41	4.12**	1.19	2.87	3.97	VI
7.	X_{14}	Indebtedness	4.30	3.59**	0.65	2.80	3.87	VII
8.	X_8	Dependency ratio	3.01	3.24**	0.39	1.17	1.63	VIII
9.	X_{13}	Savings	2.10	3.05**	0.35	0.74	1.02	IX
10.	X_{26}	Innovative proneness	1.03	2.99**	0.64	0.66	0.91	X
11.	X_{22}	Extension participation	0.86	1.08NS	0.63	0.54	0.75	XI
12.	X_9	Adjustability	0.56	2.92 NS	0.89	0.50	0.69	XII
13.	X_{24}	Achievement motivation	2.61	2.35*	0.17	0.44	0.61	XIII
14.	X_{27}	Cosmopoliteness	1.63	1.34 NS	0.18	0.29	0.41	XIV
15.	X_{18}	Risk orientation	0.29	2.13*	0.81	0.23	0.33	XV
16.	X_{20}	Value orientation	0.28	2.12*	0.52	0.15	0.20	XVI
17.	X_7	Family type	0.28	1.07 NS	0.34	0.10	0.13	XVII
18.	X_{23}	Economic motivation	0.40	1.04 NS	0.18	0.07	0.10	XVIII
19.	X_{19}	Scientific orientation	0.18	3.25	0.20	0.04	0.05	XIX
20.	X_{25}	Deferred gratification	0.10	1.47 NS	0.01	0.00	0.00	XX
21.	X_5	Caste	1.20	2.01*	-0.01	-0.01	-0.02	XXI
22.	X_{10}	Participation in developmental process	0.80	1.01	-0.04	-0.03	-0.04	XXII
23.	X_{11}	Farming system practiced	0.74	1.01 NS	-0.08	-0.06	-0.08	XXIII
24.	X_{21}	Social participation	2.20	0.54 NS	-0.04	-0.09	-0.12	XXIV
25.	X_{28}	Mass media utilization	2.26	0.49 NS	-0.15	-0.34	-0.47	XXV
26.	X_4	Livestock possession	2.31	0.29 NS	-0.21	-0.49	-0.67	XXVI
27.	X_{16}	Information seeking behaviour	2.63	0.38 NS	-0.21	-0.55	-0.77	XXVII
28.	X_1	Age	2.10	0.45 NS	-0.38	-0.80	-1.11	XXVIII
29.	X_2	Education	1.60	0.46 NS	-0.62	-0.99	-1.37	XXIX

"**Note:** di: Mean difference and Li: Discrimination function co-efficient
**significant at 1%
*significant at 5%
NS-Non-significant"
$D^2 = 46.57$, F = 31.83**

Discriminant function analysis has been utilized to identify independent variables that differentiate between low and high livelihood security levels among agricultural labourers in rainfed conditions, along with determining percentage contribution of each independent variable to overall measured distance.

Results related to analysis, as mentioned earlier, are shown in Table 3. Estimated Mahalanobis 'D^2' statistic value was 46.57, and 'F' ratio was 31.83. 'F' ratio has been determined to be highly significant ($P<0.01$). Consequently, distance between low to high livelihood security levels has been significant. It indicated that all 29 independent variables together contributed to distinguishing agricultural labourers with low and high livelihood security levels. Table 3 presents coefficient of discriminant function (Li), mean difference (di), product (di×Li), along with obtained% from analysis. Out of mean differences (di) calculated for 29 variables, statistical significance has been observed in 14 variables.

A total of 14 variables had a significant relationship with livelihood security. Out of 14 independent variables, 10 variables, including self-confidence (X_{17}), determination in work situation (X_{12}), management orientation (X_{29}), land holding (X_3), training received (X_{15}), farming system practiced (X_6), indebtedness (X_{14}), dependency ratio (X_8), savings (X_{13}), and innovative proneness (X_{26}) had significant relationship at one percent level with livelihood security levels of agricultural labourers. Another 4 variables,

namely, achievement motivation (X_{24}), risk orientation (X_{18}), value orientation (X_{20}), and caste (X_5) had significant relationship (5percent level) with livelihood security level of agricultural labourers. Table 4 indicates that percentage ranking of distance determined by significant variables showed that 1st 9 ranks including of self confidence (43.54%), determination in work situation (21.47%), management orientation (10.97%), land holding (7.03%), training received (6.98%), farming system practiced (3.97%), indebtedness (3.87%), dependency ratio (1.63%), and savings (1.02%) have been identified as significant factors in differentiating agricultural labourers with low and high livelihood security levels compared to other variables.

Computed discriminant scores 'Z_1' and 'Z_2' for low and high livelihood security levels among agricultural labourers have been 100.33 & 175.99, correspondingly. For these 2 groups, critical value of discriminant scores (Z) was 87.91.

'F' ratio has been determined to be highly significant ($p < 0.01$). Consequently, distance between low and high livelihood security levels has been significant. It indicated that 29 independent variables collectively have been effective in distinguishing between agricultural labourers with low and high livelihood security levels. It could be described by rationale that variables are chosen based on acquired knowledge, literature review, as well as their relevance to agricultural labourers. Consequently, they contribute to livelihood security.

Further, a probe into the table 3 reports that variables comprising of self confidence (43.54%), determination in work situation (21.47%), management orientation (10.97%), land holding (7.03%), training received (6.98%), farming system practiced (3.97%), indebtedness (3.87%), dependency ratio (1.63%), and savings (1.02%) occupied 1st 9 ranks (position) in discriminant function analysis in rainfed situation.

The calculated discriminant scores 'Z_1' and 'Z_2' for low and high livelihood security levels of agricultural labourers have been 100.33 & 175.99, correspondingly. For these 2 groups, critical value of discriminant scores (Z) has been 87.91.

Established discriminant function could now be utilized to predict likelihood of agricultural labourers belonging to low or high livelihood security levels. A discriminant score for selected agricultural labourers below 87.91 predicts low livelihood security, whereas a 87.91 score or higher suggests great livelihood security.

These 'Z' and 'F' values indicate a significant difference between low and high livelihood security groups. Furthermore, in computation of discriminant function analysis, medium livelihood security group has been excluded, focusing just on low and high livelihood security groups. Therefore, this is entirely expected for obtaining such outcomes. Research conducted by Lakshminarayan (1997) [8], Saravanan (2003) [13], and Prakashan (2004) [12] claimed current research outcomes.

Conclusion

A study noticed that agricultural labourers in a rainfed situation had low livelihood security due to their limited employment opportunities. Therefore, it is essential to offer year-round employment opportunities by enhancing irrigation systems and fortifying employment generation programs, including MGNREGA (Mahatma Gandhi National Rural Work Guarantee Act), along with similar programs. Study indicates that landholding, self-confidence, scientific orientation, success motivation, training acquired, farming system practiced, along with management orientation, are most significant factors determining livelihood security among agricultural labourers. Consequently, governmental support in land provision is essential, alongside the development of integrated farming systems with enhanced management methods. Moreover, specialized training programs are necessary to enhance confidence level, skills, and motivation for individuals to thrive in their pursuits.

Study found that dependency ratio, self-confidence, training obtained, along with management orientation, have been primary factors discriminating between livelihood security levels. Consequently, Govt. entities, developmental departments, including Department of Agriculture or Horticulture, Department of Social Welfare, Department of Rural Development, cooperative societies, as well as NGOs, should concentrate their efforts on amplifying such parameters via their developmental programs and schemes to assure development of livelihood security of agricultural labourers. Moreover, developmental programs specifically targeting agricultural labourers must be designed and performed.

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