

Socio-Economic Impact of Joint Land Ownership on Women Empowerment: A Study of Sunsari, Nepal¹

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Abstract

This study tests the socio-economic impact of joint land ownership (JLO) on women empowerment of Sunsari, Nepal using two period panel data before and after JLO of the same respondents since 2015 to 2020 AD. As the nature of data properties, logistic regression model is employed. The research includes the standard indicators to quantify the status of JLO and its socio-economic impact on women empowerment. In this study, status of women empowerment before and after JLO is indicated by JLO land location as dependent variables and land size, income, occupation, ethnicity, household size, housing condition, household decision, cooperative member, property ownership as independent variables measured in percentage. Logistic regression result shows statistically significant impact of JLO on land size, occupation, ethnicity, household decision and cooperative membership having p-value less than 5 percent. The estimated results from the econometric estimation suggests appropriate policy correction to participate women in JLO program for their socio-economic empowerment through JLO in Nepal.

Keywords: socio-economic characteristics, joint land ownership, women, empowerment

Introduction

Land as a natural resource has almost become very useful for human beings since the beginning of human civilization. Cai et al., (2020) argued that it is regarded as the most important form of property and its possession refers to economic well-being, social status and political power. Cherchi et al., (2019) stated ownership of land can thus be important in promoting the well-being, property control and empowerment of women. But in practice, few South Asian women gradually inherit and fewer control land as property. Research showed that there was a vast gap between land laws and its implementation due to number of factors

(law of inheritance, patriarchal ideology, post-marital residence, village exogamy) constraining women in exercising their legal claims in land property (Bhalotra, S., et al., 2020).

Central Beuro of Statistics (CBoS) (2011) reported that female ownership of land and building was 19.71 percent (26.77 percent and 18.02 percent were recorded in urban and areas respectively) while it was recorded 11.7 percent in the census 2001 AD. The government of Nepal through JLO policy (2011) has ensured that families can transfer ownership of land from husband to wife by paying a fee of rupees 100. Furthermore, Government of Nepal (GoN) (2010) made the provision of 25 to 40 percent discount

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in land registration in the names of women.

Community Self-Reliance Centre (CSRC) Nepal (2017) stated that after intervention of joint land ownership policy, the lands jointly owned by spouses thus cannot be sold only by husband or wife without mutual agreement. As a result, women have become powerful and secure in their homes. However, there is a guarantee to simplify the procedure in the registration of land for Nepalese women (i.e. JLO policy, 25-40 percent discount in land registration for women).

The Constitution of Nepal 2015, article 38(6), as per the JLO policy (2011), had the provision for the equal right to property and family affairs. But the data showed that as the 51.5% women population had 20% ownership on land and building; whereas, 10118 couples had JLO registration (CSRC, 2021). Comparing with data, Nepali women had very limited or no effective control over household decision-making and ownership and effective control of the land (Rawal & Agrawal, 2016).

This study is essential for two reasons. First, this study presents an overview and synthesis of research on status of joint land ownership and socio-economic impact of joint land ownership on women empowerment. Second, it provides empirical evidence of the relationship between joint land ownership and socio-economic characteristics of JLO holding women using pre-test and post-test data of Sunsari in Nepal. The overall objective of the study is to identify and analyze the impact of joint land ownership to women empowerment of Sunsari district of Nepal. The specific objectives are: to identify the status of joint land ownership; to analyse

the socio-economic impact of joint land ownership; and to analyse women empowerment through joint land ownership.

Review of Literature

Various literatures related with joint land ownership and its impact on women empowerment have been reviewed to find the research gap for the study. The review on the global context of JLO showed that there was diverse percentage of land ownership in the name of women in the world. Holden and Bezu (2013), in the survey report of *Stein T Holden and Sosina Bezu* from 2007 to 2012, included 615 households that received a joint land certificate. It was an increase from 61.7 percent to 82.4 percent in Southern-Ethiopia as the provision of JLC that began from 2005.

Similarly, Burnod et al. (2012), in the study that surveyed nine districts covering 1800 households found that 6 percent of plots that are marital property were registered jointly, 12 percent was registered in the name of the wife and 82 percent was registered in the name of the husband. However, while Widman and Hart (2019) found that only 3 to 4 percent of land by then had become jointly titled in Madagascar. The ownership was found high in Rwanda. Bayisenge (2018) found that women mainly gained access to land as wives in their husbands' family in Rwanda. During 2010-2013, 10.3 million land parcels were recorded countrywide while 81 percent land titles were joint, 11 percent by women and 6 percent by male. Out of this, 33 percent of joint title holding were the women of 35-60 age.

The Nepali context was not found much different from the global one. The

joint land ownership (JLO) here means to own the rights on the land jointly by the spouses. Land is considered as measure of property in Nepalese society (CSRC, 2017). JLO is recommended having common rights over the land for the spouse in order to maintain peace and harmony, security of property in society (CDS, 2013). Chakrabarti (2018) surveyed on female land ownership and fertility in Nepal and reported that Asian countries had 8 to 13 percent land ownership in joint title.

CSRC (2020) reported that after the JLO intervention in Nepal, 8367 spouses in 37 districts of Nepal signed joint ownership certificates on 2058 hectares of land by the end of March 2019. Relatively, the data showed that the policy of the government of Nepal on the joint ownership of land was not spread enough to its acting bodies in many parts of the country. It was not a great increase from the CBS (2011) report that showed 19.7 percent of women own 5 percent of the total land in Nepal and only 11 percent of those women had control of their land. The landed ownership of women was high in the urban areas in the eastern part of the country. In 30 percent of the families in Kathmandu and Kaski, women owned some land. (Oxfam et al. 2016; Alden Wiley et al. 2008).

The condition of land ownership in the name of women in Nepal is found to be related to the government policy as well. *The Constitution of Nepal* (2015), in its article 25, guaranteed land ownership as one of the most elaborated and extensive form of fundamental rights. It was taken to be a cornerstone for establishment of equal and righteous society. The constitution itself has guaranteed equality between and among its citizen and other Acts such as, *Domestic Violence (Crime and*

Punishment) Act, 2008, *Gender Equality Act*, 2015, and *Country Civil (Code) Act* 2017 are in place to promote and protect every sphere of rights of a woman. In this part, customary laws such as *Muluki Ain* 1853 and *Country Civil Code* 2017, *Land Reform Act* 1964, *Joint Land Ownership Policy* 2011 and some international conventions have the provisions of women land ownership rights. Besides these laws, in 2011, the government of Nepal introduced a policy of Joint land Ownership (JLO). This provided an easy mechanism for husbands and wives to register their land in both their names, paying a mere rupee 100 as a registration fee to the land revenue office. A woman gets a minimum of 25-50 percent tax exemption during land registration. So, women participation in joint land ownership program increased since the policy implication.

Unlike most other existing studies, this research primarily has focused on socio-economic status of JLO holding women before and after JLO intervention. Further, study has captured relation between JLO and women empowerment within the pre-test and post-test data of JLO with standard estimation methods. Lastly, it has suggested the empirical findings of the associations between socio-economic characteristics and joint land ownership for women for further policy initiations.

Conceptual Framework

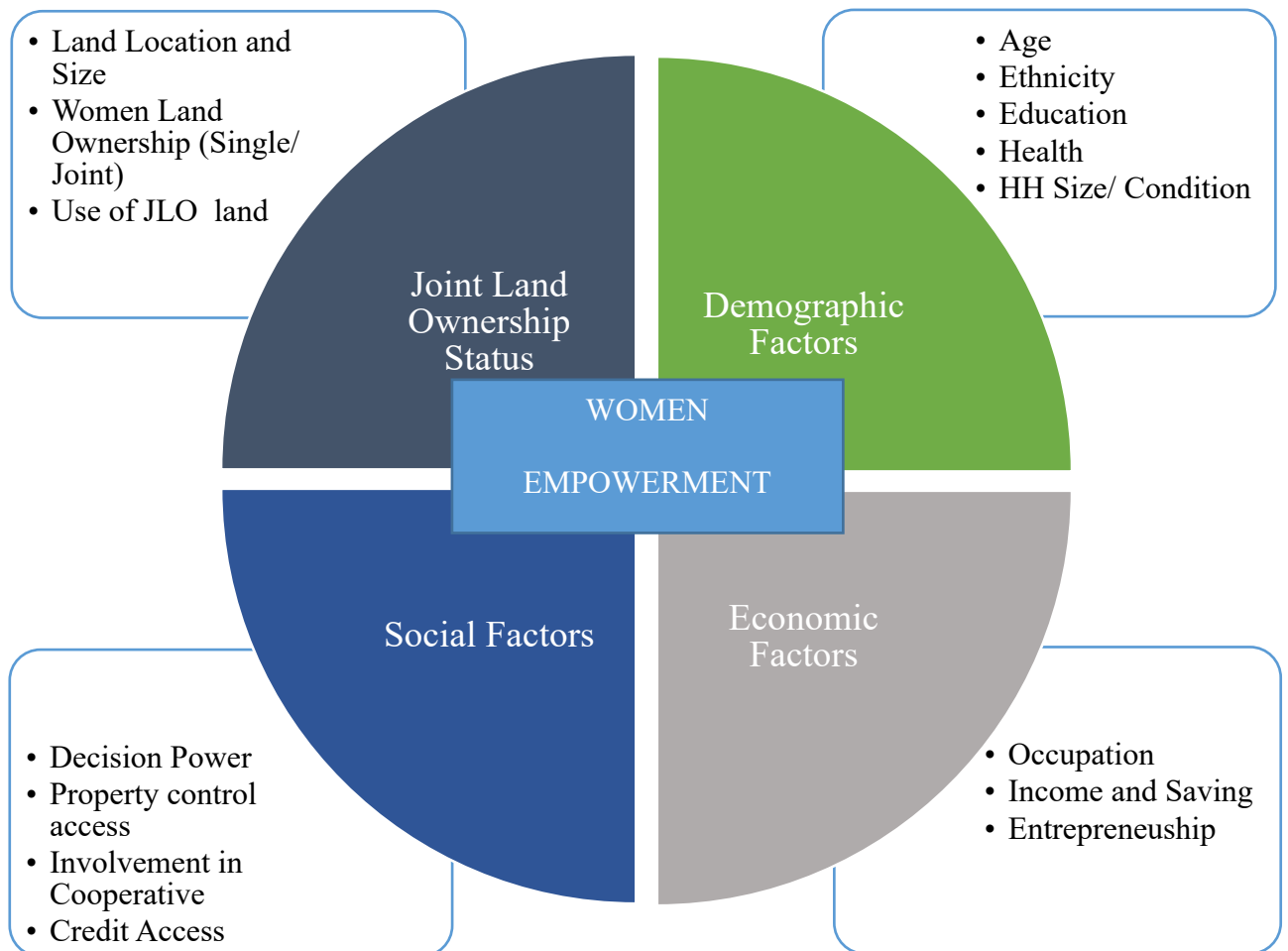
The sole land ownership of male that has been later co-owned with his spouses has been taken as joint land ownership (JLO). The socio-economic impact of such co-owning on women's empowerment is the focus of the study. Here, I had adapted the framework to focus specifically on women empowerment through joint land

ownership. Here, women empowerment through JLO factors (single and joint land ownership, land size and location and use of land) is the dependent variable and demographic factors (age, ethnicity, education, health, household size and condition); social factors (decision making

power, property control access, involvement in cooperative, credit access); economic factors (occupation, income and saving, entrepreneurship) are independent variables (Akter et al., 2017). The modified framework has been presented here in figure 2.1 as

Figure 1

Conceptual Framework



Conceptual Framework modified source from Dabissa (2013), Meinzen-Dick et al., (2019) and Haque et al., (2020)

Methods

Inferential analysis is used to analyze possible variables of survey and its measurements which has helped to determine significance of the study. The analysis has included summary statistics, correlation among the variables, binary

logistic regression, post estimation test, multicollinearity, hetero-skedasticity and the final regression result. Similarly, Collin test was also performed in order to settle the problem of multicollinearity.

Data and Variables

The study has sought to explore the relationship between dependent variable (women empowerment through JLO land) and the independent socio-economic variables such as land size, income, occupation, ethnicity, household size,

household decision and cooperative membership along with the property ownership of women. The study has tried to find out whether JLO significantly empowered women socio-economically in Nepal. Data from survey of District Lard Forum, Sunsari from 2015 to 2020 have been used.

The Model

Binary Logistic model has been applied for the inferential analysis. This model can be expressed as (Devkota et al., 2018):

The effect of X on the response probabilities $P(y=j/x)$ can be estimated by using binary logit model as:

$$P\left(\frac{y^i}{x}\right) = F(Z_i) = \frac{e^{z_i}}{1+e^{z_i}} + \frac{e^{-z_i}}{1+e^{-z_i}}$$

$$P(y=j/x) = F(Z_i) = \frac{e^{z_i}}{1+e^{z_i}} + \frac{e^{-z_i}}{1+e^{-z_i}}$$

$$Z_i = \beta_0 + \beta_1 X_{1i} + \dots + \beta_n X_{ni} + \mu_i \dots \dots \dots (i)$$

Where,

P= Probability of the outcomes

β_0 = Constant Coefficient

$\beta_1 \dots \beta_n$ = Coefficient

$X_{1i} \dots X_{ni}$ = Independent Variables

μ_i = error terms

Therefore, based on the model, the final equation is:

$$JLO_LandLocation = \beta_0 + \beta_1 Landsize + \beta_2 Income + \beta_3 Occupation + \beta_4 Ethnicity + \beta_5 Householdsize + \beta_6 Householddecision + \beta_7 Cooperativemembership + \beta_8 Property ownership \dots \dots \dots (ii)$$

Where,

Y= Dependent variable

β_0 = Constant coefficient

$\beta_1, \beta_2 \dots \beta_8$ = coefficient of independent variables

$X_{1i} - X_{ni}$ = Independent variables

Results and Discussion

Analysis

In this segment of the study, variables have been analyzed on the basis of their observation, mean, minimum and maximum value, and standard deviation as presented in table. Under this, all the variables except land size, income, household size have been assigned the

values of zero and one where zero holds minimum value and one maximum value. Here, one represents yes and zero otherwise. Zero and one can also be interpreted as dummy variables and other remaining values can be stated as numeric variables.

Table 1

Summary Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
Land_location	222	.2342342	.4244764	0	1
Land_size	222	3.765766	6.116035	.2	30.2
Income	162	9115.432	4327.531	2000	32000
Occupation	222	.1171171	.3222865	0	1
Ethnicity	222	1.81982	1.270609	1	5
Hh_size	222	4.558559	.7808185	3	7
Hh_decision	222	.2972973	.4581014	0	1
Coop_Member	222	.463964	.4998267	0	1
P_ownership	222	.2972973	.4581014	0	1

From the table 1, it presents the relationship between the dependent variable and independent variables. Results show that only 23.42 percent of the respondents have ownership of land in urban location with .4244764 standard deviation. The average land size of respondents is 3.765766 Katha with 6.116035 standard deviation and minimum size of land .2 kattha and maximum 30.2 kattha. The average monthly income of respondents is rupees 9115.432 and 4327.531 standard deviation with minimum income rupees 2000 and maximum income rupees 32000. Looking towards occupation of respondents, mean and standard deviation are .1171172 and .3222865 respectively. Similarly talking about ethnicity of respondents, ethnic group of 1-2 have the majority involvement in the JLO

registration with 1.270609 standard deviation. The average household size is 4.55 with maximum value 7 and minimum value 3. Looking towards household decision of respondents, 29.73 percent have the decision access in household and .4581 standard deviation. Similarly taking about cooperative membership, 46.40 percent respondents have got membership of cooperative. Looking towards property ownership in the household, 29.73 percent of respondents have access on property ownership in the family with .4581 standard deviation.

Specification Error

The Stata command link test can be used to detect a specification error, and it is used after the logit or logistic command. The idea behind link test is that if the model

is properly specified, one should not be able to find any additional predictors that are statistically significant except by chance.

It has come to know that *_hat* value statistically insignificant and *_hatsq* value is not statistically significant. The *_hat* value is 0.000 and *_hatsq* value is 0.181. So, we can conclude that we have chosen few meaningful predictors and the few variables are wrong or have errors and few of them are correct.

Goodness of Fit

For the goodness of fit, most commonly used test of model fit is the Hosmer and Lemeshow’s goodness-of-fit test. The idea behind the Hosmer and Lemeshow’s goodness-of-fit test, the predicted frequency and observed frequency should match closely and that the more closely they match, the better the fit. When performed goodness of fit, the result obtained for model is Prob > chi2 = 0.9927. In order to goodness of fit, p-value should be greater than 5 percent i.e. 0.05 and so we

can say that there is a goodness of fit in our models.

Other Diagnostics (Fitstat)

There are many other measures of model fit, such AIC (Akaike Information Criterion) and BIC (Bayesian Information Criterion). This helps to determine goodness of fit. We look towards count R2 in this diagnostic and the more it is, more its better. The count R2 for model is 0.877 which is higher than 0.7, so it is excellent.

Correlation

Correlation analysis is a statistical tool used to study the closeness of relationship between two or more variables. In this part we are analyzing the relation between each variable that how they are correlated with each other. The table given below shows the relation between dependent and independent variable as well between independent variables. In the given table land location is in dependent variables; whereas, others are dependent variables

Table 2

Correlation

Variables	Land_ Location	Land_ size	Income	Occupation	Ethnicity	HH_ Size	HH_ decision	Coop_ member	P_ Own ership
Land_ Location	1.0000								
Land_ size	-0.1844	1.000 0							
Income	0.0932	0.2029	1.0000						
Occupation	0.2474	0.2065	0.4401	1.0000					
Ethnicity	0.5266	-0.1650	0.1034	0.0684	1.0000				
HH_ Size	-0.1671	-0.2166	-0.3830	-0.1999	-0.1308	1.0000			
HH_ decision	0.2976	0.0326	0.3829	0.0393	0.3743	-0.0904	1.0000		
Coop_ member	-0.0654	-0.0627	0.2531	-0.0673	0.1073	-0.0501	0.2705	1.0000	
P_ Ownership	0.2678	0.0447	0.3273	0.0742	0.3431	-0.0580	0.8450	0.2443	1.0000

In the given correlation table, land location is dependent variable and others like land size, income, occupation, ethnicity, household size, household

decision, cooperative membership and property ownership are independent variables. Looking towards the data, it shows that land location has negative

relation with land size, household size and cooperative membership and positive relation with rest independent variables. For instance, land ownership empowers respondents to the income, occupation, ethnicity, household decision and property ownership in a positive manner. However, there is somehow good relationship between land location and other independent variables.

Post Estimation Result

Green (2003) argued that cross-sectional data analysis includes two problems: multi-collinearity among explanatory variables and Heteroscedasticity test in the error term. To overcome this, the Variance inflation factor (VIF) test was performed to deal with the problem of multicollinearity. The VIF estimates how much the variance of regression coefficient is inflated due to multicollinearity in the model. In this study, they are generally performed to test if there is any repetition or similarity in between the data sets and only if the data sets are free from multi-collinearity further steps can be taken accordingly.

Multicollinearity

Multicollinearity refers to the presence of linear relationship or non-linear

relationship between explanatory variables. Aylin (2010) stated that multicollinearity is a state where two or more variables have linear relation. It occurs when independent variables in a regression model are correlated. Choumert and Phelinas (2015) mentioned that if Variance Inflation Factor (VIF) value does not exceed 10 then the study is free from multicollinearity in our regression model.

Variance inflating factor as per the calculation for model is 1.97 and if VIF is greater than 10, there exists multicollinearity. So, this data set has no multicollinearity. The assumption is that there is no multicollinearity if the data set is less than 10.

Heteroscedasticity

Heteroscedasticity refers to the circumstance in which the variability of a variable is unequal across the range of values of a second variable that predicts it Klein et al. (2016). Heteroscedasticity is the variability of one variable is not equal across range of another variable that is predicted. It occurs when there is difference in variance of the error term for the range of observation.

Table 3

Heteroscedasticity

. hetttest
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of land_location
chi2(1) = 43.33
Prob > chi2 = 0.0000

It is important to identify the Heteroscedasticity as the results to be ruined when regression analysis is running. In our data set, looking towards hettest, the result appeared for the model is $\text{prob} > \text{Chi}^2 = 0.0000$. The assumption shows that there is presence of heteroscedasticity if the value is less than 0.05. So, there is presence of heteroscedasticity in case of model.

Final Regression Result

In statistics, the robustness tests has been emerged as a response to uncertainty

faced by social scientist in specifying the empirical models (Plumper, 2017). Robust standard error is a technique applied for obtaining unbiased standard errors of OLS under heterocidasticity or can be understood as the activities conducted when performing the activities like the task and solution. It can be analyzed by three processes, i.e logit coefficient, odd ration and marginal effect as:

Table 4
Final Regression

Variables	(1) Logit Model	(2) Odd Ratio	(3) Marginal Effect
Land_Location			
Land_size	0.859** (0.0519)	0.859** (0.0519)	-0.0149*** (0.00574)
Income	1.000* (9.29e-05)	1.000* (9.29e-05)	-1.69e-05* (9.01e-06)
Occupation	20.52*** (18.18)	20.52*** (18.18)	0.297*** (0.0785)
Ethnicity	2.393*** (0.515)	2.393*** (0.515)	0.0859*** (0.0178)
HH_Size	0.423* (0.208)	0.423* (0.208)	-0.0848* (0.0482)
HH_decision	8.749** (9.081)	8.749** (9.081)	0.213** (0.101)
Coop_member	0.273** (0.164)	0.273** (0.164)	-0.128** (0.0526)
P_Ownership	0.938 (0.767)	0.938 (0.767)	-0.00628 (0.0805)
Constant	7.135 (19.30)	7.135 (19.30)	
Observations	162	162	162

Robust see form in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Findings

In logistic regression, the odd ratio represents the constant effect of a predictor X on the likelihood that one outcome will occur. In regression models, we often want a measure of the unique effect of each X and Y. In the table 3.3, there are five

variables like land size, occupation, ethnicity, household decision and cooperative membership are significant having p-value less than 5 percent. It means they have positive relationship with JLO land.

With further analysis, we calculate

marginal effects of variables which are a useful way to describe the average effect of changes in explanatory (independent) variables on the change in the probability of outcomes in logistic regression and other nonlinear models. In marginal effects, we have five significant variables which are land size, occupation, ethnicity, household decision and cooperative membership respectively. The major findings that have been highlighted from the analysis have been presented below.

Findings from Descriptive Analysis

Analyzing the socio-economic impact on women empowerment comparing before and after JLO, we found the positive change on household decision making power, property access control, cooperative membership, income generation, saving creation, credit access have been increased by 56.76 %, 15.32%, 69.37%, 87.12%, 270% and 241% respectively. Similarly, we found 77% JLO women are from remote area, 74% of JLO land is utilized for both housing and agriculture, 58% of JLO registration land size is less than 1 kattha (3645 sq feet), 65% respondents are Adivasi, and 73.88% respondents have reading and writing level of education, and 22.53% respondents have RCC housing condition. Findings show that JLO has the significant impact on women empowerment.

Findings from Inferential Analysis

Those variables whose p-value is less than 0.05 do affect the land location significantly. Increase in significant variables like household decision, occupation, ethnicity, there is positive effect on land location. Increase in significant variables like land size, cooperative membership and household

size, there is negative effect on land location. Increase in household decision, occupation, ethnicity with odds ratio of increased land location by 8.75, 20.52, 2.40 then the marginal effects are positive. It means land location also increased by 0.21, 0.30 and 0.09 times with a marginal change on respective variables. Increase in land size and cooperative member with odds ratio of increased land location by 0.86 and 0.27 then the marginal effects are negative. It means the effect on land location decreased by 0.015 and 0.13 times with a marginal change in respective variables

Conclusion

The result of survey and data analysis in Sunsari shows that joint land ownership of women has significant relation to land size, occupation, household decision, cooperative membership, ethnic group. It means higher the JLO registration higher the women empowerment on significant factors of JLO. The result further suggests to review the existing policies related to the land registration like customary laws, *Muluki Ain* 1853 and *Country Civil Code* 2017, *Land Reform Act* 1964, *Constitution of Nepal* 2015, *Joint Land Ownership Policy* 2011 and international convention focusing on women land ownership rights.

Implications

For the effectiveness of JLO on women empowerment, the following reforms are suggested to the stakeholders:

- Since the JLO intervention in 2011 AD, the JLO registration is not significantly increasing in Nepal comparing the total land registration. So, awareness program should be conducted awareness program by government authority

on importance and application of JLO.

- The land ownership should not be transformed on the nature of patriarchal and law of inheritance. In case of spouses, there should be compulsory provision of joint land registration in property of inheritance and newly purchased land.
- The women of JLO holding should be encouraged and provided easy home loan at low rate of interest by the formulation of loan policy of financial intuitions and banks.
- JLO holding women must cooperate with her husband for mutual cooperation to avoid misuse of land resources.

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