

Original scientific paper UDC 331.108.47:338.43(594)

INDUSTRIALIZATION FED LABOR MIGRATION IN THE COUNTRYSIDE: TASIKMALAYA'S TRANSITION FROM AGRICULTURE TO THE CRISPY SNACKS INDUSTRY

Ristina Siti Sundari¹, Adnan Arshad², Shahida Anusha Siddiqui³.⁴,
Muhammad Kamran Khan⁵, Yadi Heryadi⁶, Farhan Ahmadˀ, Hasan Fahmi Kusnandarঙ,
Rizky Adi Nugraha Tarigan⁶, Andrey Nagdalianঙ, Andrey Blinovঙ,
Mohammad Mehdizadeh¹⁰, Mohammad Shakir Moazzem¹¹, Ahmad Ali¹²,
Srinivas Kasulla¹³, Suhail Jaiveer Malik¹³, Clement Kiprotich Kiptum¹⁴, Salam Ibrahim¹⁵⁵

¹Department of Agribusiness, Agricultural Faculty, University Perjuangan, Peta 177, 46115 Tasikmalaya, Indonesia ²College of Resources and Environmental Sciences, China Agricultural University, Lvyuan W Road nn, 100193 Beijing, P.R. China ³Campus Straubing for Biotechnology and Sustainability, Technical University of Munich, Essigberg 3, 94315 Straubing, Germany ⁴German Institute of Food Technologies (DIL e.V), Professor-von-Klitzing 7, 49610 D-Quakenbrück, Germany Management Studies Department, Bahria business School, Bahria University Islamabad, Shangrilla Rd nn, E-8/1 E 8/1 E-8, Islamabad, Pakistan ⁶Agribusiness Department, Agricultural Faculty, University of Siliwangi, Siliwangi 24, 46115 Tasikmalaya, Indonesia ⁷Department of Agronomy, Faculty of Crop Production Sciences, University of Agriculture Peshawar, Rahat Abad street 7, 25000 Peshawar, Pakistan ⁸Polytechnique Triguna, Ibrahim Adjie 7, Indihiang, Kec. Indihiang, Tasikmalaya, 46151 Jawa Barat, Indonesia 9Food Technology and Engineering Institute, North Caucasus Federal University, Kulakova 2, 355029 Stavropol, Russia ¹⁰Faculty of Agricultural and Natural Resources, University of Mohaghegh Ardabili, Daneshgah Street nn, 56199-11367 Ardabil, Iran ¹¹Department of Food Engineering and Tea Technology, Shahjalal University of Science and Technology, University Avenue nn, 3114 Sylhet, Bangladesh ¹²Department of Life Sciences, University of Mumbai Vidyanagari, Chatrapati Shivaji Maharaj Terminus Rd, Kolivery Village, Vidya Nagari, Kalina, Maharashtra, 400098 Santacruz (East) Mumbai, India

13EKA Biofuels Private Ltd., Gagan Emerald, Kondhwa 8, Kondhwa, Pune, 411048 Maharashtra, India

 ¹⁴Department of Civil and Structural Engineering, School of Engineering, University of Eldoret, Eldoret-Kachibora road nn, 1125-30100 Eldoret, Kenya
 ¹⁵Food Microbiology and Biotechnology Laboratory, Food and Nutritional Sciences Program, North Carolina A & T State University, 171 Carver Hall, Greensboro, NC 27411-1064, USA

*e-mail: ibrah001@ncat.edu

Abstract

The low income as a farmer in developing country drives to change the profession and to be a worker

in the Indonesia crispy snacks industry. This research aims to identify and analyze the factors influencing



laborer migration from the agricultural profession to non-agricultural-based industry due to countryside industrialization.

This study used primary data collected with survey data from 69 agricultural workers who migrate to work in the crispy snacks industry at the same village. Multiple linear regression (MLR) model were applied for results analysis. MLR variables consisted of age, level of education, land ownership, income per capita status, mobility, number of the respondent's family, respondent's debt liability, and government policy regarding assistance.

The examined results indicated that all variables simultaneously affected laborer migration, while partially, on each parameter determinated the varying results. The level of education and mobility variables had no significant effect on the laborer migration. Laborer migration from the agricultural profession into the crispy snacks industry, particularly among 41 - 50 years with minimal farm debt, accounted for 2 - 3 respondents. Additionally findings of this study indicated that respondents' income per capita increased by transitioning to the crispy snacks industry and income was not based upon previous experience, but the type of work being done. Neither was environmental or social degradation found to be of significant influence on the respondents' perceptions regarding the type of work chosen.

We conclude that the farmer who migrate to be a crispy snacks industry was limited to young age due to meet affordibility for life need. Consequently, crispy snacks industry owners should use local raw or agriculture-based materials in productions allowing for dual prosperity in both sectors.

Key words: Agricultural sector, Decision, Industry, Transition.

1. Introduction

Indonesia was the 4th highest populous country worldwide in 2020 [1]. The agricultural industry was limited by agricultural holding size, low labor productivity coupled with a high supply of laborers and the lack of organization and standardization of minimum wages amongst laborers in different regions. The new home industry job market was established leading to the creation of new work opportunities, income resources [2], and alternative access to Indonesia's financial circular.

Governmental facilitation of both fiscal and non-fiscal policies was introduced to build the home industry within Indonesia rapidly to leverage

industrial development. Among rising concerns are the ways the agricultural and non-agricultural industries differ in regard to employee relations and management techniques within the field of human resources. An imbalance in employee allocation through outmigration is of primary concern for rural communities and agricultural employers [3]. For countryside location such as Tasikmalaya, 27 per cent of employers were listed as industrial, non-agriculture according to the 2016 financial census record, with the primary employer being the processing industry [4]. Employment rates in the agriculture sector, is due to an ageing population with few younger farmers taking their place [5]. The population that work in agricultural sector in 2019 recently declined to 1.96% in 2020 in Indonesia, whereas in West Java Province declines 3.59% [2].

Home industry consists of one or two households used as a processing center with the families, and potentially neighbours, as the human capital [6]. Establishing industry in rural areas has changed the financial structure of rural communities and allowed for employers to pull agricultural workers into home industry as a consequence of industrialization and modernization [7]. In the case of agricultural household production, the effects on productivity are found to be ambiguous in nature with both positive and negative results between the two industries [8]. This ambiguity is focused around employment options, as the increase in home industry numbers means a decrease in agricultural employment and vice versa. Additionally, the uncertainty of employment duration and salary in home production coupled with the increased commercialization of agricultural production means financial insecurity [4]. Dilemmatic, on one side the home industry resolves rural bond debits while simultaneously shifting agricultural land use and function in rural communities changes the social and economic condition of those same communities. This needs to be observed considering all factors influencing laborer migration in rural communities from the agricultural sector after the establishment of the home industry in those same regions.

The focus of this research is to analyse labor migration occuring only from agriculture to home industry within the same vicinity. This research is different from the work done before since previous research focuses on labor migration occuring from one place to another place. The goal remains the same, to find better income and better standard of living. The point of focus is the transition phase occurance due to conversion of agricultural land for other purposes, whereas, considering the pace at which the population is growing - the laborers working in food sector need to have a safe source of income, in order to ensure food



security. In addition, we believe that it in important to address transitioning food and industry availability as a consequenc of a countryside development which can not be avoided due to industrialization.

2. Materials and Methods

Purposive judgement sampling was chosen due to fast growth of home industry establishment. There occured agricultural laborer scarcity. They migrated to be home industry laborer. The case study was conducted to home industry laborer that has some added value in income and ability to activate their community's economic circulation [9]. The sampling used Slovin formula as followed:

$$n = \frac{N}{1 + N \cdot e^2}$$

Where n= amount of samples, N= amount of population and e= error of 0.05.

The values have been substituted to calculate the number of samples, as below:

$$n = \frac{69}{1+69(0.05)^2 = 58.84 \sim 59 \text{ samples}}$$

The sample proportion was 59 respondents who work at home industry in the countryside. The primary data collected by observation, interview, and giving questionnaire to respondents.

2.1. Analysis tools

2.1.1 Classical assumption test

Primary research data was pulled from face-to-face direct interview, a closed questionnaire focusing on respondents' attitude, confidence, behaviour, and characteristics that could be influenced due to system, and field observation [10]. Secondary data was gained from related institutional websites, such as from Agricultural ministry, government authority, statistics bureau website. Data was then entered into a multiple linear regression (MLR) model to analyse the classical assumption test. The initial classical assumption test required that multicollinearity was not allowed to occur. This was performed considering a tolerance value of > 0.01 (or variance inflation factor (VIF) < 10) and also Heteroscedasticity amd normality [11, 12, 13, and 14].

<u>2.1.1.1 Coefficient determination test (R²) and analysis of multiple linear regression</u>

The research tested R2 to find the model's capacity in explaining variances of the dependent variable [12, 13, and 15], the independent variables being: age,

eductaion, landholder, income level, mobility, family load, debt liability and goovernment policy. The analysis posed more than one independent variable leading to a multiple linear regression model [14] by applying the significant effect of more than two independent variables (listed above as X1, X2, X3,.. Xn) against the dependent variable Y (laborer migration). The mathematical equation is as follows:

$$Y = \beta_{o} + \beta_{1}X_{1} + \beta_{2}X_{2} + \beta_{3}X_{3} + \beta_{4}X_{4} + \beta_{5}X_{5} + \beta_{6}X_{6} + \beta_{7}X_{7} + \beta_{8}X_{8} + e$$
 (1)

Where: Y = Laborer migration; $\beta O = \text{Constant}$, $\beta 1$, $\beta 2$, ..., $\beta 8 = \text{Coefficient regression}$; X1 = Age; X2 = Education; X3 = Land ownership; X4 = Income level; X5 = Mobility; X6 = Family Load; X7 = Debt liability; X8 = Government policy, e = model's of error term.

2.2 Hypothesis test

A hypothesis test using the Analysis of Variance (ANOVA f-test) to know whether the independent variable influenced the dependent variable simultaneously and t-test was performed to find the leading independent variable in reference to labor migration partially. If f \le f-sig:

$$F = \frac{(n - (K - 1)R^2)}{(1 - R)(K)}$$
 (2)

Where: R^2 = Coefficient determination, K = number of independent variables, n = sample.

The partial influence in the student test is as below:

$$t = \frac{\beta i}{Sei} (\%) \tag{3}$$

Where: t=t student test for partially influence, $\beta i=regression$ coefficient, Sei = Standard error of beta_i. We could derive conclusion the variables effect of laborer migration to home industry either simultaneously by F test or partially by t-student test.

3. Results and Discussion

3.1 Heteroskedasticity and normality tests

The scatterplot graphic results (Figure 1) showed that heteroscedasticity did not occur while the normality test used the standard p-plot method and suggested that the dependent and independent variables for the regression model had a normal distribution.

The data points spread along the required diagonal linear line following the direction of the graphic. Therefore, the derived conclusion is that the regression model is eligible to meet normality requirements (Figure 2).



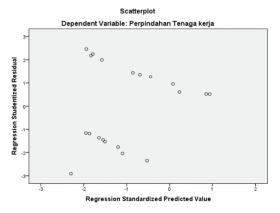


Figure 1. Heteroskedasticity scatter plot

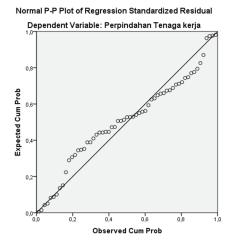


Figure 2. Normality test in healthy P-plot formation

3.2 Coefficient of determination test (R2)

The interval confidentaly (α) is 0.05 as an indicaor of significancy. Table 1 was known that Sig. Value is 0.000. That value of predictor 0.000 was less than 0.05 (α). According to principal of decision making of F test could be concluded that the hypothesis was accepted. It meant the independent variables of X1, X2, X3, X4, X5, X6, X7, and X8 strongly significant affected laborer migration between sectorss imultaneously.

Table 1. F Test (Analysis of Variance a)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11.399	9	1.425	4.763	0.000 ^b
	Residual	14.957	50	0.299		
	Total	26.356	59			

Legend: a = dependent variable, b = Predictor: Constant, X1, X2, X3, X4, X5, X6, X7, X8 (processed primary data, 2020).

3.3 Analysis of variance (ANOVA)

The first requirement to use coefficient of determination value was significant F test to predict the contribution of effect of independent variable (X_1 , X_2 , X_3 , X_4 , X_5 , X_6 , X_7 , X_8) simultanously on dependent variable (Y). The coefficient correaltion (R) reached 0.746, indicated that the independent and dependent variable of this research was very high while the range was -1 until +1.

The coefficient of determination test (Table 2), explained that coeeficient of determination (R^2) = 0.556, this signifies that the independent variables had a strength value of 55.6 per cent over the influence and contribution of the dependent variable (laborer migration from the agricultural sector into the home industry). At the same time, 44.4 per cent is the unknown influence of variables which are not considered in the sample observation (out of regression equation) in order to keep the results precise. This is a good contribution of variable Age (X_1), education (X_2), land ownership (X_3), income level (X_4), cosmopolitan (X_5), number of family (X_6), financial condition (X_7), government policy (X_9) on Labor migration.

Table 2. Coefficient of determination (R2)

Model	R	R square	Std. the error of the estimate					
1	0.746a	0.556	0.546931					
Legend: a = Predictors: Constant, X_1 , X_2 , X_3 , X_4 , X_5 , X_6 , X_7 , X_8 .								

3.4 Multicollinearity, t-test, and multiple linear regression

The result of the t-test showed that the independent variables influenced negatively or positively based upon the dependent variable (Table 3) with the $\alpha = 0.05$.

Table 3. Analysis of multicollinearity, t-test and coefficient regression

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Model	Coefficients			C:	Multicollinearity statistics	
	В	Std. Error	t	Sig.	Tolerance	VIP
(Constant)	3.678	0.767	4.794	0.000		
Age	-0.185	0.089	-2.082	0.043	0.733	1.365
Education	0.103	0.092	1.123	0.267	0.820	1.219
Land ownership	0.270	0.126	2.149	0.037	0.606	1.651
Income level	-0.075	0.099	-0.764	0.448	0.794	1.260
Cosmopolitan	0.043	0.094	0.460	0.648	0.882	1.134
Family Load	0.084	0.080	1.053	0.297	0.913	1.095
Financial condition	-0.241	0.092	-2.621	0.012	0.698	1.433
Government policy	-0.087	0.078	-1.106	0.274	0.953	1.050



No allowance of multicollinearity deals within the regression analysis. The measurement showed up to a tolerance value > 0.10 and variable inflation factor (VIF) < 10, hence it is free from multicollinearity. The multiple linear regression equation was comprised as:

 $Y = 3,678 - 0,185X_1 + 0,103X_2 + 0.270 X_3 - 0.075 X_4 + 0.043 X_5 + 0.084 X_6 - 0.241X_7 - 0.087X_8$

Coefficient β_0 is 3,678 (a constant). This correlates to the combination of age (X_1) , education (X_2) , land ownership (X_3) , income level (X_4) , mobility (X_5) , family load (X_6) , debt liability (X₂), and government policy (X₈) following such a constant (ceteris paribus) would be under effect if the coefficient of β_1 for age is -0.185, which means the older the respondent (X₁) the lower possibility of labor migration (0.185, ceteris paribus). Under coefficient β_{2} an educational rate of 0.103 relates to the change of 0.103 units of education increase of one unit of education (X_2). Coefficient β_3 (land ownership: 0.270) meant the lower the rate of land ownership (X₂) the higher the possibility of migration into home industry. Coefficient β_{λ} for income level is -0.075, meaning (X_{λ}) that income increased by one unit will further decrease labor migration by 0.075 units (ceteris paribus). Coefficient β_5 mobility (0.043) illustrates that when increasing one unit, mobility (X_s) will increase 0.043 (ceteris paribus). Coefficient $\beta_6 = 0.084$ represents that if the people of the family load increases by one unit, the labor migration will increase 0.084 units (ceteris paribus). Coefficient β_{7} being -0.241 means if (X_{7}) debt liability is higher if less labor migration. The coefficient $\beta_{\rm g}$ (Government policy assistance) is -0.087, outlining that the less X_g (Government policy assistance), the more labor migration rises by 0.087 (ceteris paribus).

Home industry's progress at the test site ran well. Interviews showed an increase in business growth, branch locations, and profitability margins. Governmental policy assistance was required to set-up the trail and create new job markets and opportunities for the rural unemployed, however this limited agricultural labor access for farmers and meant that those laborers chosen were based on preference either from colleagues or experience [15]. Migration between sectors was based upon the individuals' personal goals. The perceived financial security found within the most consistent work structure of home industry where work is consistent and established by the industry versus the seasonal employment options available for farm laborers [16]. High populations increased diversification of employment opportunities and household financial needs as low-income agricultural workers migrated to higher-payed positions in nonagricultural sectors [17, 18].

Combining home industry and the agricultural sector offers more employment opportunities for farmers

and reduces debt liability while allowing for laborers to choose agriculture industry. Hence the combination of both, home industry and the agricultural sector will result in the prevention of outmigration of laborers to urban city centres; growing the rural economy and society. Some respondents said that home industry in rural communities allowed them to work from home during the agricultural off-season when productivity typically halts, limiting their need to leave home to search out alternative employment. There are some concerns that laborers will leave the agricultural sector completely and find work in home industry permanently. The classical reasons for such migration are a low salary, long working hours under sub-optimal conditions, and a general low profitability, especially for non-land owners who can migrate easily. They ignored the social and environmental aspects of the agricultural sector in lieu of higher profitability.

3.5 Age of laborer

Home industry labor was grouped respectively as > 50 years old, 41 - 50 years old, 31 - 40 years old, and 21 - 30 years old (Figure 3).

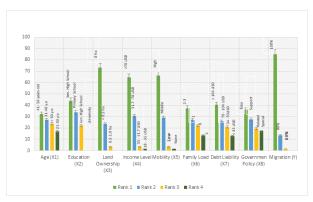


Figure 3. Recapitulation of laborer migration variables. Source: Processed primary data (2020)

The dominant labor migration (from agriculture to home industry) occurred within the 41 - 50 years old (32.2%) group, followed by > 50 years old (23.73%), 31 - 40 years (27.11%) and 21 - 30 years old (16.94%). Age of laborers was directly related to their physical power condition, with older populations choosing to migrate due to limited ability to perform hard, physical labor at the same rate as their younger counterparts which limits their on-farm work opportunities.

However, respondents' age are significant in the left tail as 2.082 compared to sig. 0.043 (Table 3) determining that the age of respondents was in contrast to the influenced labor migration. We can infer that the oldest respondents tend to remain within the agricultural sector, which confirms the 2013 census reports that most farmers are over the age of 55 [19, 36]. Some reasons for the discrepancy could be the responders



returned to the agricultural sphere in retirement or to pursue a more leisurely lifestyle away from the city centres. Age structure was linked to people's financial activity with higher incomes proportional to age and experience [8].

3.6 Status of education and income per capita

Generally, the higher education, the less interest in the agriculture sector. Moreover, higher education is often paired with more extensive job opportunities, access to information and technology, which leads to broader employment opportunities [20, 34, and 35]. The 44.06 percent of home industry laborers completed senior high school educational, 33.89 per cent elementary school, and 22.03 per cent completed junior high school, while none of those surveyed had undergraduate university education (Figure 3).

Education factor influenced laborer migration to the home industry with a t-value of 1.123 (sig. 0.267 right-tailed). The right tail is describing the higher respondent's education level correlated positively to the higher propensity to migrate to the home industry. The image came out to be such, that lazy people worked as farm laborers could be caused by the stigma of agriculture as dirty and having a low salary. This was opposite to some authors who stated that the home industry was easy to get into [19, 31], and Monanisa and Siddiqui and Ahmad who stated that education did not influence income or manage employee performance [21, 32]. Perhaps it would be wiser to conclude that although lower educated, employees are physically capable of working under farm circumstances. Their productivity will increase if given appropriate training skills [33].

Higher paying jobs provide more impetus for employees regardless of education level to change positions as shown in Figure 3, where the perception of higher salaries in the home industry was the primary mitigation factor in labor migration. Respectively, 64.40 per cent of home industry income was was > 62.21 euros, followed by 30.50 per cent (28 - 62 \in) and 3.38 per cent (< 28 \in). Whereas the income of an agricultural sector laborer averages 31.7 (both are per half-day labor). Mixed-industry laborers had the benefit of taking half-day work in both sectors increasing their income.

Income influenced laborer migration into the home industry by a t-value -0.764 on sig. 0.448 (Table 3). Moreover, even though the home industry's income included low salaries when viewed across the national scales, they were still higher than the agricultural salary. If a laborer was financially-oriented, it is assumed they would decide to migrate into the home industry with a higher income potential. This does not

take into account external costs such as food, which could potentially be found in an agricultural setting for a lower cost.

3.7 Direct payment (DP)

From macroeconomic point of view direct payment encourages farmers to continue agricultural jobs and land management. This is done to avoid both, socio economic consquence of land deprivation and migration to richer local areas. However, previous studies show positive impacts on the agriculture job creation and private employement but it has cofirmed negative consequences on public employment [22].

Studies indicated that direct payment contributed to job creation in agriculture, however, the magnitude of economic benefits remained to be moderate. In Germany [23], direct payments had resulted to job depletion while organic farming led to job creation in agriculture. It has been argued that direct payment might not hold reverse rural depopulation, but it supports the creation of job opportunities with high possibilities [24].

3.8 Land ownership

The land area owned by laborers was never found to be more than 1 ha. The survey group was found to fall under one of three categories: > 1 ha (none), 0.5 - 1 ha (13.55 per cent), and no land (83.05 per cent) (Figure 3). Higher rates of migration were found in respondents with little to no land as this limited their ability to perform agricultural work and vice versa, influencing the laborer's employment options [3]. The regression analysis showed that land ownership statistically contributed to labor migration reach t = 2.149 with sig. 0.037 (Table 3). Being a laborer in industry appeared to have no difference in perception.

3.9 Mobility distribution

Mobility is the rate of movement for a population to transition from one area to another [25]. Mobility of the labor market between agriculture and home industry, as shown in Figure 1, specified that mobilization reached a height of 66.1 per cent, followed by the middle at 30.5 per cent and the remainder at 3.38 per cent. The mobility was found to relate to the distribution of products across the region predominantly due to marketing and purchasing power and assisted in the rapid growth of the home industry. This is in contrast to the MLR results where mobility reached 0.460 under sig. 0.648. Statistically, mobility did not influence labor migration into the home industry (Table 3). The countryside people frequently moved for a variety of reasons, so high mobility rates were not because of the home industry alone, but a variety of remainder factors. No health insurance was provided to laborers



and while it is known that home-processing can lead to both human and environmental conditions due to pollutants, lack of sanitation and hygiene safety, minimum ventilation, etc, human health and environmental concerns were not considered pressing issues during interviews, but might be a subconscious factor leading to mobility.

3.10 Family load and debt liability

Home industry labor household size's is typically between two to three family members and occurs roughly 37.59 per cent more frequently than agricultural workers (Figure 3). Family load is proportional to expenditures such as food, clothing, rent, and education costs, with more children equating to higher output costs. Expenditures were almost impossible for agricultural workers to meet without additional financial assistance. Statistically, the number in the family gave a t-value of t=1.053 from sig. 0.297 (Table 3). It indicated that the number in family influenced labor migration from the agricultural sector into the home industry and that the household liability is proportional to income as a prosperity level [26, 27].

Debt liability refers to a laborer's loans and bills. Figure 3 shows that 37.28 per cent is the highest debt liability score. It means that the debt liability of the respondent was greater than their ability to pay back their credit, loans, and bills beyond their ability to fulfil their basic expenditures for general survival. The high level of debt liabilities were the primary reasons given for migration to the higher waged home industry. The second score was 23.72 per cent followed by 18.64 per cent, 11.86 per cent, and 8.47 per cent. The laborer who was able to migrate to the home industry without a credit burden was only 8.47 per cent.

The debt liability's influence on laborer migration provided a left tailed 2.261 compared to sig. 0.012 (Table 3) signifying that the debt liability made the laborer keep their job as a farmer or take on a dual job in both the agricultural and home industry sectors. This is in contrast to Farhani, [37], who stated that debt liability was a driving factor in farmer migration to the home industry with the goal of improving their income to fulfil their family needs. The research found that the higher the debt liability the less the transition to the home industry seemed to mitigate those debts, potentially due to the increased costs associated with such a migration (credit, bills, tuition, loans, etc.).

3.11 Cultural and social capital

Social capital basically defined as interaction of networks of relationships, norms of reciprocity and trust. In rural area networking, these aspects play an important role due to the small size of the community. It is also a way to enable farmers build trust to share their experince, acquire knowledge and develop idea to solve problems. Local cultures in rural areas are strong, bring people to creat buisnesses, support porjects and establish local markets while it has potentials to creat shock agaisnt globaization and modernization. Bult and Adekunle found that structural social capitals beyond the village hugely contribute to adoptation of innovations in agriculture by means of netwroking and cultural potentials [28].

3.12 Government policy assistance

In the case of home industry progress and sustainability was supported by government policies. The goal was to increase the opportunities for home industry expansion and promotion. While 33.89 per cent of responders received some form of assistance as per government initiatives, the t-value of 1.1.06 (left tailed sig. 0.274) showed that government policy should not migrate laborers to the home industry and that it was more important for a good relationship between the sectors than promoting one sector over another.

3.13 Progress

Laborer migration percentages were found to range from 60 - 100%. Figure 1 indicated that 84.74 per cent of sampled laborers migrated entirely into the home industry. Whereas 13.55 per cent were still working in the agricultural sector and 1.59 per cent were working in both sectors simultaneously (Figure 3). Simultaneous employment (plural-activity) was found in higher ratios among part-time agricultural laborers [29, 30]. The higher statistics of elderly individuals (> 64) were engaged in household agricultural production and had maximum possibilities of choosing family farming.

Laborer migration from the agricultural sector into the home industry, particularly within the 41 – 50 years old demographic (no land, minimum debt, and 2-3 members of their household) had the highest rate of return from job transfer to the home industry. Likewise, it was found that the higher the ratio of migrant labor income was to total household income and/or the higher the ration between labor populations in a region, the higher the possibility that farmers would choose land transfer or land abandonment [29, 30].

By interview, there were thirty-one home industries accommodating 732 rural laborers in the study. Of those 732 laborers, 663 laborers (90 per cent) worked in both agricultural and home industry sectors to increase their household income by splitting the day, morning - afternoon at the farm then afternoon - evening at the home industry. This is due to the flexibility offered by home industry employment. While the predominant age group employed only within the agricultural sector



was +55 years old, 9 percent had migrated entirely into the home industry, opposite to what is found within urban centres [2, 38].

4. Conclusions

- The home industry in Tasikmalaya has had good progress due to entrepreneurship trends, increasing people's income. However, the complete transition to home industry is still less than 9 percent of the agricultural sector, yet seems to be growing at a fast rate. The existence of the home industry in Tasikmalaya is predominantly inclined to help laborers increase income due to dual employment opportunities and is dependent on the flexible work schedule found in the home industry. The increased income allows the debt liability of the laborer to be paid off and improve their living conditions but at the potential cost of both human and environmental health over the long-term. - Hence bringing this research to its ultimate conclusion, that is, home industry owners should use local raw or agriculture-based materials in productions allowing for dual prosperity in both sectors. The importance of the agricultural sector can be demonstrated in three ways: It provides food to consumers, and fibres and other raw materials for domestic industry. Millions of people moved during the Industrial Revolution. Some simply moved from a village to a town in the hope of finding work whilst others moved from one country to another in search of a better way of life. Poor working conditions, housing and sanitation led to many people opting to emigrate. It is a source of foreign exchange earnings. It provides a market for industrial goods and more opportunities for labor to earn. Life for poor people, which meant most people, was pretty miserable before the Industrial Revolution. Life expectancy was low, diets were poor and disease was rampant. Movement into the towns and factories spurred by the Industrial Revolution was a step up for the overwhelming majority.

Acknowledgement

Salam A. Ibrahim would like to acknowledge the support of the Agricultural Research Station at North Carolina Agricultural and Technical State University (Greensboro, NC 27411, USA). This research was funded, in part, by grants (project number NC.X337-5-21-170-1 and NC.X341-5-21-170-1) from the National Institute of Food and Agriculture (NIFA). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of NIFA.

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