

THE EFFECT OF LABOUR POLICY ON LABOUR PRODUCTIVITY IN LOCAL POULTRY AGRO-PROCESSING INDUSTRIES IN MOROGORO MUNICIPALITY

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Abstract: In Tanzania, and more so in Morogoro Municipality, labour policies are significant in the development and competitiveness of poultry agro-processing industries. Enforcement of laws like the Employment and Labour Relations Act (2004) and the Occupational Health and Safety Act (2003) has led to some challenges of implementation, poor awareness, and poor institutional capacity, which has created loopholes between the policy desires and the situation in industries. The paper analyses the connection between labour policy and employee satisfaction within the poultry agro-processing industry using The selected local poultry producer as a case study. The convergent parallel mixed-method research design was utilized under the influence of the Human Capital Theory, which included the use of questionnaires, interviews, and logistic regression analysis to determine important factors of productivity. The results indicate that the labor force is dominated by youth, men, and middle-educated, with low levels of special technical capabilities and low female labor force. Management practices, employee training, and technological advancement discovered to have the greatest influence on labour productivity, with labour costs, capital investment and workplace conditions being less prominent but still influential. The findings validate the fact that the higher level of productivity depends not only on financial investments but also on the development of human resources, successful leadership, and equitable labour relations. The research findings conclude that to gain sustainable productivity, companies should combine systematic training, inclusive hiring, high salaries, and safe workplace with on-strategy technological integration. It proposes specific measures to close the gender gaps, enhance the policy implementation, and match the capital investments with the range of the workforce capacities. These results offer evidence-based information to policymakers, industry leaders, and other stakeholders to fine-tune labour laws, enhance labour capacity, and trigger the development of the Tanzanian agro-processing industry.

Keywords: Labour policy, economic performance, Local poultry agro-processing, workforce development, employment, Tanzania.

1. INTRODUCTION

The labor policy is very instrumental in the determining the growth of poultry agro-processing industries in Tanzania and to Morogoro Municipality. According to the international and regional regulations, the labor policies target to protect the rights of workers, treat them fairly, and facilitate decent working conditions. During the post-independent era, employment creation has been one of the pillars of poverty reduction and economic growth in Tanzania, and policies have changed since 1960s socialist policies to more market-oriented reforms in 1980s and later. Although a number of laws were adopted

including the Employment and Labour Relations Act (2004) and the Occupational Health and Safety Act (2003), their successful application is still a challenge. The frameworks are to help promote equitable wages, occupational safety, and conflict resolution, as well as allow Tanzania to meet the wider regional and international labor standards.

Labor policies have favoured industrialisation and foreign direct investment (FDI) to the poultry agro-processing sector. The agricultural processing sectors, particularly in major urban areas like Dar es Salaem and Morogoro have registered significant growth as a result of heightened investments and government policies including Five-Year Development Plans (FYDP). These programs are focused on productivity in the industries, skill development and incentive to investors. Consequently, the industry has been providing both local and foreign employees with employment opportunities with annual reports indicating an average of 9 percent employment growth rates over the years. But as the latest statistics show, there is stagnation and in some cases deterioration in the employment opportunities because of lack of skill of the workforce, high costs of operations and lack of labor law compliance. This shows a disjuncture between policy intentions and on-the-ground realities, indicating that the workforce training and policy implementation need to be improved.

Systemic barriers in growth of poultry agro-processing industries have been experienced in Morogoro Municipality, in particular. Although the municipality has a strategic potential of becoming a regional agro-processing hub, lack of infrastructure, access to capital, and skilled workers remain the challenge that is hampering growth. In addition, the labor policies have not served the purpose of effectively alleviating these limitations and deterring new investments and factory shutdown. The government has heard the call by enhancing structures by improving skills in the system via skill development programs and business friendly reforms but structural problems remain. In the case of Morogoro, the sustainable growth in the poultry agro-processing business is not only based on the enforcement of the labor policy, but also on specific intervention on the infrastructure, capacity development, and investor confidence to catalyze the potential in the sector.

1.1 STATEMENT OF THE PROBLEM

Achieving positive implementation of labor policies in Tanzania faces several obstacles, primarily including ineffective enforcement methods, limited financial resources, and low awareness among employers and employees. Regulatory authorities often lack sufficient funds, personnel, and logistical support to conduct regular inspections and ensure compliance, resulting in under-enforcement and inconsistent application of labor laws. Additionally, ignorance about labor rights and duties undermines legal protections and leads to low compliance levels. Furthermore, the lack of effective collaboration among employers, employees, workers' associations, and government bodies hinders the development of coherent solutions to labor-related issues. Financial difficulties also force actors to adopt cost-cutting strategies, which may manifest as poor working conditions and low salaries, thereby diminishing workers' morale.

Although there are diverse policy interventions, the real effectiveness of labour policies and the economic implications of the agro-processing industry is less empirically studied. There are gaps in the knowledge about the effects of labor costs in industries such as poultry processing on competitiveness and sustainability of the industry in terms of wages, welfare contributions and employee training. In the same way, there has been minimal effort in investigating the overall effects of the labor policy on the level of productivity, growth, and stability of the national economy. Closing these gaps would be invaluable to policymakers, industry leaders, and stakeholders, as it allowed the development of evidence-based labor policies. Finally, intensifying research, implementation, and collaboration would see to it that labour policies play a meaningful role in industrial competitiveness and in the economic growth of the agro-processing industry in Tanzania over the long term. Therefore, the objective of this study was to assess the effect of labour policy to labourers in agro-processing industries and assess the determinants of labour productivity in the poultry agro-processing industry

1.2 RESEARCH QUESTION

- i. How do labour policies relate to employee satisfaction in the poultry agro-processing industries based in Morogoro Municipality?

2. THEORETICAL FRAMEWORK

2.1 Human Capital Theory

According to human capital theory, which was formulated by Gary Becker (1964), productivity of workers is improved after investments in education, training, and skill development; this directly leads to the industries growing and becoming competitive. In industries that are labor-intensive like manufacturing, labor policies that are focused on training the workforce can promote innovation, enhance the efficiency of operations, and the quality of outputs. The theory was further

enhanced by other scholars like Schultz (1961), Mincer (1974), Lucas (1988) and Romer (1990) who maintained that the theory contributed towards long run economic growth, adaptability of technology and social fairness. Human capital theory does not only contribute to the industrial competitiveness but also provides revenue mobility and inclusiveness of the labor market by building the capacity and knowledge of the workers, which is especially pertinent in the environment of an industry that is rapidly evolving and getting automated.

The relevance of the human capital theory to the economic effect of labor policies in the manufacturing sector highlights the essence of the direct elements of policies that can directly boost the workforce capabilities. Labor laws can greatly increase productivity, quality of the products and innovativeness of the manufacturing industry through education, training and skill development. Through this theory researchers are able to measure the effects of such policies to determine their effects on economic performance, competitiveness and sustainability in the sector. Additionally, it emphasises the contribution of workforce development to the adaptation of industries to ever-changing technology and the global competition. Thus the human capital theory can be a suitable model to evaluate how the conducive labor policies in the manufacturing sector especially poultry agro-processing in Tanzania can be used to boost the industrial performance, make it sustainable and harmonize labor market development to the national economic goals.

2.2 REVIEW OF EMPIRICAL STUDIES

The Influence of Labour Policy on Industrial Economic Performance

2.2.1 Minimum Wage and Productivity

Several studies dwell upon the relationship between the minimum wage changes and employee productivity. The study in Neumark and Wascher (2008) indicated that the increase in minimum wages established optimum worker productivity coupled with reduced worker turnover rates. According to their findings, high wage increments could cause high operational expenses among labor dependent industries hence reduced cumulative productivity. In an U.S based research conducted by Card and Krueger (1994) they found that the escalation in the minimum wage to a higher rate did not bring on any degradation in the employment rate or agro-processing production. In their research, the statistics revealed that when they were given higher wages the level of work motivation became higher hence generating good economic growth results. The study indicates that minimum wage has a bearing on productivity although the bearing lies on the parameters of the special industrial circumstances.

2.2.2 Collective Bargaining Agreements

Studies about collective bargaining agreements (CBAs) demonstrate how these agreements enhance industrial economic performance substantially. The research by Freeman and Medoff (1984) revealed that enterprises with CBAs generated better productivity than businesses without unionized staff. Better communication between managers and their employees turned out to be the primary reason that unions improved economic performance because employees felt more involved with organizational objectives. Better workplace conditions together with reduced employee absences led to elevated worker morale as a result of CBAs. The upgraded working situation produced an improved workforce performance that led to enhanced economic results. Numerous studies performed throughout different areas including the United States demonstrated that businesses under union control experience higher productivity levels together with diminished operational hurdles.

2.2.3 Labour Rights Protection and Competitiveness

The evaluation of labor safety is associated with international competitiveness all over the globe. When the rights of workers are adequately safeguarded, the agro-processing sector fares well in terms of its economic performance as suggested by Kaufman (2015). Education of employee rights helps the employees improve their skills and productivity that results in more firm competitiveness. Safeguarding the rights to labor is appealing to FDI since multinational companies also want to have an employment environment that is not subject to social risks. South Africa took labor protection measures which sustained economic growth even as they continued earning investment abroad. The research presented by the author Lupala (2021) examines the aspects of labor right protection in Tanzania by analyzing its positive effect on the industrial development through improving the skills and productivity of workers. There is inadequate enforcement of law which makes the benefits unattainable.

2.2.4 Impact of Labour Policies on Economic Growth

The labor policy impacts on the agro-processing economic growth have been greatly studied by students. Brown and McGill (2020) focused on the fact that adequate labor regulations provide opportunities of maintaining a sustainable development of industries combined with a long-term rise of the economy. The dissemination of fair wage mechanism and job protection and workers rights system will create stable modes of labor that lead to increase in productivity. Ogundele (2018) demonstrated in their Nigerian research study that labor reforms facilitated to the realization of better industrial performance in terms of jobs developed in work places as well as better working conditions in the country. African nations still encounter the hampering to growth due to issues of underemployment alongside the informal markets. According to Lupala (2021), labor laws in Tanzania act as the foundation to the foreign investments attraction particularly in the agro-processing sector. According to Lupala, the fact that labor law development tended to be industrial hurt the development of erratic practice enforcement. The success rate of the policies of labor is based on the strength and dependability of its enforcement.

2.2.5 Labour Policy and Economic Resilience

Labor policies that governments and even the private sector will have to adopt in ensuring that there is industrial stability even during economic crisis periods. Good labor rights in countries also increased the countries resistance to economic crises as supported by Freeman and Medoff (2019). In these nations employees were taken care of in the form of unemployment compensation and in workforce development which ensured that workers were able to get work thus a wave of productivity and in the meanwhile it guaranteed economic balance. Betcherman (2019) argued that due to good systems of labor protection, there was less economic vulnerability during the financial crisis of 2008. Employees who had adequate support at their work place were found to have greater capacity at maintaining industrial production during times when the economic situation was highly unstable.

According to Nzimande (2017), the Labor protection policies and unions helped in stabilizing industries despite the financial crisis that occurred in 2008 in South Africa. As the research evidence indicated, the process of union bargaining on income subsidies and job security had direct effect on maintaining the industrial output. Due to the issues of unemployment and low wages, regardless of this, Mwakajumilo (2016) argued that labor laws in Tanzania helped the industries attain the productivity objective even in the waning economic times. According to his research findings, labor protection programs were essentially needed in maintaining industries run during times when the economy is facing hard times.

2.2.6 Influence of Labour Policy on Informal Employment

The impacts of the labor policies on the informal employment are well discoursed topic in the developing countries. Chen (2016) has elaborated that formal labour policies that encourage fair working conditions of employees in the formal economy have better outcomes and competitiveness in the market as compared to other informal firms. Companies who complied with the labor laws performed better because of efficiency in their businesses thus contributing to the ongoing economic growth. Tanzania has inadequate labor policies as Sanga (2019) uncovered that the informal form of employment still exists. The studies also revealed that informal businesses have the problem of being inefficient coupled with a challenge on productivity. Sanga observed that increasing levels of labor policy performance and promotion of inclusiveness would facilitate the means of business transition of enterprises in informal situation to formal business status that would lead to the overall performance of the industry.

3. METHODOLOGY

3.1 The study area

The study was conducted at the selected local poultry producer in Morogoro Municipality, a strategic location for Tanzania's agro-processing sector due to its favourable agricultural conditions and diverse economic activities. Morogoro's climate supports the cultivation of crops such as maize, cassava, beans, rice, potatoes, and vegetables, with irrigation from rivers supplementing rainfall (URT, 2020). The municipality also hosts several processing facilities, including Alliance One Tobacco Processing in Mkambalani, fruit processing in Kiroka, and tomato processing in Mikese, which add value to agricultural produce (Morogoro Municipality, 2022). In addition, the local economy is boosted by retail and wholesale trade, small-scale businesses, and informal activities in construction, transport, and hospitality (Rweyemamu & Mwaipopo, 2004). Its role as a transport hub provides access to key markets, including Dar es Salaam, enhancing regional trade opportunities (NBS, 2020). This combination of agricultural potential, processing industries, and trade networks makes Morogoro an ideal study area for examining the relationship between labor policies, labor costs, and the economic performance of poultry agro-processing industries, with implications for improving competitiveness and economic growth.

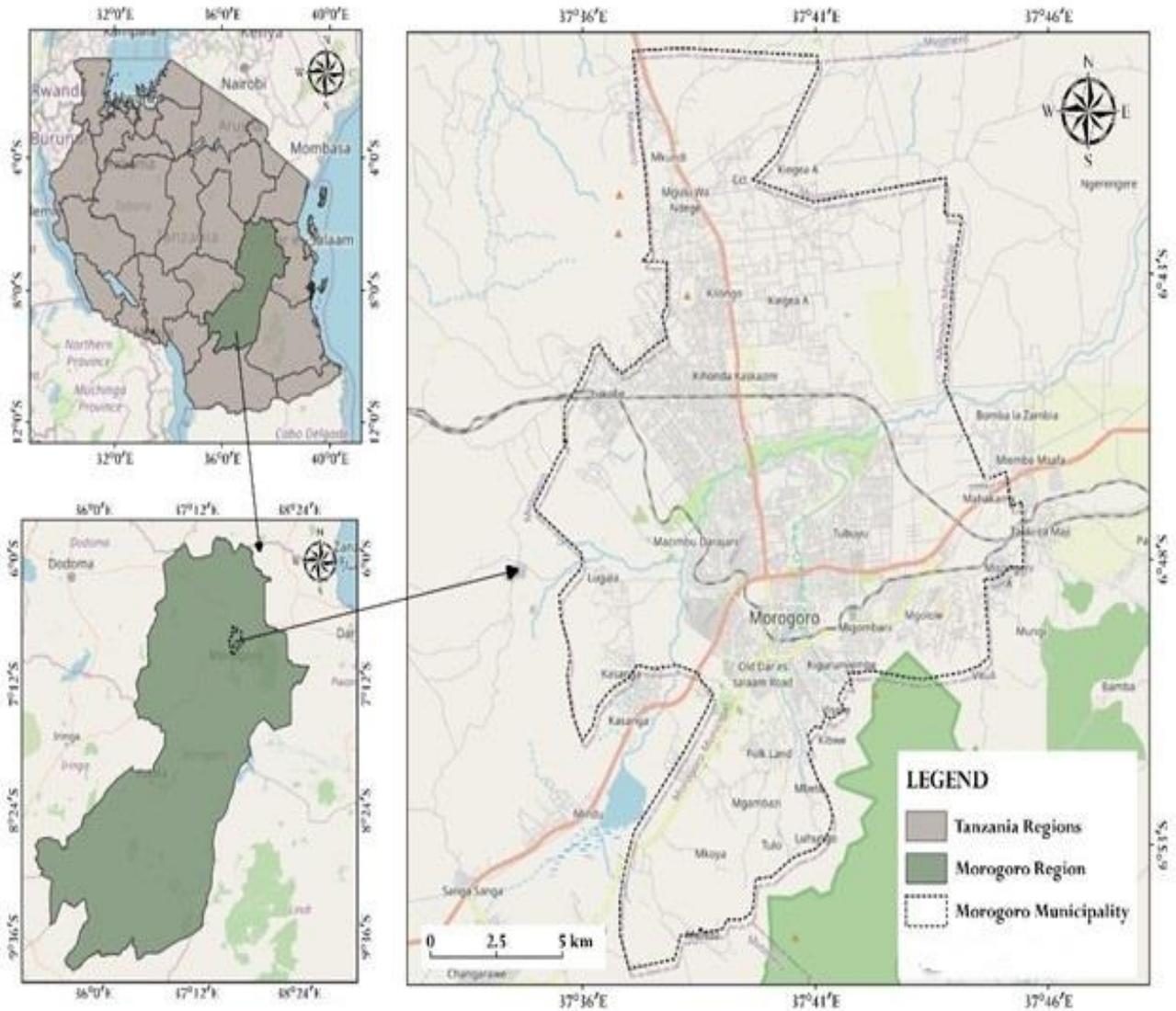


Figure 3.1: A Map to Show the Study Area

3.2 General economic activities in Morogoro Municipality

The climate of Morogoro municipality is favourable to growing food and income crops, as URT (2024) indicated. Corn, cassava, beans, rice, potatoes and vegetables are the most popular crops cultivated in this area. Also agriculture in this area depends on irrigation systems that are formed by use of nearby rivers and normal rainfalls. Some of the processing facilities in Morogoro Council, District Council, increase the value of agricultural products with Alliance One Tobacco Processing in Mkambalani, Fruit Processing in Kiroka and Tomato Processing in Mikese. The region also has a healthy business sector in which retail and wholesale markets supply regional needs and local needs (Morogoro Municipality, 2022).

Small businesses and unorganized activities like those offering services in areas like construction, transport and hospitality industry are very favorable to the local economy (Rweyemamu & Mwaipopo, 2004). The commerce as well as the services are increasingly becoming important owing to the fact that Morogoro is a key transport hub (Morogoro Municipality, 2022). The economic activity of the region is also facilitated by its favourable destination, which provides access to key markets located in Dar es Salaam and other places (NBS, 2020)

3.3 Population

The poultry agro-processing sector in Tanzania is significant for job creation and food supply. The country continues to witness only 6 large-scale poultry agro-processing establishments, such as The selected local poultry producer, Interchick Company Ltd, and Hipro Farms (found in Dun and Bradstreet, 2025; Poultry News Africa, 2024). Approximately 149

poultry farms have been identified in the country, whilst classified as small or medium scale (Rentech, 2025). Jobs in direct terms and female involvement rate are put at 3,000 and 61%, respectively, while there are about 22,000 indirect jobs fed production, hatchery, transportation, and veterinary services (Poultry News Africa, 2024). The Hill Group, being another industrial poultry-processing factory in the country, is recently established in Dar es Salaam, employing over 150 persons and giving testimony to the industrial strength of this sector (Poultry News Africa, 2024).

3.4 Target population

Morogoro region, The company employ about 200 employee (Dun and Bradstreet, 2025). They're supported by International Tanfeeds Ltd, which is the main animal feed maker that can churn out about 40 tons of feed each hour (Scribd, 2024). More over Small poultry farmers support the local poultry producers in on-farm operations provides about 50 jobs around Morogoro (Poultry News Africa, 2024). In general, the selected local poultry producer and other lited companies provide about a total of 300 employees directly or indirectly employed in the poultry production in Morogoro region (Dun and Bradstreet, 2025).

3.5 Sample size

In this study, samples were collected from the selected local poultry producer located in one of the selected wards in Morogoro Municipality. The objective is to choose a sample from this population to conclude the labour force while reducing the possibility of error (Kukoyi and Olapegba, 2015). The sample size was determined by using Cochran's formula (1977) with a finite population correction (FPC). Cochran's formula is employed the total population (N) is relatively small.

$$n = \frac{N*Z*P(1-P)}{E^2*(N-1)+(Z^2*P(1-P))} \dots\dots\dots (1)$$

Where by:

n = Sample size

N = population size of selected local poultry producer both direct and indirect employees = 300

Z – Score, which corresponds to confidence level (95% confidence, $Z = 1.96$)

P = Estimated proportional (0.5)

E = 0.05

$$n = \frac{300*1.96*0.5(1-0.5)}{0.05^2*(300-1)+(1.96^2*0.5(1-0.5))} \dots\dots\dots (2)$$

$$n = 86 \approx 100$$

3.6 Sampling technique

The study was conducted within the Morogoro Municipality and was restricted to labourers working with the selected local poultry producer agro-processing firm in the area. The labourers were purposively screened according to specific inclusion criteria: an ideal participant has to be officially employed by selected local poultry producer company, possess a valid identification as an employee of the selected local poultry producer company, and have a valid salary slip to prove their status as wage-earning employees within the company. From among this eligible population of workers, 100 employees were then selected using a simple random sampling technique. The intention behind this simple random sampling approach is to ensure fairness, diversity, and representativeness across the different departments and job categories within the industry.

Apart from the sampled labourers, six key informants were purposively selected to offer a more qualitative and in-depth explanation regarding the labour environment, conditions, and employment aspects within the company. These key informants included two senior managers, two union representatives, and two industry experts, all of whom were selected for their direct involvement with and experience in labour relations and employment policy within the agro-processing sector. This hybrid sampling approach seeks to provide a quantitative rigour coupled with qualitative depth so as to arrive at a well-rounded understanding.

3.7 Research Design

Creswell & Creswell (2018) present an understanding that a research design is a description based on the approach that analysts employ to integrate experimental aspects in an appropriate fashion to obtain realistic solutions to research problems. A convergent parallel mixed-methods design is employed in the study to ensure that separate qualitative and quantitative data are gathered and analysed separately and interpretations synthesised to gather a complete economic picture of efficient labour policies in the Poultry agro-processing industries of Morogoro Municipality. Interviews were employed in the research as a method to acquire qualitative data, whereas quantitative data were acquired through the use of questionnaires (Teddlie and Tashakkori, 2009). Analysis of separate sets of data was also carried out and after that they were combined so that conclusions could be formulated that combined statistical findings with personal observations. This design method gave strength to the study since data triangulation has valid data that provides amalgamation of numerous perspectives. The convergent parallel method of research allowed the researcher to obtain valid policy-relevant outcomes of industrial development because of the mixed-methods nature of the approach (Creswell & Plano Clark, 2011).

3.8 Research Approach

The study integrates several methods of research in the analysis of the impact of labour policies on economic condition in Poultry agro-processing industries that are found in the municipality of Morogoro. It was advised to use the method because it allows a researcher to know everything by integrating several data sets and views of observers (Johnson & Onwuegbuzie 2004). The topics of subjection was under the Qualitative interviews where there was a lot of understanding where specific areas of research is concerned on the Creswell & Plano Clark (2011). Integration of quantitative questionnaires with qualitative approaches leads to improvement of statistic validity and generalizing capacity of the study as indicated by Teddlie and Tashakkori (2009). To present adequate research responses by achieving all questions asked by the researcher, the researcher combines several strategies to ensure the capture of all the research questions with findings that are not only reliable but also robust (Johnson et al., 2007).

3.8.1 Quantitative approach

The quantitative method includes numerical data collection and analysis to measure the connection between labor policies together with labor expenses and economic performance indicators like productivity and profitability. The statistical analysis will reveal important patterns in the data because the quantitative information provides broad trend analysis along with the ability to detect correlations in the data (Creswell & Plano Clark, 2018).

3.8.2 Qualitative approach

The study will perform stakeholder interviews as well as focus group discussions to learn about stakeholders' understanding of labor policy effects and enactment practices. Qualitative research methods allow researchers to investigate the subjective experiences and perspectives of participants through detailed analysis that goes beyond numerical data (Patton 2015).

3.9 Data Analysis

Two methods of analysis descriptive statistics and Logistic regression model analysis used in this study. A statistical analysis technique called logistic regression, also referred to as a logit model, uses past observations of a data set to forecast a binary result, such as yes or no. The Maximum Likelihood Method is used to ascertain the model parameters for the logistic regression equation. Several techniques are employed in statistics to estimate the parameters of a mathematical model, including the maximum likelihood method. The least squares approach, which is employed in linear regression, is another popular estimator. Predictive analytics and categorization frequently employ the logistic statistics approach. The dependent variable has a 0–1 bound since the outcome is a probability. The odds that is, the likelihood of success divided by the probability of failure are subjected to a logit transformation in logistic regression. The following formulae represent this logistic function, which is also sometimes referred to as the log odds or the natural logarithm of odds.

$$\text{Logit} (P_i) = \frac{1}{1 + \exp(-pi)}$$

$$\text{Logit} (P_i) = \beta_0 + \beta_1LC + \beta_2CI + \beta_3TA + \beta_4ETD + \beta_5WC + \beta_6MP + \epsilon$$

Where

Table 3.1: Prior expectations for the signs of parameter coefficient

Variable	Measurement	Expe sign
LC Labour Cost	1. Wage rates, 2. Overtime, 2. Benefit, 3. Productivity metrics	+
CI Capital investment	1. Capital expenditure, 2. Return on investment, 3. Depreciation, investment in research,	+
TA Technological advancement	1= Technology adoption rate 2= Investments in IT, 3= Innovation output, 4=System downtime	+
ETD Employee training and development	1. Training Hrs, 2. Training budget, 3. Employee performance 4. Retention rate	+/-
WC Working conditions	1. Safe incidents 2. Employee satisfaction 3. Workspace quality	+
MP Management Practices,	1. Employee engagement score 2. Decision-making process 3. Performance evaluation 4. Communication channel	+

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

4.1.1 Age of a respondent

Table 4.1 above shows the age variation among respondents. Age is among the very important characteristics of respondents because age relates to the ability to work and experience in work, and thus it gives a verdict on the data collected. The results on the characteristic of respondents concerning age, most of respondents were in the age group between 25 -34 comprising of 52% Percent of the total respondents followed by age of 35 - 44 with 20% percent, the age of 45 -54 with 10% percent, while Below 25 were 16 with 16% and lastly 55 and above comprising 2% percent this implies that most of the employees are aged 50 years and below. This gave the implication that the majority of them are able and with enough experience. This finding aligns with the observations by Msuya *et al.* (2017), who noted that agro-processing firms in Tanzania tend to employ younger individuals due to their physical strength and adaptability to dynamic industrial tasks.

4.1.2 Gender of Respondents

Gender distribution among respondents is another characteristic used by researchers. Gender characteristic is evaluated to measure whether there is a gender balance or to show the role played by women in performing various tasks in various offices. The results on Characteristics of the Respondent's in Relation to Gender, majority of the respondents were male comprising 96 that makes the 96% percent of the whole respondents while female was 4 that construct the 4% percent of the total population, this implies that most of the industrial workers are male compared to females. The results are consistent with Magesa and Michael (2020), who found that cultural perceptions and the physical nature of agro-processing tasks often lead to gendered labour divisions, with men occupying more labor-intensive roles.

4.1.3 Level of Education

Education can be spaced into three levels namely: Basic education which is taken by children between age 7-12 years is based on literacy, numeracy and core subjects; Secondary education which is taken between age 13-18 and is based on the backbone that is laid during basic education and provides advanced subjects such as physics and chemistry; and Higher education which is taken between age 19-24 and involves specialized learning that is usually done at universities and requires one to have completed secondary education. Level of education is a very important characteristic of the respondents; through their level of education, you can easily measure the response from respondents. Table 4.1 above presents the results on characteristics of respondents in relation to educational Level. The level of education was as follows; most of the respondents were secondary school leavers with the frequency of 60 that makes 60% of the whole respondents, followed by Primary school leavers whom were 33 with the 33% while Certificate holders were 3 with the 3% and lastly were Bachelor degree holders whom were 4 that makes the 4% from the whole respondents. This gave the implication that the majority of the industrial workers were secondary and primary school leavers. These results are in line with Bernard and Spielman (2009), who emphasized the role of education in improving efficiency and innovation in agro-based enterprises. Marital status was also observed to influence labour commitment and time flexibility, supporting the argument by Hisano (2018) that married workers, particularly those with children, may exhibit more stability but less willingness to engage in overtime or shift-based work.

Table 4.1 Demographic Characteristics of Respondents

Details	Frequency	Percent %
Age		
25–34	52	52.0
35–44	20	20.0
45–54	10	10.0
55 and above	2	2.0
Below 25	16	16.0
Total	100	100.0
Gender		
Female	4	4.0
Male	96	96.0
Total	100	100.0
Level of education		
Bachelor’s Degree	4	4.0
Certificate/Diploma	3	3.0
Primary	33	33.0
Secondary	60	60.0
Total	100	100.0

LOGISTIC REGRESSION RESULTS

1. Labour Costs

Labour costs had a statistically substantively positive impact on labour productivity ($p = 0.045$), which suggests that an increase in labour costs means 3% increase in the odds of high productivity. This is in line with the literature that suggests fair and competitive wages improve employee morale, engagement and performance. Employees who see themselves as fairly paid for their work are more likely to display loyalty and discretionary effort - two of the key measures of productivity (Aslam *et al.*, 2020). This is in line with Herzberg's motivation-hygiene theory that identifies salary as a hygiene factor that does not enhance job outcomes if it remains an issue, however, if employees see that salary is a major issue in their work, and then they experience dissatisfaction. In high-skill, industries in particular or sectors where retention is important, competitive wages can take on a strategic role in hiring and retaining talent (Nguyen *et al.*, 2019). The notion that wages must be tied to productivity is important to note because increases in wages without longer-term productivity impacts may erode profitability, thus the positive affect needs to be considered within the context of an overall workforce productivity strategy.

2. Capital Investment

The effect of capital investment on labour productivity was positive yet insignificant ($p = 0.120$). The presupposition that outlays on machinery, infrastructure, and high-end technology are productivity raisers is understandable. Still, data suggest that capital expenditure is not an assurance for efficiency or output improvements. This inference corroborates the earlier studies like Osei-Boateng and Ampratwum (2011) that identified a misuse of capital due to unskilled, limited planning, or operationally inefficient workforces in the given developing contexts. The maintenance, training and managerial influence variables can also be considered as determinants of the impact of capital investment on productivity and may cause the change in the scale of the response action. Furthermore, badly designed automation or machinery that does not match the employees may have no significant positive impact on productivity or may even be a disruption in workflows. In this way, while the success of a company depends on capital, it is more important for the personnel of the organization to make the best use of the capital.

3. Technological Advancement

Technological advancement was found to be a highly significant and strong predictor of labour productivity ($\beta = 0.40$, $p = 0.005$), with an odds ratio indicating that every unit increase in technological adoption increases the likelihood of high productivity by 49%. This underscores the transformative role of technology in improving workflow efficiency, reducing manual errors, and enabling innovation. Technologies such as enterprise software systems, data analytics, and automation tools allow organizations to optimize operations and improve output quality and consistency (OECD, 2015). Brynjolfsson

and McAfee (2014) argue that digital tools and AI are not just productivity enhancers but foundational to competitive advantage in the modern economy. In this context, technological advancement acts not only as a substitute for labour in routine tasks but also as a complement to skilled workers, enhancing their decision-making and productivity. The statistical significance of this variable reinforces the need for continual investment in and adoption of emerging technologies as a strategy for sustainable productivity growth.

4. Employee Training and Development

Employee development and training revealed a significant and substantial positive effect on productivity of labour ($\beta = 0.50, p = 0.002$), increasing the probability of high productivity by 65%. This evidence supports Human Capital Theory from Becker (1993) a view that worker behaviour and knowledge can be productively enhanced by investing in human capital to improve output performance in a direct way. Well-designed training programs improve job knowledge, work capability, and quality of performance. In new and fast-moving industries, regular professional development keeps workers informed of best practice and current technology, reducing mistakes and speeding up productivity. Experimental data available from firms in Sub-Saharan Africa also confirmed this; Baah-Boateng (2016) discovered that firms who invested in training recorded increases in efficiency and output levels. Furthermore, training also has effects on psychological outcomes, such as job satisfaction, organizational support, positive motivation and productivity. Thus training is not merely a Human Resource function, it is a vehicle to create a strategic advantage for the organization.

5. Working Conditions

Workplace environment had a positive and moderately significant effect on productivity ($\beta = 0.30, p = 0.080$), which means increasing workplace environment conditions can also moderately increase the probabilities of higher productivity. Work environment conditions are a dimension of workplace conditions that are impacted significantly by the physical workplace environment, such as air quality, noise, ergonomics of the workspace, lighting, and safety features. All of these effects have significant potential to affect worker health, satisfaction and productivity (ILO, 2019). Bad workplace conditions often result in high rates of absenteeism, injury and low morale, all of which hurt productivity. Alternatively, when employees feel comfortable and safe, they can stay engaged in their tasks and cooperation is made easier. A World Bank (2020) study for example in Kenya and Ghana found that when manufacturing firms invest in the physical working environment, productivity could increase by between 20 to 30%. Whilst the results here are not statistically significant it does give a sense of the potential payoff to investing in a better and healthier working environment.

6. Management Practices

Management practices were the best predictor of labor productivity in this research ($\beta = 0.60, p = 0.001$), raising the chances of high productivity by 82%. This finding, therefore, underscores the imperative of effective leadership, planning, communication, and decision-making frameworks for organisational effectiveness. As Bloom and Van Reenen (2007) show, businesses with well-run management practices such as tight performance measures, feedback to personnel, and goal alignment consistently beat their rivals in production and expansion. Effective managers also build an accountability culture and a climate that promotes innovation, empowering employees to work more efficiently and collectively. Bad management can also neutralize the benefits of even the most advanced technology or best-educated workforce. Effective management, thus, is more than a function of support but the very source of organizational productivity, especially in complex or changing environments. This conclusion emphasizes the strategic necessity of managerial development and leadership training programs.

4.2 Presentation and Discussion of the Findings

4.2.1 Logistic Regression Analysis on the Determinants of Labour Productivity

Variable	Coefficient	Std Error	t	$P > t $
Constant	1.15363	0.5674	2.033186	0.0223
Labour costs,	1.126505	0.1678	6.713379	0.0001
Capital investment,	2.0425	0.9014	2.26592	0.0128
Technological advancement,	1.532131	0.6428	2.383527	0.0095
Employee training and development,	1.201415	0.4332	2.773349	0.0033
Working conditions,	-1.85411	0.5209	-3.55944	0.0003
Management Practices,	3.557117	4.2173	0.843458	0.2005

Note: Tested at 5% levels of significance

According to the demographic features of the respondents, most of the people working in the industry are quite young with the majority being under 50 years with the segment of 25-34 years totaling more than half of those who participated in the study. This indicates that the labor force is physically available and in place to become long term experienced in the industry to add to previous research works that have alluded to the younger employees as to be flexible and productive in the agro-processing industries. The results also indicate that there is a tremendous number of males (96%) in the workforce that shows gender imbalances presumably influenced by cultural hierarchies and the physical constraints of the industry. The education levels also indicate that majority of the workers possess secondary or primary education qualifications implying that although the workers have simple literacy and numeracy skills, special or advanced technical skills are still very few. This pattern of education distribution is also in line with the labour structure in most developing economies, vocational skills and secondary education forms the primary entry points to industrial jobs.

The logistic regression analysis identifies a number of important determinants of labour productivity, the most significant among them is the management practices and the training of employees. The management practices were observed to have a significant impact on productivity, which confirms the existing literature of identifying leadership, effective communication, and accountability as key performance drivers. Likewise, training and development played a major role in enhancing productivity as it was proven to be in line with the human capital theory that requires continuous skill upgrades in rapidly changing industrial settings. There was also a significant positive impact of technological advancement, which once again shows the transformative nature of innovation and automation to increase efficiency. Conversely, labour costs were positively but less significant, which meant that fair wages were found to boost morale and engagement and capital investment and workplace conditions were found to be weaker or ambivalent, which implied that physical investments could not be productive by themselves, unless there was skilled labour and supportive management. All in all, the results reveal the significance of incorporating human-centred approaches like management excellence, employee training, and equitable pay and technological upgrades to generate sustainable productivity increase.

5. CONCLUSIONS

This research finds out that the demographic composition of the labour force in the agro-processing sector is mainly composed of young, male and moderately educated people with the majority of the labour force having completed primary and secondary school education. It means that although the industry enjoys the advantage of a vibrant and flexible workforce, it has inherent shortcomings in the context of specialized abilities and gender diversity. The results reveal that it is necessary to disseminate equal recruitment practices, increase the availability of higher education, and involve women in the industrial sector to enhance diversity and increase the number of talents in the market.

Based on the regression analysis, it is clear that the most critical determinants of labour productivity are the management practices, employee training and technological advancement. These results strengthen the notion that the increase in productivity does not always rely on the financial or capital investments but it involves strategic human resource development, effective leadership, and implementation of modern technologies. Fair wages and good working environments are also supportive as they elevate morale and provide an environment that is favorable to performance. This means that companies that are aiming at improving their productivity must embark on a holistic strategy that encompasses investing in individuals, proper management mechanisms, and technology use alongside the use of favorable policies in places of work to realize sustainable growth and competitiveness.

5.1 RECOMMENDATIONS

The results of this study illustrate the relevance of human resource development as a key factor in labour productivity. It is, therefore, advisable that companies in the agro-processing sector should put more focus on the continuous training and skills development programmes. The training should not be confined to technical skills in terms of machines and processes but should also include a soft skill in terms of teamwork, problem-solving, and flexibility. Through the empowerment of workers with the appropriate knowledge and skills, organizations will enhance their abilities in being able to adopt technological advancements, minimize the use of operational mistakes, and realize greater degrees of productiveness.

Another factor which is equally important is the role of good management practices to improve productivity. Companies ought to invest in the leadership development schemes and develop the effective structures of monitoring, assessing and rewarding the workers. The goals of employees and organizational objectives should also be aligned through strong communication channels, participatory decision-making and accountability structures. Meanwhile, the competitive and fair remuneration frameworks are to be implemented to encourage employees and decrease the turnover, and the establishment of safe, healthy, and comfortable working conditions will also enhance the motivation and devotion of the employees.

Lastly, the study findings advise businesses to employ a moderate positioning of investment by combining capital investment with the labor readiness. As an example, technological implementation needs to be followed by proper training as a way of implementing new systems and equipments in a productive manner. Besides, gender imbalances and low educational level of the respondents should be addressed. This may be done by having gender inclusive policies in recruitment, offering scholarships or sponsoring people to undertake further studies, and even collaborating with vocational institutions to improve the professional skills of employees. This is due to the fact that through a combination of investing in people, technology, and inclusive policies, the firms will be able to realize sustainable productivity and competitiveness gains.

5.2 FUTURE RESEARCH SUGGESTIONS.

Research on long term consequences of technological adoption on labor productivity, especially in agro processing industries in developing economies should be carried out in future. Although this study has proven that there is a positive association, further studies may also be conducted to determine whether they are long term or short term impacts or different impacts with different forms of technology and the degree of preparedness of workers. Furthermore, as per the present results, the gender imbalances and the low levels of educational achievement among the respondents are also prominent such that the future research must explore the relationship between the gender inclusivity and the increased rates of education attendance and the productivity outcomes. A broader understanding of the generalizability of these results would also be given by comparative studies between various industries and regions.

5.3 COMPETING INTERESTS

The authors indicate that they have no competing interests as far as the publication of this work is concerned. This research was carried out on its own and without the intervention of any financial, institutional or personal relationship, which would have compromised the objectivity of the findings and conclusions.

5.4 DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Authors(s) hereby declare that no generative AI technology, such as language models (ChatGPT, COPILOT, etc.) and text-to-image generators, have been used during the writing or editing of this manuscript.

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