

PROFITABILITY IN THE RED MEAT INDUSTRY ON THE GHANAIAN LIVESTOCK MARKET: EVIDENCE FROM A PUBLICALLY-OWNED RED MEAT FACILITY

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ABSTRACT: *We examined the profitability of a publically owned enterprise in Kumasi-Ghana. Specifically, the study sought to; determine the costs and returns, associated with operations, assess the factors that affect the profitability, and identify the challenges faced by management in their operations. Non-probability purposive sampling was used to select the study area. Structured interviews were used as primary data whereas a 10-year financial statement was the secondary data source. The result showed a positive profitability index of 0.88 and operation ratio of 0.93 although the gross margin analysis produced an operating loss (π) of (GH¢ (37,331)) given a TAC of GH¢ 4,409,972, TVC of GH¢ 10,148,464, TR of GH¢ 14,059,680, and a GM of GH¢ 4,372,644. The regression model confirmed that factors that affect the profitability of abattoir enterprise are influenced by eight factors namely; Salaries/Wages, Electricity/Water, Plant repair/maintenance, plant/market consumables, cleaning detergents, pension contribution, depreciation expense and packaging/labelling at $r=0.86$.*

KEYWORDS: Profitability, Red-Meat Industry, Non-Probability Purposive Sampling, Gross Margin Model, Mean Score Model, Multiple Regression

INTRODUCTIONS

According to Herd *et al.* (2003), the profitability of any enterprise is determined by the difference between the input costs and the revenues from sales. Determinants of the profitability of the global livestock market have raised concerns among stakeholders on the need for strategic managerial supports in the agribusiness sector of developing countries (Ha *et al.*, 2001; Kaase, 2006; Killebrew & Plotnick, 2010; Mugera, 2012). This is particularly so because the continuous survival and profitability of agribusinesses is supported by available resource to achieve enterprise growth (Baye, 2010; Goddard *et al.*, 2005; McGahan & Porter, 1999, 2002; Olwenty & Shipo, 2011). The country's Abattoirs (publically owned entity) though has been in existence for nearly two decades, economically, it is facing stiff competition from the involvement of private sector participation (Besis, 2002; Killebrew & Plotnick, 2010; Randan & Ashitey, 2011). Thus the need to assess the determinants of the enterprise profitability in the agribusiness sector of developing countries (Anang *et al.*, 2013).

Ghana's Living Standard survey (GLSS 5) of 2013 report that the country's main sources of meat consumption, like previous years, is the livestock supplemented by wild animal hunting

(bush meat i.e. all types of meat obtained from the wild), particularly in the rural areas (Kudzodzi, 2006). According to available statistics from the Ministry of Food and Agriculture (MOFA, 2010), over 40,000 tons of meat annually representing 20% of an estimated national requirement (MOFA, 2010) comes to the country's abattoir. The sector from health and environmental hygiene perspective provides high quality protein meat and inclusively employs significant part of the populace in the areas of processing, nutrition, health, product and by-products as well as vending at food joints and chop bars (Anku, 2005; Killebrew & Plotnick, 2010).

The remaining 80% is supplemented from both unlicensed and licensed abattoirs as well as imports from other countries. This makes the Abattoir enterprise generally a very lucrative venture over the last decade not only in Ghana (Anang et al., 2013; Kudzodzi, 2006; Randan & Ashitey, 2011) but in other countries around the globe (Cable & Mueller, 2008; Glen *et al.*, 2001; Goddard *et al.*, 2005; Goddard & Wilson, 1999; Kipchumba et al., 2010; Langemeier, 2010; McMillan & Wohar, 2009). Most of these studies assessed determinants of profitability in European meat industries and found significant association for profitability and market concentration. Schumacher & Boland (2005) study of determinants of profitability in the US livestock industry concluded on similar results. Also, these studies were conducted in economics that provide financial support or security for such enterprises (Gschwandtner, 2005; Mbengwa et al., 2011; Odagiri & Maruyama, 2002). However, studies on determinants of profitability in the livestock market in Ghana agribusiness are very few (Anang et al., 2013; Randan & Ashitey, 2011) and do not provide comprehensive results on determinants of profitability in the livestock market and its effect on red meat business sustainability. The livestock industry in Ghana is faced with proliferations of uncertified local animals' slaughters and strong competition from cheap import due to Ghana liberalisation of the red meat imports in line with World Trade Organisation commitments. Conducting such a study in Ghana, where such financial subsidies and support are rare may reveal different firm variables that show significantly different determinants of profitability.

Profitability is the key factor which decides the long term survival of the meat industry as well as the farmers involved in animals' production (Bain, 1951; Baltagi, 2001; Basis, 2002; Berger et al., 1987). Relative impact of these factors in profitability is important as a decision tool to be used by the farmers and management of the Abattoir enterprise (Baye, 2010; Capi, 2009; Horne & Wachowick, 2008; Idendah & Fleming, 2002). Therefore this study was carried out to determine the factors affecting profitability of Kumasi Abattoir operations and evaluate how management strategies to overcome this challenges. The specific objectives were to

- i. To determine the cost and returns associated with abattoir operations
- ii. To assess the factors that affect profitability of the Abattoir enterprise
- iii. To identify challenges faced by management in the operations of Abattoir

This study is important as its attempts to fill the gap in literature on determinants of profitability in the livestock industry and its effects of business sustainability. This information may be useful especially for investors, financial managers and financial institution that design and promote agribusiness schemes.

RESEARCH METHODOLOGY

The research used an exploratory design relying on both quantitative and qualitative data (Church et al., 2001; Leedy & Ormrod, 2005; Neuman, 2006) to examine the profitability of Abattoir enterprise as an economic venture, and the factors that affect enterprise performance at Kumasi Abattoir Company Limited. The explorative research design in the form of a case study was used to understand the profitability of the red meat industry in Ghana. The sampling design used was the purposive non-probability sampling approach since the population of the study consists of a business entity. A non-probability sample is used when a group that represents the target population already exists (Page & Meyer, 2003). Both primary and secondary data sources were used (Saris & Gallhofer, 2007; Yin, 2009). Primary was collected through the use of structured interview. The structured interview solicited information from two (2) top management officials namely the managing director and the finance officer about the challenges faced by the operations of the abattoir. The secondary sources of data were collected mainly approved audited financial statements of the company for a ten (10) year period (2004 to 2014). The variables on which data was collected include the input cost such as fixed and variable cost, outputs such as revenue, expenditure, labour input, and capital inputs. The justification for chosen time period was due to the fact that it offers recent time series observations and it constitutes a period of major changes for the meat industry especially the abattoir enterprises. To ensure the validity of the research work, certain criteria would be set for the study. The first criterion was that the audited financial data collections are taken from management of facility and the data was cross checked to avoid ambiguity. The second criterion was that the study sought participants' consents before the research starts. The participants were briefed on the objectives of the research so that they can decide on participating. Finally, all information provided by the participants will kept confidential and respondents will remain anonymous.

To estimate the cost and returns for the 10 year period, objective one was measured using the gross margin model and further analysis was done to obtain profitability of the enterprise using mean score model. Profitability indices such as profitability index (PI), rate of return on investment (ROI), return on variable cost (RVC) and operating ratio (OR) were estimated to confirm the viability of the enterprise.

Gross Margin Model

The gross margin formula is given as: $\text{Gross Margin (GM)} = TR - TVC$ and profit (π) = GM - TAC

The gross margin represents the contribution made by the abattoir to the overhead cost. It also shows the gains or losses (Table 2) that can be expected if the enterprise increased or reduced in size (Phiri, 2012).

Where GM = Gross margin; TR = Total revenue; TVC = Total variable cost; TAC = Total Administrative and General cost; π = profit/loss

Mean score model

Mean score model was adopted to analysis used to analysis profitability indices such as profitability index ($PI = NI/TR$), return on variable cost ($RVC = [(TR - TRC)/TVC]$) and

operating ratio(OR) = TVC/TR . The rule of thumb is that the greater than 1 of a profitability index, the higher the returns from Kumasi abattoir's investments.

Decision point < 1.0 and negative (Reject)

Decision point >1.0 and positive (Accept)

$$X_{avg} = \sum x/n = 1$$

Where X_{avg} = mean; Σ = summation; x = yearly estimation of item under consideration; n = number of years (10 years)

To determine the factors that affect profitability, the study selected variables from the audited financial statements as applicable to Kumasi Abattoir Company Limited. The variables (Table 1) selected are fixed and variable cost (Muria, 2011; Miller et al., 2010) and included in the regression model (Equation 2). Correlation and multiple regression analytical techniques were employed to analyse the data and perform trend analysis from 2004 to 2014. To perform trend analysis using Pearson correlation (i.e. to observe the association between the independent variables) and multiple regression analysis, the study used an empirical model given as: $GM_{it} = \alpha_i + \beta_i X_i + \epsilon_i$ Equation 1

Where: GM= Gross margin (GH¢); X_i^* = vector of variable inputs costs (Table 1)

Expanding the equation, the

$$GM_t = \alpha_0 + \beta_1 \ln X_{1t} + \beta_2 \ln X_{2t} + \beta_3 \ln X_{3t} + \beta_4 \ln X_{4t} + \beta_5 \ln X_{5t} + \beta_6 \ln X_{6t} + \beta_7 \ln X_{7t} + \beta_8 \ln X_{8t} + \beta_9 \ln X_{9t} + \beta_{10} \ln X_{10t} + \beta_{11} \ln X_{11t} + \epsilon_t$$
 Equation 2

Table 1: The variable inputs for the empirical model

X_1 = salaries & wages (in cedis) / annum	X_4 = cost of plant repair & maintenance (in cedis) / annum	X_7 = cost of packaging and labelling	X_{10} =cost of plants consumables & marketing
X_2 = Cost on electricity/water (in cedis) / annum	X_5 = cost of fuel & gas	X_8 = employees SNNIT contributions	
X_3 = risk cost (cost of cleaning and sanitation in cedis) / annum	X_6 = cost of protective clothing	X_9 = cost of Marketing expenses	

Table 2: Summary of Determinants of Profitability

Variable	Description	Expected Sign
Dependent variable		
GM	Gross profit –overheads cost + indirect cost	(+/-)
Internal factors	Independent characteristics of Kumasi Abattoir	
Salaries & Wages	Salaries & wages are determined by the educational and experience level of labour. As salaries & wages increases, profit	(+/-)

	is expected to increase with increase in sales. But if labour cost increases with little or no expansion in output level, profit reduces.	
Cost of electricity and water	Cost of electricity is estimated from the number of the equipment used, frequency of use. Use of the processing equipment is to increase the level of productivity per unit of time in order to increase profit. Hence, the initial increase in electricity cost is expected to increase productivity in order to increase profit, but as the cost increases with little or no increase in output level, profit tends to decrease.	(+/-).
Risk cost	Risk cost is made up of the costs of cleaning and sanitation. It is expected that the higher the risk cost, the higher will be the profit if output increases.	
Cost of repair & Maintenance	The cost of repairs, servicing, changing of parts of machines and equipments. Maintenance is done to avert breakdown of machines. It is expected that as maintenance cost increases initially, profit increases. But a further increase in the cost without a proportional increase in output could reduce the profit.	(+/-)
Cost of fuel and gas	The cost of fuel and gas involves flaring of animals' furs and fuel for transporting finished products. The higher the cost, the higher the profit that should be derived from it, if there is a demand for the product. But if demand for the product is low, the higher the place cost, the lower the profit will be.	(+/-)
Cost packaging and labelling	Cost of packaging and labelling. This is a value-added service which involves the use of cellophane or bags to package the dressed animals. It is expected that as the output increases, the cost of packaging increases, hence profit increases.	(+/-)
Cost marketing expenses	Advertisement informs or increases the level of awareness of the customers of the availability of the services provided. The higher the cost, the higher the profit that should be derived from it, if there is a demand for the product. But if demand for the product is low, the higher the place cost, the lower the profit will be.	(+/-)
Cost of plant/marketing consumable	It is expected that as the output increases, the cost of packaging increases, hence profit increases.	(+)
Cost of protective clothing	The cost of purchasing disposable gloves, boots is enhancing food safety. It is expected that if cost (input) is higher, profit will be higher when output increases.	(+)

The SWOT (strengths, weaknesses, opportunities, threats) analysis is a descriptive as well as an analytical tool. Strengths and weaknesses relate to conditions internal to a business or industry, whereas threats and opportunities refer to external conditions facing the organisation or industry. The results from the structured interview and documentation review analysis aided in the designing the SWOT analysis to answer objective 3.

RESULTS

Costs and returns associated with the enterprise operations

Gross margin is estimated as the difference between the total volume of sales and the direct & variable costs. Therefore, gross margin (GM) in this study was calculated by subtracting total direct & variable costs from total sales income (total revenue). The result from Table 3 shows that the highest returns in respect of variable costs of operation was achieved in the year 2012 (GH¢ 802,611) and followed by 2013 with GM of GH¢ 719,214. The results of operating profit and loss of the enterprise showed mixed results. The enterprise generally recorded a loss in some years (2004, 2005, 2008, 2010 and 2013) and profit in the remaining years under review. The results also show a loss of GH¢ 37,331 over the 10 year period.

The profitability index (PI) was determined by dividing net income (subtracting totals sales income from salaries/wages) by total revenue (total sales income). Sales income represents the value of goods invoiced to customer during the year net of discounts and returns. In the enterprise under study, the financial statements are prepared under the historical cost conversion. According to the results in Table 3, Kumasi Abattoir Company Limited shows the average profitability index (PI) of positive 0.88 over the entire 10 years. This indicates that for every Ghana cedi earned as revenue, 88 pesewas were returned to Kumasi Abattoir as net income hence very profitable.

The rate of return on investment (ROI) was calculated as a percentage ratio of Net income (NI) to Total cost (TC). ROI ratio in this study was used to estimate net earnings per one Ghana cedi investment. The average ROI for the abattoir over the period of 10 years was GH¢88.3, which indicates that Kumasi Abattoir capital assets were declining by 30 pesewas per every cedis capital invested.

The rate of return on variable cost (percent) was determined by subtracting total revenue (sales income) from total costs divided by total variable costs. The average return on variable cost for enterprise was negative (-1.0%) and this means that the enterprise was incapable of producing negative returns on variable costs and that the abattoir has to use all its sales to pay for its variable costs. The results show that the higher ratios of variable and fixed costs to total revenue sales lower the profitability of the abattoir.

Operating ratio (OR) is a profitability indicator which measures percentage of variable cost per one Ghana cedi sale. The average OR for the enterprise was 0.93 (93%). This result indicates that for every cedis sale, the percentage of variable cost was 93% respectively. The results further reveal that the OR in 2011, 2012 and 2013 was 0.86 (86%), 0.64 (64%) and 0.68 (68%) respectively. The changes in OR for the difference years can be attributed to prices of the inputs of variable cost such as electricity, labour cost, water cost and other variable cost during a respective years under review as well as decline in sales.

Table 3: Enterprise profitability measurement based on audited financial statements (2003-2013)

Year									Profitability indices			
	Net profit (GH¢)	Operation Profit/Loss	Total Cost (GH¢)	Total administrative cost	Gross margin (GH¢)	Total variable cost (GH¢)	Total revenue (Sales income) (GH¢)	Net income (GH¢)	Profitability index	Rate of return on investment	Rate of return on variable cost (%)	Operation ratio (%)
2003	258,888	19,130	480,910	166,589	185,718	314,322	500,040	403,699	0.81	83.9	6.09	1.00
2004	(29,452)	(7,790)	663,453	214,147	206,357	449,305	655,662	520,929	0.80	78.5	(1.73)	1.00
2005	(133, 251)	(18,352)	880,109	282,489	264,137	597,620	861,757	660,762	0.77	75.1	(3.07)	0.63
2006	20,700	30,526	975,693	300,810	331,336	230,714	100,622	76,157	0.76	78.1	4.52	1.2
2007	18,611	25,479	946,186	267,209	292,688	678,977	971,665	723,647	0.75	76.5	(3.75)	1.2
2008	(47,790)	(75,698)	1,023,924	337,286	261,588	686,638	948,226	750,986	0.79	73.3	(11.02)	1.10
2009	17,133	(3,028)	1,395,921	301,880	298,855	1,094,041	1,392,896	1,135,768	0.82	81.4	(0.28)	1.00
2010	(97,923)	(112,421)	1,319,456	483,988	371,567	835,468	1,207,035	956,198	0.79	72.5	(12.72)	1.10
2011	153,701	113,625	1,503,481	524,948	638,573	978,533	1,617,106	1,308,523	0.81	87.0	13.10	0.86
2012	131,811	137,136	2,698,235	665,474	802,611	2,032,760	2,835,371	2,491,636	0.88	92.3	12.02	0.64
2013	(64,820)	(145,938)	3,115,238	865,152	719,214	2,250,086	2,969,300	2,629,949	0.89	84.4	(12.63)	0.68
	193,342	(37,331)	1,500,261	4,409,972	4,372,644	10,148,464	14,059,680	11,658,254	0.88	88.3	(0.95)	0.93

Source: Field data, 2015

Factors Affecting Profitability of the enterprise

The results of the correlation matrix are presented in Table 4. The findings of Pearson's correlations indicate all the variables are positively correlated to each other at 1% level of significance. This result from pair-wise correlations suggests that there is evidence of relationship between at least two variables. Nonetheless, the results from Table 4 show a high positive correlation coefficient of 0.94 and a strong relationship between Salaries & Wages and Fuel & Gas signifying multicollinearity. According to Stevens (2009) and Nurosis (2009) a correlation value of above 0.80 indicates multicollinearity. In order to avoid spurious regression, the data was further analysed to find the level of stationarity. The result is shown in table 7. Augmented Dicky Fuller (ADF) test was used to test for the level of stationarity. The Philips Perron (PP) test was also applied to augment the ADF test since it has the ability to correct for serial correlation and heteroskedastic error term. The result shows that all the variables were non-stationary at the level except operating income which was level-stationary at 5% significant level. However, all the non-stationary series became stationary first differencing except fuel/gas expenses and protective clothing.

This provides further evidence to investigate using multiple regressions whether significant relationship exist among the variables. The finding from the multiple regressions is presented in Table 8. This means that, not all of the coefficients of the variables are significant at 1% level. The results of the multiple regression analysis on the factors influencing profitability of Kumasi Abattoir are shown in Table 8. The results show that about 86% of the variability in the gross margin, net income and operating profit/loss was explained by the factors included in the model. That is, these factors highly explain variations on the level of profit. Fuel and gas expenses and expenses on protective clothing were excluded from the regression estimation because they were neither level stationary nor first differenced stationary. Also Marketing expenses and expenses on clothing were omitted from the model since they were highly correlated. Two out of the eight (8) factors included in the model were significant. These are plant /marketing consumables and cleaning & sanitation. This means that these factors must be given utmost consideration in any decision aimed at improving the gross margin or profit in the Abattoir enterprise.

Six of the independent variables (Plant repair & maintenance (1.136), cleaning & sanitation (5.964), wages and salaries (0.550), SSNIT contribution (1.568), depreciation expenses (1.125) and packaging & labelling (0.039) of these factors had positive coefficients, that is they move in the same direction. This might be explained that constant working of machines & equipment, cleaning & sanitation, packaging & labelling, etc made the dressed animal product purchase appealing that customers patronised their services and are prepared to pay for the services and payment of salaries of workers boost workers morale to give out their best. Though these variables have positive relationship with profits on cleaning and sanitation was significant.

Electricity/water expenses conformed to the theoretical expectation of a negative sign suggestion. Thus, profit and electricity and water expenses move in the same direction.

Marketing Expenses (-0.19) are expected to increase awareness for the product in order to increase sales and therefore profit. However, a negative relationship between marketing expense and profit may mean that there were little quantity of the animals being brought from farmers for slaughtering and process. Also plant and marketing expenses had a negative and significant effect on profit. This calls for relook at the marketing strategies employed by the Kumasi Abattoir.

Table 4: Correlation Matrix

Variables	1	2	3	4	4	5	6	7	8	9	10
Plant/Marketing (1)	1.000										
Fuel/Gas (2)	0.33	1.000									
Electricity/Water (3)	0.61*	0.64*	1.00								
Plant Repairs/Maintenance (4)	0.66*	0.58*	0.47	1.000							
Protective clothing (5)	0.32	0.68*	0.53*	0.29	1.000						
Cleaning/Sanitation (6)	0.65*	0.52*	0.66*	0.61*	0.59*	1.000					
Salaries/Wages (7)	0.38	0.94*	0.66*	0.61*	0.69*	0.73*	1.000				
SSNIT contribution (8)	-0.06	0.25	0.38	-0.19	0.72*	0.16	0.22	1.000			
Depreciation expense (9)	-0.61	-0.10	-0.51	-0.43	-0.27	-0.66	-0.20	-0.16	1.000		
Package/labelling	0.25	0.18	-0.23	0.71	-0.30	-0.16	0.11	-0.54	0.436	1.000	
Marketing expenses	-0.15	0.54	0.05	0.13	-0.14	0.15	0.47	-0.10	0.26	0.69	1.000

Source: Field data, 2015 Correlation is significant at the 0.01 level (2-tailed).

Table 5: Unit Root Test

<i>ADF Unit Root Test</i>			<i>PP Unit Root Test</i>	
<i>Variable</i>	<i>Level</i>	<i>1st Differenced</i>	<i>Level</i>	<i>1st Differenced</i>
<i>plant marketing</i>	-2.443	-4.229***	-2.440	-4.406***
<i>Fuel /gas</i>	1.153	-1.666	1.274	-1.666
<i>electricity/water</i>	-1.173	-8.146***	-0.902	-11.257***
<i>plant repairs/maintenance</i>	-1.913	-3.633***	-1.955	-3.570***
<i>protective clothing</i>	-0.034	-2.374	0.412	-2.274
<i>cleaning sanitation</i>	-2.111	-9.474***	-2.090	-7.739***
<i>Salaries/wages</i>	-1.510	-3.082**	-1.532	-3.106**
<i>SSNIT contribution</i>	0.125	-5.626***	0.848	-5.040***
<i>Depreciation expense</i>	-2.410	-3.107***	-2.332	-3.240**
<i>Package/labelling</i>	-1.833	-3.159**	-1.941	-3.220**
<i>Marketing expenses</i>	-0.723	-2.720*	-1.007	-2.729*
<i>Operation profit and loss</i>	-3.332**	-2.990*	-3.391**	-2.833*
<i>Net income</i>	0.108	-3.336**	0.649	-3.365**
<i>Gross margin</i>	0.137	-2.212*	0.846	-3.989**

Table 6: Model for the Estimation of Factors Affecting Profitability of the enterprise

<i>Variables</i>	<i>Coefficients</i>	<i>t-statistics</i>
<i>plant/ marketing</i>	-2.050	-1.78*
<i>electricity/water</i>	-0.195	-0.19
<i>plant repairs maintenance</i>	1.136	0.59
<i>cleaning sanitation</i>	5.964	2.55**
<i>Salaries/wages</i>	0.550	0.523
<i>SSNIT contribution</i>	1.568	0.31
<i>Depreciation expense</i>	1.125	1.67
<i>Package/labelling</i>	0.039	0.07
<i>Adjusted R-Squared</i>	86%	

Note: *, ** and *** represents significant levels at 1%, 5% and 10% respectively.

SWOT Analysis of Abattoir Operations

The study identified through the structured interview with top management staff of the finance department revealed the following as major challenges that face KACL over the years. The main challenges currently are:

- The low slaughter fees appropriated below the marginal cost of its operations
- Spiral increases i.e. higher proportional increment of utility bills on water and power consumption imposed by the utility companies.
- Import bills on Plant consumables or saw blades and machinery parts and high implied depreciation annual provisional expenses.

- Frequent Government conventional controls on minimum wage, which resonate with cost of living in the country. These badly impinge on the Company's limited financial resources every year.

The study further assessed the challenges faced by management in the operation of Abattoir using the SWOT analysis.

Table 9: SWOT analysis of the study enterprise

Strengths	Weaknesses	Opportunities	Threats
Competitive product prices	Over dependence on local market for animals	Huge untapped market for business growth	Lack of adequate funding
Hygienic environment	Cheap imports from countries that subsidise their agricultural produce	Huge demand for meat products	Unwillingness to pay economic fees
Competent and dedicated staff	WTO commitments Ghana is fulfilling does not encourage fair competition	Closeness to animal market	Lack of customer awareness on health threats of using other slaughter houses
Variety of animals products which serves your needs	Inefficient machines	Religious flexibility towards meat	Lack of regulation on slaughtering in hygienic environment
A well-established commercial sector	Training and skills development are implemented too slowly		

DISCUSSION

The results of operating profit and loss of the enterprise showed mixed results. According to Reddy (2003) and Balogun et al., (2011) profit margin may be improved if volume of sales goes up. When this happens, the business can raise profit they manage the factors within their control. Thus, by improving abattoir efficiency and sales, and reducing costs by using optimal levels of inputs the abattoir would be more profitable.

According to the results, the enterprise shows the average PI of positive 0.88 over the entire 10 years. This indicates that for every cedis earned as revenue, 88 pesewas were returned to Kumasi Abattoir as net income. The result is consistent with studies by Phiri, (2012) where PI was employed as an investment appraisal ratio to measure the percentage net profit per one rand of sales. The results of Phiri (2012) recorded a PI of 0.99 which indicated that for every rand earned as revenue, 99 cents were returned to the farm as net income. However, the results were contrary to Bano et al., (2011) which recorded 0.07 and 0.16 PI. Bano et al., (2011) results

indicates that for every rand earned as revenue, 7 and 16 cents were returned to farm as net income.

The average ROI for the abattoir over the period of 10 years was 88.3 cedis, which indicates that the enterprise capital assets were declining by 30 pesewas per every cedis capital invested. The results for average operation ratio (OR) for Kumasi Abattoir were showed that operation ratio varied over the 10 years period. The changes in OR for the difference years can be attributed to prices of the inputs of variable cost such as electricity, labour cost, water cost and other variable cost during a respective years under review. The study finding is in consistent with study undertaken by Reddy (2003) and Cahill (2007). According to Phiri (2012), rate of return on variable cost (RVC) is a profitability indicator which measures net earnings per cedis spent on variable cost. The average return on variable cost for Kumasi Abattoir was negative (-1.0%) and this means that Kumasi Abattoir was incapable of producing negative returns on variable costs and that the abattoir has to use all its sales to pay for its variable costs. The results show that the higher ratios of variable and fixed costs to total revenue sales lower the profitability of the abattoir. This finding was contrary to that of Mishra et al., (1999) where the use of limited resource by controlling their variable costs brought efficiency and subsequently profit.

The results from regression analysis on the factors influencing profitability of study enterprise show that about 86% of the variability in the gross margin and operating profit/loss was explained by the factors included in the model. That is, these factors have substantial effects on the level of profit. Two out of the eight factors included in the model were significant. These include plant/marketing expenses and cleaning or sanitation. This means that these factors must be given utmost consideration in any decision aimed at improving the gross margin or profit in the Abattoir enterprise. Six (Plant repair & maintenance, cleaning & sanitation, SSNIT contribution and packaging & labelling of these factors had positive coefficients, that is an increase in the use of these factors increases profit. This might be explained that constant working of machines & equipment, wearing of protective clothing and cleaning & sanitation, packaging & labelling made the dressed animal product purchase appealing that customers patronised their services and are prepared to pay for the services and payment of salaries of workers boost workers morale to give out their best. Though packaging and labelling had positive effects on profit, they were, however, not significant.

Marketing Expenses (-0.19) are expected to increase awareness for the product in order to increase sales and therefore profit. However, a negative relationship between marketing expense and profit may mean that there was little quantity of the animals are being brought by farmers for slaughtering and process. The finding derived from this study is consistent with past studies by El-Osta & Steele (1999) which found that for limited resource and other small farms to become more profitable, controlling their variable and fixed costs is more effective than other measures considered. Their study further shows that the higher ratios of variable and fixed costs to total value of agricultural production lower the profitability of limited resource farms.

The results from the structured interview and documentation review shows that the Abattoir's operation is one of the many renowned and classified Agricultural businesses. It is said to be classified for reasons that concern Public Health and life especially the safety of the people who consume meat. It is also a business and must be handled as an industrial business to manage resources equitably, efficiently and optimally to make profit; since an Abattoir's

operation hinges on capital intensive structural components both in cost and in fixed assets and variable cost items for running the Plant.

Usually, Abattoirs all over the world thrive on two parameters i.e. either it is subvented /supported by Government, Boroughs or counties they serve or operated privately to make profit as a business entity. However, the results from the interview with the finance manager revealed that Kumasi Abattoir Company opted for the latter option and so its operational sustainability depends upon its profitable growth trends during its operational periods when its Plant and machinery are new and providing optimal cost to its running cost.

Implication to Research and Practice

Gross margin, ROE, ROA are an indicators of how efficient a company is and how well it controls its costs. The loss recorded by the company in some of the years under review indicates a decline in sales and under-utilisation of assets erased profits and resulted in a net loss. Likewise, the higher profit margin for the other years showed increase in sales thus the company was more effective in converting revenue into actual profit. The managerial implication of the findings suggest that if Kumasi Abattoir utilities its assets (ie. Plants, Equipment and building) or diversify their business activities, their business is likely to experience increased net income and returns to operation ratio. The profit margin can be improved if management adjust upward the current service fee to reflect current market price, reduce input cost such as variables cost of electricity/water, salaries/wages by purchasing new processing equipment to replace old ones. In such conditions, the abattoir can raise profit margin if they manage the factors within their control.

CONCLUSION

Management should consider factors that significantly affect profitability and addressed them. For instance, management replacing old plants and machines with state of the art machines and equipments will reduce frequency of breakdown, reduce cost of repair and maintenance, and limit engagement of casual worker which will invariably reduce salaries/wages paid to people. The SWOT analysis can help management address challenges faced by company. We recommend further studies to include privately owned abattoir in order to make a general conclusion.

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