Inventory Management and Financial Performance of Small Scale Apicultural Enterprises in Cameroon: The Case of Oku Honey Cooperative Society Limited

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Abstract

This study examines inventory management and financial performance of Small Scale Apicultural Enterprises in Cameroon, the case of Oku Honey Cooperative Society Limited (OHCSL). The independent variable (Inventory management) proxy by raw materials inventory, work-in-progress inventory, finished products inventory, and packaging material inventory was regressed against dependent variable (financial performance) proxy by gross profit margin. Data used in this study cover the period 1988-2017. The primary data was collected using interviews, structured and semi- structured questionnaires administered to the management staff of the organization. Using magazines, internship reports and annual reports of the enterprise, secondary data was collected. Using multiple regression analysis, the study established that a positive relationship exist between the independent (inventory management) and dependent variables (financial performance) at OHCSL. However, it was uncovered that holding raw material inventory contributed minimal on the financial performance of OHCSL. This was attributed to the fact that honey is processed within 24hours post harvest and hence the cooperative avoids holding raw material inventory. Consequently, the study recommended improvement in inventory management practices including improving staff capacity at the cooperative.

Keywords: *Raw Materials Inventory, Work-In-Progress inventory, Finished-Products inventory, Financial Performance, Inventory Management, Gross Profit Margin*

1.0 Introduction

It has been generally accepted that inventory management affects the performance of organizations, thus it becomes urgent that organizations hold sufficient quantities of inventory to ensure production as well as distribution to satisfy customers. According to Miller, (2010), inventory management affects either directly or indirectly organizational profitability. This implies that proper inventory management makes it possible for firms to have adequate quantities of stock to provide client requests, and minimize inventory holding cost. To ensure high organizational performance and hence growth, good inventory management practices are necessary, this primary due to the farm that a significant amount organizational resources are invested in the form of inventory (Kruger, 2005). Apparently better inventory management will release resources that will be gainfully employed in other organizational activities thus improving the productivity of the organization (Ghosh and Kumar, 2003) and hence financial performance.

2.0 Literature Review

According to Lysons, and Farrington (2006),

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inventory management focuses basically on the methods used by organizations to ensure that sufficient levels of stock of inputs or other supplies, semi finished products and final products are available when needed to provide optimum service levels for the organization. As highlighted by Chapman, Ettkin, and Helms(2000), thanks to proper inventory management practices, large manufacturing firms have saved a lot in costs.

Rajeev (2010) views inventory management from the point of gaining competitiveness. Rajeev (2010) upholds that there exist a positive relationship between inventory management methods and cost reduction. In same light, sampling Manufacturing firms in Greece, Koumanakos (2008) uncovered that the rate of return is lower when higher levels of inventories are preserved by a firm.

In a study done by Kolias, Dimelis and Filios(2011), uncovered a positive correlation between the rate of turnover of inventory and capital concentration. Similarly, Fullerton, McWatters and Fawson (2003) observed that in manufacturing firms where modern inventory management techniques are employed, a positive relationship existed between firms profitability and inventory management had with modern inventory management techniques there exist a positive relationship between firm's profitability and inventory management. By implication, in manufacturing firms where inventory management methods are modern profitability is consistently high when compared with other enterprises.

According to Pandey (2004), inventory consists of all what business organizations hold such as inputs, semi finished goods, finished and other materials so as to facilitate business production processes. In the same light, James (2000), assert that inventory is basically assets held with the intention of employing in the course of business operations.

Despite the benefits as highlighted above, determining a sufficient quantity of inventory remains a challenge for apicultural enterprises notably Oku Honey Cooperative Society Limited (OHCSL). This stems from the fact that Oku Honey Cooperative Society Limited like other apiculture firms in Cameroon is small and medium sized in nature and lack inventory management policy. This largely due to the fact that Apiculture in Cameroon is still less developed and depends solely on nature. Furthermore, the reliance of apiculture on nature, and the reality that weather forecast information is almost inexistent has made it difficult for apicultural enterprises in Cameroon to make informed decisions as concerns inventory holding. The effect has been business interruptions as consumer needs have often not be fully satisfied as at when needed.

2.1 Gap in Literature

Organisational performance and growth generally has been viewed to be highly influenced by inventory management practices (Jonsson and Mattsson 2008). From the works reviewed, inventory management and its effects on organizational performance have been greatly studied with attention paid to large companies especially manufacturing firms. This implies that inventory management with respect to performance of small scale enterprises has been given little attention. Further, literature has not been able to focus on inventory management in apicultural enterprises.

Furthermore, the scholarly works reviewed on inventory management are foreign hence a gap in literature which through conducting research on inventory management in Cameroon, this study seeks to fill.

3.0 Objective of the study

This study focuses on examining the effect that inventory management practices have on the financial performance of OHCSL a small scale apicultural enterprise in the western highlands of Cameroon. Specifically, this study examines the effect of raw material inventory, work in progress inventory, finished product inventory and packaging material inventory on the financial performance of OHCSL.

4.0 Methodology

The case study approach was adopted and data used has been purely that collected from OHCSL as the study case study and for the period spanning 1988 to 2017. This study conceptualizes financial performance as a dependent variable and inventory management as the dependent variable.

The purposeful sampling technique was employed. Data collection was from primary (questionnaire and interviews) and secondly sources (annual reports, written internship reports carried out in this organization, magazines and other related materials). The test re-test method, member check and triangulation were use to ascertain validity and reliability of data.

The model specification used the functional form:

$GOPMA = \alpha + \beta 1RAMI + \beta 2WIPI + \beta 3FIPI + \beta 4PMI + \mu$

Where,

GOPMA = Gross profit margin, proxy for financial performance

RAMI= Raw Material Inventory

WIPI= Work in Progress Inventory

FIPI= Finished Product Inventory

PMI=Packaging Material Inventory

α = the constant term

$\beta 1, \beta 2, \beta 3, \beta 4$ = independent variable coefficients to be determined

μ= the equations error term

5.0 Results and Discussions

5.1 Part A: Descriptive Statistics

5.1.1 Inventory management practice and financial performance of OHCLS

The staff at the Oku Honey Cooperative Society Limited were asked to provide data on the past inventory of the enterprise for 30 years. In order to understand fluctuations, Time series analysis was done. The researcher divided the years into groups following a five year interval and calculated the mean. The averages (means) were considered to represent each group and were then compared against each group to see the effect on the financial performance measured using gross profits.

Table 1 Mean Inventory 5 years Time Series

	1988-1992	1993-1997	1998-2002	2003-2007	2008-2012	2013-2017
	Mean 1	Mean 2	Mean 3	Mean 4	Mean 5	Mean 6
RM (KGS)	9415.6	8185.2	10433.4	9440	9660	12430
WIP (KGS)	2353.6	2045.8	2608	2360	2415	3107.4
FP (KGS)	4707.6	4092.2	5216.4	4720	4830	6215
FPUNSOLD (KGS)	4111.2	1228.4	1265.2	1416	679	310.8
FinP (FCFA)	3275400	2645056	5045966	4803600	4984600	9430000

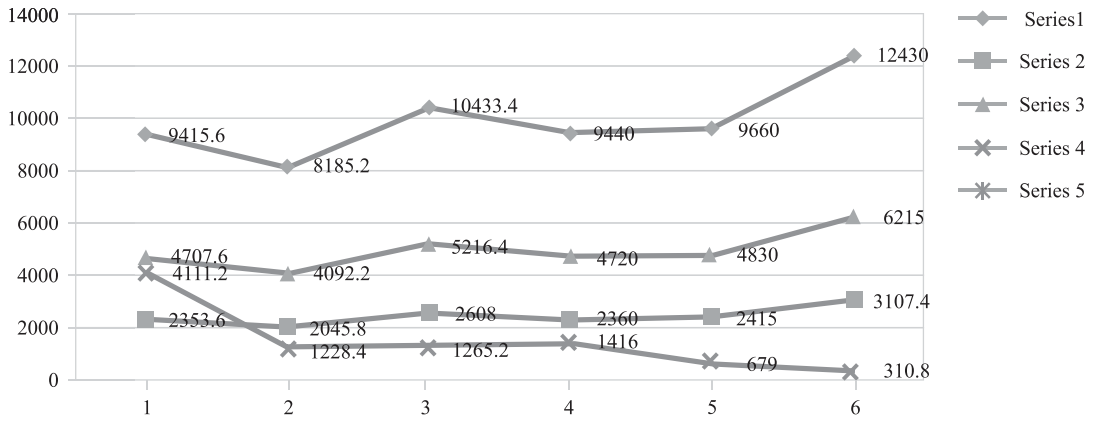
Note:
RM (KGS) = Raw Materials measured in kilograms
WIP (KGS) = Work in Progress measured in kilograms
FP (KGS) = Finished Products Measured in kilograms
FPUNSOLD (KGS) Finished Products unsold measured in kilograms
FinP (FCFA) = Financial Performance measured using gross profits in FCFA

As observed, the financial performance of Oku Honey Cooperative Society Limited measured using gross profits has continuously varied from over the years since 1988; with period 1993-1997 has recorded the lowest gross profits since the creation.

5.1.2 Interrelationship between Inventory and Financial Performance in OHCSL

Data collected from the field and averaged indicated that the more amount of raw materials held as inventory, the more work in progress and finished product at the later stages with consequences reflected as high gross profits. Work in Progress inventory was noted to be the least stage at which inventory is held at Oku Honey Cooperative Society Limited. As explained by the staff of the cooperative, for the period 1988 to 2002, a significant proportion of work in progress (semi finished) and raw materials ended up like wastage because of poor inventory management practice and the limited use of the materials at the time. For example, during field interviews, the manager explained that the production of Bee Wax only started in 2003 and has significantly reduced wastage hence positively impacting the financial performance of the cooperative from 2003 to present. The metallic containers that were formally used to store honey have been replaced by plastic containers. The honey stored in these metallic containers easily get bad as the containers usually get rust. The graph below illustrates the relationship between inventory and Financial Performance in OHCSL.

Figure 3 five year average volume of different inventory levels



5.2 Part B: Inferential Statistics

5.2.1 Hypothesis one:

H_o: The raw material inventory practices do not have an impact on the financial performance of OHCSL

Table 2 Summary of the Model

Model	R	R Square	R Square Adjusted	Std. Error of the Estimate
	.310a	.096	-.205	1.047

a. Predictors: (Constant), RMminwastage (Raw materials minimum wastage), RMsufficient (Raw Material available in Sufficient quantity), RMrighttime(Raw Materials available in sufficient quantity at the right time)

b. Variable (Dependent): Financial Performance

From the table above, there is a negative value for R Square adjusted (-.205) and a positive coefficient for R(0.310)

Thus, according to results obtained from the data provided by OHCSL, the model composing of (RMminwastage (Raw materials minimum wastage), RMsufficient (Raw Material available Sufficient quantity), RMrighttime(Raw Materials available in sufficient quantity at the right time)) explain 00.00% of total financial performance variations.

Table 3 Regression Model – Variance Analysis

Model		Squares (Sum of Squares)	Df	Mean Square	F	Sig.
1	Regression	1.048	3	.349	.318	.812[b]
	Residual	9.875	9	1.097		
	Total	10.923	12			

a. Variable (Dependent): Finperformanceb. Predictors: (Constant), RMminwastage (Raw materials minimum wastage), RMsufficient (Raw Material available Sufficient quantity), RMrighttime(Raw Materials available in sufficient quantity at the right time)

Variance analysis as can been seen from the table above gave an F- Value of .318 implying that the equation is significant (p>0.1 which is at 0.8). Thus the hypothesis that raw material inventory practices do not have an impact on the financial performance of OHCSL was accepted.

To understand better how aspects of raw materials inventory management contributed on financial performance multiple regression analysis was done. Beta coefficients were used to make comparisons on the contribution of each of the independent variables. The table below shows the multiple regression analysis.

Table 4 Hypothesis I - Multiple Regression

Model		Coefficients (Unstandardized)		Coefficients (Standardized)	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.625	3.164		1.462	.178
	RMsufficient	.625	.828	.332	.755	.470
	RMrighttime	-.500	1.283	-.230	-.390	.706
	RMminwastage	-.500	1.283	-.197	-.390	.706

a. Dependent Variable: FinPerformance

From the table above, 0.332 is the largest standardized beta coefficient which patterns to having sufficient Raw Material Inventory. This means that sufficient Raw Material Inventory makes a positive and an insignificant contribution to explaining the dependent variable- financial performance in OHCSL.

5.2.2 Hypothesis two

H_0: the work – in - progress inventory practices have no impact on the financial performance of OHCSL.

Table 5 Summary of the Model

Model	R	R Square	R (Adjusted R Square)	Std. Error of the Estimate
1	.781[a]	.609	.531	.653

a. Predictors: (Constant), WPsufficient (Work in Progress Sufficient), WPmin (Minimum or Minimal Work in Progress)

b. Variable (Dependent) : Financial Performance

The table above table depicts the regression analysis for hypothesis II. Results show a positive adjusted R square value of 0.531 and R square value of 0.609. This implies therefore that the model composed of WPsufficient (Work-in-Progress Sufficient), WPmin (Minimum or Minimal Work in Progress)) explains about 53.1% of the variations recorded as concerns financial performance an thus is statistically significant at 0.01 (1%).

Table 6 Regression Model – Variance Analysis

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6.656	2	3.328	7.800	.009[b]
	Residual	4.267	10	.427		
	Total	10.923	12			

a. Dependent Variable: FinPerformanceb. Predictors: (Constant), WPsufficient, WPmin

Calculations as can be seen from the table about resulted in an F-value of 7.800, implying that at ($p<0.01$)the equation is significant. Thus we reject the hypothesis that work-in-progress inventory practices do not have an impact on the financial

performance of OHCSL

Further, multiple regression analysis were performed show aspects of work-in-progress inventory that contributed significantly on financial performance at OHCSL. Results as presented in the table below provides beta values obtained and used for comparison in predicting the dependent variable –Financial.

Table 7 Hypothesis II – Multiple Regression

Model		Coefficients (Unstandardized)		Coefficients (Standardized)	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.933	1.745		1.108	.294
	WPmin	1.600	.413	.849	3.873	.003
	WPsufficient	-1.133	.477	-.521	-2.376	.039

a. Dependent Variable: FinPerformance
b. Predictors:

The calculations as can be seen from the table above gave highest standardized beta coefficient is 0.849 which patterns to minimizing work in progress Inventory. This implies that financial performance of OHCSL is affected positively sand significantly by minimal quantities of work-in-progress inventory.

5.2.3 Hypothesis three

H_0: the finished product inventory practices do not have an impact on the financial performance of OHCSL

Table 8 Summary of the Model

Model	R	R Square	R (Adjusted R Square)	Std. Error of the Estimate
1	.273[a]	.175	.110	1.005

a. Predictors: (Constant), FPexcess, FPsufficient

The regression analysis results on the table above were generated to test hypothesis III. From the table, coefficients are positive that is R (0.273), R square (0.175) and Ajusted R square (0.110). Therefore, about 11.0% variation in financial performance at OHCSL can be explained by the model composing of (FPexcess, (Excess finished product), FPsufficient (sufficient finished product))

Table 9 Regression Model – Variance Analysis

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.816	2	.408	.404	.067[b]
	Residual	10.107	10	1.011		
	Total	10.923	12			

a. Variable (Dependent): FinPerformanceb. Predictors: (Constant), FPexcess, FPsufficient

With the F value of 0.404 gotten from the analysis of variance on the regression model, the overall equation is thus significant at p< 0.1 and hence hypothesis III is rejected.

Furthermore, multiple regression (two variables) was done to determine the aspect of finished product inventory management approach significantly contributed on financial performance. The calculations can be seen in the table below and makes use of beta coefficients for comparison.

Table 10 Hypothesis III - Multiple Regression

Model		Coefficients (Unstandardized)		Coefficients (Standardized)	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.964	2.986		1.663	.127
	FPsufficient	-.357	.806	-.141	-.443	.667
	FPexcess	-.393	.630	-.198	-.623	.547

a. Dependent Variable: FinPerformance

From the table above, the regression analysis yielded negative beta coefficients. This implies that at Oku Honey Cooperative Society, though keeping sufficient finished product inventory practices and having excess finish product inventory affect financial performance, their impact is negative on the financial performance of Honey Cooperative Society Limited when isolated.

5.2.4 Hypothesis four

H_0: the packaging material inventory practices have no impact on the financial performance of OHCSL.

Table 11 Summary of the Model

Model	R	R Square	R (Adjusted R Square)	Std. Error of the Estimate
1	.791a	.626	.439	.714

a. Predictors: (Constant), PMinsufficient, PMdiscount, PMnormal, PMexcess

The testing of hypothesis IV are depicted as seen in the table above. The coefficients are positive that is R=0.791, R- square = 0.626 and Adjusted R square = .439. These regression results as seen from the correlation coefficients indicate that the model composing of (PMinsufficient (Packaging Material Insufficient), PMdiscount (Discount received from purchases of packaging materials), PMnormal (Having Normal quantities of Packaging materials), PMexcess (Keeping excess quantities of packaging materials)) can explain about 43.9% variation in financial performance of OHCSL at a significance level of 0.1 (10%).

Table 9 Regression Model – Variance Analysis

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6.839	4	1.710	3.349	.068[b]
	Residual	4.084	8	.511		
	Total	10.923	12			

a. Dependent Variable: FinPerformanceb. Predictors: (Constant), PMinsufficient, PMdiscount, PMnormal, PMexcess

Variance analysis as seen from the table above gives F-value of 3.349 indicating the significance of the overall equation at $p<0.1$. With this, hypothesis IV is thus rejected.

A two variable regression analysis was performed to establish the relationship degree between the dependent variable and each predicting variable, with beta coefficients used for making comparison. The table below presents the results as generated.

Table 13 Coefficients[a]

Model		Coefficients (Unstandardized)		Coefficients (Standardized)	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.154	1.848		.624	.550
	PMexcess	-1.433	.755	-.659	-1.898	.094
	PMdiscount	1.625	.459	.863	3.542	.008
	PMnormal	-.082	.303	-.062	-.270	.794
	PMinsufficient	.208	.354	.196	.587	.573

a. Dependent Variable: FinPerformance

From the table, standardized beta coefficient patterning to discounts received from purchases of packaging materials was the largest .863 followed by insufficient quantities of packaging materials .196. This implies discounts received from purchases of raw materials positively impact on the financial performance of Oku Honey Cooperative Society Limited and it is significant at 1%. As regards packaging materials excess, results show that its impact on financial performance of OHCSL is positive and significant at 10%.

5.3 Part C: Discussions

The study investigated the inventory management approaches of Oku Honey Cooperative Society Limited and their effects on financial performance. To achieve the study interest, four hypothesized relationships were highlighted to be examined. Gross profits were considered as an indication of financial performance. Overall, the study variables (inventory management practices (independent) and financial performance (dependent)) were observed to be positively related. This finding is supported by literal works (see Lysons& Farrington, 2006; Eroglu& Hofer, 2011), who asserted that efficiency and effectiveness in inventory management impacts on the financial performance of enterprise.

However, as seen from the regression analysis, raw material inventory management was noted not to

have an impact on the dependent variable (financial performance) at OHCSL. Based on discussions with the staff at the cooperative, this finding is appropriate and attributed to:

1) the fact that the cooperative acquires its raw materials basically within a very short period (months of April and May the harvesting season),

2) the cooperative do not keep inventory in the form of raw materials because honey is processed with 24hours after harvest,

3) the cooperative is a producers cooperative (farmers owned), and the only legalized cooperative processing honey in the area and since farmers are aware that honey must be processed within 24 hours postharvest, they have no other alternative places where they can sell their honey.

Furthermore, as observed from the regression analysis, the study results indicated that the holding of minimal work in progress, sufficient finished products and sufficient packaging materials positively impacts on financial performance at Oku Honey Cooperative Society Limited. This finding is similar to Adeyemi and Salami (2010).

Overall, a majority of the predicting variables from results significantly contributed to financial performance at OHCSL. For instance, with a standardized beta coefficient is 0.849 which patterns to minimizing work in progress Inventory and .863 patterning to discounts received from purchases of packaging materials these predictors were observed to impact positively on the study dependent variable (financial performance), the case of Oku Honey Cooperative Society Limited.

More interesting, study findings uncovered that Oku Honey Cooperative Society Limited usually process much honey during the harvesting period and then keep it in the form of finish product inventory which is then sold as the year goes on. Previous scholarly works have upheld similar findings (see Bloomberg, Lemay and Hanna, 2002; Chen, Murray and Owen, 2005; Alao, 2010). It is worth mentioning that though work in progress inventory management practices, finished product inventory management practices and packaging materials inventory management practices are positively impacting on the financial performance of OHCSL; other factors play a significant role. These factors as highlighted by study participants included seasons of the year, prices and availability of market. For example, it was asserted that with the licensing of Oku White Honey, the market share for Oku Honey Cooperative Society Limited has increased the world over. The result has been translated in increase demand and increase prices of finished products hence impacting positively on the financial performance of the cooperative. Production and gross profits results for the period spanning 2013 to 2017 confirmed this assertion.

6.0 Conclusion

This study focused on inventory management in a small scale apicultural enterprise. Overall results showed a positive relationship existing between the independent variable (inventory management practices) and financial performance. Thus ensuring effective and efficient management of inventory will translate to better organisational performance.

6.1 Recommendations

The following recommendations are made for consideration;

1) The cooperative should source for more partners so as to be able to sell all what is produce yearly.

2) The cooperative should look for ways to improve on the bottling of honey drink so that it can last longer. This will help reduce losses that come as a result of the short lifespan of honey drink post production.

3) Also the researcher recommends that the capable staff be improved through training on proper and efficient inventory keeping. This recommendation is based on the difficulty that the researcher faced in having data for the past years.

6.2 Limitations of this study

i) This study is based on one organization.
ii) Inventory management is not treated as a whole in this study; it tackled only some basic types of inventory.

iii) The type of organization used as case study in this research is very special with its products and inventory management very different. The results thus may not be suitable to be generalized across sectors.

iv) Last but not the least, the study made use of gross profits as a measure of financial performance. This may not always be the case in some organizations as gross profits may not necessarily translate to healthy financial performance.

6.3 Future Scope of Research

The researcher suggests that further research be conducted as guided below:

1. A study be conducted to examine the challenges of inventory management practices at Oku Honey Cooperative Society Limited

2. Other commodity specific studies be conducted to see how inventory management practices impact on financial performance and comparisons made with results obtained from Oku Honey Cooperative Society Limited.

3. Finally, the researcher suggests that the same methodology be employed and another study conducted in another honey cooperative society in a different region to see if there will be any variation in results.

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