EFFECT OF PAYBACK PERIOD TECHNIQUE ON SHAREHOLDERS' WEALTH MAXIMIZATION AMONG AGRICULTURE AND ALLIED FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE, KENYA

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Abstract

The objective of this study was to determine the effect of Payback Period technique on shareholders wealth maximization among agricultural firms listed at Nairobi Security Exchange. The study was guided by the theory of economic depreciation. The research adopted descriptive research design in which a census of all the targeted population of six listed agricultural firms on Nairobi Securities Exchange. Sixty-six employees who are the Chief Executive Officers, Chief Finance Officers, General Managers, Financial Advisors, Management Accountants and Financial Accountants were the respondents. Sixty six questionnaires were administered as the main tool of primary data collection whereas secondary data was collected by use of secondary data collection sheet from the firms' published financial reports. Descriptive statistical methods was applied to describe the effect of payback period technique on shareholders wealth maximization among listed agricultural firms. Inferential statistics such as correlation analysis and regression analysis was applied to test the hypotheses of association

and differences. Data collected was processed using SPSS 24. The findings revealed positive significance relationship between the study variable set at P<0.05. Payback Period (β=0.363; p=0.000<0.05. The study concluded that payback period has a positive and significant effect on shareholders' wealth maximization amongst agricultural and allied listed firms. The study recommended that those concerned with capital budgeting techniques of agricultural allied firms must be equipped with capital budgeting techniques to prevent the company from financial distress which will prevent shareholders' wealth maximization

Keywords: Payback Period, Kenya, Agriculture & Allied Listed Firms, Shareholders' Wealth Maximization, Nairobi Securities Exchange

INTRODUCTION

Maximizing shareholders' wealth is to optimize the discounted cash flows provided by investment projects assuming zero agency costs, known discount rate, and frictionless markets so that financial managers can separate investment decisions from individual shareholder preferences which leads to increased value of a company in order to increase stockholders share value (Daunfeldt & Hartwig, 2014). Essentially firms always encounter different investment opportunities which they evaluate and decide which ones to adopt given the scarce resources at their disposal. They have to undertake investment projects that promise optimal returns for the risks assummed and ensure they maximize the wealth of the shareholders'. Investment decisions are concerned with acquiring a long term asset for less than its value so as to increase the wealth of the firm.

Capital budgeting techniques help the financial manager of a firm to decide upon the project that is most viable for the firm to invest its funds. It is important in the investment appraisal where it guides the decision making by ensuring that the investment alternatives selected represent the best alternatives for the firm based on a set of policies and investment guidelines (Singh, Jain & Yadav, 2012). Net present value is one of the most recommended techniques for project appraisal as it takes into account all cash flows as well as the time value of money (Nyarombe, Kirui, Kamar & Gwaro, 2015). Financial managers who use this method would choose investment projects whose ARR's are highest. One of the advantages of this method is that it uses accounting data from financial statements which are readily available. The method is however unreliable as it ignores the time value of money. It also uses accounting information which is subjected to accounting policies whose application may vary from one firm to another.

Hasan (2013) opines that small size companies in Australia constitutes forty percent of the jobs but most researchers have dealt much on capital budgeting techniques in large firms. Capital Budgeting Techniques is an important tool in capital management in Australia. Usage of Payback Period (PBP) together with Discounted Cash Flow (DCF) techniques is widely used. The aspect of company management is to satisfy the owners hence requirement of proper capital budgeting techniques. Any slight deviation in capital budgeting process would lead to negative effect to the company's financial position.

In Rwanda, Internal Rate of Return (IRR) and Discounted Payback Period (DPBP) are the mostly used capital budgeting techniques in evaluating investment projects by firms. Most firm managers are ignorant on the application of cost of capital because many companies use cost of equity to discount their cash flows despite the fact that such companies finance their investment projects using both equity and debt.

To succeed in such a competitive environment, firms have to stay alive to the fact that they need to have in place a forward looking capital investment strategy that shall enable them to invest in new plant and equipment as technology change from time to time to replace the old ones. In Kenya, Net Present Value, Payback Period and Internal Rate of Return are the most common capital budgeting techniques that are used to evaluate the viability of projects for investment (Nyarombe *et al.*, 2015). The capital budgeting techniques used by firms listed in the Nairobi Securities Exchange have a significant positive relationship with the financial performance of the firms (Munyao, Kalui & Ngeta, 2014).

Statement of the Problem

Weston and Copeland (2014) opines that agricultural listed firms' play a significant role in the economic growth and development of any country, which also ensures shareholders' maximizes their wealth. However, reports show that the performance of agricultural firms listed in Nairobi Securities Exchange has been lagging behind over the years compared to other companies in other sectors within the Exchange. For instance the share prices for Williamson Tea Kenya Plc declined from Ksh.290 in 2014 to Ksh.150 in 2018, those of Kapchorua Tea Kenya declined from Ksh. 137 in 2014 to Ksh.79 in 2018 while Eaagads Ltd's declined from Ksh. 29 to Ksh.20.5 in 2018 (NSE, 2019). Most firms in the agricultural sector at the Nairobi Securities Exchange have lived below their expectation that has led to shareholder apathy that has contributed to the decline of the Kenyan rural economy essentially as a result of unstable dividend payout by firms in the sector (Waswa, Ndede & Jagongo, 2014). According NSE (2017) there was instability in the Earnings Per Share (EPS) of all the companies listed in the agriculture sector between

years 2012-2016. This signifies poor financial performance in the sector which implies instability in wealth maximization by firms in the sector.

Research Objective

The objective of this study was to establish the effect of Payback Period technique on shareholders' wealth maximization among agricultural and allied firms listed at the Nairobi Securities Exchange.

Research Hypothesis

Pay Back Period has no significant effect on shareholders' wealth maximization among agricultural and allied firms listed at the Nairobi Securities Exchange.

THEORETICAL REVIEW

Aguilar (1967) a theoretical framework guides research, determining what study variables measure, and what statistical relationship to look for in the context of the problems under the study. In this section, the researcher has reviewed existing theories on payback period technique and the association with shareholders' wealth maximization.

Theory of Economic Depreciation

The theory was developed by Baumol in 1971. The theory argues that the years in which an asset is put to use to capacity are the peak periods. It follows that during the years in which there is unused capacity (off peak years), the long run marginal cost of the companies output should cover operating costs only i.e. in such a period, it is equal to short-run marginal cost and includes absolutely no contribution towards depreciation. During these years, an increase in the use of the asset is always desirable so long as the marginal operating costs are covered.

The theory further argues that the price of a new asset is determined by the equilibrium between the cost of producing the asset and the asset value to the buyer. According to Hulten and Wykoff (1980) the value to the buyer may be related to the return obtained renting the asset to subsequent users. The Payback Period approach is appropriate when relating expected rents and user costs to asset value. Scholars have criticized theory of economic depreciation. Price of assets depends on taxes over a period of time and when such changes occur, asset prices will also change.

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Conceptual Framework

Kombo and Tromp (2010) alludes that a conceptual framework is a systematic arrangement of in-depth thoughts and standards borrowed from applicable fields of enquiry and utilized to assemble a resulting introduction. A conceptual framework is the diagrammatic presentation of study variables and it demonstrates the existing relationship between the dependent and the independent variables (Chandran, 2004; Oso & Onen, 2009).
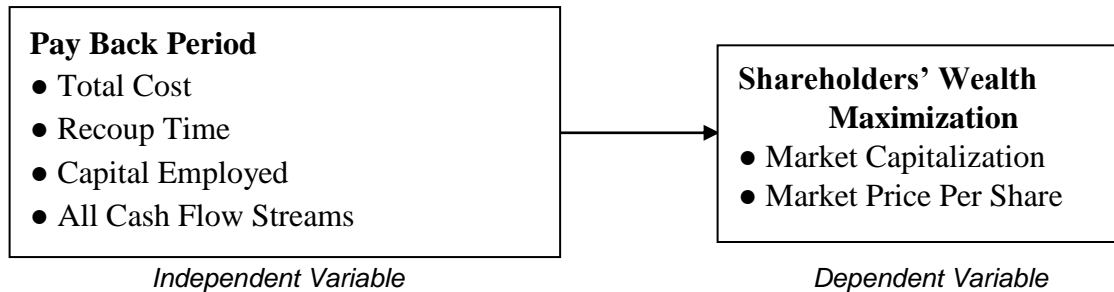
Pay Back Period
- Total Cost
- Recoup Time
- Capital Employed
- All Cash Flow Streams

Shareholders' Wealth Maximization
- Market Capitalization
- Market Price Per Share

Independent Variable   *Dependent Variable*

Figure 1: Conceptual Framework

EMPIRICAL REVIEW

Kothari (2004) empirical literature review entails review of studies made before which are similar or closely related to the one proposed in a view to acquire knowledge as to what data and other materials present for operationalize purpose. In this section, the researcher reviews previous work done by researchers in regards to Payback Period technique.

Payback Period and Shareholders' Wealth Maximization

Smith *et al.*, (2013) examined economics of precision agricultural technologies from side to side of the Great Plains based on Payback Period technique in Colorado, Kansas and Nebraska. The field data for the study was collected from farms located in Colorado, Kansa and Nebraska. Forty students provided detailed information regarding field size and shape for 553 crop fields totaling to 49,095 acres. Data was analyzed according to the field size and shape which included square, circle, equilateral triangle and NWKS. The findings show that returns from investing analyzed by PBP are greatest for square fields and where there are less than 50-acres, non-square shaped fields, and the payback is less than one year. The use of precision technologies in agriculture have given farmers the possession of skill to more effectively apply crop inputs which can be translated to high yields and lower costs.

Svatonova, Herak and Kabutey (2016) examined financial profitability of palm oil plantation in Indonesia based on Payback Period undertaken from the perspective of company

in Norht Sumatra. Data was collected during face to face interviews with oil palm plantation managers involved in the production process. The data related to quantities and costs of all outputs and inputs of the establishment, production, maintenance, sales and harvesting. Data was summarized using Excel 2010. Payback Period method was used to define the main time point when it is worth the initial investment in the project. The payback period (PP) was found to be 6.75 years.

Lonnie and Roshan (2015) carried a study on the cure for Everton tea a company based out of the North West region of Italy using Payback Period that is used to evaluate projects. The three main products to be tackled by the new facility are pyramid tea bags, tea bags and instant tea. The depreciation/amortization schedule for machinery is prepared. Each product sales are also computed. Everton Company requires that all investment projects have a payback and discounted payback less than 3 years and 3.5 years respectively. The board of directors identifies the necessary financials connected with establishing a new packaging facility, make a pro forma statement in order to decide whether to put up the facility or continue engaging in business with Glendore.

Kwami and Mawufemor (2017) did a study on growth constraints associated with aquaculture (tilapia fish farming) investment in Ghana with the aid of Payback Period. Data analysis involved returns analysis to evaluate tilapia farm profitability and risk analysis of returns. The shorter the payback period the less risk associated with fish farming investment. Fixed cost include the cost of capital assets such as land and costs involved in pond construction and variable cost cover operational costs and depend directly on the scale of operations. Revenue from tilapia fish farming business are the financial gains. The study findings from all the 97 farms show that the lowest payback period is 1.93 years. The lowest payback period for the profitable farms was 0.40 years (0.80 production cycles) and the highest was 2.11 years (4.23 production cycles). There is assumption that fixed assets which are land and pond have no terminal value at the end of 10 year project life which might not be the case.

Olapade, Bangura, Tholley and Momoh (2017) did a study on economic differential of integrated fish, rice combined with piggery and fish, rice combined with poultry production systems in Sierra Leone using payback period technique. Adaptive research trials were carried out at Njala University Fish Farm. Data for water quality variables were analyzed using measures of central tendency (standard deviation and mean) and ANOVA at p=0.05. The payback periods calculated for the investments were 0.34 and 0.98 years. The investment poultry project broke even and PP (Payback Period) in year one while the piggery project did not but can only break even and pay back in the year two of production. The shorter payback period projects are attractive to the investors who find them economic viable. Aquaculture

business which completes more than five years to payback the cost of investment is carefully thought to be unattractive.

Kwame, Egyir, Kwadzo, and Olufunke (2014) assessed financial feasibility of producing a urine based fertilizer for vegetable farming in the city of Accra, Ghana using Payback technique. The study employed survey data conducted by International Water Management Institute (IWMI). Questionnaires were used to collect data from 300 vegetable farmers. The estimated cost benefit analysis parameter were fed into MS Excel 2007 which was used to generate the PBPs values under two scenarios namely ownership of the urine collection operated by a private profit oriented entrepreneur and reuse system operated by Accra Metropolitan Assembly (public owned). The cost benefit analysis using payback period show a payback periods of 5.44 years and 2.91 years.

Mutanu and Wakah (2016) carried an evaluation of the profitability of poultry and pig investment projects in Meru town using Payback Period technique. The study adopted a descriptive survey design. Simple random sampling was used to select 42 farmers from 210 farmers in town. The study used a questionnaire which was administered to the selected respondents on a drop and pick basis. Data analysis actually involved simple tabulation and presentation of reports generated from excel. The findings show that poultry farming and pig farming have a payback period of 16 to 18 months. The study concluded that the success rate of poultry and pig farming projects was low as evidenced by a maturation rate of 51-60 percent of the stock.

Research Gaps

From the reviewed empirical literature, it is evident that Payback Period has been done but not in all sectors. There is no study that has been done on payback period technique in listed agricultural firms. From the reviewed literature, most studies did not give measures of the variable which the current study has done. Therefore, this study intends to fill these pertinent gaps in literature by studying the effect of payback period in listed agricultural firms on Nairobi Security Exchange.

MATERIAL AND METHODS

According to Orodho (2003) research design encompasses a specific plan to be incorporated so as to enable thorough fulfillment of the identified research problems. It is therefore an outline that covers data collection, measurement and finally analysis to produce meaningful output. In the case of this study therefore, information was obtained in a systematic and detailed manner and the researcher did not make any changes to it.

Target Population

Orodho (2005) further deduced that study target population encompasses the precise group of items and even people who possess various traits which are under scrutiny by the researcher. The study targeted all six listed firms in the agricultural and allied sector listed at the NSE. The categories were drawn from six departments from each firm namely audit department, finance department, marketing department, human resource department, operations department and corporate affairs department as shown in Table 1.

Table 1: Target Population

Category	Target Population	Percentage
CEO	6	9
CFO	6	9
General Managers	6	9
Financial Advisors	6	9
Management Accountants	6	9
Financial Accountants	36	55
TOTAL	**66**	**100**

Source: NSE, 2019

Census

Taking a census requires that the researcher examine or count all elements in the target population (Cooper and Schindler, 2003). This study adopted a census where all the six firms in the agricultural and allied sector listed at the NSE were included in the study. Mugenda and Mugenda (2003) opines that when the population is small, that is; less than 200 respondents, a population census is ideal as opposed to other sampling techniques if time and resources would allow as it increases reliability.

Data Collection Instruments

Data collection entails getting together all relevant information required by the study (Kothari, 2004). The researcher collected both quantitative and qualitative data from the identified respondents. Secondary data was gathered from published financial statements using secondary data collection sheet while primary data was collected using questionnaires.

Data Collection Procedure

This study specifically collected secondary data from the published accounts and published statements from the agriculture and allied firms listed at the Nairobi Securities Exchange (NSE). Questionnaires were administered by the researcher by drop and pick method after seeking consent from the management of the listed agricultural firms.

Data Processing and Analysis

Data collected through questionnaires were coded, cleaned, processed and analyzed. The processing and analysis of the research data was carried out via the use of Statistical Package for Social Science (SPSS) version 24. Descriptive statistical tools included mean, mode, standard deviations, variances, frequencies and percentages whereas inferential statistics tools used were Pearson's correlation coefficient and multiple regression model. Creswell (2012) established that the researcher ought to have various information concerning the collected statistical data namely; inferential, test statistics and descriptive statistics. Reliability among multiple measures of variables of the study was checked using the Cronbach's Alpha coefficients, regressions was done to determine the influence relationship between variables under investigation. This study adopted a multiple regression model shown in Equation 1

Y = α +β₁X₁ + ὲ…………..…….…………...……Equation 1

$$Y = \alpha + \beta_1 X_1 + \acute{\epsilon}$$

RESULTS

Descriptive Statistics for Payback Period and Shareholders' Wealth Maximization

Table 2: Descriptive Statistics

Statement		SD	D	UD	A	SA	Mean	Std. Dev.
1. The company considers the total cost of establishing a project while making capital budgeting decisions.	F	4	2	3	42	2	3.68	0.915
	%	7.5	3.8	5.7	79.2	3.8		
2. The organization estimates the period of time it takes to recoup the money invested in a project	F	2	2	4	22	23	4.170	0.995
	%	3.8	3.8	7.5	41.5	43.4		
3. The firm takes into consideration the capital employed in a project during capital budgeting	F	4	1	3	43	2	3.717	0.885
	%	7.5	1.9	5.7	81.1	3.8		
4. All cash flows from the project are considered while determining payback period.	F	2	3	3	31	14	3.981	0.951
	%	3.8	5.7	5.7	58.5	26.4		

Most of the respondents at 44(83.0%) agreed while a few of the respondents 6(11.3%) disagreed with the statement that the company considers the total cost of establishing a project while making capital budgeting decisions at (Mean=3.679, Std. Dev. =0.915). Majority of the respondents at 45(84.9%) agreed while a few of the respondents 4(7.6%) disagreed with the statement that the organization estimates the period of time it takes to recoup the money invested in a project at (Mean=4.170, Std. Dev. =0.995). Most of the respondents at 45(84.9%) agreed while a few of the respondents 5(9.4%) disagreed with the statement that the firm takes into consideration the capital employed in a project during capital budgeting at (Mean=3.717, Std. Dev. =0.885). Majority of the respondents at 45(84.9%) agreed while a few of the respondents 5(9.5%) disagreed with the statement that the organization cash flows from the project are considered while determining payback period at (Mean=3.981, Std. Dev. =0.951).

Correlation Analysis Results

Pearson's product moment of correlation denoted by (r) was used to find out the relationship between the variables to assess both the direction and strength. According to Obilor and Amadi (2018) correlation coefficients can be high or low (magnitude), and positive or negative (direction). Correlation coefficients vary from -1 to +1: whereas -1 and +1 indicate perfect negative and perfect positive correlation coefficients respectively, a correlation coefficient of 0 (zero) means there is no correlation (zero relationship). Further, correlation coefficients lower that 0.40 (whether positive or negative 0.40) are said to be low, between 0.40 and 0.60 are moderate, and above 0.60 are high.

Table 3: Correlation Coefficient Matrix

		Shareholders' Wealth Maximization	Payback Period
Shareholders' Wealth Maximization	Pearson Correlation	1	
	Sig. (2-tailed)		
Payback Period	Pearson Correlation	.941[**]	1
	Sig. (2-tailed)	.000	

**. Correlation is significant at the 0.01 level (2-tailed)

Model of Fitness

From the output results in Table 4, R is the simple correlation of 0.941 which shows a strong positive correlation between Payback Period technique and shareholders' wealth maximization.

R^2 is called the coefficient of determination and tells us how shareholders' wealth maximization in agricultural listed allied firms is varied with Payback Period. An adjusted co-efficient of determination 0.881 which shows that Payback Period explain the 88.1% of changes in shareholders' wealth maximization at 95% level of confidence.

Table 4: Model of Fitness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.941[a]	.885	.881	.31219

a. Predictor: (Constant), Payback Period

b. Dependent Variable: Shareholders' Wealth Maximization

Analysis of Variance

Analysis of variance (ANOVA) was employed in testing the goodness of fit. The study findings in Table 5 shows the relationship between the independent variable and the dependent variable was statistically significant (F=215.947, P-value of 0.000<0.05) which indicates that the multiple regression model was good for data

Table 5: Analysis of Variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	21.047	1	21.047	215.947	.000[b]
Residual	2.729	28	.097		
Total	23.775	29			

a. Predictor: (Constant) Payback Period

b. Dependent Variable: Shareholders' Wealth Maximization

Regression Coefficient Estimation

T-test of statistical significance of coefficient was done in order to establish the Beta (β) which shows how strongly independent variable affects dependent variable. Table 6 shows the regression coefficient results whereby Payback Period value had a positive (β=0.928, *p* 0.000<0.05). The multiple regression for shareholders wealth maximization is shown in equation 2.

Table 6: Regression Coefficient Analysis

Model	Unstandardized	Standardized	t	Sig.

		Coefficients		Coefficients			
		B	Std. Error	Beta			
1	(Constant)	.405	.246			1.645	.111
	PBP	.928	.063	.941		14.695	.000

Dependent Variable: Shareholders' Wealth Maximization

$Y = 0.405 + 0.928X_1 + \acute{\varepsilon}$……….….Equation 2

The alpha value (constant value) 0.405 implies that at zero payback period then shareholders' wealth maximization of agricultural listed allied firms is at 0.928 units. The coefficient 0.928 indicates that improvement in payback period by one unit leads to improvement in shareholders' wealth maximization by 0.928.

CONCLUSIVE REMARKS

Conclusions

Payback period had a positive effect on shareholders' wealth maximization among agricultural allied listed firms on the Nairobi Security Exchange, Kenya. The research concluded that the total establishment cost of a project, the period it takes to recoup invested money in a project, consideration of all cash flows from a project while determining payback period has a positive and significant effect on shareholders' wealth maximization.

Recommendations for Policy and Practice

Chief executive officers, chief financial officers, general managers, financial advisors, management accountants and financial accountants of agricultural allied firms must be experienced, well versed and equipped with appropriate capital budgeting technique(s). Applying Payback Period, for agricultural listed companies experiencing financial distress, then their projects having a quick Payback are important because shareholders' wealth maximization is met. This will also ensure the agricultural allied listed firms thrive due to the use of appropriate capital budgeting technique hence a positive impact to the economy.

Suggestion for Further Studies

Future researchers undertake a research on moderating effect on the relationship between payback period technique and shareholders' wealth maximization amongst agricultural and allied listed firms. Another study need to be conducted to establish the effect of other factors

apart from Payback technique that affect shareholders' wealth maximization amongst agricultural and allied listed firms.

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