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EFFECT OF WORKING CAPITAL INVESTMENT AND FINANCING POLICIES ON THE PROFITABILITY OF LISTED INDUSTRIAL GOODS COMPANIES IN NIGERIA

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Abstract: Working capital and financing decisions or policies are essential in determining companies' capacity to invest in any securities, be it non-current or current assets which has a significant role in retaining the organization's liquidity, solvency, survival, continuity and profitability. This study investigates the effect of working capital investment and financing policies on the profitability of listed industrial goods companies in Nigeria. The ex-post facto research design was adopted, and data were sourced from annual reports and accounts of 21 listed industrial goods companies in Nigeria, out of which 14 firms were selected and form the sample size with 140 firm-year observations for the period of 10 years from 2012 to 2021. The ordinary Least Square (OLS) regression model was employed to analyze the data. The test of normality, multicollinearity, and heteroscedasticity were all conducted to improve the reliability and validity of statistical results. Also, the model selection using a Hausman specification test was conducted to determine between random and fixed effects models. The outcome enables the study to reject the fixed and accepted random effect estimator. The study established that aggressive and conservative investment policy have negative and insignificant impact on profitability. The conservative financing policy has a positive and insignificant effect on profitability, while aggressive financing policy has a positive and significant impact on profitability. Hence, the study concludes that aggressive financing policy and conservative financing policy improve profitability, and aggressive investment policy and conservative investment policy reduce the profitability of listed industrial goods companies in Nigeria. The study recommends that companies should embrace aggressive financing policies as a way of increasing their profitability. This will enable the companies to use an appreciable level of current liability to finance their operations' thereby attracting more profits for the firms. While aggressive investment policy should be improve to enhance a significant positive impact on their profitability. This will enable the companies to use more current assets to finance the industrial goods, thereby generating more profits for firms and shareholders.

Keyword: Profitability; Aggressive investment policy; Conservative investment policy; Aggressive financing policy; Conservative financing policy

1. Introduction

Working capital and financing decisions or policies are key elements in determining companies' capacity to invest in any securities, be it non-current or current assets (Makau, 2019). Working capital financing play a significant role in retaining the organization's liquidity, solvency, survival, continuity and profitability (Morshed, 2020). The availability of working capital is an indicator of financial healthy or soundness, assuring the creditors or investors in the financial statements that their investments are secure. Therefore, efficient management and mixture of working capital is one of the preconditions for the success of an organization as working capital is the life giving force to an economic entity. Owolabi and Alu (2012) assert that working capital is a crucial element in any organizational setting that requires cogent attention, proper planning and management. As resources available to organizations are scarce, it is believed that the management of an organization's working capital has a pivotal role to play in the achievement of profitability and overall performance of such an entity. This implies that a firm's liquidity does, to a large extent, determine its profitability. However, liquidity and profitability are not the same, but are the core objectives of a firm. Increase in company profitability by reducing the liquidity can bring some serious problems as goals cannot be ignored at any cost; if the goal of maximizing the profit is ignored, survival is not possible for a long time and if liquidity objective is ignored, insolvency or bankruptcy could be faced (Qazi, 2011.

Working capital from accounting literature perspective is current assets minus current debts, which suggests the amount of the company's investment in cash, marketable securities, commercial receivable accounts, Inventories minus current debts. Working capital connote the ability of a firm to meet its short-term financial obligations, without selling any of its long term assets (Qazi, 2011). Working capital investment and financing policies efficiency is vital for firms, irrespective of their size, because the major part of their assets is composed of currents assets as cited in the works of Abdul, Talat, Abdul and Mahmood (2010). Working capital investment and financing policies directly affect the profitability and liquidity of business firms (Raheman & Nasr, 2007; Dash & Hanuman, 2009; Erasmus, 2010; Smith & Fletcher, 2009). This suggests if a firm does not invest sufficient funds in current assets, it may become illiquid. But it would lose profitability as idle current assets would not earn anything. Thus, a proper trade-off (optimal mix) must be achieved between profitability and liquidity, in order to ensure that neither insufficient nor excessive funds are invested in current assets.

However, a firm may adopt an aggressive working capital management policy with a low level of current assets as a percentage of total assets, or it may also be used for the financing decisions of the firm in the form of high level of current liabilities as a percentage of total liabilities. Excessive levels of current assets may have a negative effect on the firm's profitability, whereas a low level of current assets may lead to a lower level of liquidity and stock outs, resulting in difficulties in maintaining smooth operations (Van Horne & Wachowicz, 2004). The main objective of working capital policy is to maintain an

optimal balance between each of the working capital components. Business success heavily depends on the financial executives' ability to effectively manage receivables, inventory, and payables (Filbeck & Krueger, 2005). Working capital policies of a firm are concerned with two decision areas. These include working capital investment decision and working capital financing decision. Working capital investment policy is concerned with determination of appropriate level of investment in current assets and mix of current assets. Working capital financing policy reflects decisions as to what methods of financing to use to obtain funds for investment, and as such, working capital investment and financing policies therefore have tendency to impact on profitability, particularly with respect to industrial goods companies in Nigeria.

Industrial goods companies, which constitute firms that operate in the industrial goods sector, have been reckoned, globally and locally, as having the potential to accelerate economic development. Industrial goods firms propel industrialization as they produce products which continue to be relevant to industries. The industrial goods companies exist to make profit and their survival is significantly dependent on the viability of their working capital investment and financing decisions. Hence, it is necessary to examine the relationship between working capital investment and financing decisions and profitability of the companies

There have been ongoing debates of effective working capital management policies on firms profitability and its implications on shareholder's value, and as such, a number of studies examines the influence of working capital on corporate profitability in recent time. However, most of these studies focused on traditional working capital management policies of cash conversion cycle management, accounts receivable management, accounts payable management but fails to examine the effect of working capital investment and financing strategies such as aggressive and conservative working capital management strategies or policies on profitability. Some of the studies concentrate on the aggregate sector of economy and large firms operating within developed economies. For instance, Salawu and Alao (2014) results showed that the aggressive working capital policies, the average payment period, were positively and significantly related to profitability, while inventory turnover in days, cash conversion cycle were also significant but negatively related to profitability; whereas Dinku, (2013) found mixed results that the conservative working capital policies, days accounts receivable, number of days inventory and cash conversion cycle have a significant negative impact on profitability. But the amount of working capital required varies across nations, sectors of industries and indeed firms depending on the nature of business, scale of operation, production cycle, credit policy, and availability of raw materials. None of the studies examine the effect of working capital investment on firm profitability.

Therefore, there is need to examine the effect of working capital investment and financing policies (conservative working capital investment policies, conservative working capital financing policies, aggressive investment working capital policy, and aggressive

financing working capital policy) on profitability of firm in Nigeria. Especially, at a time that many manufacturing factories had been either temporarily or completely closed down due to inability to meet their financial obligations as at when due to liquid unavailability. It is against this background that this study examines the effect of working capital investment and financing policies on the profitability of listed industrial goods companies in Nigeria.

This study seeks to investigate the effect of working capital investment and financing policies on the profitability of listed industrial companies in Nigeria. The study specifically seeks to: Determine the effect of aggressive investment working capital policy on the profitability of listed industrial goods companies in Nigeria; Ascertain the effect of aggressive financing working capital policy on the profitability of listed industrial goods companies in Nigeria; Investigate the effect of conservative investment working capital policy on the profitability of listed industrial goods companies in Nigeria; and Examine the effect of conservative financing working capital policy on the profitability of listed industrial goods companies in Nigeria.

In view of the research statement of problem and specific objectives, the following hypotheses were formulated in null form: **$H0_1$:** There is no significant relationship between aggressive investment working capital policy and profitability of listed industrial goods companies in Nigeria; **$H0_2$:** There is no significant relationship between aggressive financing working capital policy and profitability of listed industrial goods companies in Nigeria; **$H0_3$:** There is no significant relationship between conservative investment working capital policy and profitability of listed industrial goods companies in Nigeria; and **$H0_4$:** There is no significant relationship between conservative financing working capital policy and profitability of listed industrial goods companies in Nigeria.

The study will be of immense significance to policy makers, academic researchers and accounting practitioners. First, managers of manufacturing companies, especially the selected companies will have insight on how best to optimize balance between liquidity and profitability in their companies. The study will equip managers with a desirable working capital strategy that maximizes shareholder interests and directs them in the challenges that the entity faces.

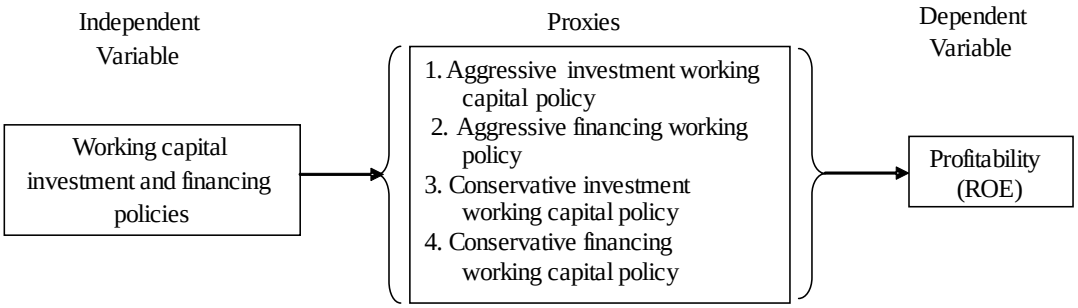
Many surveys have indicated that managers spend considerable time on day-to-day problems that involve working capital decisions; hence the present study will help companies in Nigeria to know more about working capital management and its impact on profits. Academic researchers who are interested in the working capital management policies of companies and the impact on profitability will find this work of immense benefit. It will, therefore, contribute to the existing literature in the area of corporate finance, thus serve as a reference material to them.

Finally, this study will contribute to the accounting practice as the knowledge gained will be used as a base or yardstick for evaluating firms' performances with regards to liquidity and profitability, and thus, theoretically contributing in establishing the

relationship between working capital policies and profitability of firms since firms who effectively manage their working capital tends to be more profitable.

2. Conceptual Framework and Review of Related Literature

Conceptual Framework: The framework is developed in the line with the main and specific objectives of the study. The main objective was the working capital investment and financing policies, while the specific objectives are aggressive investment working capital policy, aggressive financing working capital policy, conservative investment working capital policy, and conservative financing working capital policy which form the independent variables of the study. Other key variable was the profitability as dependent variable measured by Return on Equity (ROE). The study developed a conceptual framework to link the predictable and outcome variables, and seeks to ascertain the extent to which the dependent variable influence the predictable variable of the listed industrial goods sector in Nigeria. The framework gives a background and clear picture of the components and its effect on profitability of industrial goods firms in Nigeria. Below is the conceptual framework developed as shown:



Source: Conceptual framework developed through fieldwork based on literature

Table 1 displayed the conceptual framework designed to ascertain the effect of working capital investment and financing policies on profitability. Working capital investment and financing policies are predictable variables proxies by aggressive investment capital policy, aggressive financing policy, conservative investment capital policy, and conservative financing policy, while profitability is the outcome variable measured by return on equity (ROE).

The concept of working capital has been defined by so many authors. According to Farounbi (2005), working capital is the amount of capital which is readily available to an organization showing the difference between resources in cash or readily converted into cash (current asset) and the organizational commitment for which cash will soon be required (current liabilities). That suggests, resources which a firm has at hand to run its daily operations. Nwaezeaku (2006) see working capital as a degree of convertibility to cash

with which any asset can be sold at a fair market price. Javid and Zita (2014) view working capital as the ability of the organization to fund the difference between the short-term assets and short-term liabilities. In summary, working capital is the sum total figures derived from current assets and current liabilities on the statement financial position (balance sheet), that measure the financial health of a company.

Working capital investment and financing policies: Working capital investment in one hand, is the deployment of financial resources into a day-to-day business operations. This suggests the distribution of financial resources or an implementation or putting to use the firms' financial resources by the top management in a daily business operations for the benefits of both the firm and its stakeholders. On the other hands, working capital investment connote the amount of money given to the management of the organization to achieve its business objectives. That suggests the financial resources pull together by individual shareholders and entrusted to the companies' management for the actualization of the targeted objectives in their daily operations. While financing policies are decisions, selection, choices or regulation tailored toward financial system of the entity, such as payment system, borrowing system and lending system. The policies most time designed to established financial stability, mobility, market efficiency and enhance the firm's value for its stakeholders. Therefore, the working capital investment and financing policies, which are independent variables are proxies into four variables:

Aggressive investment working capital policy (AIWCP): Is a type of policy where a firm finances its current assets along with part of its non-current assets by short term debt (Gardner, Mills & Pope,1986). Supporting this view, Weinraub and Visscher (1998) argued that financing investment through short term sources is associated with low interest rate, which seeks to reduce excess liquidity while meeting the short term requirements. This means that the firm tries to hold low levels of current assets and high level of current liabilities so as to reduce inventory turnover, cash balances and investment in account receivables.

Conservative working capital policy (CWCP): This type of policy is a mixture of both defensive and aggressive working capital policies. According to Carpenter and Johnson (1983), is an approach that balances both risks and returns. This suggests that conservative working capital policy is a defensive policy involves financing of non-current assets and major part of current asset by using long term financing such as debt and equity (Taleb, Zoued & Shubiri, 2010).

Aggressive working capital financing policy (AWCFP): This is a high-risk strategy of working capital financing wherein short term finances are utilized not only to finance the temporary working capital but also a reasonable part of the permanent working capital. In this approach of financing, the levels of inventory, accounts receivables and bank balances are just sufficient with no cushion for uncertainty (Taleb et al., 2010). An aggressive financing strategy implies a firm will finance part of its permanent assets and all its current assets using short-term funds. This is in contrast to matching or conservative financing.

Matching uses long-term funds to finance permanent current assets and short-term funds to finance temporary, current assets. A conservative financing strategy puts all the permanent and some of the temporary assets in long-term, stable funds (Murdock, 2014).

Conservative working capital financing policy (CWCFP) : This is a risk-free strategy of working capital financing. A company adopting this strategy maintains a higher level of current assets and therefore resulted to higher working capital. The major part of the working capital is financed by long-term sources of funds such as equity, debentures, long-terms loans etc. so, the risk associated with short-term financing is abolished to a great extent (Taleb et al., 2010). In conservative approach, fixed assets, permanent working capital and a part of temporary working capital is financed by long-term financing sources and the remaining part only is financed by short-term financing sources. Thus, the primary objective of working capital management is ensured.

Profitability: Profits are indicators of good business performance resulting from its operation. Pandey (2005) asserted that profit is a function of sales volume and profit margin in that with an optimum credit policy, maximum revenues can be reduced by the firm upon which profits are realized hence consistent with the objective of maximizing firm's value. On the other hand, profitability is the end product of policies and decision taken by the firm which is important measure of its success. This suggests profit received from holding an investment over some period, say a year plus any change in the market price usually expressed as parent of the beginning market price of the investment (Van Horne & Wachowicz, 2004). In accounting point of view, profit is based on accrual principle and includes non-cash items for example depreciation. Most firms use accrual concept to allocate receipts and expenditures or payments to accounting periods as revenues and expenses that is when a sale is made, revenues are recorded irrespective of the period in which it is incurred and not when cash is paid (Pandey, 2005). There are different profitability ratios that can be used to assess the financial health of a business. The ratio reflects the efficiency with which management produces each unit of product. With a high gross profit margin relative to the industry average, it implies that the firm is able to produce at a relatively low cost (a sign of good management), otherwise it will show or indicate the firms' inability to produce raw material at favorable terms due to failure to manage costs of inventory, poor utilization of machines among others. In this study, return on equity (ROE) is used as a ratio to measure the profitability to determine the efficiency with which management produces each unit of product.

Theoretical framework: Several theories are put forward for working capital investment and financing policies on profitability. However, this study considered four: Agency cost theory; Trade-off theory; Aggressive theory; and conservative approach theory.

Agency free cost theory: The agency free cost theory brings out the fact that organizations suffer agency costs as a result of free cash flow. Free cash flow is cash in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital (Jensen, 1986). This theory was put forth by

Jensen (1986), who argued that managers are always tempted to pile up cash under their controls and make investment decisions which might not be in the best interest of shareholders. Free cash flow may be at the disadvantage of the shareholders, and as such efficient working capital management is required to avoid situations whereby managers mismanage the resources of the organization for their own interests. The study considered the relevant of the theory as it explains why the shareholders of a firm may opt to adopt a conservative approach or aggressive working capital management approach bearing in mind the agency costs that they are likely to face.

Trade-off model: The trade-off model demonstrates that firms decide their optimal level of cash holding by comparing the marginal cost and benefits of holding cash. This is due to the fact that large investment in current assets under certainty would mean a lower rate of return on assets (ROA) of the firm, and excess investments in current assets will not earn enough return. Since, profit maximization is one of the firm's objective, while preserving liquidity of the firm is another important firm's objective too. There is a need to trade-off between these two objectives of firms. This is because if firms do not care about profit, firms cannot survive for a longer period (Pandey, 2010). On the other hand, if firms do not care about liquidity, firms may face the problem of insolvency or bankruptcy. Therefore, to balance between the two options, the management of a firm may opt to trade off excess investments in current assets to liabilities, which make this theory relevant to the study.

Aggressive theory: This theory is applied where the firm plans to take high risk and where short term funds are used to a very high degree to finance current and fixed assets (Gardner, Mills & Pope,1986). According to Taleb, Zoued and Shubiri (2010), the approach is characterized by low interest rates. This is because a company with an aggressive working capital policy offers short credit periods for customers, holds minimal inventory and has a small amount of cash in hand (Olowe, 2000), suggesting increases the risk of defaulting due to the fact that a company might face lack of resources to meet short term liabilities, given a high return as it's associated with high risk. This theory is relevant to the study as it explains why management of a firm may opt to finance current and fixed assets with short term on highly risky funds.

Conservative approach theory/model: Firms may adopt a conservative financing policy when it depends more on long term funds for financing needs (Weinraub & Visscher, 1998). In this policy, or approach, the firm finances it permanent assets and part of temporary current assets with long-term financing. The purpose of this approach is to balance both risks and returns (Carpenter & Johnson, 1983). This approach relies heavily on long-term financing and, therefore, is less risky, and as such, relevant to the study as it explains why management of a firm may opt to finance current and fixed assets with long-term, less risky financing methods.

Empirical Studies: The debate on the relationship between working capital investment and financing policies and firm performance has attracted great attention from researchers.

This is evident in the number of empirical studies conducted from both developed and developing economies over the years. This section of the chapter reviews some of these studies.

Uremadu (2012) examined the effect of working capital management and liquidity on the profitability of listed firms in the Nigerian productive sector for two years (2005-2006). The micro-data were analyzed using descriptive statistics and ordinary least squares (OLS) methodology. They discovered a negative relationship between profitability and cash conversion cycle and creditors' payment period and a positive relationship between profitability and inventory conversion and debtors collection. Also, the cash conversion cycle is the most significant precision variable influencing profits and leads to corporate profitability in Nigeria. The two years may not adequately reflect the working capital policies of a firm operating. Tharshiga (2013) studied the effect of the cash conversion cycle on the profitability of listed plantation companies in Sri Lanka. The cash conversion cycle (CCC) has been considered a better measure of a firm's effective working capital management, especially cash management. This study attempted to examine the effect of the cash conversion cycle on profitability in ten listed plantation companies in Sri Lanka between 2008 and 2012. Results revealed a negative relationship between Return on Equity and cash conversion cycle. Further Cash conversion cycle also has a insignificant negative impact on Return on assets.

Salman, Folajin and Oriowo (2014) investigated the relationship between working capital management in organizational profitability in Nigeria, particularly in manufacturing companies quoted on the Nigerian Stock Exchange. The data for this study derived from the audited financial statements of the firms listed on the Nigerian Stock Exchange (NSE) between 2005 – 2013 comprises twenty (20) manufacturing firms used as a sample size. The study adopted panel data because it combined time series and cross-sectional data. Pearson Correlation Moment Coefficient and Ordinary Least Squares (OLS) were employed to analyze the data. The result showed that working capital has a negative and significant relationship with the Return on Assets (ROA) and Return on Equity (ROE). That implies that firms' performance can increase with the short side of the Cash Conversion Cycle. Also, Onodje (2014) investigated the relationship between working capital management and the financial performance of selected Nigerian Manufacturing Companies in Nigeria. The study covers 2002 – 2011 from published financial statements of a panel of 75 manufacturing companies listed on the Nigerian Stock Exchange. The study objective was to investigate the relationship between working capital, debt management and firm performance for Nigerian manufacturing firms. The regression analysis fixed effect, random effect, and one-step difference Generalized Method of Moment (GMM). This result suggests that efficient working capital and debt management are critical to improved manufacturing performance in Nigeria.

Hoang (2015) studied the relationship between working capital management policies and profitability. The study population consisted of 98 manufacturing firms listed on the

Ho Chi Minh City Stock Exchange for six years, from 2009 to 2014. Pearson's correlation and multiple regression techniques were, employed for data analysis. Working capital management policies were the independent variables proxies by conversion cycle, net trade cycle, average collection period, average inventory period, and average payment period. Profitability was the dependent variable measured by return on assets (ROA). The results revealed negative and significant relationships between working capital management policies and profitability. Based on these findings, managers can improve the firm's profitability by reducing the cash conversion cycle, net trade cycle and its components to an optimal level. Adam and Quansah (2019) examined the effects of working capital management policies on shareholder value creation in Ghana. The study sampled six (6) listed manufacturing firms on the Ghana Stock Exchange for 14 years from 2000-2013, with 84 firm-year observations. The independent variable was working capital management policies proxies by conservative financing and aggressive financing policy. The dependent variable was shareholders' value measured by Tobin's Q, economic value added (EVA), and market-to-books ratio (MBR). The study utilized multiple regression techniques for data analysis. The finding revealed a positive and significant effect of aggressiveness of current assets investment and financing policies with profitability and shareholder value. That suggested that the more aggressive management becomes towards working capital management, the higher the profitability, increasing shareholder value.

Makau (2019) explored the effect of working capital financing on a firm's financial performance in Nairobi. The study population consisted of 45 non-financial corporation quoted at the Nairobi Stock Exchange for five years, from 2014-2018, with 225 firm-year observations. Working capital financing was the independent variable proxies by aggressive financing policies, while financial performance was the dependent variable measured by return on assets (ROA). The study employed linear regression techniques for data analysis. The outcome showed a negative and significant relationship between aggressive financing policy and financial performance. That suggests that the management of the firms should minimize the use of short-term financing sources as it reduces the firm's profitability levels and opts for optimal liquidity. However, liquidity much not high since too much liquidity adversely affects the firms' profit levels. Morshed (2020) studied the relationship between accounting and finance by measuring the effect of rational working capital management on profitability in Hungary. The primary source of data was employed based on the opinions of interviewees gathered from semi-structured interviews with 16 respondents (Financial managers) from four industries. The effect of working capital management was the independent variable proxies by conservative financing and aggressive financing policy. The dependent variable was profitability. The results revealed that the working capital investment and financing policies have a positive and significant relationship with profitability.

Abdul, Abid and Fitriya (2021) examined the impact of working capital management on the profitability of listed companies in Indonesia. The study population consisted of

135 companies listed on the Indonesian Stock Exchange (IDX) for 20 years, from 2000-2019, with 1,620 firm-year observations. The independent variable indicators for the study were working capital investment, working capital financing, and cash conversion cycle. The profitability was the dependent variable measured by return on assets (ROA). The study used ordinary least squares (OLS) regression techniques to analyze the data. The finding showed that a working capital investment strategy has a positive and significant relationship with return on assets. Al-Mawsheki (2022) studied the effect of working policies on firms' financial performance in Malaysia. The study sampled 147 manufacturing firms listed on the Malaysian Stock Exchange for ten (10) years from 2010-2019, with 1,470 firm-year observations. The working capital policies were the independent variable proxies by working capital investment policy (WCIP), working capital financing policy (WCFP), aggressive financing policy (AFP), and conservative working financing policy (CWCFP). The operation income (IC) used to measure financial performance is measured by operation income (IC). The study employed multivariate regression techniques for data analysis. The results revealed a positive and significant effect of conservative working capital financing policy on firms' financial performance. That implies that the management of manufacturing firms can increase their operating income by adopting a conservative working capital financing policy.

3. Methodology

This study adopted the ex-post facto research design. Because the ex-post facto research design was premised on the ability for enquiring as to what extent a variable (or event) which have had occurred in the past has impacted on the occurrence of present event. This type of design relies solely on the secondary data because the events or facts had already occurred and not subject to manipulations (Obiwuru, Okwu, Akpa & Nwankwere,2011). Also, the use of ex-post facto research design was premised on the ground that working capital policies have already been implemented by listed industrial goods companies and can be quantitatively measured; thereby allowing testing of hypotheses formulated and drawing of inferences there from. The population of this study comprises of the twenty-one (21) listed building materials companies on the Nigerian Stock Exchange for five years as at 2016 for five (5) years to 2021. The entire population adopted, but only twelve (14) companies were selected based on the following criteria:

i) They have full financial data for the whole period of investigation;

ii) They must be listed on the NSE from 2016-2021;

iii) They company's financial information must be publicly available, accessible, and readily attainable from the company's website or any other reliable source;

iv) The companies should not have had financial changes from 2012 – 2021;

v) They should not have had a stop of transactions for more than six months during the period under investigation. Below is the sample size 12-2021 as shown on.

Table 2: Population and sample size of the study as at 31st December, 2021

S/No	Name	Filters to arrived at the Sample Size	Year of Listing
1	Ashaka Cement	Merged	1990
2	Lafarge Cement	✓	1978
3	Dangote Cement Company	✓	2010
4	First Aluminum Nigeria Plc	✓	1992
5	Greif Nigeria Plc	Delisted	
6	Portland Paints Plc	✓	2009
7	Beta Glass Nigeria Plc	✓	1986
8	Berger Paints Nigeria Plc	✓	1959
9	Cux Nigeria Plc	✓	2008
10	CCNN Plc	Delisted	1993
11	B. O, C Gases Nigeria Plc	✓	1959
12	CAP Plc	✓	1978
13	D N Meyer Plc	✓	1979
14	Multiverse Plc	✓	2008
15	Notore Chemical Indusries	✓	2018
16	Premier Paints Plc	✓	1995
17	Thomas Wyatt Nigeria Plc	✓	1978
18	Aluminum Extrusion Plc	Suspended for 1 year	1986
19	Aluminum Manufactures Plc	Incomplete information	1972
20	Rokana industries Plc	Delisted	1991
21	IPWA	Delisted	1978

Source: Field work, 2021

The Ordinary least square (OLS) multiple regression techniques were employed to analyze the data using STATA 14. The panel methodology was adopted since the data to be analyzed has panel attributes. . This will assists the researcher to determine the relationship between the predictive and outcome variables using the below model:

$$ROE_{it} = \beta_O+\beta_1 AIP_{it}+\beta_2 AFP_{it}+ \beta_3 CIP_{it}+ \beta_4 CFP_{ti} + e_{it}$$

where:

ROE_{it} = Return on Equity of firm *i* at time *t*

AIP_{it} = Aggressive Investment Policy of firm *i* at time *t*

AFP_{it} = Aggressive Financing Policy of firm *i* at time *t*

CIP_{it} = Conservative Investment Policy of firm *i* at time *t*

CFP_{it} = Conservative Financing Policy of firm *i* at time *t*

e_{it} = error term

i subscript = Cross-section dimension of the variables

t subscript = Time series dimension of the variable

β_0-β_4 = coefficient of independent variables

The priori expectation is that there will be a positive and significant relationship between the slope coefficient of the intercept (b_0), AIP (b_1) and AFP (b_2), CIP (b_3) and CFP (b_4).

Results and Discussions

This segment is where data collected was analyze and presented. It begins with descriptive statistics, correlation analysis and regression. The descriptive statistics is presented in Table 3 where the minimum, maximum, mean and standard deviations of the variables used in the study are showed.

Table 3: Descriptive Statistics

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
ROE	140	0.183	0.231	0.003	1.408
AIP	140	0.469	0.246	0.035	1.068
CIP	140	0.530	0.245	0.051	0.987
AFP	140	0.304	0.156	0.005	0.792
CFP	140	0.111	0.888	0.006	0.48

Source: STATA 14 Output Results based on study data

Table 3 displayed the detail information of the descriptive statistics for the dependent and independent variables. ROE= Return on Equity, AIP=Aggressive investment policy, CIP=Conservative investment policy, AFP=Aggressive financial policy, CFP = Conservative financial policy. The most prominent among the results in the descriptive statistics is the lower standard deviations of ROE (0.231) and higher standard deviation of CFP (0.888) relative to the standard deviations of other independent variables used in the model, ranges from 0.2 to 0.1. The lower standard deviation of ROE is an indication that our sample firms are relatively influenced by working capital investment and financial policies. Similarly, the mean value of return on equity (ROE) which is a ratio that measures the net profit after tax to share capital in respect to industrial goods companies is 0.183 with a standard deviation of 0.231. That suggests a high dispersion from the mean value of ROE recorded within the period of study. This result indicates that for every ₦140 of owners' capital invested generated an average of ₦18.30 for the shareholders of the selected industrial goods companies for the period under study. That suggests the percentage of the return on each naira invested by shareholders during the period under study is 1.83%. The standard deviation also showed a higher level of volatility in firms' earnings as related

to invested capital. The highest ROE recorded within the study period is 1.408 with a minimum of 0.003 and this is high.

The result of the descriptive analysis in respect to aggressive investment policy (AIP) further reflects a mean of 0.469 with a fluctuation of 0.246. This indicates that there is a low dispersion from the mean value of AIP recorded within the period of study. This implies that firms during the period under investigation are using a moderate level of aggressiveness of working capital investment policy. This further implies that much of current assets were used in financing industrial goods firms during the period under study. The highest AIP recorded within the study period is 1.068 with a minimum of 0.035. Aggressive Financing Policy (AFP) which utilizes higher levels of current liabilities and less long-term debt reveals a mean of 0.530 with a fluctuation of 0.245. This shows that there is a high dispersion from the mean value of AFP recorded within the period of study. This results implies that industrial goods firms under study are using an appreciable level of current liability in financing their operation during the period under study. The highest AFP recorded within the study period is 0.987 with a minimum value of 0.051.

Also, the result reveals a mean of 0.304 in respect to conservative investment policy (CIP) with a fluctuation of 0.156. The standard deviation shows that there is a low dispersion from the mean value of CIP recorded within the period of study. This implies that industrial goods companies under investigation places a greater proportion of their capital in liquid assets which may thus lead to less profit for the firms. This further implies that their level of current assets increases in proportion to their total assets. The highest CIP recorded within the study period is 0.792 with a minimum value of 0.005. In the same vein, the mean of conservative financing policy (CFP) reflects a value of 0.111 with a fluctuation of 0.888. This indicates that there is a high dispersion from the mean value of CFP recorded within the period of study. This suggests that industrial goods firms during the period under study uses less of long-term debt and capital and more of current liabilities. This further shows that the firms are expose to risk since they are concentrating on the use of less current liabilities. The highest CFP recorded within the study period is 0.48 with a minimum of 0.006.

Robustness Test

A number of tests are carried out to ensure the robustness of the results. The tests performed in this study include Normality test, Multi-collinearity test, Heteroscedasticity test, and Hausman specification test.

A careful observation of Table 4 demonstrates that the P-value of all the variables were less than or equal to 5% significant level. That implies all the study variables failed the normality test, as the tests were significant at 5% with a confidence level of 95%, implying that the data does not fit the normal distribution. However, the failures of these variables was not surprised, because in a panel data set, there are repeated observations

Table 4: Normality Test Results

Variable	*Observations*	*W*	*V*	*Z*	*P-VALUE*
ROE	140	0.668	36.326	8.115	0.000
AIP	140	0.961	4.180	3.231	0.000
CIP	140	0.951	5.320	3.776	0.000
AFP	140	0.979	2.262	1.844	0.032
CFP	140	0.780	24.033	7.182	0.000

Source: STATA 14 Output Results

in the same units, which are, very likely, not independent, that mostly violates normality assumptions (Baltagi, Song, Jung, & Koh, 2007; Baltagi, Song, & Koh, 2003; Elliott & Woodward, 2007).

Multicollinearity Test Results

The Variance Inflation Factor (VIF) was conducted to determined the existence or otherwise of multicollinearity between and among the predictive variables. The results of the VIF test are shown in table 4 below:

Table 5: VIF Results

Variable	*VIF*	*Tolerance (1/VIF)*
AIP	4.36	0.229
CIP	4.25	0.235
AFP	1.51	0.660
CFP	1.24	0.804
Mean VIF	2.84	

Source: STATA 14 output Results

The variance inflation factor (VIF) is used to detect multi-collinearity in this study. In general, a VIF above 10 indicates high correlation and is cause for concern. However, all the explanatory variables such as AIP, CIP, AFP, and CFP were less than 4 and tolerance level is less than 1, suggesting that there was an absence of perfect multicollinearity among the independent variables. The mean VIF of 2.84 also attests that the models for testing the hypotheses were fit and reliable.

Heteroscedasticity and Hausman Specification Tests

This segment discusses the tests of heteroscedasticity (hettest) and Hausman fixed – random specification. Results of these tests are presented below:

Table 6: Results of Hettest, Fixed-Random Specification

Test	*Chi-Square*	*P-Value*
Breusch-Pagan/Cook-Weisberg Hettest	92.69	0.000
Hausman Fixed Random	7.65	0.105

Source: STATA 14 Output Results based on study data

The Breusch-Pagan/Cook-Weisberg test for heteroscedasticity was conducted to determined the existence or otherwise of heteroscedasticity. The evidence from Breuch Pagan/Cook-Weisberg with the coefficient of 92.69 and p-value of 0.000 confirms the presence of the heteroskedasticity in the result, and as such, study rejects the alternative hypothesis that there is absence of heteroscedasticity. That suggests that the study require a more generalized least squares (GLS) regression analysis, with the fixed and random effects. In the same vein, Table 5 present the results of Hausman Fixed – Random Specification test with a Chi^2 of 7.65, which is statistically insignificant. This suggests that random effect regression analysis is suitable for this study since the p-value is insignificant.

Table 7: Summary of Regression Results

	ROE			
Variables	*coefficient*	*Z-value*	*P-value*	
AIP	-0.029	-0.27	0.784	
CIP	-0.064	-0.62	0.537	
AFP	0.465	3.66	0.000	
CFP	0.107	0.60	0.548	
CONS	0.077	0.71	0.476	
R^2				
	Within			0.0678
	Between			0.3467
	Overall			0.2462
Wald Chi^2				14.35
Prob Chi^2 (Sig)				0.006
Adjusted R^2				0.2657

Source: STATA14 Output

Table 7 shows the result of GLS random effect multiple regression for fitted values of ROE. The regression revealed that AIP has a coefficient of -0.029, a z-value of -0.27 and p-value of 0.784, indicating that AIP is insignificantly and negatively affect ROE. Similarly, the regression result in Table 7 shows that conservative investment policy (CIP) has a

coefficient value of -0.064, a z-value of -0.62, and a p-value of 0.537, implying that CIP is insignificantly and negatively affect profitability (ROE). In the same vein, aggressive financial policy (AFP) has a coefficient of 0.465, a z-value of 3.66, and a p-value of 0.000, suggesting that AFP is positively and significantly affect profitability (ROE). This means an increase in aggressive financial policy (AFP) is significantly increases ROE. Also, the conservative financial policy (CFP) has a coefficient value of 0.107, a z-value of 0.60, and a p-value of 0.476, indicating that CFA is positively and insignificantly affect of return on equity (Profitability). The coefficient value of constant (CONS) is 0.077 and z-value of 0.71, which is statistically insignificant. This determines the value of ROE given a unit increase or decrease in any of the independent variables, while all others are held constant.

Table 7 also presents the overall result for fitted values of ROE. The result displays 24.62% of variations in working capital investment and financial policies as explained by ROE, while 75.38% is explained by other factors. In addition, the wald chi^2 has a value of 14.35 at a significant p-value of 0.006. This implies that return on equity (ROE) has a significant effect on working capital investment and financial policies at 95% level of confidence. The Adjusted R-square shows that even after adjusting for the degree of freedom the model could only explain about 26.57% of the total systematic variations in working capital investment and financial policies. This indicates that there are other factors that account for variation in working capital investment and financial policies proxies by AIP, CIP, AFP and CFP of listed industrial goods companies in Nigeria which has been captured by the stochastic disturbance term in the model.

5. Hypotheses Testing

$H0_1$: States that the aggressive investment policy has no significant effect on the profitability of listed industrial goods companies in Nigeria. "The ordinary least squares (OLS) regression result shows a Z-value of -0.27 and a P-value of 0.0784", which is statistically insignificant. The result indicates most of the listed Nigerian industrial goods companies during the period of investigation used a moderate level of aggressiveness of working capital investment policy whereby many current assets financed industrial goods firms. Thus, a unit increase in aggressive investment policy insignificantly reduces the profitability of listed industrial goods companies in Nigeria. That suggests aggressive investment policy (AIP) has no probability of increasing working capital investment and financial policies of listed Nigerian industrial goods companies. That provides evidence of accepting the null hypothesis and rejecting the alternative that the aggressive investment policy adopted by listed industrial goods companies has a negative and insignificant effect on the profitability of listed companies in Nigeria. This finding conforms with the results of Tharshiga (2013), who find that aggressive investment policy has a negative and insignificant effect on profitability. However, this finding contradicts that of Uremadu (2012); Onodje (2014), who find a positive and significant impact of aggressive investment policy on profitability.

$H0_2$: States that the conservative investment policy has no significant effect on the profitability of listed industrial goods companies in Nigeria. Table 9 shows a" Z-value of -0.62 and a P-value of 0.537," which is statistically insignificant. The result indicates that most industrial goods companies under investigation place a higher proportion of their capital in liquid assets, which may thus lead to less profit, whereby their level of current assets increases relative to their total assets. Therefore, a unit rise in conservative investment policy insignificantly reduces the profitability of listed industrial goods companies in Nigeria. That implies conservative investment policy (AIP) has no probability of increasing working capital investment and financial policies of listed Nigerian industrial goods companies. That provides evidence of accepting the null hypothesis and rejecting the alternative that the conservative investment policy applied by listed industrial goods companies in Nigeria has no significant effect on profitability. This finding is in agreement with the results of Esmaeil (2014), who find no significant relationship between conservative investment policy and profitability but disagrees with that of Adam and Quansah (2019; Morshed (2020), whose findings show a positive and significant effect of conservative investment policy on profitability.

$H0_3$: States that the aggressive financial policy applied by listed industrial goods companies has no significant effect on profitability in Nigerian companies. The aggressive financing approach adopted by listed industrial goods companies during the study period has a positive and significant impact on profitability. "This was evidenced by a Z-value of 3.66 and a P-value of 0.000," which is statistically significant at 5%. The result shows that most industrial goods firms under study use an appreciable level of current liability to finance their operation during the period under study. Thus, a unit increase in aggressive financial policy leads to an increase in profitability and vice versa. That suggests the aggressive financing approach adopted by listed industrial goods companies has the likelihood of influencing the profitability of the listed Nigerian companies. That provides evidence of rejecting the null hypothesis and accepting the alternative that the aggressive financial policy has a significant effect on profitability in the listed Nigerian industrial goods companies. This finding is consistent with Abdul et al. (2021); Mawsheki (2022), who find a positive and significant effect of aggressive financial policy on profitability. The finding contradicts the finding of Makau (2019), who finds a negative and significant impact of aggressive financing policy on profitability.

$H0_4$: States that the conservative financial policy adopted by listed industrial goods companies has no significant effect on profitability in Nigerian companies. The financing policy has a positive and insignificant impact on profitability" The regression result in Table 6 shows a Z-value of 0.71 and a P-value of 0.476", which is statistically insignificant. The result indicates industrial goods firms use less long-term debt and capital and more current liabilities, thereby exposing firms to risk since they are concentrating on using fewer current liabilities. That provides evidence of accepting the null hypothesis and rejecting the alternative that the conservative financial policy has no probability of

increasing the profitability of listed industrial goods in Nigeria. The finding conforms to the outcome of Nazir and Afza (2009), who also find no significant effect of conservative financial policy on the profitability of Nigerian companies, but contrary to the study of Hoang (2015), who finds a negative and significant impact of conservatives financing policy on profitability.

Conclusion

Based on the above findings in the analysis carried out, this study makes the following conclusions:

The aggressive investment policy has a negative and insignificant effect on the profitability of listed industrial goods companies in Nigeria. That means the aggressive investment approach applied by the management of listed industrial goods in Nigeria does not contribute to improving or increasing the profitability of Nigerian companies;

The conservative investment policy had no significant effect on the profitability of the listed industrial goods sector during the study period. That implies the conservatives investment policy adopted by the management of industrial goods in Nigeria makes no meaningful effort or contribution to improving profitability in the Nigerian companies;

The aggressive financial approach adopted by listed industrial goods has a positive and significant effect on the profitability of Nigerian companies. That implies that an increase in the aggressive financing approach employed by the management of listed industrial goods leads to an increase in profitability; and

The conservative financial policy adopted by listed industrial goods in Nigeria yields a positive and insignificant effect on the profitability of Nigerian companies. That indicates that an increase in the conservative financial policy adopted by the management of listed industrial goods in Nigeria resulted in an insignificant decrease in the profitability of Nigerian companies.

In conformity with the findings and conclusion of the study, the following recommendations are proffer:

First, the management of the listed industrial goods companies in Nigeria, who are the custodian in managing affairs of the day-to-day companies' should be encouraged to improve the application and use of aggressive investment policy to improve profitability. Doing so will enable the management of the firms to use more current assets to finance the industrial goods, thereby generating more profits for firms and shareholders.

Second, the management of the listed industrial goods companies should be equipped with the latest tools, equipment and policies and ensure that the individual involved should be allowed to participate fully. It will enable individuals or managers to increase firms' profitability by improving the efficiency of management of working capital investment and financing policies.

Third, the management of the listed industrial goods in Nigeria should encourage the managers and individuals involved in the application and the use of aggressive financial

policy to embrace it as a step toward increasing the firm's profitability. Doing so will motivate directors and managers to use an appreciable level of current liability to finance their operations' thereby attracting more profits for the firms.

Finally, the management of the listed industrial goods in Nigeria should embrace a conservative financing policy since it has an increased effect on profitability. Putting this into practice will go a long way for listed industrial goods companies in Nigeria due to its ability to add more value and quality evidence leading to higher profits for firms and shareholders.

References

Abdul, B., Abid, D., & Fitriya, F (2021). Does working capital management affect profitability?: Empirical evidence from Indonesia Listed Firms. *Asian Economics and Financial Review, 11* (3), 236-251.

Abdul, R., Talat, A., Abdul, Q., & Mahmood, A.B (2010). Working capital Management and Corporate performance of Manufacturing Sector in Pakistan. *International Research Journal of Finance and Economics, 1*(47), 245-267.

Adam, A. M., & Quansah, E (2019). Effects of working capital management policies on shareholders 'value: Evidence from Listed Manufacturing Firms in Ghana. PANOECONOMICUS, 66 (5), 659-686. OR https://doi.org/10.2298/PAN161206027A

Al-Mawsheki, R. S. M. A (2022). Effect of working capital policies on firms' financial performance. *Cogent Economics and Finance, 10* (1), 01-16 OR https://doi.org/10.1080/23322039.2022.2087289

Baltagi, B. H., Song, S. H., Jung, B. C., & Koh, W. (2007). Testing for serial correlation, spatial autocorrelation and random effects using panel data. Available through www.badi@conmail.tamu.edu/downloaded on the 15th April, 2017.

Baltagi, B. H., Song, S. H., & Koh, W. (2003). Testing panel data regression models with spatial error correlation. Available through www.badi@conmail.tamu.edu/downloaded on the 15th April, 2017

Carpenter, M. D., & Johnson, K. H. (1983). The Association between working capital policy and operating risk. *Financial Review,18* (3), 106-109.

Dash, M., & Hanuman, R (2009). A Liquidity-Profitability Trade-Off Model for Working Capital Management. Retrieved from http://ssrn.com/abstract=1408722

Dinku, T (2013). Impact of working capital management on profitability of micro and small enterprises in Ethiopia: The Case of Bahir Dar City Administration. *International Journal of Accounting and Taxation, 1*(1), 15-24.

Elliott, A. C., & Woodward, W. A. (2007). Statistical analysis quick reference guide book with SPSS examples. Available through www.elliot@tune.edu.uk/24th September, 2016.

Erasmus, P. D (2010). Working capital management and profitability The relationship between the net trade cycle and return on assets. *Journal of Southern African Institute of Management Scientists, 19* (1), 285-297.

Esmaeil, A (2014). Aggressive investment policy and aggressive financing policy of working capital with profitability of Tehran's' Stock. *Advanced Research in Economics and Management Sciences(AREMS),*19 (14), 2322-2360.

Farounbi, L (2005). *Management Accounting* (New ICAN Syllabus) Lagos: FB Ventures.

Filbeck.G., & Krueger, T (2005). Industry related differences in working capital management. *Mid-American Journal of Business*, 20 (2), 11-18.

Gardner, M. J., Mills, D. L., & Pope R. A (1986).Working capital policy and operating risk: An empirical analysis. *Financial Review*, *21*(3), 31-56.

Hoang, T. V (2015). Impact of working capital management on firm profitability: The Case of Listed Manufacturing Firms on Hochi Minh Stock Exchange. *Asian Economic and Financial Review, 5* (5), 779-789.

Javid, S., & Zita, V. P. M (2014). Impact of working capital policy on firm's profitability: A Case of Pakistan Cement Industry. Research Journal of Finance and Accounting, 5 (5), 182-191.

Jensen, M. C (1986). Agency Costs of Free Cash Flow, Corporate Finance and Takeovers. *American Economic Association Papers and Proceedings, 6* (2),323-329.

Makau, C. S (2019). *Effect of working capital financing policy on financial performance of firms listed at the Nairobi Securities Exchange*. MBA Project submitted to University of Nairobi.

Morshed, A (2020). Role of working capital management in profitability considering the connection between accounting and finance. *Asian Journal of Accounting Research, 5* (2), 257-267.

Murdock, R. (2014). Aggressive financing strategy

Nazir, M. S., & Afza, T (2009). Impact of aggressive working capital management policy on firms profitability. *The IUP Journal of Applied Finance,* 15 (8), 19-30.

Nwaezeaku, N. C. (2006). *Theories and Practice of Financial Management*. Owerri. Ever Standard Publishing.

Obiwuru, T. C., Okwu, A. T., Akpa, V. O., & Nwankwere, I. A (2011). Effects of leadership stye on organizational performance: A survey of selected small scale enterprises in Ikosu- K e t u Council Development Area of Lagos State, Nigeria. *Australian Journal of Business and Management Research, 1* (7), 100-111.

Onodje, M. A. (2014) Working capital management and performance of selected Nigerian Manufacturing Companies. *Global Journal of Management and Business Research: Economics and Commerce, 14* (3), 126-138.

Owolabi, S. A., & Alu, C. N (2012). Effective working capital management and profitability: A Study of selected Quoted Manufacturing Companies in Nigeria. *Economics and Finance Review*, *2*(6), 55–67.

Pandey, I. M **(**2010). *Financial Management*. 10th ed. New Delhi: Vikas Publishers.

Pandy, I. M (2005). *Financial Management,* (9th Edition). New Delhi: Vikas Publishing House PVT LTD

Qazi, H. O (2011). Impact of working capital on firms' profitability. *African Journal of Business Management, 5* (27), 11005-11010.

Raheman, A., & Nasr, M (2007). Working capital management and profitability: A Case Of Pakistani Firms. *International Review of Business Research Papers*, *3*(1), 279–300.

Salawu, R. O., & Alao, J (2014). Working capital management and the performance of selected Quoted Manufacturing Companies in Nigeria (2000-2009). *Research Journal of Finance and Accounting, 5* (14), 80-92.

Salman, A., Folajin, O. O., & Oriowo, A (2014). Working capital management and profitability: A study of selected listed manufacturing companies in Nigerian Stock Exchange. *International Journal of Academic Research in Business and Social Sciences, 4*(8), 287-295.

Smith, M. B., & Fletcher, L (2009). Factors influencing working capital management in South Africa. *Journal of Southern African Institute of Management Scientists,* 18 (3), 179-194.

Taleb, G. A., Zoued, A. N., & Shubiri, F. N (2010). The determinants of effective working capital management policy: A case study on Jordan. *Interdisciplinary Journal of contemporary research in Business*, *2* (1), 248-264.

Tharshiga, M (2013). Effect of cash conversion cycle on profitability of Listed Plantation Companies in Sri Lanka. *Research Journal of Finance and Accounting*, *4* (18), 132-137.

Uremadu, S.O., Egbide, B.C., & Enyi, P.E (2012). Working capital management, liquidity and corporate profitability among Quoted Firms in Nigeria: Evidence from the Productive Sector. IJARAFMS. 2(1) 80-97.

Van Horne, J. C., & Wachowicz, J. M (2004). *Fundamentals of Financial Management*. Upper Saddle River, NY: Prentice Hall International.

Weinraub, H. J., & Visscher, S (1998). Industry practice relating to aggressive conservative working capital policies. *Journal of Financial and Strategic Decision*, *11*(2) 11-18.