



Cash Conversion Cycle and Performance of Listed Healthcare Companies on the Nigerian Stock Exchange

Ambe Alfred Neba

Department of Accounting

Gombe State University

Email: nebaa2002@yahoo.co.uk

ABSTRACT

Though wide spread studies show a strong link between cash conversion cycle and financial performance of organisations around the world, there are however, limited studies of such found in developing countries. This study examines the cash conversion cycle and financial performance of listed healthcare companies on the Nigerian Stock Exchange for the period 2012 to 2016, in order to establish the relationship between cash conversion cycle and financial performance. The study used descriptive analysis and the correlation model. The data was obtained from the published financial statements and accounts of firms by Nigerian Stock Exchange. The Pearson Correlation coefficient was calculated to establish the relationship and a t-test administered to determine the significance of the relationship. Key findings were that there exists a negative relationship between cash conversion cycle and financial performance of healthcare companies listed on the Nigerian Stock Exchange - a negative return of -0.313; that the sectorial correlation coefficient, was -0.1471; and that the reduction of turnover period can increase financial performance and profitability. This suggests that firms with short cash conversion cycles were likely to perform better than those with long cash conversion cycles. Firms in the sector are therefore encouraged to shorten their cash cycles. Also recommended is that healthcare companies should deliberately and efficiently control cash along their supply chain networks and avoid stockpiling.

Key words: Cash Conversion cycle, Inventory Turnover, Average payment Period.

INTRODUCTION

Adequacy of funding of investment activities means that cash management is crucial in all organizations, private and public to ensure their survival, buoyancy and success. Cash conversion concerns the planning and control of cash flows by management. That is why Akinsuleri (2011) observes that the amount of cash a company can keep or "on short call" at a bank greatly depends on its cash conversion cycle and reflects the need for cash. Cash conversion cycle (CCC) is the length of time from the payment for the purchase of raw materials for

manufacturing a product, to the collection of account receivables associated with sale of the final product. It is at the center of efficient working capital management. The length of cash conversion cycle is an important measure of the efficiency of working capital management and it is also a powerful performance measure determining how well a company is managing its working capital, so by effective cash conversion cycle, a company's performance can be predicted.

A good cash conversion cycle indicates that the firm is collecting its receivable quickly and delaying the payments of suppliers as much as possible. This leads to high net present value of cash flow and ultimately, high firm value. It is equally an effective measure of funds that are committed, including those tied to inventories and receivables, less payments that are deferred to suppliers. It has been interpreted as the cash outlays that arise during the production of output and the cash inflows that result from the sale of the output and the collection of accounts receivable. Cash conversion cycle is increasingly replacing the traditional current ratio and quick ratio as an indicator of a firm's liquidity. There is an inverse relationship between performance and cash conversion cycle; a shorter cash conversion cycle (CCC) is desirable as is associated with better performance, whereas a longer CCC is discouraged as it infers to poor performance. Velnampy (2005) notes that, each organization employs a lot of money in various projects. The success of each organization depends on the ability of its management to apply liquid assets etc, to generate profitability. Thus liquidity and profitability are both most important factors for any management to run an organization smoothly. Poor management of liquidity leads to cash shortages, difficulties in paying for its obligations, fall in profitability and even losses. Profitability is argued as being against the liquidity; to the extent that the organization is guaranteed survival first and foremost, above which point/ threshold, it is against profitability.

Murtala Zakari, (2016) says that the cash management problem is closely related to the concept of liquidity as discussed in corporate finance literature. He further says that a firm's performance mainly depends on



the way the firm is able to manage its resources at all times. This includes working capital management. To be very efficient, an organization must not underestimate or neglect its working capital management because it is the reason for many organisational failures and inability to optimize the performances. A firm must effectively and efficiently manage its working capital in order to avoid a reduction in profitability and subsequent financial crisis, (Murtala, 2016). For the running of businesses, funds have to be raised and managed, so cash management involves the administration of liquid assets and liabilities. The business activities of firms and organizations result in the flow of cash and this brings up the aspect of control to ensure that the organization remains liquid enough to meet its payment obligations. Over the decades in Nigeria, many multinational corporations down to partnerships have fallen from enviable positions of buoyancy and efficiency to struggling and collapsing businesses. A lot of them have been liquidated completely, highlighting the growing inefficiency in cash management or the whole working capital. Cash controls have not been effective and efficient.

The reckless corruption rampant in business organisations is partly due to the poor grasp of its effect on the fortunes of firms through shortage of cash. This study should help mitigate that. Also, this area of studies is still under-explored in the developing world (and Nigeria as a country in particular) relative to the developed world. So this study is crucial in contributing to bridging the knowledge and practice gap between the two worlds given their differences in environments, technology, firms' sizes, levels of business and liquidity risks.

Literature Review

Some key concepts make up the cash conversion cycle theory: Accounts Receivables management, Payables management, Inventory management and Cash conversion management.

Accounts receivable management (AR) are amounts owed by customers for goods or services they have been provided with. Managing this component of CCC minimizes the time these financial resources are held by customers. As an active component of sales, changes in ARs level and

magnitude, directly affect profitability as they are directly related. But increases in sales also require additional financing to support the increase investments in accounts receivable. Therefore the formulation of a good credit policy and collection procedure is indispensable. The ethical and rational thing is for firms to prefer selling for cash than on credit, but competitive pressures force most firms to offer credits. Sometimes banks are made to manage receivables for businesses.

Accounts Payable management (AP). Amounts can be owed to suppliers for goods and services they rendered to the company. These are looked upon as credit purchases and considered better than short term loans because they have no interest charges. In view of this, accounts payable are always regarded as a major source of working capital financing for firms (Pandey 2005). Therefore, strong alliances between company and its suppliers will strategically improve production lines and strengthen credit records for future expansion.

Inventory management is the practice of ensuring that there are enough goods or materials to meet demand without creating overstock, or excess inventory. Brigham and Houston (2002), assert that proper inventory management requires close coordination among the sales, purchasing, production and finance departments therefore, the finance manager must arrange any financing needed to support the inventory management build up. Suppliers, raw material, work-in-progress and finished goods therefore, play important roles in determining CCC and activities of production, (Horngren, Datar and Foster, 2013).

Cash conversion management is rooted in the accrual accounting principle and is directly related to a firm's performance, such that by receiving cash quickly for credit sales while paying suppliers as close as possible to their due dates is considered efficient performance. This should result in a higher present value of the net cash flows and the value of the firm, marked by the availability of net cash in-flows, which suggests a more liquid condition of the firm. It is a residual time interval measure of residual cash flow financing, influenced by either expansion or contraction in any of the three liquidity flow measures: the inventory conversion period, receivables conversion period and the payables deferral period, (Gentry et al., 1990).



Theories for this Study

The following theories are considered for this study:

i. **Cash Conversion Cycle Theory:** This was developed by Gitman (1974) as part of operating cycle, with its focus being the length of time between the acquisition of raw materials and other inputs and subsequent inflows of cash from the sale for finished goods (including credit sales), and represents the number of days of operation for which financing is needed. The CCC is a dynamic measure of ongoing liquidity management by combining both balance sheet and income statement data to create a measure with a time dimension. The CCC is used as a comprehensive measure of working capital as it shows the time lag between expenditure for the purchase of raw materials and the collection of sales of finished goods (Padachi, 2006). The highlight is that day to day management of a firm's short term assets and liabilities plays an important role in the success of the firm. Firms with growing long term prospects do not remain solvent without good liquidity management, and CCC does this by approximating these three periods with the financial ratios of inventory days, so that the length of the cash conversion cycle (CCC) is given by: $CCC = \text{Inventory days} + \text{Trade receivables days} - \text{Trade payables days}$. According to Arnold (2008), the shorter the CCC, the fewer the resources needed by the company. So the longer the cycle the higher will be the investment in the working capital. This longer cycle could increase sales, which could lead to higher profitability. But this longer cycle, will also lead to higher investment and could rise faster than the benefit of the higher profitability. The operating cycle theory is in line with this study so far, and this research is based on it because it is a proxy for measurement; it also helps to determine the amount of cash needed for any sales level as it represents the interaction between the components of working capital and the flow of cash within a company.

While the analysis of an individual firm's CCC is helpful, industry benchmarks are crucial for a company to evaluate its CCC performance and access opportunities for improvements. The length of CCC may differ

from industry to industry. Therefore the correct way is to compare a specific firm to the industry in which it operates (Hutchinson, 2007).

ii. **Conservative plan Theory** is a risk-free strategy of working capital financing. A company adopting this strategy maintains a higher level of current assets and, therefore, higher working capital. The long-term sources of funds, such as equity, debentures, term loans, etc., finance all fixed assets and a major part of the working capital (all permanent current assets and even a part of variable current assets). The short-term sources are used only to meet the peak seasonal requirements; during the off-season, the surplus funds are kept invested in marketable securities. These enable the firm to absorb sudden variations in sales, production plans, and procurement time without distracting production plans. The higher liquidity that this brings reduces the risk of insolvency.

But the criticisms here are that; this translates into lower returns than optimal; that large investments in current assets lead to higher interest and carrying cost and with fixed and part of current assets financed by long term funds added to the fact that permanent and long term sources are more expensive, this leads to lower returns on risks, (Horne and Wachowitz, 1998). It at times could be very expensive in the long term as it completely avoids short term borrowing. This theory uses the 'play it safe' philosophy, attempting to provide sufficient long term financing to cover all anticipated eventualities. With the implied relatively high investments in current assets in relation to sales, the current assets to sales ratio will be comparatively high and assets and turnover ratio will be low.

Empirical Views: Gill et al. (2010) investigated the relationship between working capital management (WCM) and the firm's profitability for a sample of 88 American manufacturing companies listed on the New York Stock Exchange for the period of three years from 2005-2007. Their study used co-relational and non-experimental research design. The results of this research showed significant positive relationship between the cash conversion cycle and the company's profitability. This implied that the higher the cash conversion cycles the higher the profitability of the firm. Their measure for the cash conversion cycle was consistent with that of Huynh, (2011) who measured CCC using the number of day's



accounts receivable plus number of day's inventory minus number of day's accounts payable. However, the two researchers differed on the measure of the dependent variable. While the later used $(\text{sales} - \text{cost of sales}) / (\text{Total assets} - \text{Financial assets})$, as the dependent variable of profitability, the former divided the operating income by the non-financial assets to get the proxy for the dependent variable.

Kwasi (2010) attempted to measure and analyze trends in the working capital management of Ghanaian Oil market firms and the impact on their performances. The study employed trend and econometric analysis using an unbalanced panel data of 11 Ghanaian oil marketing firms from 2001-2008. Number of day's inventory, number of day's accounts Receivable, number of days payable, cash conversion cycle and the trade cycle were measures of working capital management, and gross profit divided by total assets as profitability. He found inconsistent trends in the various components of working capital in the Ghanaian oil marketing companies (OMCs). He also found a significant negative relationship between profitability and number of day's accounts receivables, number of days accounts payables, the cash conversion cycle and the net trade cycle.

METHODOLOGY

The interest in the effect of CCC on financial performance of listed health care firms in Nigeria were broken down into examining: i) the relationship between cash conversion cycle and Return on investment; ii) the relationship between cash conversion cycle and Return on Equity; iii) the relationship between Cash Conversion Cycle and Return on Capital Employed; iv) the role of cash conversion cycle in explaining the variations in the Profitability; and v) the impact of cash conversion cycle on profitability of the listed Nigerian health care companies.

These were tested by these hypotheses:

HO₁: Cash conversion cycle has no significant relation with Debt Ratio of listed Nigerian health care companies.

HO₂: Cash conversion cycle has no significant effect on Return on Equity of listed Nigerian health care companies.

HO₃: Cash conversion cycle has no significant relations with Fixed Assets to Total Assets Ratio of listed Nigerian health care companies.

HO₄: Cash conversion cycle has no significant relationship with Accounts Receivable of listed Nigerian health care companies.

HO₅: Cash conversion cycle has no significant relationship with Accounts Payable of listed Nigerian health care companies.

The population for the study was made of eleven (11) companies listed on the NSE as at the period selected and the sample size selected were five (5), namely; Glaxo Smithkline consumer Nigeria Plc., (listed since 1st July, 1979), Ekocorp Plc., (listed since 24th March, 1994), Evans Medical Plc., (listed since 1st January, 1979), Fidson Healthcare (listed since 6th April, 2008), and Pherma-Deko Plc. (listed since 1st August, 1979). Sampling technique used for selecting the above was the judgmental or purposive sampling (i.e. of the non-probabilistic sampling class).

Data was collected, reviewed, evaluated and analysed. CCC attributes of interest had these proxies assigned: Debt Ratio (D Ratio), Financial Assets to Total Assets (FATA), Account Receivable Period (ACR), Account Payable Period (ACP), Inventory Conversion Period (ITID), Current Ratio (CR). Financial Performance had Return on Equity (ROE) as its own proxy.

Debt Ratio (D Ratio) = Total Debt (T Debt) / Total Assets (T Assets);

Financial Assets to Total Assets (FATA) = Current Assets (CA) / Total Assets (TA);

Accounts Receivable Period (ACR) = $\left\{ \frac{A/C \text{ Rec} / \text{Sales}}{\dots} \right\} \times 365$;

Account Payable Period (ACP) = $\left\{ \frac{\text{Trade Payable (TRD PAY)} / \text{Cost of Sales (COS)}}{\dots} \right\} \times 365$;

Inventory Turnover Period (ITD) = $\left\{ \frac{\text{COGAFS} / \text{Average Stock (AVG STC)}}{\dots} \right\} \times 365$;

Returns on Equity (ROE) = $\left\{ \frac{\text{Profit after tax (PAT)} / \text{Net Worth (NW)}}{\dots} \right\}$ Assets);

Cash Conversion Cycle (CCC) = Account Receivable (AR) + Inventory Turnover (ITD) – Account Payable (ACP);

Current Ratio (CR) = Current Assets (CA) / Current Liabilities (CL); and

Logarithm of Sales (LOS) = Log (Sales)

The published Facts Book of the NSE and the annual reports and accounts of the case study companies sampled, supplied the data used for the



sampled firms for the period, 2012 to 2016 deemed more appropriate because of the relative stability compared to those before or after it.

Descriptive statistical as well as correlation and regression analyses were used, employing the STATA tool. The model underlying the testing of the propositions presented in the hypothesis was;

$$\text{ROEit} = \text{BO} + \text{B1ACPit} + \text{B2ITIDit} + \text{B3CCCit} + \text{B4ACRit} + \text{B5DRit} + \text{B6CRit} + \text{B7LOSit} + \text{B8FATAit} + e.$$

Where:

ROE: Return on Equity, to measure corporate financial performance. So ROEit is Return on Equity of firm i at time t (1.....5 companies).

BO, 1.....3: Constants representing the direction and extent to which each variable influences performance of a company.

ACP: The Average Collection Period.

ITID: Inventory Turnover Period.

CCC: Cash Conversion Cycle.

ACR: Accounts Receivable Period (Day).

DRatio: Debt Ratio.

LOS: Natural logarithm of sales. (LOS is to reduce large number to a certain level that will fit the others that is in the research in Order to avoid discrepancy)

FATA: Financial Asset to Total Asset.

CR: Current Ratio

e: The error term that is surrogate for all other variables influencing performance.

Xit: The different independent variable of a company 'i at a time t'.

t: Time 1.....5years.

Cash Conversion Cycle and Performance of Listed Healthcare Companies on the Nigerian Stock Exchange
 Extracted and evaluation of each company's data is shown below:

Table ia. The Financial Reports of Ekecorps showed the following:

Ekecorp	A/C REC	SALES	COGAS	AVG/ STC	TRD/ PAY	COS	T DEBT	T ASSET	PAT	N ASSET	CA	CL
2012	295159636	1215358768	507,892,048	11809287	157499484	616467720	212,904,651	3087289361	130740659	2034385030	354656705	212904651
2013	473115351	1215217291	478,364,011	22282574	145314907	636853280	302,934,168	3312265123	152766176	2187151206	515051297	302934168
2014	513655107	305532493	121,249,752	21,292,532	149178358	184,282,741	1,067,150,428	3,378,907,378	57912848	2,311,756,950	590917378	179718607
2015	3779824	8210760	1,348,520	697502	4212210	682306	10,346,497	11506726	744378	4860179	4611780	6646547
2016	1965841	4527004	1,850,131	757233	3658656	684463	7,578,979	15343062	82075	12101918	3378320	3241144

Table ib. The following information was derived from the above Ekecorps table;

D Ratio	FATA	ROE	ACR	ITID	ACP	CCC	CR	LOS
0.0689617	0.11487641	0.06426544	88.643181	43.00785	0.255486993	131.3955443	1.665800645	9.0847045
0.0914583	0.15549821	0.0698471	142.10389	21.468077	0.228176429	163.3437895	1.700208664	9.08465394
0.3158271	0.17488416	0.02505144	613.63069	5.6944732	0.809508027	618.5156537	3.288014457	8.4850574
0.8991695	0.40078994	0.15315856	168.02778	1.9333565	6.173491073	163.7876436	0.693861038	6.91438336
0.4939678	0.22018551	0.00678198	158.5004	2.4432784	5.345294048	155.5983888	1.042323328	6.65581088

Source: Simplified from Ekecorps financial reports, 2012 - 2016

Table iia. The Financial Reports of Glaxo Smithkline Consumer Nigeria Plc. showed the following:

Glaxosmith	A/C REC	SALES	COGAS	AVG STC	TRD Pay	COS	T DEBT	T ASSET	PAT	N ASSET	CA	CL
2012	2651133	25308159	9079440	4555302	591102	4524138	11129661	21792721	2823526	10663060	1295661	9510572
2013	2379525	29183675	10890828	5616340	1429400	5274488	13867949	21792721	2919170	12345714	14091806	11781418
2014	4,977,242	30,521,127	10,735,015	6,602,945	11,891,919	19,786,112	15,044,624	27,992,867	1,848,842	14,772,052	14,573,474	13,220,815
2015	6,036,399	23,040,004	7,407,245	7,701,541	14,652,154	15,632,759	17,083,602	29,800,262	485,942	14,564,386	16,648,963	15,235,876
2016	6151860	7644135	2,428,840	7088507	18139612	5,215,294	20,651,406	34,024,928	188307	15305096	20176657	18629832



Table iib. The following information was derived from the above Glaxo Smithkline Nig. Plc table;

D Ratio	FATA	ROE	ACR	ITID	ACP	CCC	CR	LOS
0.5107054	0.05945384	0.2536938	38.23524	1.9931587	0.130655166	40.09774404	0.136233762	7.4033
0.6363569	0.64662903	0.2104976	29.760701	1.9391326	0.271002607	31.42883097	1.196104408	7.4651
0.5374449	0.52061384	0.12289054	59.522485	1.625792	0.601023536	60.54725364	1.10231283	7.4846
0.5732702	0.55868512	0.02844494	95.6287	0.9617874	0.937272429	95.65321515	1.092747342	7.3625
0.6069493	0.59299632	0.00911836	293.74532	0.3426448	3.478157128	290.6098101	1.083029466	6.8833

Source: Derived from Glaxo Smithkline Nig. Plc Financial reports, 2012 - 2016

Table iii.a. The Financial Report of Phama Deco Plc. showed the following:

Phama Deco	A/C Rec	SALES	COGAS	AVG STC	TRD Pay	COS	T Debt	T ASSET	PAT	N ASSET	CA	CL
2012	89071	1037463	505307	341293	343280	164014	1839379	2782811	740945	943432	654699	1630929
2013	99321	1060308	416670	231584	270265	185086	1667939	2498136	-121182	830197	477872	1568346
2014	261,864	1,566,190	923922	222083	895,974	642,268	1908024	2839229	101,007	931,204	838,643	1,791,935
2015	9657	1481964	712213	273550	140038	769751	784885	2570082	659264	1857537	1252363	712545
2016	7197	1095109	499551	332781	53050	595558	583269	2324045	-218703	1841125	579383	482920

Table iii.b. The following information was derived from the above Phama Deco Plc table;

Source: Derived from financial reports of Phama Deco Plc. 2012 - 2016

D Ratio	FATA	ROE	ACR	ITID	ACP	CCC	CR	LOS
0.6609788	0.23526535	0.78537192	31.336939	1.4805666	2.092992062	30.72451373	0.401427039	6.01597262
0.6676734	0.19129143	-0.1459678	34.190221	1.7992176	1.46021309	34.52922562	0.30469807	6.02543204
0.6720219	0.29537702	0.10846925	61.027308	4.1602554	1.395015788	63.79254792	0.468009721	6.19484445
0.305393	0.48728523	0.35491298	2.3784687	2.6035935	0.181926363	4.800135838	1.75759145	6.17083765
0.2509715	0.24929939	-0.1187877	2.3987612	1.5011404	0.089076127	3.810825482	1.199749441	6.03945735

Cash Conversion Cycle and Performance of Listed Healthcare Companies on the Nigerian Stock Exchanges
Table va. The Financial Report of Fidson Healthcare Plc showed the following:

Fidson PLC	A/C Rec	SALES	COGAS	AVG STC	TRD Pay	COS	T DEBT	T ASSET	PAT	N ASSET	CA	CL
2012	1986197	7168939	2018514	1090030	1517386	928484	5552501	8582982	206889	5228435	4770498	2572544
2013	2344387	9247050	2737269	1497332	1692285	1239937	6997753	12243088	15980	5255335	4769698	3262088
2014	3,187,471	9,725,185	5439589	1321436	3,779,619	4,285,596	10007213	15772494	631,825	5,765,281	4,654,412	5,909,026
2015	3,830,785	6,160,874	3,265,263	747301	4,316,947	2,895,611	10,023,748	16,485,327	473,483	13,916,814	4,774,253	5,835,267
2016	1,965,841	4,527,004	2,385,929	777,167	3,658,656	2,141,075	9,578,979	16,023,506	82,075	1,065,006	3,378,320	9,578,979

Table ivb. The following information was derived from the above Fidson Healthcare Plc table;

D Ratio	FATA	ROE	ACR	ITID	ACP	CCC	CR	LOS
0.6469198	0.55580893	0.03956997	101.12541	1.8517967	1.634261872	101.3429462	1.854389274	6.85545489
0.5715676	0.38958292	0.00304072	92.537756	1.8280976	1.364815309	93.00103809	1.462161045	6.96600321
0.6344725	0.29509677	0.10959136	119.63031	4.1164226	0.881935441	122.8647991	0.787678375	6.98789787
0.6080406	0.28960621	0.03402237	226.95425	4.369408	1.490858751	229.8327972	0.818172159	6.78964233
0.5978079	0.21083526	0.07706529	158.5004	3.0700339	1.708793947	159.8616444	0.352680594	6.65581088

Source: Derived from financial reports of Fidson Healthcare Plc. 2012 - 2016

Table va. The Financial Report of Evans Medical Plc. showed the following:

Evans PLC	A/C Rec	SALES	COGAS	AVG STC	TRD PAY	COS	T Debt	T ASSET	PAT	N ASSET	CA	CL
2012	1218700	48645009	1621890	838500	443300	783390	4874400	7304600	284504	2430184	2877800	26242006
2013	1359700	4885500	1710500	918500	452100	792000	4884500	7440600	388995	2858300	2977800	2724200
2014	1071283	3342550	1387473	860665	2361940	1955077	5449443	6650177	-972904	3107462	2102640	3542715
2015	593175	828016	376572	583736	1769088	451444	5792560	6258681	161921	466121	1335198	3607807
2016	441500	3523000	831700	378000	389000	680700	4032000	3966200	889	-65800	2088000	2988000



Table vb. The following information was derived from the above Evans Medical Plc. table;

D Ratio	FATA	ROE	ACR	ITID	ACP	CCC	CR	LOS
0.6673055	0.39397092	0.11707097	9.1443194	1.9342755	0.565873958	10.51272094	0.109663872	7.68703829
0.6564659	0.40020966	0.13609313	101.58438	1.8622754	0.570833333	102.8758245	1.09309155	6.68890902
0.8194433	0.31617805	-0.3130864	116.98203	1.6120941	1.20810587	117.3860214	0.593510909	6.52407791
0.9255241	0.21333537	0.34737976	261.4791	0.6451067	3.918731891	258.2054706	0.370085761	5.91803873
1.0165902	0.52644849	-0.0135106	45.741555	2.2002646	0.571470545	47.3703495	0.698795181	6.54691264

Source: Derived from financial reports of Evans Medical Plc. 2012 - 2016

Given that CCC applies only to select sectors dependent on inventory management and related operations, therefore a trend of decreasing or steady CCC values over multiple periods is a good sign while rising ones should lead to more investigations and analysis based on other factors. The 'b' tables of the firms in the industry showed that CCC was fluctuating in all of them over the years of the study. Pharma Deco leads with the smallest CCC values at only double digits and decreasing from 30 to 03, with an average of just 27 days (less than a month). It is closely followed by Glaxo Smithkline with only one year at triple digits while the rest of the years are double digits. It is not a very good CCC performance though given that it is rising from 40 to 290 with an average of up to 103.2 (less than 4 months). Evans Plc is third and similar to Glaxo with a rising CCC from 10 to 47 with an average of 106.8. Fidson Plc is next with its CCC rising from 101 to 159 and an average of 140.8 (more than 4 months). Ekecorp also with a fluctuating value of CCC generally rising from 131 in 2012 to 155 in 2016, peaking at 619 in 2014, shows an average of 246.2 meaning that it takes more than 8 months to sort out liquidity issues.

Descriptive Statistics

Table vi below shows as a whole, the summary of the descriptive statistics (i.e. the statistical attributes of the variables) of all the firms as computed from summarized calculations above. There are five firms being evaluated yearly for five years amounting 25 observations (as shown in the second (Obs) column). The separate evaluations of variables of each company's financial performance are shown in the 'b' tables above. Table vi shows their overall means, standard deviations, minima and maxima.

Table vi

Variable	Obs	Mean	Std. Dev	Min	Max
ROE	25	.0985994	.2017114	-.3130864	.7853719
D Ratio	25	.5774115	.2313984	.0689617	1.01659
FATA	25	.3397681	.1633493	.0594538	.646629
ACR	25	122.1124	128.5585	2.378469	613.6307
ITID	25	4.657764	8.946147	.3426448	43.00785
ACP	25	1.494599	1.60444	.0890761	6.173491
CCC	25	127.3907	127.7255	3.810826	618.5156
CR	25	.9117534	.512943	.1096639	1.854389
LOS	25	6.99559	.8735458	5.918039	9.084704



Source: Generated using STATA

Returns on Equity (ROE) had an average of about 10% ranging from about -31% to a maximum of about 79%. This means that every Naira of common share holders' equity earned on average about 10% and a maximum of 79%, with the returns varying on both sides of the scale by a margin (σ) of 20%. The average number of days that takes the companies to convert their inventories to sales (ITID) was about 5 days, with a maximum of 43 days. The average payment period (ACP) for the companies was 1 (or 1.5) day and with maximum of 6 days. And looking at the number of days that account receivables were settled were far more than the days that the companies were able to settle their account payables. This implied that the companies in the health care group were in the habit of borrowing (taking overdrafts) to meet up with the payment periods to their accounts payable which meant they had lower returns to equity than they otherwise should have. Similar interpretations go for the other ratios.

Correlation between the Variables

Inter-relationships and associations between the variables were analysed using Pearson Correlation Analysis to determine their effects on cash conversion cycle and profitability. Table vii below shows the resultant correlation matrix.

Table vii: Correlation Coefficient of the Variables.

Variables	ROE	DRATIO	FATA	ACR	ITID	ACP	CCC	CR	LOS
ROE	1.0000								
DRATIO	0.0387	1.0000							
FATA	-0.0419	0.3591	1.0000						
ACR	-.1316	-.0657	-.1861	1.0000					
ITID	.0563	-.6343	-.4069	0.0231	1.0000				
ACP	0.0870	0.4231	0.0002	0.3023	-.2431	1.0000			
CCC	-.1471	-.0831	-.1961	0.9941	0.0916	0.2648	1.0000		
CR	-.1242	-.5599	0.3353	-.0373	0.4062	-.1918	-.0139	1.0000	
LOS	-.1278	-.5914	-.1584	0.2863	0.6982	-0.3118	0.3321	0.3490	1.0000

Source: Generated using Statistic Data Analysis (STATA)

The diagonal in the table shows the perfect self-correlation of each of the variables (value = 1.000). The highest correlation is recorded between ACR and CCC (0.9941) which implies the absence of multi-collinearity with ROE and all variables. Correlations between the dependent variables and independent variables, show that the relationship between ROE and D Ratio is positive with a value of 0.0387 implying that increase in D Ratio increases financial performance by more than 3%. Also FATA (Financial Asset to Total Asset ratio) and ROE correlation is negative (-0.0419) implying that a decrease in FATA increases financial performance by 4%. Same goes for ACR and ROE with a correlation of -0.1316 implying that, a decrease in accounts receivable decreases financial performance with more than 13%. ITID and ROE show a negatively correlation of -.0563 implying that a decrease in ITID increases the financial performance by less than 7%. ACP and ROE have a positive correlation of 0.0870, implying that an increase in ACP increases financial performance by less than 9%. CR and ROE also have a negative correlation between them of -.1242 implying that decrease in CR increases financial performance by more than 12%. Similarly, ROE and LOS relationships are negative (-.1278) an amount significantly less than 13% meaning correlation that decreases in LOS decrease financial performance with the same percentage.

Regression Analysis and Hypothesis Testing

Following the conduct of the multiple regression analysis to determine the kind of relationship, if any that exist between the Cash Conversion Cycle and financial performance of quoted healthcare companies on the Nigerian stock exchange, the model used was;

$$ROE_{it} = B_0 + B_1ACR_{it} + B_2ITID_{it} + B_3CCC_{it} + B_4ACR_{it} + B_5DR_{it} + B_6CR_{it} + B_7LOS_{it} + B_8FATA_{it} + e$$

Where: ROE_{it} = Returns on Equity of the firms at the time period
 B₅DR_{it} = Debt Ratio for the firms at the time period



BO = Constant with direction and extent for the firms
 B6CRit = Current Ratio
 B1ACPit = Accounts payable for the firms at the time period
 B7LOSit = Log of Sales for the firms at the time period
 B2ITIDit = Inventories to sale for the firms at the time period
 B8FATAit = Financial Assets to Total Assets ratio of the firms at the time period
 B3CCCit = Cash Conversion Cycle for the firms at the time period
 E = Error Term for the firms at the time period
 B4ACRit = Accounts Receivable for the firms at the time period

Computing the coefficients of the independent variables, by running the data through STATA program; the following was found as shown in table viii below.

Table viii: Regression Results

Variable	ROE	Coef.	Std.	Err.	T	P> t
D Ratio	-.1680473	.4950887	-0.34	0.739	-1.217588	.8814938
FATA	.1634942	.5756752	0.28	0.780	-1.056883	1.383871
ACR	.0017388	.0057694	0.30	0.767	-.0104917	.0139693
ITID	.0042062	.0133945	0.31	0.758	-.0241888	.0326012
ACP	.0152264	.0436783	0.35	0.732	-.0773674	.1078202
CCC	-.0019748	.0057157	-0.35	0.734	-.0140916	.010142
CR	-.1029547	.1885455	-0.55	0.593	-.5026534	.296744
LOS	-.0286057	.1016011	-0.28	0.782	-.2439903	.1867789
Cons	4.30956	.7759261	0.56	0.586	-1.213934	2.075846

Source: Generated by from Statistic Data Analysis (STATA).

Substituting the values of the variables with significant coefficients (the insignificant ones: D Ratio, FATA, and CR are excluded) into the regression model gives the following equation:

$$ROE = 4.30956 + 0.0042062 - 0.0019748 \underline{-.1029547} + .0017388 + 0.1634942it + eit.$$

By combining the tables and regression equation, the multiple relationships existing between the dependent and independent variables are assessed, and the test of hypotheses accepted or rejected accordingly. The intercept of 4.30956 means that, should all the variables in the

equation add up to zero, the Nigerian healthcare companies will earn N4.31 on each N1 Common share invested in it.

Firstly, with regards to the impact of Inventory Turnover on Financial Performance, the results given in table viii show that using a two-tail test, the p-value of ITID (0.032) is lower than 0.05 (at a 95% level of confidence), therefore showing that there is a significant influence of ITID on the dependent variable (ROE). This agrees with the works of Ali (2011), and Warnes (2013), who found a positive relationship in them as well; but is opposed to the works of Usama (2012), and Panigrahi (2013) who found an inverse relationship between the inventory turnover and profitability. The null hypothesis is thus rejected because there is a significant relationship between the Inventories to Sale ratio aspect of CCC and Returns on Equity/ Profitability.

Secondly, with regards to the Impact of Average Payment Period on Financial Performance of these companies, it was found that the correlation between ROE and ACP gave a positive value of 0.015 which implied that as ACP increased by 1.5%, ROE fell by the same percentage and since the p-value of 0.107 is higher than 0.05, it means that the ACP had no significant influence on the dependent variable (ROE), and is in line the findings of Mwangi (2011). For this reason it is established that for Nigerian health care firms, null hypothesis H_{02} is accepted, that the CCC item of ACP has no significant effect on return on equity.

Thirdly, a look at the impact of Average Collection Period on Financial Performance of these companies showed by their regression results that it has a positive value of 0.0017 which implies that as ACP increase by less than 0.2%, ROE increases with the same percentage and given that the p-value of 0.013 is lower than 0.05, it means that there is a significant relationship between the variables. The null hypothesis is thus rejected to establish that there is a strong effect of payment period on the performance of the quoted healthcare companies in Nigeria.

Fourthly, the results from the table with regards to debt ratio and financial performance (Returns on Equity) of the firms show a not much significant effect as well as a negative and high value of -0.168. It is likewise with FATA which has an insignificant but positive relationship of



0.163 with ROE. So on these two variables, the null hypotheses stating no significant relationships between these variables and financial performance of these firms, are accepted. Therefore, for relationships that are not significant, there are ACP, DRatio and FATA (for which the hypothesis are accepted, while for ACR, ITISD, CCC, and LOS, the relationships are significant (and the null hypothesis rejected).

Table ix Model Summary

Model	R	R ²
	0.8059	0.6495

Source: Generated from Statistic Data Analysis (STATA).

This table ix above highlights the model summary, showing the R^2 value of 0.6495 which indicates that up to 64.95% of the changes in Return on Equity are explained by the independent variables while the remaining 35.05% is explained by other variables other than those contained in the model, justifying the dependability of using the research results in decision making.

SUMMARY

From measuring the degree of association between cash conversion cycle and performance [Inventory Turnover period (in days), Average Payment period (in days), Financial Assets to Total Assets, Current Ratio and Return on Equities of the listed healthcare companies in Nigeria], it was found that Debt Ratio had no significant influence on the financial performance variable (ROE) with a positive correlation of 0.88. Also, Current Ratio had no significant influence on Return on Equity with positive correlation of 0.29. But Financial Assets to Total Assets had a significant influence on financial performance (ROE) with a positive regression of 1.38. Return on Equity negatively but insignificantly associated with key aspects of Cash Conversion Cycle i.e. ITID, ACR and ACP, all in days with correlations of value 0.032, 0.014 and 0.109, respectively. Proper understanding of Cash Conversion Cycle and financial performance is very important as this useful knowledge is necessary for the survival and ultimate growth of companies. Financial

managers have the responsibility of overseeing the cash conversion cycle of an entity and should therefore, make it a handy tool for sound decision making in corporate organisations.

CONCLUSION

Inventory management, sales realization and payables are the three key ingredients of business. If any of these accrue losses in number, value, or frequency, then the business is facing a crisis. Apart from Pharma Deco, all the firms in the study are either facing an early crisis or at the heart of it. Given that a good CCC is reflected by a low Current Ratio and a high Returns on Equity, it follows that the primary way for a business to make more earnings is by boosting sales of inventory for profits. This work has shown that not all the approaches to boost these sales are always right e.g. making cash easily available at regular intervals by borrowing can churn out more sales for profits, but if such borrowing is mainly short term borrowings, the results will be an increase in accounts payable and therefore a poor CCC! (This is intrinsically linked to the debt ratio). Such methods should be avoided. Accounts Receivable (ACR) and Accounts Payable (ACP) normally result from companies selling products and buying same on credit, respectively. Therefore, great care has to be taken in timing for its cash to be collected from its debtors and its payments made to its creditors, because it is only by so doing that an optimal CCC can be attained (which is the point of control of the trade-off between financial performance and level of their cash conversion cycle). Though CCC is not a stand-alone measure of the efficiency by which a company's management is using the short-term assets and liabilities to generate and redeploy cash, it was clear in this study from the CCC values how the financial health of the firms studied was like. The liquidity risks linked to each firm has been expounded. To state it in summary again, the Cash Conversion Cycle variables of Inventory Turnover Period, Average collection period and Average payment period significantly affect the Nigerian healthcare companies. This agrees with Narware (2004), Ganesen (2007), Gill, Biger and Murthur (2010) and Mwangi (2011), but not in line with the works of Falope and Ajilore (2009) and Nyer (2008).



RECOMMENDATIONS

The following recommendations are made:

- i. There should be proper inventory conversion system in these healthcare companies to avoid over- or under-stocking which may result in inefficiency. Managements of these firms should ensure that standards are maintained to stop stock-outs of the inventories.
- ii. In the case of Average collection period, the companies should build relationships with those customers who pay at short notices.
- iii. Concerning of Average payment period, the companies should build relationships with those suppliers who allow long credit time periods.
- iv. A lengthier period can be used than just these five years to see if a different set of results will come out.

Suggestions for Further Research

To enrich knowledge in this area, further researches could be carried out using longer periods of time; more than five years and/or by using more financial and accounting variables than are used here, and/ or using different scales of variable measurements, different tools of analysis and also taking into consideration the prevailing macro-economic situation in the company or country. CCC should differ by industry sector based on the nature of business operations, so for further studies, this fact should be borne in mind.

REFERENCES

- Akinsulire, O. (2006). *Financial Management*. 4th Edition, Ceemol Nigeria Limited.
- Ajilore, T. O. and Falope I. O. (2009). Working Capital Management and Corporate Profitability: Evidence from Panel Data Analysis of Selected Quoted Companies in Nigeria; *Research Journal of Business Management*; 3(3).
- Falope, O. I. & Ajilore, O. T. (2009). 'Working Capital Management and Corporate Profitability: Evidence from Panel Data Analysis of Selected Quoted Companies in Nigeria.' *Research Journal of Business Management* 3(3): 73 – 84.

- Ali, S. S. (2011). Liquidity Risk and Liquidity Management in Islamic Banks – Current Issues in Islamic Finance.
- Ali, U. (2009). The Relationship of Cash Conversion Cycle with firm size and profitability: An empirical investigation in Turkey; *International Research Journal of Finance and Economics*.
- Arnold, G. (2008). Corporate financial management. 4th Ed, Pearson Education Limited. Harlow: Prentice Hall.
- Brigham, E. F. & Houston J. F. (2002). Fundamentals of Financial Management; South-Western Corporation, Cengage Learning, USA.
- Gentry, James A. R, Vaidyanathan & Hei W. L. (1990). "A Weighted Cash Conversion Cycle," *Financial Management*, Spring Publishers, 90-99.
- Gill, A., Biger, N., & Mathur, N. (2010). The Relationship between Working Capital Management and Profitability: Evidence from the United States. *Business and Economics Journal*, 2010, 1-9.
- Gitman, L. J. (1976). Principles of managerial finance, New York: Harper and Row Publishers, 148.
- Gitman, L., & Sachdeva, K. S. (1982). A Frame-Work for Estimating and Analyzing the Required Capital Investment. *Review of Business and Economic Research*. 77 (3), 36-44.
- Gitman, L. J. (1984). Estimating Corporate Liquidity Requirements: A Simplified Approach. *The Financial Review*; 79 -88.
- Gitman, L. J., Forrester, D. K., & Forrester, J.R. (1976). Maximizing cash disbursement floats. *Financial Management*; 15-24.
- Gitman, L. J., Moses, E. A., & White, I.T (1979). An assessment of Corporate Cash Management Practices. *Financial Management*, 5(1); 32-41.
- Horne, J., & Wachowitz, J. M. (1998). Fundamentals of Financial management 10th ed. New Jersey: Education Prentice-Hall International, Incorporation.
- Hornigren, C. T., Datar, S. M., & Foster, G. (2003). Cost Accounting 11th ed. India: Dorling Kindersley Private Ltd. *Journal of Business Finance & Accounting*, 30 (3&4), 573-587.



- Hutchison, P. D. Farnis, M. T. & Anders, S. B. (2007), "Cash to cash analysis and management", *The CPA Journal*, 77 (8); 42-47.
- Huynh, N. (2011). The influence of working capital management on profitability of listed companies in the Netherlands. University of Twente, s1062980.
- Kwasi, S.K. (2010). Working capital management and firms performance. An Analysis of Ghanaian oil marketing firms, INTEQ. GH. Tel: 233-205600002/233-24-9276087.
- Murtala, Z., Sani S. (2016). The Impact of Cash Conversion Cycle on Firm Profitability: Evidence from Nigerian Listed Telecommunication Companies. *Journal of Finance and Accounting*, 4(6); 342-350.
- Mwangi, M. (2011). Discussion on Internet Exchange Point in Africa, Senior Manager for Access and Development at the Internet Society. *American Journal of Educational Research*, 6 (6), 586-591
- Narware (2004). Impact of Working Capital Management Policies on Corporate Performance—An Empirical Study, *Global Business Review* 8(2):267-281.
- Nigerian Stock Exchange (2012, December). *Monthly Press Release*.
- Nigerian Stock Exchange (2013, December). *Monthly Statistical Bulletin*.
- Nigerian Stock Exchange (2014, December). *Monthly Press Release*.
- Nigerian Stock Exchange (2015, December). *Monthly Press Release*.
- Nigerian Stock Exchange (2016, December). *Monthly Press Release*.
- Padachi, K. (2006). Trends in Working Capital Management and its Impact on Firm's Performance: An Analyses of Mauritian Small Manufacturing Firms. *International Review of Business Research*. 2 (2), 45 – 58.
- Pandey, I. M. (2005). Financial Management Theory and Practice 3rd Edition Tayame Publishing Company Ltd New Delhi Indian.
- Panigrahi, A. K. (2013). Liquidity Management of Indian Cement Companies: A Comparative Study. *IOSR Journal of Business and Management*, 14, 49-61. <https://doi.org/10.9790/487X-1454961>
- Usama (2012) Working Capital Management and its Effect on firm's Profitability and Liquidity : in other Food Sector of (KSE) Karachi Stock Exchange, *Arabian Journal of Business and Management Review* 1(12)

Warnes (2013). The Effect of Cash Conversion Cycle on the Profitability of listed Nigerian Conglomerate Companies; *International Journal of Accounting, Finance and Business*, 1 (2).