THE COMPANY'S PROFITS ARE FALLING AND THERE IS A BUILD-UP OF INVENTORY WITHIN THE PRODUCTION PROCESS. EVIDENCE OF BRALIRWA LTD, RWANDA 2013-2019

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ABSTRACT

This paper was conducted for examining the significance of build-up inventory within a company's production process as a tool of recovering falling profit. Evidence was made to Bralirwa Ltd for its production performance in the last 7 years (2013-2019). Descriptive statistics methods were used (presentation of data as values, growth rate, average, shares and ratios) and correlative design was also used (correlation between inventory and profits). The researcher has used SPSS and Ms Excel for data compilation and analysis (mainly the organization of tables and figures). For hypothesis testing, the researcher has used both bivariate and linear regression analysis. The study findings have resulted that the cost of raw materials are negatively impacting profits as it contributed -26.6% to RONA, -32.7% NP and -52.2% to EBIT respectively and it is not statistically significantly correlated to both indicators of profitability. This negative correlation is again between profitability indicators to Non-returnable packaging costs and spare parts costs as well as costs of work in progress (-30.4% to EBIT). Meaning that, for increasing falling down profit in the company's production process, there is a need to reduce or to manage as well as possible the costs of raw materials, work in progress, non-returnable packaging and spare parts costs. Findings of this study have again shown that to ensure that falling down the profit of the company was taken up growing, there is need to manage finished goods, goods for resale and other inventories. Finished goods contributed 18.4% to RONA, 30.3% to NP and 62.8% to EBIT. GFR contribute 10.5% to RONA, 17.5% to NP and 18.2% to EBIT and Other Inventories (OI) contribute 93.1% to RONA and 85.7% NP. However other inventories (as not all defined) may negatively affect the EBIT (-15.9%). All in all, it is true that once a company's profits are falling, there is a build-up of inventory within the production process. Meaning that, for a company to ensure that profits are increasing over the years they should ensure proper management of inventories mainly minimization of cost of production and operational expenses. Companies also could ensure that goods for customers' needs are available regularly in good and sufficient quality and quantity.

Keywords: Company's profit; Falling; build-up; inventory; production process; Bralirwa Ltd; Rwanda.

1.0 INTRODUCTION

A company recognize company profit falling down once the difference between total sales (revenues) to total purchases plus expenses from previous years is not increasing (Pandey, 2005).

There are different ways to build up a company's profit growth which include inventory management in the production process and sales management (Prempeh, 2015). Inventories of the company are referred to the value of raw materials, finished goods or stock for use and work in progress (WIP) all available or their quantity to sustain the production process of the company (Eberendu et al., 2017). James (2016), has studied the effects of inventory control on the profitability of joint firms or industries in Kenya, the findings registered that inventory control practices are positively and statistically significantly correlated to joint firms or industrial profit and this was explained by the R2 value of 0.361 and P-value of 0.000 meaning that, the share of the independent variable was 36.1% to dependent variable while remaining 63.9% is signified by other factors not captured by his model (James, 2016).

No doubt that the vital to make successful functioning of a company or a firm is inventoried, to ensure that functions of the business company are stable and creating increasing profit management of inventory takes a great part. Poorly managed inventories contribute to the falling process of profit or loss and well-managed inventories also make the reverse (Ennis K. & Shin S., 2019). The main goal of the company is profit. The source of the profit is sold goods and services by the company. Without the profit, the company can close, and the management feels unhappy and called to pay attention once the profit falls down year to year. To increase the profit, the company ensure and increase the goods or services sold. But also profitability is not a single source, it can be provided by numerous operations within the company and each could not be denied in favour of others (Nasution A.A., 2020).

Carlson (2020), the most common reason for changes in inventory levels changes in total sales. Usually, lower inventories point to quicker sales, whereas a buildup in inventory levels indicates a slowing sales pace. Gross profits equal net sales minus the cost of goods sold. If the business in question sells its products at a profit, in other words, the profit margin is positive, faster sales mean more gross profits while slower sales result in a decline in gross profits. Therefore, if the depletion or buildup in inventories is the result of a change in the sales pace, and the firm has a positive profit margin, lower inventories will mean higher gross profits, while higher inventories will result in lower gross profits (Carlson, 2020).

Reference to the study conducted by Popa et al. (2014), a well-managed inventory system in the production process of the company results in an increase in customers, sales and ultimately profits. The success of a company's business is the outcome of its ability to provide services to customers or users and remain financially viable. Inventory plays the role of holding customers, keeping the company in the production process and keeping the company's function available all the time (Popa, A. E., & Ciobanu, R., 2014). Literature (Kakeeto et al., 2017) shows that cost savings and revenues are realized from proper inventory management. Literature also informs that a company should cut down the total

expenses by at least 2% through better inventory management and distribution of finished goods (Kakeeto et al., 2017). This study intends to assess and ensure that the following hypotheses are valid or not:

Null hypothesis: In the production process, inventories could not be significant for building up a falling company's profit.

Alternative hypothesis: In the production process, inventories could be significant for building up a falling company's profit.

2.0 MATERIALS AND METHODS

This study is both descriptive and correlative design. It is based on descriptive statistics consisting of the growth rate, percentages, average and mean values for indicators representing profit change and change of inventory of Bralirwa Ltd from 2013 to 2019. It is correlative as it intends to evaluate the correlation between inventory and profit of the company. The information or data are all secondary sourced data mainly from various authors' publications and the Bralirwa Annual report. The tool used for data collection is desk review as all information were available from the company's website and all other publications were available on the internet in addition to the researcher's reasoning capacity. This tool of data collection is significant in this period where all the world implements measures against the spread of the COVID-19 pandemic. Data were presented in both formats, graphs and tables modified from the original report sources. Calculations were made while calculating growth rate, shares, average and correlation coefficients with as support of Ms Excel and SPSS (Statistical Package for a social scientist). The following indicators were taken for assessing profit change of Bralirwa Ltd 2013 to 2019:

Return on Asset (ROA) = Net Income (NI)/ Total Assets (A)

Return on Equity (ROE) = Net Income (NI)/ Stakeholders Equity (SE)

Indicators for evaluating inventory of Bralirwa Ltd change 2013 to 2019:

Analysis of inventories values was made to growth in last years (7 years) on Raw materials, Work in progress, Finished goods, Goods for resale, Non-returnable packaging, Spare parts, Other inventories, and Provision for spare parts. Analysis of correlation was made using the following models:

The study adopts Linear Regression models. This stand with the analysis of linear correlation from time series data on both indicators of variables (independent and dependent variable). The simple linear regression model stands from y = a + bx where "a" represent the coefficient and b represent the intercept. The extension of the liner mode is as follows (Shyti, 2018):

$$Y_{(1;2\&3)} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \varepsilon$$

Where "y1;2&3" reflect 2 indicators of the dependent variable (EBIT as % of Gross Revenue, ROA and ROE) and X1 to X2 mean all 8 indicators combined to provide total

inventories of Bralirwa Ltd. Bivariate correlation also was made for assessing at each level the correlation and statistical significance level. Bivariate correlation analysis gives two parameters of measurement (1) Pearson correlation which lay between -1 to +1 and shows either the correlation is positive or negative as well as strong or weak, (2) P-value (which is significant at 0.05) confirming whether tested variables are statistically significant or not (Anggraeni, 2017).

3.0 RESULTS

Results were presented as existing values for Bralirwa Ltd profitability indicators and inventories. The assessment is based on the observation of values year by year and analysis of average and growth rate. In the end, there was a statistical analysis used for testing the study hypothesis.

### 3.1 Variation of Bralirwa Ltd sales, assets, equity and profit from 2013 to 2019

Table 1: Change of values for Bralirwa Ltd Profitability indicators 2013-2019

Profitability Indicators (Frws'000)	2013	2014	2015	2016	2017	2018	2019	Average
Total Assets	91,537,000	102,462,000	122,883,000	131,740,000	127,729,000	134,801,000	121,741,000	118,984,714
Equity	32,311,730	35,991,789	35,383,213	31,638,250	35,690,923	39,076,216	34,610,902	34,957,575
Gross Profit	27,900,000	26,951,000	26,176,000	25,676,000	26,275,000	32,793,000	34,877,000	28,664,000
Net Profit	15,459,000	11,394,000	7,106,000	1,398,000	5,079,000	7,242,000	1,192,000	6,981,429

Source: Bralirwa Ltd Annual Report, 2013-2019

Table 1 shows the changes that happened from profitability indicators of Bralirwa Ltd 2013 to 20219. From 2013 to 2019 Bralirwa Ltd net profit was not changed in a regular way, there was an increase and drop in profits from one year to another. Here below is figure 1 showing the Growth rates per each indicator of profitability (Bralirwa Ltd, 2020). Net profit is the main indicator for profitability assessment. Bralirwa Ltd based on the observation for the last 7 years has a capacity of earning around an average of 6.9 billion Rwandan francs per year, average growth profit also for the last 7 years is around 28.6 billion, equity is around 34.9 billion and total assets are around 118.9 billion Rwandan francs.

Figure 1: Growth rate of Bralirwa Ltd net profit from 2013 to 2019
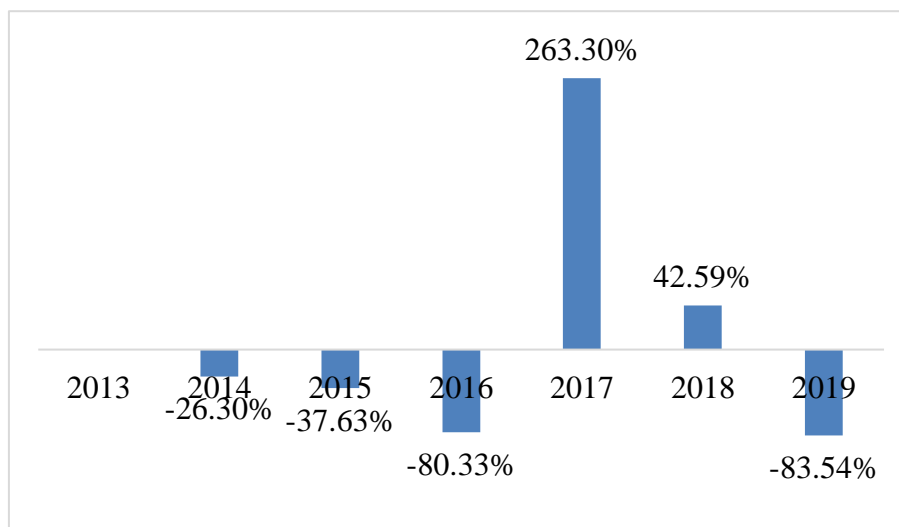
As seen from figure 1, Bralirwa Ltd net profit was falling for the following years, 2013-2014 (-26.3%), from 2014 to 2015 (-37.63%), from 2015 to 2016 (-80.33%) and from 2018 to 2019 (-83.54%). Only for two cases or years does the net profit increase.

3.2 Variation of Bralirwa Ltd inventories from 2013 to 2019

Every year the company (Bralirwa Ltd, presents inventory associated with numerous items such as raw materials, work in progress, finished goods, goods for resale, non-returnable packaging, spare parts, other inventories and provision for spare parts.

**Table 2: Change of inventories from 2013 to 2019 (Bralirwa Ltd)**

Inventories (Rwfs'000)	2013	2014	2015	2016	2017	2018	2019	Average
Raw materials	8,291,122	6,867,732	7,722,659	9,875,269	7,309,867	7,723,403	7,726,931	7,930,998
Work in progress	1,712,548	2,161,213	1,811,496	738,298	1,088,858	1,386,669	1,456,760	1,479,406
Finished goods	338,727	991,303	1,059,759	1,436,785	1,316,950	1,201,568	715,737	1,008,690
Goods for resale	397,628	626,882	724,744	934,370	1,386,558	208,976	86,681	623,691
Non-returnable packaging	1,700,697	1,103,318	1,268,804	1,429,296	1,616,323	1,978,204	2,595,047	1,670,241
Spare parts	3,390,403	3,923,605	4,833,740	7,247,762	7,179,411	6,203,924	5,898,110	5,525,279
Other inventories	2,030,991	2,233,982	1,586,451	1,437,378	1,172,631	1,253,779	1,056,790	1,538,857
Sub-total	**17,862,116**	**17,908,035**	**19,007,653**	**23,099,158**	**21,070,598**	**19,956,523**	**19,536,056**	**19,777,163**
Provision for spare parts	-	-	-	-1,002,113	-625700	-	-1059109	-895641
Total Inventories	**17,862,116**	**17,908,035**	**19,007,653**	**22,097,045**	**20,444,898**	**19,956,523**	**18,476,947**	**19,393,317**

Source: Bralirwa Ltd Annual Report, 2013-2019

Bralirwa Ltd inventories were increased from 2013 to 2019 but for in-between years, the increase was not regular. It was mixed upward and downward sloping. The average yearly value of Bralirwa inventories is around 19.3 billion Rwandan francs which are composed of 7.9 billion raw materials (41% share of total inventory), 1.4 billion working capital (8%), 1 billion finished goods (5%), 0.6 billion goods for resale (3%), 1.6 billion non-returnable

packagings (9%), 5.5 billion spare parts (28%), 1.5 billion of other inventories (8%) and minus 0.8 billion Rwandan francs of provision for spare parts (equivalent to -5%). Here below, is the trend for inventory growth rate within Bralirwa Ltd from 2013 to 2019 (Bralirwa Ltd, 2020).

Figure 2: Growth rate of Bralirwa Ltd inventory from 2013 to 2019
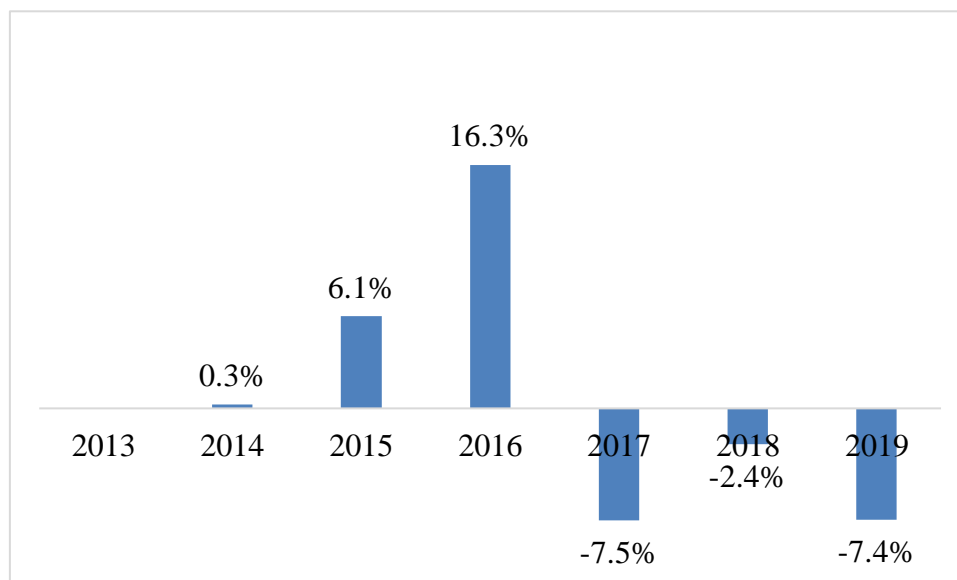
Bralirwa Ltd inventories were increased year by year from 2013 to 2016, were in the first range increased at 0.3% (2013-2014), 6.1% (2014-2015), 16.3% (2015-2016) and for the period beyond 2016 the growth rate of inventory was negative but less than 10% as it shows -7.5% by 2016-2017, -2.4% for the year 2017-2018 and -7.4% for the year 2018-2019.

3.3 Test of inventory significance for building-up falling down profit in company's production process.

In this section, the researcher has presented both results, ratios, bivariate correlation analysis results and findings on the equation models.

Table 3: Profitability ratios for Bralirwa Ltd 2013 to 2019

Important ratios	2013	2014	2015	2016	2017	2018	2019
EBIT as % of Gross Revenue	19%	14%	10%	13.70%	17.00%	18.60%	10.60%
Net Profit as % of average shareholders' equity	44%	32%	20%	4.40%	14.20%	18.50%	3.40%
Net Debt/EBITDA	53%	88%	181%	185.20%	149.20%	154.10%	168.70%
EBITDA/Interest expenses (times covered)	55%	9.10%	2.60%	211.90%	331.00%	382.30%	314.30%
RONA	31%	25%	11%	2.00%	7.20%	10.40%	2.10%

Important ratios	2013	2014	2015	2016	2017	2018	2019
Cash conversion Rate	-54%	11%	-65%	185.00%	11.30%	-108.70%	161.80%
Dividend Payout (% of net profit)	50%	68%	72.40%	73.50%	75.90%	78.10%	86.30%

Source: Bralirwa Ltd Annual Report, 2013-2019

As seen from table 3, Bralirwa has recognized positive net profit as % of average shareholder's equity but which is not constantly increasing from 2013 to 2019. It is reducing from 44% to 32% (2013-2014), 32% to 20% (2014 to 2015), from 20% to 4.4% (2015-2016), and increased from 4.4% to 14.2% (2016-2017), increased again from 14.2% to 18.5% (2017-2018) and later again reduced from 18.5% to 3.40% (2018-2019). Return on net assets (RONA) also was followed the same way for the same period where for example decreased from 31% to 25% (2013-2014) and again reduced from 10.4% to 2.10% for last years (2018-2019). The same trend was also followed by EBIT (Earnings Before Income Tax) as % of Gross Revenues from 2013-2019. This is in line with profit decline in the same period.

Linear Regression Model equations:

(1) EBIT as % $GR = 51.405 - 1.196RM - 1.045WIP + 2.799FG - 1.495GFR + 0.865OI$

(2) $RONA = 16.584 - 1.023RM + 0.470WIP + 2.575FG - 0.952GFR + 2.490OI$

(3) NP as % of average $SE = -8.006 - 0.896RM + 2.500WIP + 6.495FG - 0.777GFR + 0.879OI$

Keys: EBIT: Earnings Before Income Tax; GR: Gross Revenues; RM: Raw Materials; WIP: Work in Progress; FG: Finished Goods; GFR: Goods for Resale; OI: Other Inventories; NP: Net Profit; SE: Shareholder's Equity; NRP: Non-returnable packaging and SP: Spare parts.

The analysis of linear equation has rejected two indicators (Non-returnable packaging and Spare parts) and from the remaining five indicators of Bralirwa Ltd inventory growth, the findings confirm that (1) there is a negative relationship between earnings before income tax (EBIT) as a percentage of gross revenues to raw materials, work in progress, goods for resale and there is a positive relationship of it to finished goods and other inventories. (2) RONA has a negative relationship with RM, GFR and has a positive relationship with WIP, FG and OI while (3) Net Profit as % of average shareholders' equity (ROE) has a negative relationship with RM and GFR and it has a positive relationship with WIP, FG and OI.

With the linear regression model, it ensures that one unit change of independent variable (one of five mentioned above: RM, WIP, FG, GFR and OI) lead to a change of its coefficients times the existing value of a dependent variable (any of three mentioned above) in addition to the existing value.

Table 4: Correlation values

		RONA	NP as % of average SE	EBIT as % of GR	RM	WIP	FG	GFR	NRP	SP	OI
RONA	r	1	.972**	.129	-.266	.838*	.184	.105	-.451	-.799	.931**
	p-value		.001	.807	.610	.037	.728	.843	.369	.056	.007
NP as % of average SE	r	.972**	1	.200	-.327	.799	.303	.175	-.491	-.727	.857*
	p-value	.001		.704	.527	.056	.559	.740	.323	.102	.029
EBIT as % of GR	r	.129	.200	1	-.522	-.304	.628	.182	-.090	.451	-.159
	p-value	.807	.704		.288	.558	.182	.730	.866	.369	.764
RM	r	-.266	-.327	-.522	1	-.132	-.125	-.384	-.112	-.235	.027
	p-value	.610	.527	.288		.803	.813	.452	.833	.654	.960
WIP	r	.838*	.799	-.304	-.132	1	-.309	-.217	-.082	-.896*	.828*
	p-value	.037	.056	.558	.803		.551	.680	.878	.016	.042
FG	r	.184	.303	.628	-.125	-.309	1	.659	-.769	.179	.084
	p-value	.728	.559	.182	.813	.551		.155	.074	.734	.874
GFR	r	.105	.175	.182	-.384	-.217	.659	1	-.727	.142	.093
	p-value	.843	.740	.730	.452	.680	.155		.102	.789	.861
NRP	r	-.451	-.491	-.090	-.112	-.082	-.769	-.727	1	.351	-.538
	p-value	.369	.323	.866	.833	.878	.074	.102		.496	.271
SP	r	-.799	-.727	.451	-.235	-.896*	.179	.142	.351	1	-.927**
	p-value	.056	.102	.369	.654	.016	.734	.789	.496		.008
OI	r	.931**	.857*	-.159	.027	.828*	.084	.093	-.538	-.927**	1
	p-value	.007	.029	.764	.960	.042	.874	.861	.271	.008	
	N	6	6	6	6	6	6	6	6	6	6

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

*. Correlation is significant at the 0.05 level (2-tailed).

The findings from bivariate analysis confirm that raw materials are negatively correlated to Return on Net Assets (-26.6%) and this correlation is not statistically significant as the p-value is greater than 0.05 (is 0.610). Raw materials also are negatively correlated to NP ratio and EBIT ratio at -32.7% to -52.2% respectively. Work in Progress (WIP) is positively correlated to RONA at 83.8% and this correlation is statistically significant (p=0.037<0.05), it is also positively correlated to NP ratio at 79.9% however in between correlation is not statistically significant (p=0.056>0.05), and is negatively correlated to EBIT rate at -30.4% with non-statistical significance (p=0.558>0.05). Finished Goods (FG) is positively correlated to RONA at 18.4% and the correlation is not statistically significant (p=0.728>0.05), it is also positively correlated to NP ratio at 30.3% (p=0.559>0.05) and positively correlated to EBIT at 62.8% (p=0.182>0.05).

Goods for Resale (GFR) is positively correlated to RONA at 10.5% and the correlation is not statistically significant (p=0.843>0.05), it is also positively correlated to NP ratio at 17.5% (p=0.740>0.05) and positively correlated to EBIT at 18.2% (p=0.730>0.05).

Non-returnable packaging (NRP) is negatively correlated to RONA at -45.1% and the correlation is not statistically significant (p=0.369>0.05), it is also negatively correlated to NP ratio at -49.1% (p=0.323>0.05) and negatively correlated to EBIT at -9% (p=0.866>0.05).

Spare parts (SP) is negatively correlated to RONA at -79.9% and the correlation is not statistically significant (p=0.056>0.050), it is also negatively correlated to NP ratio at -72.7% (p=0.102>0.05) and positively correlated to EBIT at 45.1% and the correlation is not statistically significant (p=0.369>0.05).

Other Inventories (OI) are positively correlated to RONA at 93.1% and the correlation is statistically significant (p=0.007<0.050), it is also positively correlated and statistically significant to NP ratio at 85.7% (p=0.029<0.05) however negatively correlated and not statistically significant to EBIT at -15.9% (p=0.764>0.05).

Reference to the study results, the researcher takes an opportunity to confirm the alternative hypothesis and failure to accept the null hypothesis. Now it is confirmed that in company's production process while profit falling down, the management could focus on finished goods, goods for resale and other inventories and take care with raw materials costs, work in progress costs, minimize also non-returnable packaging costs and spare parts costs. With maximum respect of all these, the profit will going up for the company's business.

4.0 DISCUSSIONS

The study findings have resulted that the cost of raw materials are negatively impacting profits as it contributed -26.6% to RONA, -32.7% NP and -52.2% to EBIT respectively and it is not statistically significantly correlated to both indicators of profitability.

This negative correlation is again between profitability indicators to Non-returnable packaging costs and spare parts costs as well as costs of work in progress (-30.4% to EBIT). Meaning that, for increasing falling down profit in the company's production process, there is a need to reduce or to manage as well as possible the costs of raw materials, work in progress, non-returnable packaging and spare parts costs. This study findings ensure a complement to the results of the assessment made by Choudhari (2018) as confirmed that for a company to maximize profit (as the main motive of a company in the production process), the main tool is to minimize production costs and expenses (Choudhari, 2018).

Findings of this study have again shown that to ensure that falling down the profit of the company was taken up growing, there is need to manage finished goods, goods for resale and other inventories. Finished goods contributed 18.4% to RONA, 30.3% to NP and 62.8% to EBIT. GFR contribute 10.5% to RONA, 17.5% to NP and 18.2% to EBIT and Other

Inventories (OI) contribute 93.1% to RONA and 85.7% NP. However other inventories (as not all defined) may negatively affect the EBIT (-15.9%). This is also complemented in one way or another and true to the findings of Ahmed (2016) while assessing the effect of inventory management on the overall financial performance of a company. He finds that inventory management is significant to the profitability of the company, in the other words once a company ensure efficient inventory management, it will increase the profits. Thus, companies could be sure that finished goods are available in good condition for regular supply to customers (Ahmed, 2016).

All in all, it is true that once a company's profits are falling, there is a build-up of inventory within the production process. Meaning that, for a company to ensure that profits are increasing over the years they should ensure proper management of inventories mainly minimization of cost of production and operational expenses. Companies also could ensure that goods for customers' needs are available regularly in good and sufficient quality and quantity.

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