

Using Balanced Scorecard for Measuring “Baghdad Soft Drinks Company” Performance

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ABASRACT

To expand and to achieve a market share, companies must have a clear policy to achieve their goals, and that cannot be done without measuring their performance from different perspectives and views because the financial perspective only cannot give a right view.

Balanced Scorecard (BSC) is one of the performance measurement systems, and it is suitable measurement system that determines the performance, by the integration of all the financial and nonfinancial measures.

The BSC was implementing in “Baghdad Soft Drinks Company” with its four perspectives for three years (2011 to 2013). The conclusions of BSC showed that for financial perspective the company has a clear growth according to the financial perspective measure's percentages, for customer perspective: the irregular percentage values of customer perspective measures indicate that the company needs to be more interactive with their customer requirements. But for internal business process perspective the company almost committed to the planned production, and has a good utilization and efficiency percentages, and for learning and Growth perspective the percentages explain the company does not commit to the budget-costs as planned.

Keywords: Performance measure, Balanced Scorecard- (BSC), Financial Perspective, Customer Perspective, Internal Business Perspective, Learning and Growth Perspective.

INTRODUCTION

Any organization most have a clear strategy to outline where an organization wants to go and how it's going to get there, that's happened by writing the mission and vision statements of the organization, these statements are the words leaders use to explain an organization's purpose and direction.

BSC has been launched more than twenty years ago as a first set of principles for balanced strategic objectives and measures key performance indicators (KPI's) setting and measurement. The “parents” of BSC are Dr. Robert S. Kaplan, Baker Foundation Professor at Harvard Business School and Dr. David P. Norton, the founder of the consulting team that contributed over the past two decades to the development of BSC into today's integrated and aligned management system [1].

The BSC expands the general concept to major four perspectives to measure the performance. These four perspectives are financial perspective, customer perspective, internal business process perspective, and learning and growth perspective.

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The term "Scorecard" signifies quantified performance measures and "Balanced" signifies that the system is balanced between [2]:

- Short-term objectives and long-term objectives.
- Financial measures and non-financial measures.
- Lagging indicators and leading indicators.
- Internal performance and external performance perspectives.

G. Markus, in his research shows that the industrial companies can methodologically increase their production performance by finding losses and there links by BSC [3], **Toong Khuan Chan, and Poh Tin Hiap**, has pointed out that the critical success factors and strategic thrusts have covered all four perspectives of the BSC with a strong emphasis on the Learning and Growth perspective but are deficient in their focus on customer management [4], while **Adil Chriyha, Zitouni Beidouri, et. al.**, provide key points for the establishment of a performance system for Moroccan textile industry, which based on the BSC [5].

Balanced Scorecard Framework

There are four main BSC perspectives according to Kaplan and Norton, the financial, customer, internal process and learning and growth perspectives.

Financial Perspectives:

Kaplan and Norton do not disregard the traditional need for financial data. Timely and accurate funding data will always be a priority, and managers will do whatever necessary to provide it. In fact, often there is more than enough handling and processing of financial data [6].

Return on Investment (ROI):

Return on investment ROI; is the most common profitability ratio. There are several ways to determine ROI, but the most frequently used method is to divide net profit by total assets [7].

$$ROI = \frac{\text{Net Profit}}{\text{Total Asset}} \dots\dots\dots (1)$$

Return on Equity (ROE):

Return on equity, or ROE, is a measure of profitability that calculates how many dollars of profit a company generates with each dollar of shareholders' equity [8].

$$ROE = \frac{\text{Net Profit}}{\text{stockholder equity}} \dots\dots\dots (2)$$

Revenue Growth (RG):

Revenue growth illustrates sales increases/decreases over time. It is used to measure how fast a business is expanding. More valuable than a snapshot of revenue, revenue growth helps investors identify trends in order to gauge revenue growth over time [7, 9].

$$\text{Revenue Growth} = \frac{\text{Revenue current year}}{\text{Revenue last year}} - 1 \dots\dots\dots (3)$$

Profit Margin:

A ratio of profitability calculated as net income divided by revenues, or net profits divided by sales. It measures how much out of every dollar of sales a company actually keeps in earnings [10].

$$\text{Profit Margin} = \frac{\text{Net profit}}{\text{Total Sales}} \dots\dots\dots (4)$$

Quick Ratio (QR):

An indicator of a company's short-term liquidity, the quick ratio measures a company's ability to meet its short-term obligations with its most liquid assets. For this reason, the ratio excludes inventories from current assets, and is calculated as follows [8]:

$$\text{Quick ratio} = \frac{\text{current assets-inventories}}{\text{current liabilities}} \dots\dots\dots (5)$$

A common rule of thumb is that companies with a quick ratio of greater than 1.0 are sufficiently able to meet their short-term liabilities.

Customer Perspectives

Recent management philosophy has shown an increasing realization of the importance of customer focus and customer satisfaction in any business. These are leading indicators: if customers are not satisfied, they will eventually find other suppliers that will meet their needs. Poor performance from this perspective is thus a leading indicator of future decline, even though the current financial picture may look good [7].

Advertisement

The advertisement schedule adherence reflects the percentage of company's commitment to the planned advertisement cost [11].

$$\text{Advertisement Schedule Adherence} = \frac{\text{Actual Advertisement cost}}{\text{Scheduled Advertisement cost}} \dots\dots\dots (6)$$

Marketing Growth

The marketing growth ratio explains the growth comparing to the previous year or to specific year (based year) [7, 9].

$$\text{Marketing Growth} = \frac{\text{Marketing current year}}{\text{Marketing last year}} - 1 \dots\dots\dots (7)$$

Internal Business Process Perspective:

This perspective refers to internal business processes. Metrics based on this perspective allow the managers to know how well their business is running, and whether its products and services conform to customer requirements (the mission) [6].

Production Schedule Adherence

When production over or below the plan, either service level or inventory investment is adversely affected. Assertive continuous improvement programs should be in place to decrease the variance. The following equation is used for this purpose [11].

$$\text{Production Schedule Adherence} = \frac{\text{Actual Production}}{\text{Scheduled Production}} \dots\dots\dots (8)$$

Production Growth Rate

The production growth ratio explains the growth comparing to the previous year or to specific year (based year) [7, 9].

$$\text{Production Growth Rate} = \frac{\text{Current Production} - \text{Previous Production}}{\text{Previous Production}} \dots\dots\dots (9)$$

Efficiency

It is a level of performance that describes a process that uses the lowest amount of inputs to create the greatest amount of outputs. Efficiency relates to the use of all inputs in producing any given output [12].

$$\text{Efficiency} = \frac{\text{Actual Output}}{\text{Effective Capacity}} \times 100 \% \dots\dots\dots (10)$$

Utilization

A metric is used to measure the rate at which potential output levels are being met or used [12].

$$\text{Utilization} = \frac{\text{Actual Output}}{\text{Design Capacity}} \times 100 \% \dots\dots\dots (11)$$

Wastivity

Wastivity of any system can be defined as the ratio of total waste generated to the total input to that system [13].

$$\text{Wastivity} = \frac{\text{Total Waste generated}}{\text{Total Input}} \dots\dots\dots (12)$$

Learning and Growth Perspective:

This perspective includes employee training and corporate cultural attitudes related to both individual and corporate self-improvement [6].

Translating and Dispatching

The translating and dispatching adherence reflects the percentage of company's commitment to the planned translating and dispatching cost [11].

$$\text{Translating and Dispatch Schedule Adherence} = \frac{\text{Actual Cost}}{\text{Scheduled Cost}} \dots\dots\dots (13)$$

Research and Experiment

The Research and Experiment adherence reflects the percentage of company's commitment to the planned Research and Experiment cost [11].

$$\text{Research and Experiment Schedule Adherence} = \frac{\text{Actual Cost}}{\text{Scheduled Cost}} \dots\dots\dots (14)$$

Data Gathering and Calculations

Data were collected from the company for three years (2011, 2012 and 2013) and a based year 2010 for the comparison since BSC is a performance measures system and strategic tool to help the top manager to draw their future plan, were all financial activities and production operations were recorded, although some data were unavailable. The company have two factories (Al-Furat factory consist of four production lines, and Dijla factory consist of three production lines) and it produces a different material types and flavors: (Pepsi cola, Miranda, Seven Up, Miranda green apple, Pepsi Cola diet, Shani, Miranda lemon, Mountain dew, etc.) of different sizes.

Financial Perspective

The financial activities and performance has been calculated according to the equations from 1 to 5, where figure (1-a) showed the ROI, figure (1-b) showed ROE, figure (2) showed Revenue growth, figure (3-a) showed profit margin, figure (3-b) showed quick ratio.

Customer perspective

The customer activities and performance has been calculated according to the equations 6 and 7, where figure (4) showed the advertisement schedule adherence, figure (5) showed marketing growth.

Internal business perspective

The internal business activities and performance has been calculated according to the equations from 7 to 12, where figure (6) showed yearly production scheduling adherence, figure (7) showed production growth rate, figure (8) showed efficiency, figure (9) showed utilization, table (1 to 4) showed waste production and waste time calculation for production line (1, 2, 3, 4, 5 and 8).

Learning and growth perspective

The learning and growth activities and performance has been calculated according to the equations 13 and 14, where figure (10) showed the advertisement schedule adherence and figure (11) showed marketing growth.

Results Discussion

It can be notice as shown in figure (1-a) that the ROI increases yearly which indicates the height of the adequacy of the company to achieve profits resulting from investments in total assets and an indicator of the health of the investment decisions. And noticed the ROE as shown in figure (1-b) percentage is increasing too so the company has a good decision making in increasing the profit yearly for the owners.

For revenue growth ratio it is decreasing as shown in figure (2); this decreasing does not mean that there is no growth, but this difference occurred according to the based year (2010) because there are significant changes in the plant and increase production due to activated new lines. This ratio gives an indication of the effectiveness of the sales department and the extent of accrued revenue growth of the company's sales during successive years.

The profit margin increases yearly as shown in figure (3-a) so the high percentage indicates the adequacy of the company's management to achieve profits results from the product marketing, and can be notice as shown in figure (3-b) that low or decreasing quick ratios generally suggest that a company is over-leveraged, struggling to maintain or grow sales, paying bills too quickly or collecting receivables too slowly so the company sufficiently able to meet their short-term liabilities.

The cost of advertisement is contrast as shown in figure (4), this decline shows the lack of company interest in this aspect, and in addition the PepsiCo-INT does not allow only their international advertisement to be broadcast on TV. The PepsiCo- INT forced the company to

introduce prizes In Ramadan on 2011 and 2012 to win a car and the second year to win an electronic devices (laptop, LCD TV, etc.) and that advertisement broadcast on TV were not planned, and its cost is more twice, in 2013 there are agreement about the advertisement payment.

There is an irregular percentage in marketing growth as shown in figure (5), it was because the company did not pay attention for the marketing in 2011, at the end of 2012, Baghdad Soft Drinks Company has complete and operate soft drinks distribution project and sale Al-Fountain devices and accessories and installation services in restaurants, hotels and clubs, so that why the growth increase in 2012, and they bought cars fleet for marketing distribution.

The production scheduling adherence for year 2013 as shown in figure (6) was higher than the previous years, committed to the required scheduling planning for that year.

From figure (7 A) the calculation considered for previous year so the growth percentages were decreasing yearly-but still there was growth as shown in figure (7 B) which the calculation based on year 2010; explain the yearly growth which reach to 23% for year 2013 .

The efficiency is fluctuating for all products as shown in figure (8) and its scaling for product 250 ml/can up to 129.7% in year 2011, product 1.75 L/PET up to 115.9% in year 2013 and 750 ml PET up to 108.9% in year 2012 and 253.6% in year 2013. It is noticed that the efficiency is higher than 100% that's due to the improvement work in some production lines to reach values more than the designed capacity.

The utilization as shown in figure (9) was fluctuating for all products and it's escalating for product 750 ml PET up to 190.26% in 2013.

According to the tables (1, 2, 3 and 4) the calculations has showed that:

- There is no clear relationship between the wastivity and time waste, it is noticed that the wastivity occurred for two reasons, first due to the raw materials may not compatible with the specifications (sometimes the production line need to be adjusted), or sometimes the company increase the production lines speed which leads to increase the wastivity.

- The wastivity percentage does not exceed 1% and this is still within the acceptable percentage .

- In general it is noticed that the wastivity increase in summer months, this is due to production line speed.

- The production line (8) has higher wastivity percentage this is due to there is no good work environment, the hot temperatures for each the employees and the production line and because bad lighting system.

In 2011 the percentage is (111.7%) means the actual translating and dispatch costs are more than the planned costs due to sending number of engineers for training in Germany about devices maintenance. When any new product is produced, samples are sent to be inspected, for example, samples of gas containers of (CO₂) are sent to check for purity. Sometimes new cans are tested in the production line with water instead of syrup, so this cost is added to researches and experiments costs.

Conclusions and Recommendations

From the calculations and reports derived from BSC implementation, it can be conclude that:

1. The main problem of the Baghdad Soft Drinks Company is the lack of clear strategy; this is because the company depended on PepsiCo INTL. planning strategy.
2. Here is no clear written vision and mission statement by "Baghdad Soft Drinks Company, so top managers have no clear goals to achieve, this lead to miss achieving all the goals and this also lead to misunderstanding by their employees too.
3. The company has no idea about BSC system, but it measures some indicators of financial and internal process perspectives such as utilizations, gross margin profit, so the company has the basis to implement BSC.
4. Applying BSC system will improve the company's performance measurement system for other perspectives (not only financial perspectives) that committed to company's strategy.

5. Results from BSC implementation can be shown as numerical values and numerical percentages. For the four perspectives the percentages in this study formula are used to indicate the increase and decrease percentages.
6. The company has a problem in updating the information and activities documentation.
7. The BSC results shows that:
 - Financial perspective: Company has a clear growth according to the financial perspective measures percentages.
 - Customer perspective: the irregular percentage values of customer perspective measures indicate that the company needs to be more interactive with their customer requirements.
 - Internal business process perspective: company almost committed to the planned production, and has a good utilization and efficiency percentages.
 - Learning and Growth perspective: the percentages explain the company does not commit to the budget- costs as planned.

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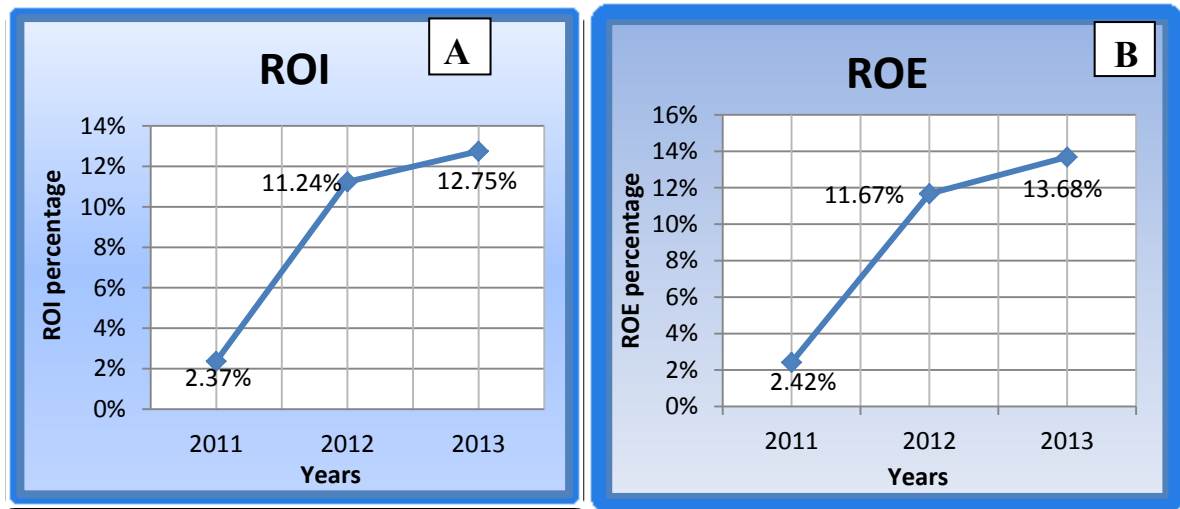


Figure (1) a- ROI, b- ROE

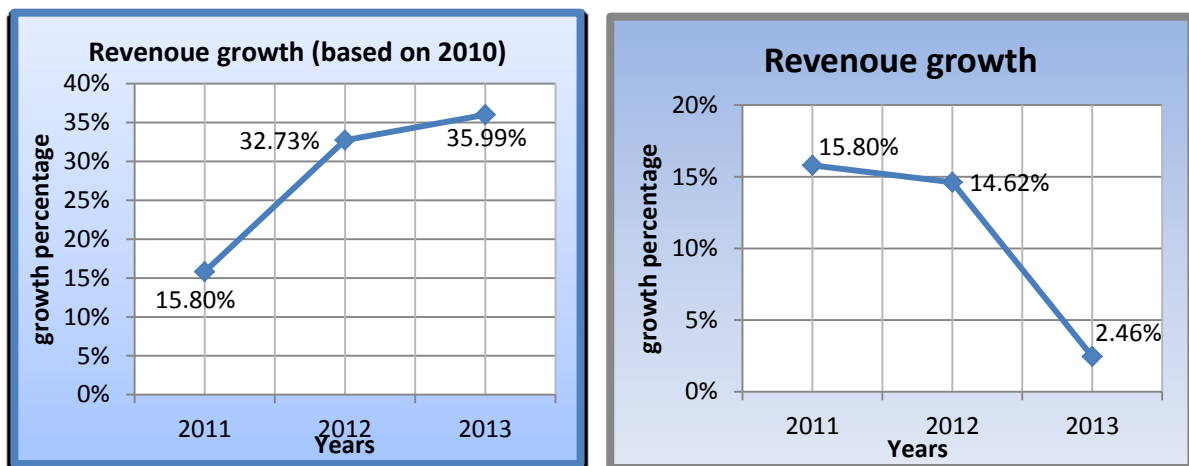


Figure (2) Revenue Growth

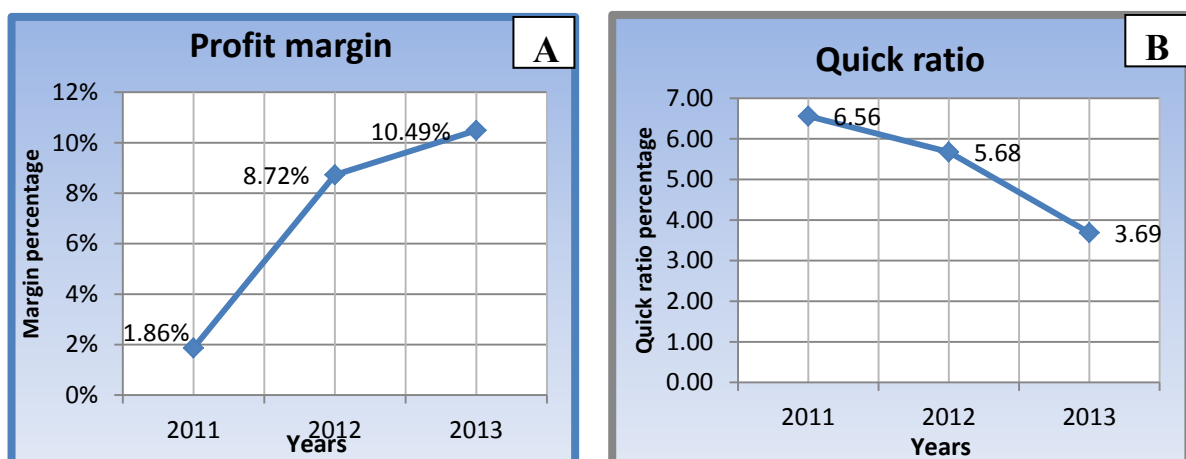


Figure (3) a- Profit margin, b- Quick ratio

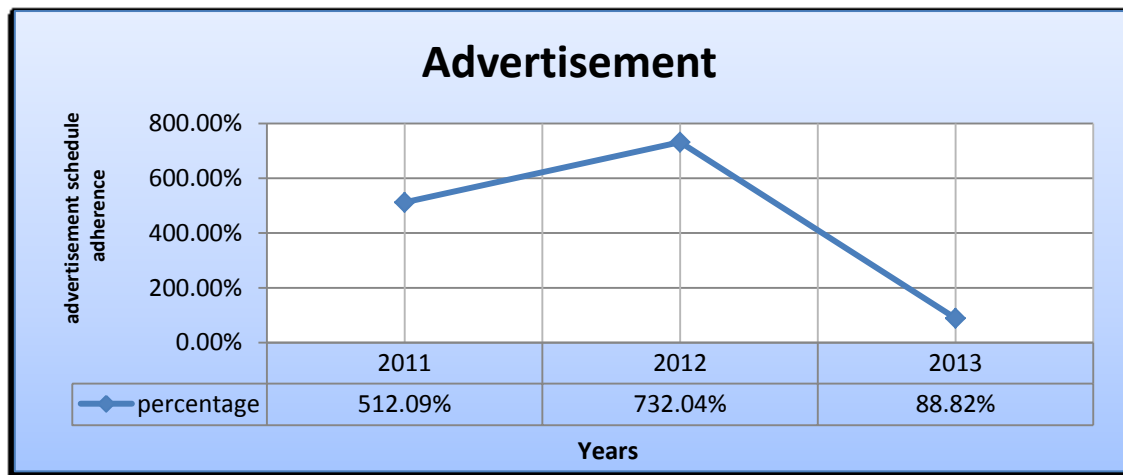


Figure (4) schedule adherence advertisement



Figure (5): Marketing growth percentage

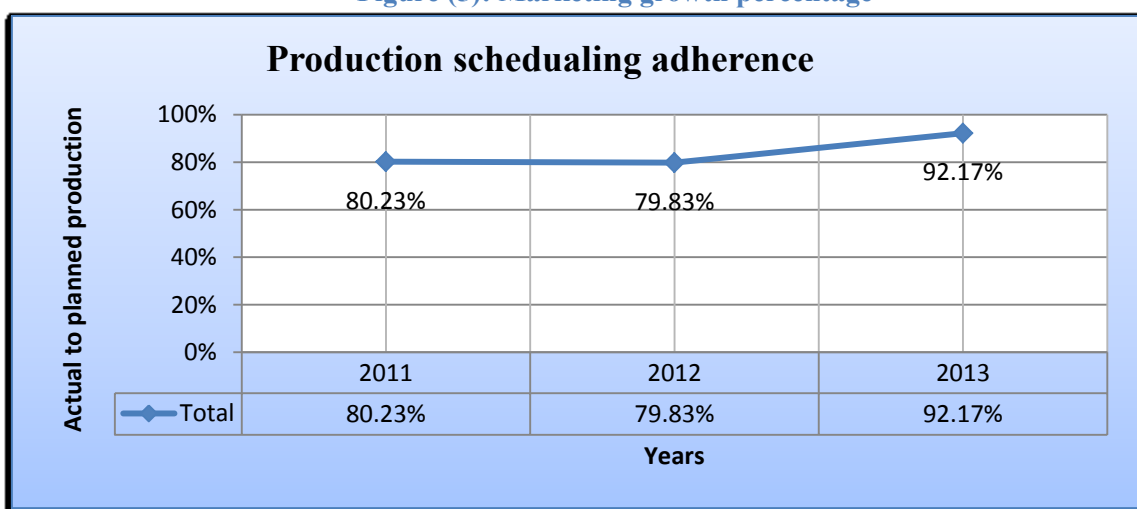


Figure (6): Yearly Production scheduling adherence

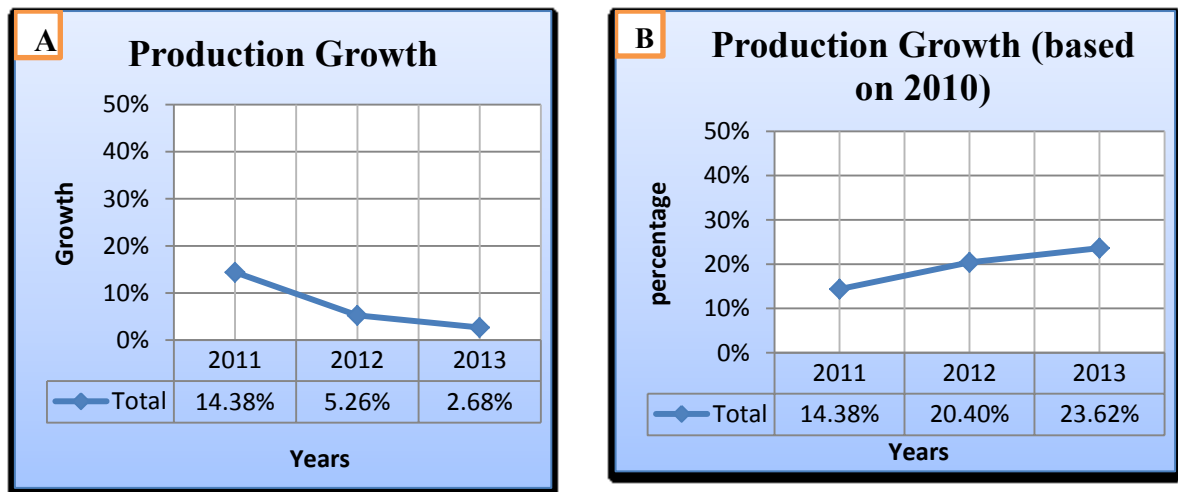


Figure (7): production growth rate



Figure (8): Efficiency

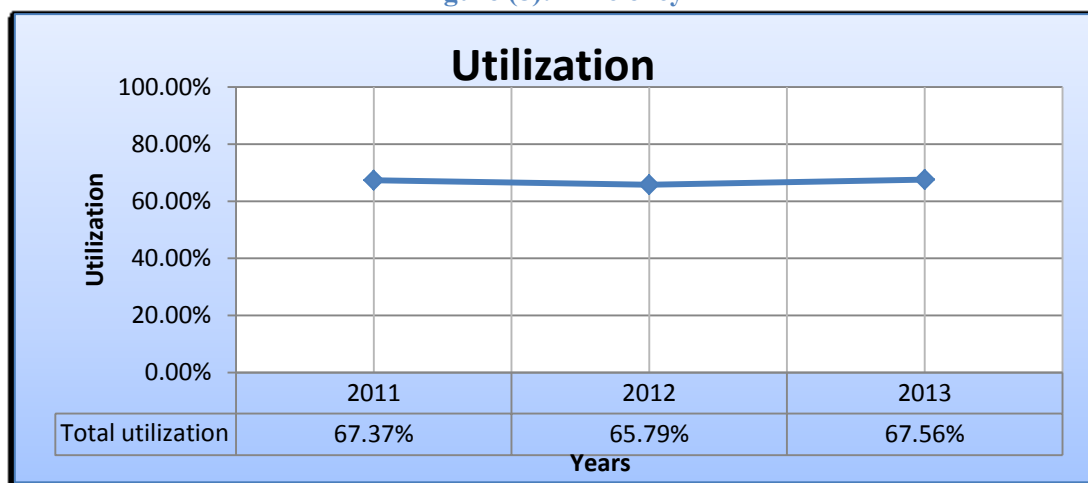


Figure (9): Utilization

Table (1) Waste Production and Waste Time Calculation for Production line (1)

Month	Production Line 1			
	150 ml Can		250 ml Can	
	Wastivity	Waste Time	Wastivity	Waste Time
1			0.15%	4.11%
2	0.16%	7.10%	0.18%	2.84%
3			0.19%	6.50%
4			0.16%	5.48%
5			0.16%	8.00%
6			0.19%	6.22%
7	0.31%	3.79%	0.22%	4.67%
8			0.25%	12.33%
9			0.21%	8.62%
10			0.21%	8.44%
11			0.25%	6.46%
12			0.26%	7.23%
Sum	0.21%	5.26%	0.20%	7.06%

Table (2) Waste Production and Waste Time Calculation for Production line (2)

Month	Production Line 2			
	250 ml Can		330 ml Can	
	Wastivity	Waste Time	Wastivity	Waste Time
1	0.31%	3.80%	0.26%	1.75%
2	0.30%	5.68%	0.21%	0.49%
3			0.19%	6.98%
4			0.11%	4.59%
5			0.20%	5.40%
6	0.32%	1.55%	0.19%	5.07%
7			0.16%	5.55%
8			0.21%	10.87%
9			0.18%	6.89%
10			0.18%	6.45%
11			0.20%	6.03%
12			0.26%	7.45%
Sum	0.31%	4.21%	0.19%	6.66%

Table (3) Waste Production and Waste Time Calculation for Production line (3 and 4)

Month	Production Line 3		Production Line 4	
	Wastivity	Waste Time	Wastivity	Waste Time
1	0.62%	0	0.24%	3.38%
2	0.31%	0.41%	0.20%	2.34%
3	0.43%	0.31%	0.26%	2.51%
4	0.26%	1.34%	0.19%	1.24%
5	0.27%	0.45%	0.20%	1.38%
6	0.29%	0.74%	0.17%	0.23%
7	0.22%	0.97%	0.18%	3.67%
8	0.31%	7.23%	0.24%	9.50%
9	0.32%	1.37%	0.28%	2.10%
10	0.29%	0	0.15%	0.81%
11	0.23%	0	0.18%	0
12	0.39%	0	0.19%	0
Sum	0.29%	1.53%	0.20%	2.74%

Table (4) Waste Production and Waste Time Calculation for Production line (5 and 8)

Month	Production Line 5		Production Line 8	
	1.25 L PET		RB & NRB	
	Wastivity	Waste Time	Wastivity	Waste Time
1	0.10%	0.87%	0.53%	0
2	0.06%	1.58%	0.40%	0
3	0.20%	4.52%	0.54%	0.32%
4	0.09%	4.65%	0.49%	1.39%
5	0.07%	3.65%	0.34%	0.75%
6	0.03%	2.23%	0.38%	0
7	0.03%	5.05%	0.42%	1.27%
8	0.05%	8.45%	0.39%	6.85%
9	0.07%	2.98%	0.44%	0
10	0.04%	1.63%	0.14%	0
11	0.05%	0.00%	0.11%	0
12	0.05%	1.18%	0.13%	0
Sum	0.07%	3.61%	0.36%	1.28%

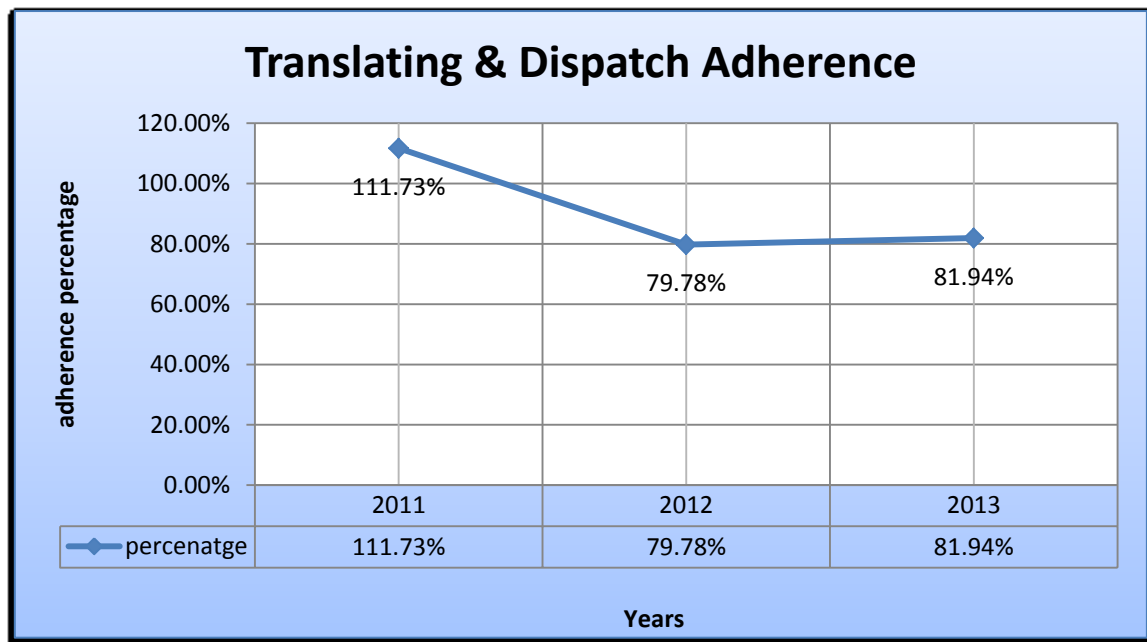


Figure (10) Translating and dispatch adherence

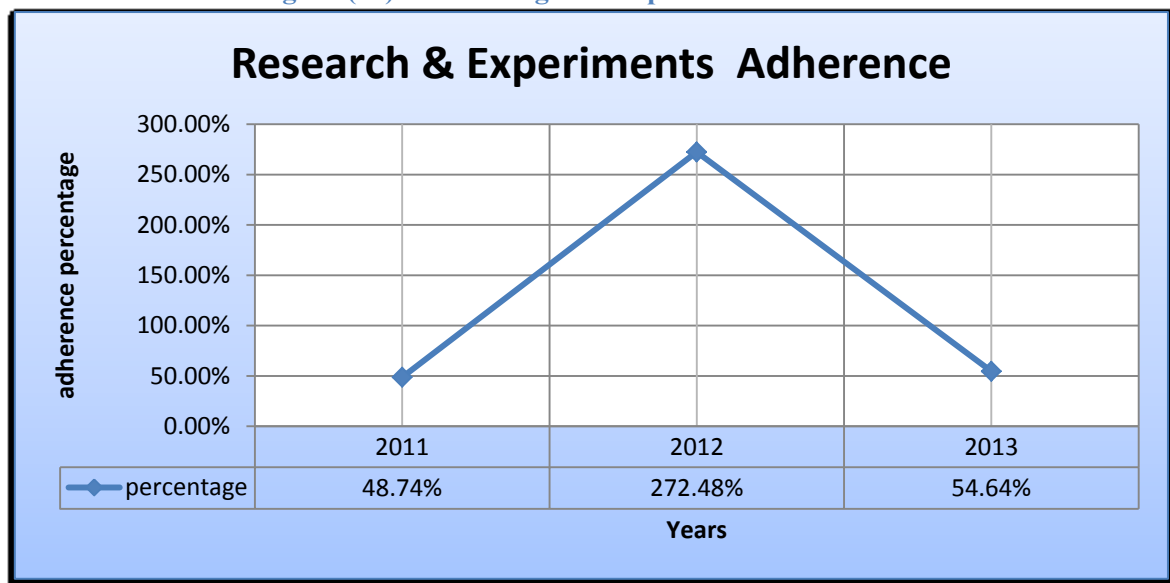


Figure (11): Research and experiment adherence