

BDM PROJECT MID TERM SUBMISSION

Submitted by:

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Sri Lakshmi Venkateshwara Mobiles

EXECUTIVE SUMMARY:

Selling mobile part spares and repairing mobiles are the services offered by Sri Lakshmi Venkateshwara mobiles. It is a B2C business model. Getting damaged items, products having more price fluctuations, finding more unsold products are the problems faced by the shopkeeper. Try to solve the problems faced by him by using the past data got by him, by analysing the sales, revenue and implementing some excel tools like pivot tables and VLOOKUP and Data visualization. Evidence of authenticity was provided by a letter of authorisation, a excel file holding primary data, a video and photograph taken at the shop. Data was collected based on weekly basis. Meta data and descriptive statistics were described separately for each product.

Continuing the analysis of data using some statistical principles like volume pareto analysis, revenue pareto analysis etc., Explaining the frequency distribution of the products sold during the period and visualise each product's share in sales in particular week. And then visualise the required data based on the problems to solve it. Visualise the profits made by him on charts and try to find the trend in the data. And finally highlighting the solutions to problems faced by him and explaining the insights and results.

PROOF OF ORGINALITY:

The primary data collected is saved in the spreadsheet: [Link to primary data](#)

I am in Raipur, but vendor in Srikakulam, Andhra Pradesh I interact with them in online. So, I am unable to submit the interaction video with him. But this video shows the shop and the products he selling: [Vendor Shop Video](#)

Additional photographs of the shop is included in this link: [Additional Photographs](#)

Vendors visiting card: [Visting card](#)

METADATA AND DESCRIPTIVE STATISTICS:

After getting the consent, the data was collected. The data was observed to pertain to the period of October 2022 to December 2022, consisting of 3 months of data. Upon subsequent study, the following metadata was observed. It was comprised of a heading row, 72 rows of data and 10 columns of data. The spreadsheets columns and their contents are explained in below table.

Name of Column	Type of data	Description of data
Week	Categorical, text	It tells about the which week of that month
Product	Categorical, text	Name of the product he sold
Buying Price	Numerical, integer	Price of the product bought by the shopkeeper on that week
Selling Price	Numerical, integer	Price of the product sold by the shopkeeper on that week
In stock	Numerical, integer	No of units of the product he bought on that week
Out stock	Numerical, integer	No of units of the product he sold on that week
Unsold items	Numerical, integer	No of units of the product that are unsold
Total In stock	Numerical, integer	No of units of the product are ready to sell (Unsold items + In stock)
Damaged Items	Numerical, integer	No of units of the product that are defected

The data was collected based on weeks not on daily basis because he takes the stock on weekly basis. He sells six different types of products. They are: a) Ear Phone, b) Mobile cases c) Screen Guards, d) Bluetooth Devices, e) Mobile Chargers, f) Cables. Each product has its own variables (by selecting the specific product we want in header option). So, each product has its own descriptive statistics. Below tables describes the descriptive statistics of each product briefly.

Descriptive statistics of Mobile Chargers:

	Buying Price	Selling Price	In Stock	unsold+new	Out Stock	Damaged Items	Unsold Items
Mean	100	140.00	6.33	12.50	5.50	0.17	6.83
Median	100	140	5.5	12.5	5	0	7.5
Mode	90	130	10	15	5	0	5
Std Deviation	8.53	8.53	4.87	2.61	3.85	0.39	2.44
Variance	72.73	72.73	23.70	6.82	14.82	0.15	5.97
Range	20	20	15	5	13	1	8
1st Quartile	90	130	0	10	0	0	2
3rd Quartile	90.00	130.00	0.00	10.00	0.00	0.00	2.00
4th Quartile	90.00	130.00	2.75	10.00	2.75	0.00	5.00

Descriptive statistics of Mobile Cases:

	Buying Price	Selling Price	In Stock	unsold+new	Out Stock	Damaged Items	Unsold Items
Mean	82.5	122.50	20.92	23.50	20.58	0.33	2.58
Median	80	120	21	25	21	0	1.5
Mode	80	120	20	25	18	0	1
Std Deviation	4.52	4.52	4.46	2.68	3.37	0.49	2.97
Variance	20.45	20.45	19.90	7.18	11.36	0.24	8.81
Range	10	10	17	7	11	1	10
1st Quartile	80	120	10	20	14	0	0
3rd Quartile	80.00	120.00	10.00	20.00	14.00	0.00	0.00
4th Quartile	80.00	120.00	19.75	20.00	18.00	0.00	0.75

Descriptive statistics of Bluetooth Devices:

	Buying Price	Selling Price	In Stock	unsold+new	Out Stock	Damaged Items	Unsold Items
Mean	274.1666667	374.17	1.83	5.25	1.50	0.00	3.75
Median	280	380	1.5	5	1.5	0	4
Mode	250	350	0	5	2	0	4
Std Deviation	22.75	22.75	1.75	0.62	1.00	0.00	1.06
Variance	517.42	517.42	3.06	0.39	1.00	0.00	1.11
Range	50	50	5	2	3	0	3
1st Quartile	250	350	0	5	0	0	2
3rd Quartile	250.00	350.00	0.00	5.00	0.00	0.00	2.00
4th Quartile	250.00	350.00	1.00	5.00	1.00	0.00	3.00

Descriptive statistics of Cables:

	Buying Price	Selling Price	In Stock	unsold+new	Out Stock	Damaged Items	Unsold Items
Mean	40	60.00	24.92	25.92	24.42	0.50	1.00
Median	40	60	25	25.5	24.5	0	1
Mode	40	60	20	30	28	0	0
Std Deviation	0.00	0.00	4.21	3.80	4.44	0.67	1.04
Variance	0.00	0.00	17.72	14.45	19.72	0.45	1.09
Range	0	0	11	10	13	2	3
1st Quartile	40	60	19	20	17	0	0
3rd Quartile	40.00	60.00	19.00	20.00	17.00	0.00	0.00
4th Quartile	40.00	60.00	20.00	22.00	20.75	0.00	0.00

Descriptive statistics of Ear Phones:

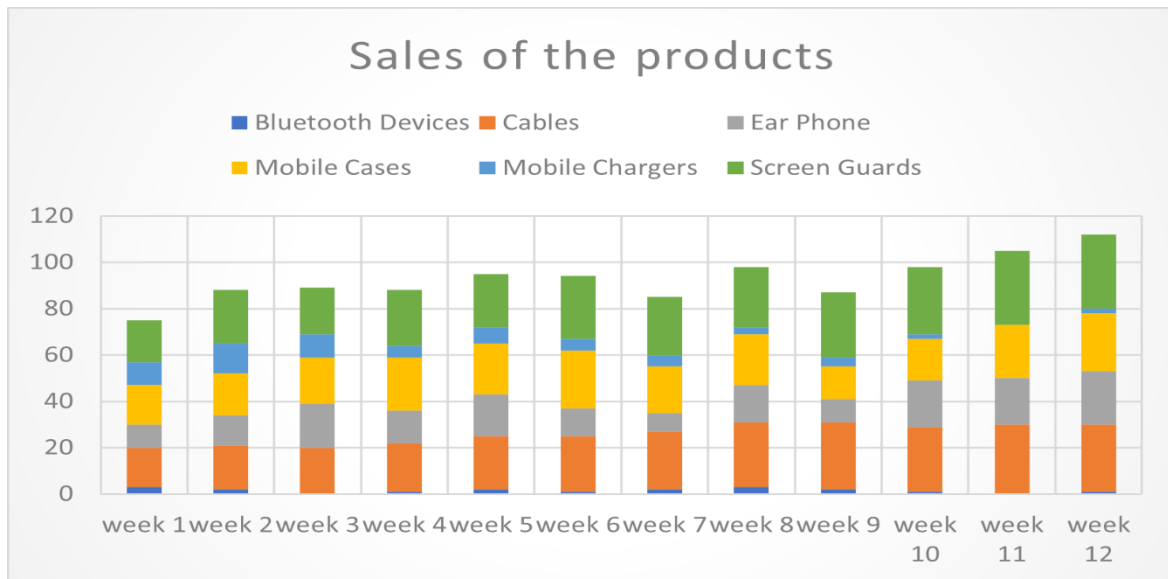
	Buying Price	Selling Price	In Stock	unsold+new	Out Stock	Damaged Items	Unsold Items
Mean	73.75	104.58	15.92	20.00	15.25	0.67	4.08
Median	72.5	102.5	15.5	20	15	0	3
Mode	70	100	15	20	10	0	0
Std Deviation	5.69	5.42	4.80	2.13	4.79	1.07	4.29
Variance	32.39	29.36	22.99	4.55	22.93	1.15	18.45
Range	20	15	17	10	15	3	12
1st Quartile	65	100	8	15	8	0	0
3rd Quartile	65.00	100.00	8.00	15.00	8.00	0.00	0.00
4th Quartile	70.00	100.00	12.75	20.00	11.50	0.00	0.00

Descriptive statistics of Screen Guards:

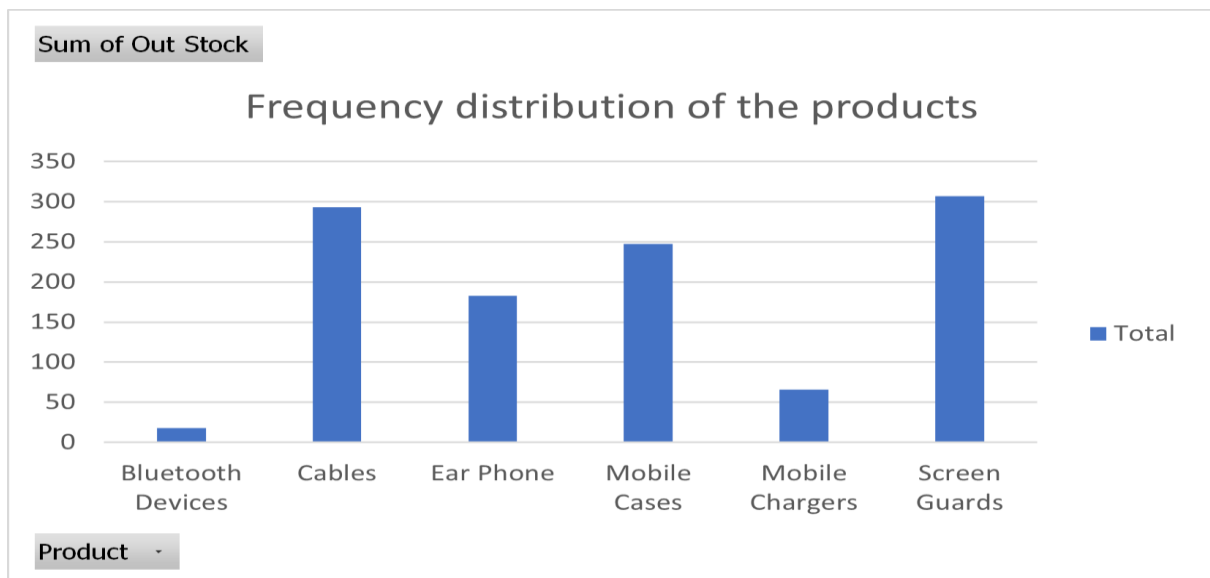
	Buying Price	Selling Price	In Stock	unsold+new	Out Stock	Damaged Items	Unsold Items
Mean	52.92	94.17	27.50	28.75	25.58	1.92	1.25
Median	50	90	28	30	25.5	2	1
Mode	50	90	25	25	23	1	1
Std Deviation	3.96	5.15	4.23	3.77	4.34	1.16	1.29
Variance	15.72	26.52	17.91	14.20	18.81	1.36	1.66
Range	10	10	13	10	14	4	4
1st Quartile	50	90	21	25	18	0	0
3rd Quartile	50.00	90.00	21.00	25.00	18.00	0.00	0.00
4th Quartile	50.00	90.00	24.75	25.00	23.00	1.00	0.00

Percentiles of buying price, selling price in every product almost same because there is no so much change in price. In products like cables the price is almost constant throughout the period.

For this dataset, with use of pivot table, constructed a stacked column chart to show how segments of a whole change over time. It tells about each product's share in sales in particular week. From this chart, concluded that sales of Screen Guards and cables contributes the major portion in total sales of products. Sales of Bluetooth devices are very low when compared to others. The below figure shows the sales of the products per week.



And also, we have to know frequency distribution of each product about its stock. With use of excel, made the frequency distribution for each product in these 12 weeks. He sold screen guards in very large quantity when compared to others, after that he sold cables. And then mobile cases, ear phones, mobile chargers and bluetooth devices. The following Bar chart shows the distribution of the sold products in all weeks.



ANALYSIS PROCESS AND METHODS:

4.1 COLLECTION:

To briefly summarise the data collection process, collected the data based on weeks not on daily basis. Sri Lakshmi Venkateshwara Mobiles, owned by Simhadri Sairam, was characterised by business to consumer model (B2C). This project is based on data collected from him. Generally, it is not an organized firm so they wouldn't maintain the data, then note down the data by asking him about his sales, profits, prices of products, find the products which gives more profit and average stock he taken every week. This data will be used to solve the problem statement mentioned in proposal. Average stock of each product he taken every week is needed to find the damaged products and to find the unsold products. This data will be collected through personal meeting through online. In first meeting, introduction was made. In second meeting, problem statement was decided. In third, data needed to solve the business problem is collected for analysis.

4.2 CLEANING:

As the data was manually entered with care, most forms of error were avoided. In MS EXCEL, data validation feature was used to ensure that data type of each column remains consistent. And also, when collecting the data, he is not clear about some variables in some weeks, treated them as missing values and filled them with most repeated value in some cases or filled with mean values in some cases based on its property.

4.3 ANALYSIS:

[Link to the proof of work](#)

Volume pareto analysis: It is statistical technique says that 80 percent of the volume generates from 20 percent of the products. To check this, we performed required operations by using Pivot Table.

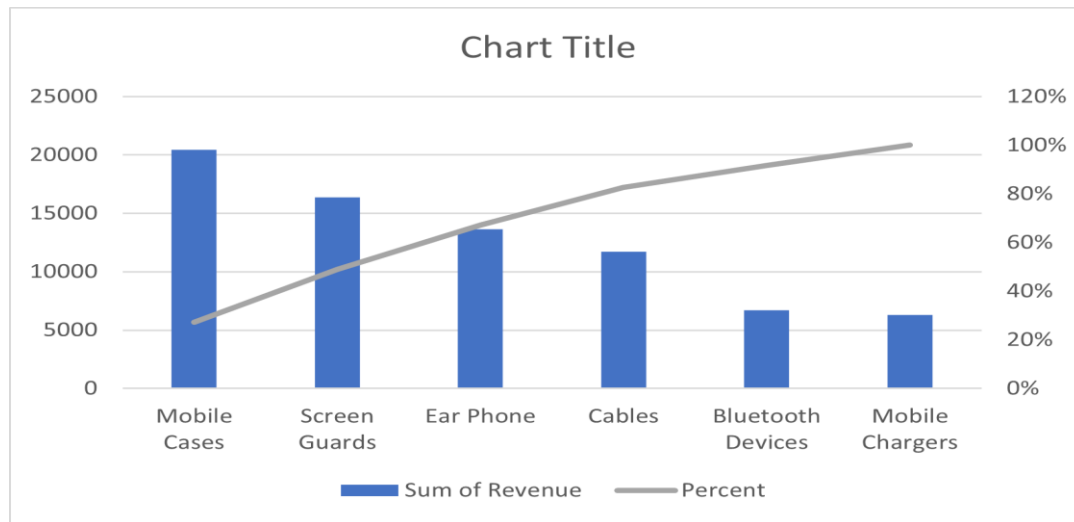
Row Labels	Sum of Out Stock		
Screen Guards	307	307	28%
Cables	293	600	54%
Mobile Cases	247	847	76%
Ear Phone	183	1030	92%
Mobile Chargers	66	1096	98%
Bluetooth Devices	18	1114	100%

Here we see the volume pareto analysis of the products in above table, 20 percent of the six products means is one product. By observing the above table, nearly 80 percent of volume sold out from three products. This analysis says that only 20% of products (one product) needed, but here three products contribute to 80 percent of volume. So, volume pareto analysis was not worked. Screen guards, cables and mobile cases contributes 80 percent of the volume of stock sold.

Revenue Pareto analysis: It is statistical technique says that 80 percent of the Revenue generates from 20 percent of the products. To check this, we performed required operations by using pivot table.

Row Labels	Sum of Revenue		
Mobile Cases	20430	20430	27%
Screen Guards	16365	36795	49%
Ear Phone	13635	50430	67%
Cables	11720	62150	83%
Bluetooth Devices	6680	68830	92%
Mobile Chargers	6300	75130	100%
		75130	

Above table shows the revenue pareto analysis of the data, here 80 percent of the revenue comes from the 4 products namely Mobile cases, Screen guards, Ear phone and cables, but here 20 percent means only one product. So, here also the principle does not hold. Below chart is the visualisation of revenue pareto analysis of this data.



Along with pareto analysis we did the trend analysis on profit and sales. And also perform analysis to each product separately by using data to find the trends in the profit, volume and revenue etc..., Try to find the solutions to the business problem by using pivot tables and visualisation tools in excel.

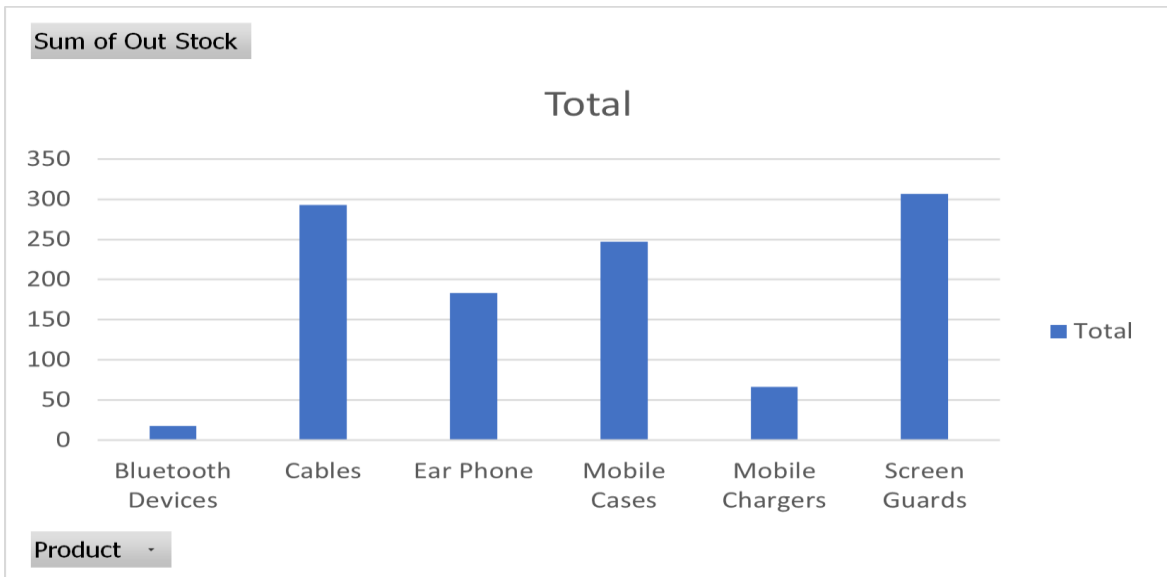
Analysis for finding the solution to business problem mentioned in proposal form:

- Analysis was done to find the product which gets damaged frequently by visualise the count of damaged products in each product vs product in bar chart.
- Analyse the sales data by pivot table to find the less sold products in given time period.
- Visualise the price changes of each product in various charts to find the most price fluctuated product.
- Analyse the profits of each product to find the product having more profits in given time period.

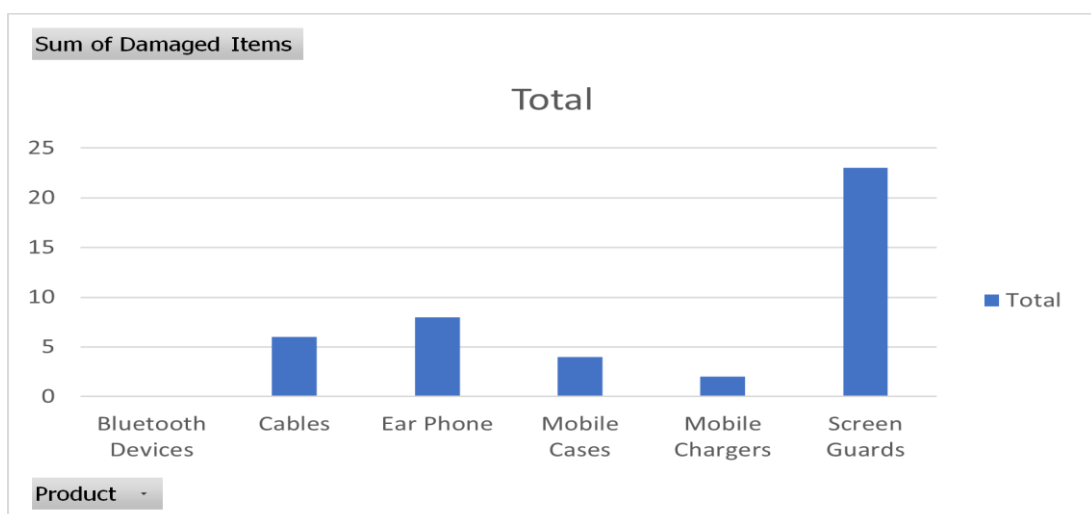
5. Results and Findings:

- By performing revenue pareto analysis on the given data, the principle does not hold.
- And also, in volume pareto analysis, the principle does not work out.

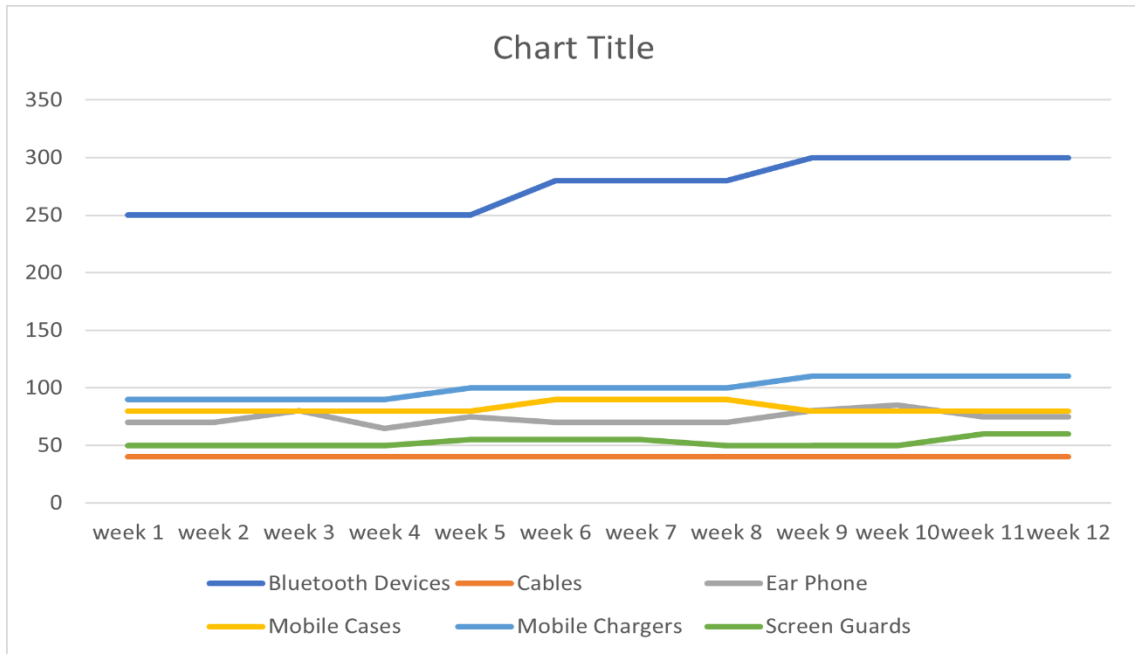
- Screen Guards is the product category, which is getting more damaged products found by visualising the data in Bar chart. Because it is very sensitive product, maybe it gets damaged in travel and logistics. After that ear phones and cables. Below chart shows the frequency of damaged items in each product category.



- Screen Guards is the most sold product category, because it is the guard to mobile screen and also it gets damaged frequently. So, it gets sold frequently. After that, he sold the cables and then mobile cases. From below bar chart, we found that Bluetooth devices are less unsold product category because its high-cost product.



- Coming to price fluctuations, Bluetooth devices, earphones and mobile cases are products whose price changes frequently. Cables is the only product having constant price in the given time period. Below chart shows the price fluctuations of each product separately.



- Profit is the important in every business. Here, the below chart describes the contribution of each product in overall profit he gained. Screen guards is the most profit giving product and then mobile cables. And then Bluetooth devices is the last because it is low sales product, but its margin high when compared to other products.

