

## ***A Study on Sales Performance Optimization with the Special Reference to a Retail Airport Apparel Store Chain***

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### ***Abstract***

*The retail apparel industry has been increased tremendously in recent days. Due to the competition in the retail stores, the sales of the stores need to be increased. The primary objective of this study is to identify and differentiate products selling in high and low quantities and values and forecast the sales for the first quarter of the next year. The secondary objective of this study is to provide recommendations to the company to improve the sales. The project focuses on the analysis of the sales of the apparel retail store and to increase the sales. The statistical analysis like Percentage Analysis, Linear Regression Analysis, Forecasting analysis, Advance chart analysis, Z score, Advanced chart analysis using Tableau is done in the project. Based on the results, the suggestions are given to the company to increase the sales.*

***Keywords:*** *Sales performance optimization, Regression analysis, Forecasting Analysis.*

### **INTRODUCTION**

This study focuses on how to maximize the sales in multi brand apparel showroom and forecast the sales for upcoming period. It also focuses on minimizing the inventory by identifying the fast and slow moving products

### **STATEMENT OF THE PROBLEM**

The company under the study is not aware of the products selling in high and low quantities and values, so that they are maintaining inappropriate stock and they could not achieve the targeted sales.

**OBJECTIVE**

The primary objective of this study is to identify and differentiate products selling in high and low quantities and values and forecast the sales for the first quarter of the next year. The secondary objective of this study is to provide recommendations to the company to improve the sales.

**SCOPE OF THE STUDY**

This study helps the company to differentiate products selling in high and low quantities. It helps them to increase the sales in terms of quantity and value. It helps the company to maintain an optimum inventory.

**LIMITATIONS OF THE STUDY**

This study states about only the Airport branch of retail apparel stores which can provide different view on showroom’s at different place.

**METHODOLOGY**

*Type of Research:*

Descriptive Research

*Population size:*

Product wise sales data of the year 2017 in 6 airport stalls of the company

*Sample Size:*

Product wise sales data of the year 2017 in 6 airport stalls of the company

*Source of Data:*

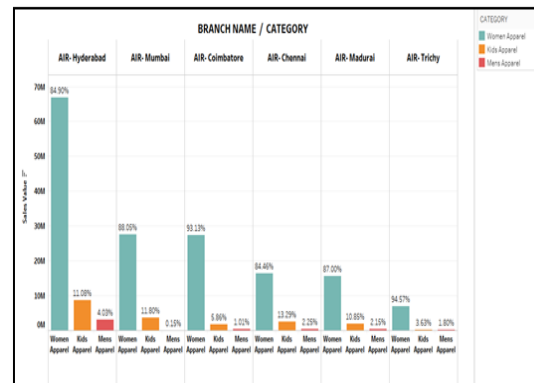
Secondary data given by the company is used for the analysis in this project.

*Tools Used:*

Tableau is used in this study for analysis and Data Visualization. Linear Regression, Forecasting using smoothing methods, Advanced Charts, Pareto Analysis and Z score tests are done in this done

*Findings*

*Variable Analysis:*



**Fig 1: Bar Chart showing category of products based on Women, Kids and Men Apparel - branch wise**

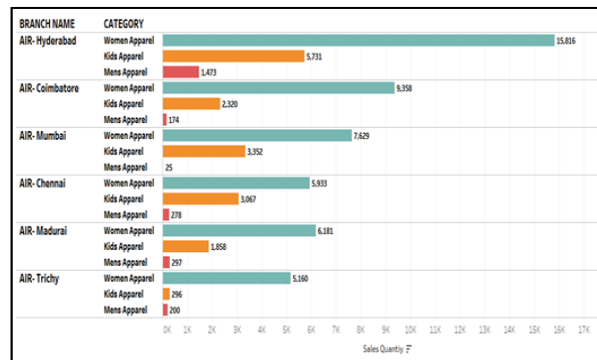


Fig 2: Bar Chart showing comparison of sales quantity - branch wise

Fig 1 & 2, show that women apparel products are more in quantity and sales, followed by kids and men apparel in all the stores.

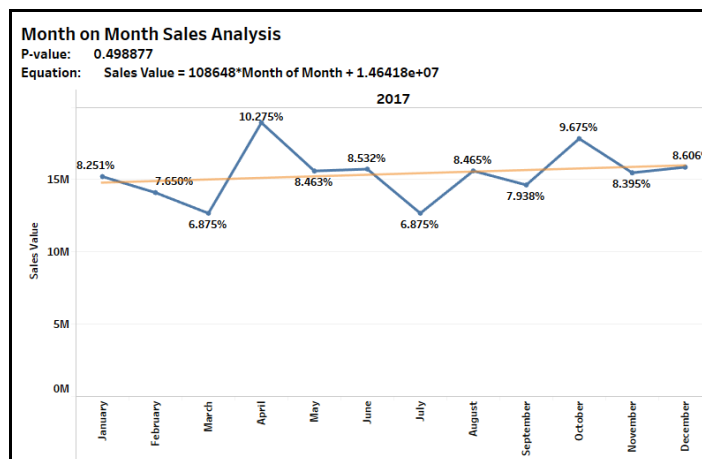
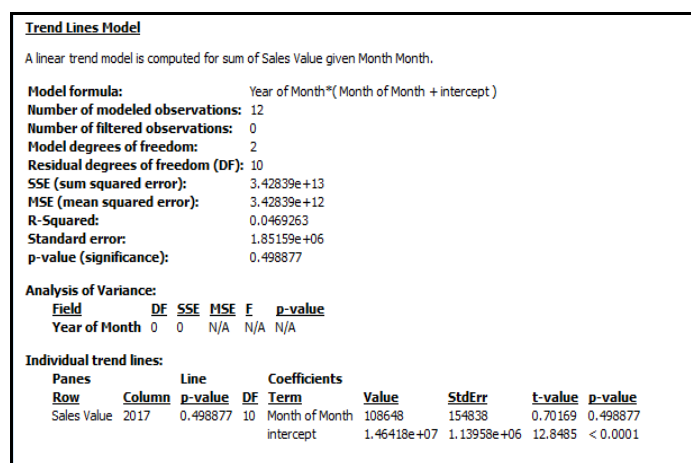


Fig 3: Line Chart showing month wise sales (%) in all branches

Fig 3 shows that sales is more during April (10.27% of total sales) and October (9.67 % of total sales) which are Holiday months when compared to other months.

**Result:**



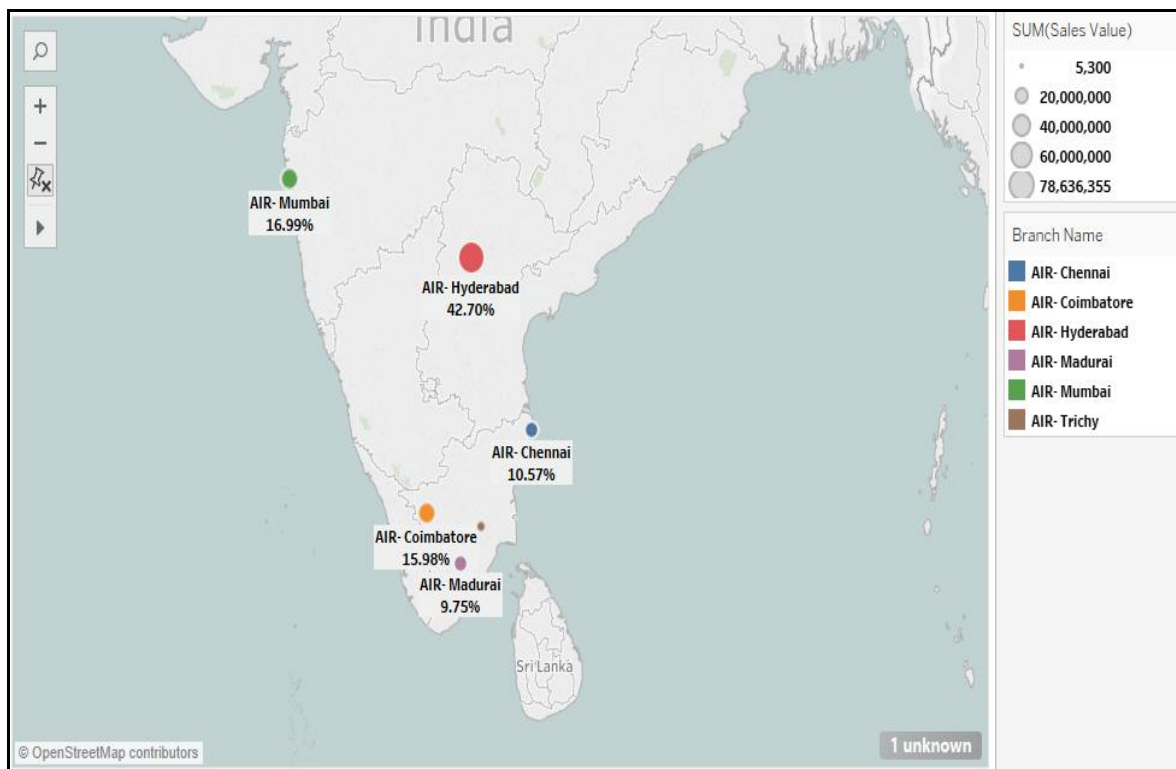
**Inference:**

- The p value is 0.49 so the growth was not much increased month on month,
- The trend line show it was only slight growth in the sales for past one year data,
- If we have last 3 or 5 year data the prediction will be more accurate

regarding growth or slake of sales.

Hear we cannot predict that with one year data regarding the sales growth.

- There is also fluctuation between months on month sales,
- Holiday month like April (10.27%) and October (9.67%) is in top sales compare to the other month sales so stock should maintain more on this month compare to any other months.



**Fig 4: Map Chart showing sales (%) - branch wise**

Fig4 shows that Hyderabad store stands first in the sales (quantity and values) with 42.70% of total sales in all stores.

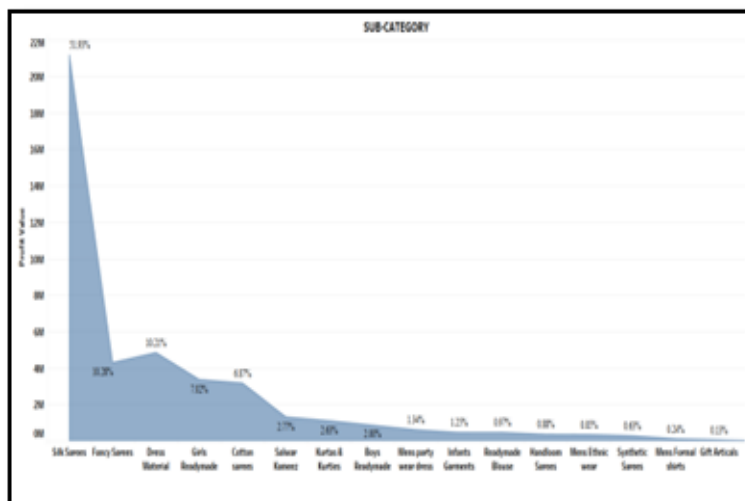


Fig 5: Area Chart showing profit(%) - Sub category wise

Fig 5 shows that silk saree is the highest selling product which constitutes 51.93% of the total sale of all products.

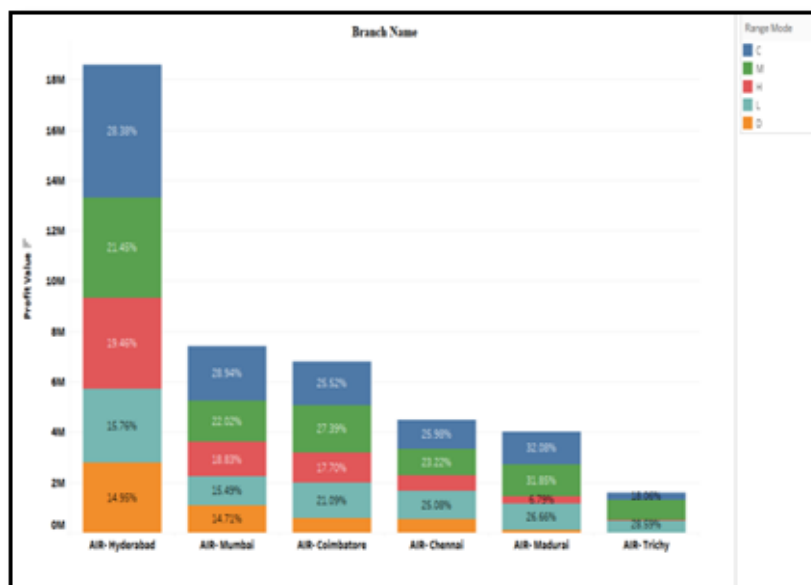


Fig 6: Bar Chart showing range of products - branch wise

L - Low, M - Medium, C - Costly, H - High Costly, D - Display products

Fig 6 shows that C category products are selling more in the entire all the airport stores with a total of 26.90%.

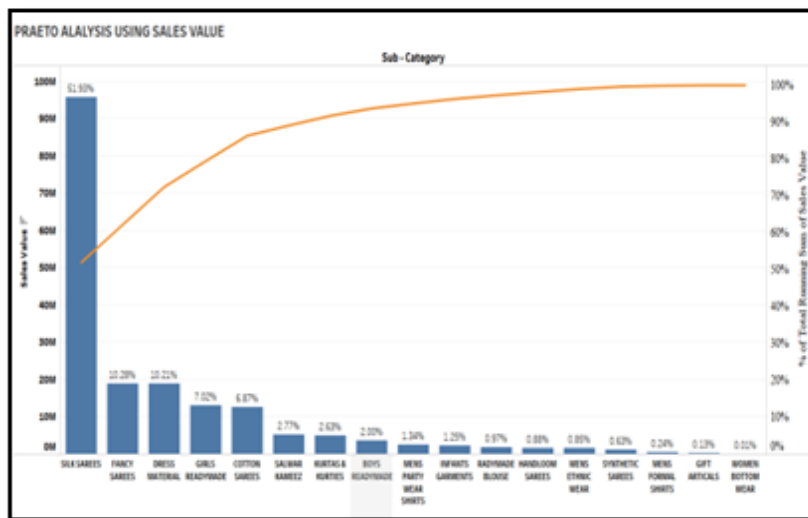


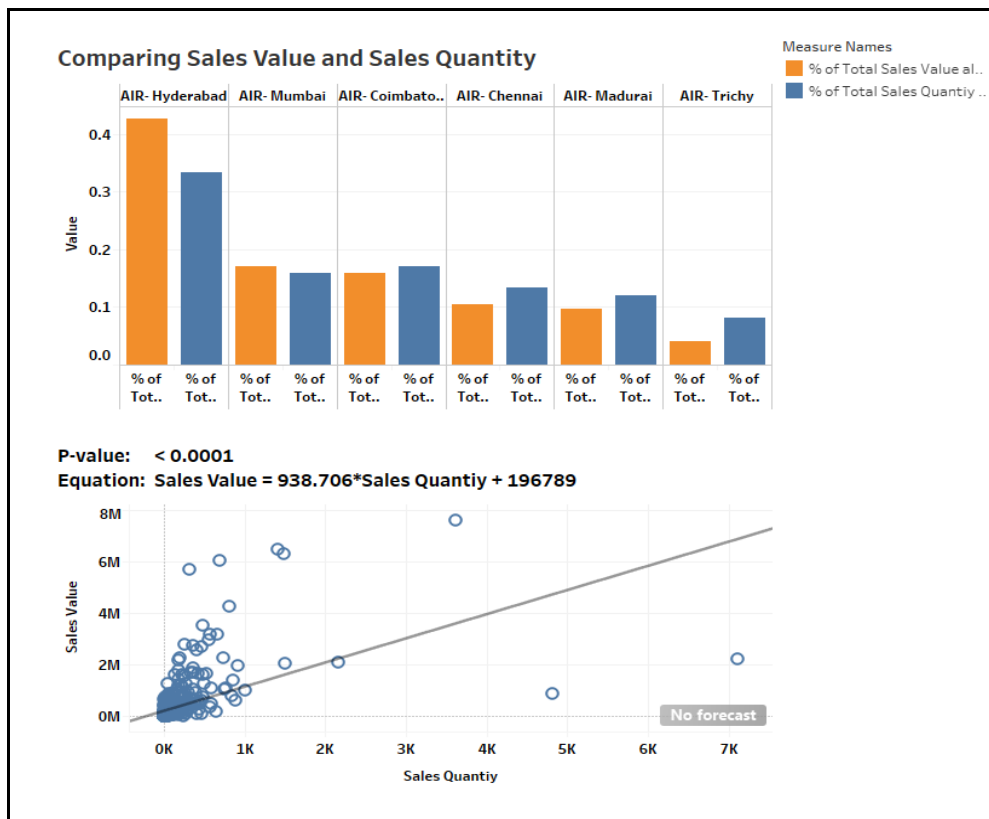
Fig 7: Pareto Chart showing Pareto Analysis for products - sub category wise

Fig 7, Pareto Analysis Chart shows that silk saree, fancy saree and girls readymade constitutes 80% (approximate) of the total sales in all the stores.

BRANCH WISE PROFIT ANALYSIS (AVERAGE)		Branch Name					
Category	Sub - Category	AIR- Chennai	AIR- Coimbatore	AIR- Hyderabad	AIR- Madurai	AIR- Mumbai	AIR- Trichy
WOMEN APPAREL	SILK SAREES	■	■	■	■	■	■
	DRESS MATERIAL	■	■	■	■	■	■
	FANCY SAREES	■	■	■	■	■	■
	COTTON SAREES	■	■	■	■	■	■
	SALWAR KAMEEZ	■	■	■	■	■	■
	KURTAS & KURTIES	■	■	■	■	■	■
	RADYMADE BLOUSE	■	■	■	■	■	■
	HANDLOOM SAREES	■	■	■	■	■	■
	SYNTHETIC SAREES	■	■	■	■	■	■
WOMEN BOTTOM WEAR	■	■	■	■	■	■	
KIDS APPARELS	GIRLS READYMADE	■	■	■	■	■	■
	BOYS READYMADE	■	■	■	■	■	■
	INFANTS GARMENTS	■	■	■	■	■	■
MENS APPAREL	MENS PARTY WEAR SHIRTS	■	■	■	■	■	■
	MENS ETHNIC WEAR	■	■	■	■	■	■
	MENS FORMAL SHIRTS	■	■	■	■	■	■
ACCESSORIES	GIFT ARTICALS	■	■	■	■	■	■

Fig 8: Heat Maps showing sales of sub category of products - branch wise

Fig 8, Heat map represent sub-category and branch wise sales show variance by size and the colour.



**Fig 9: Regression Chart showing relationship between Sales value and quantity**

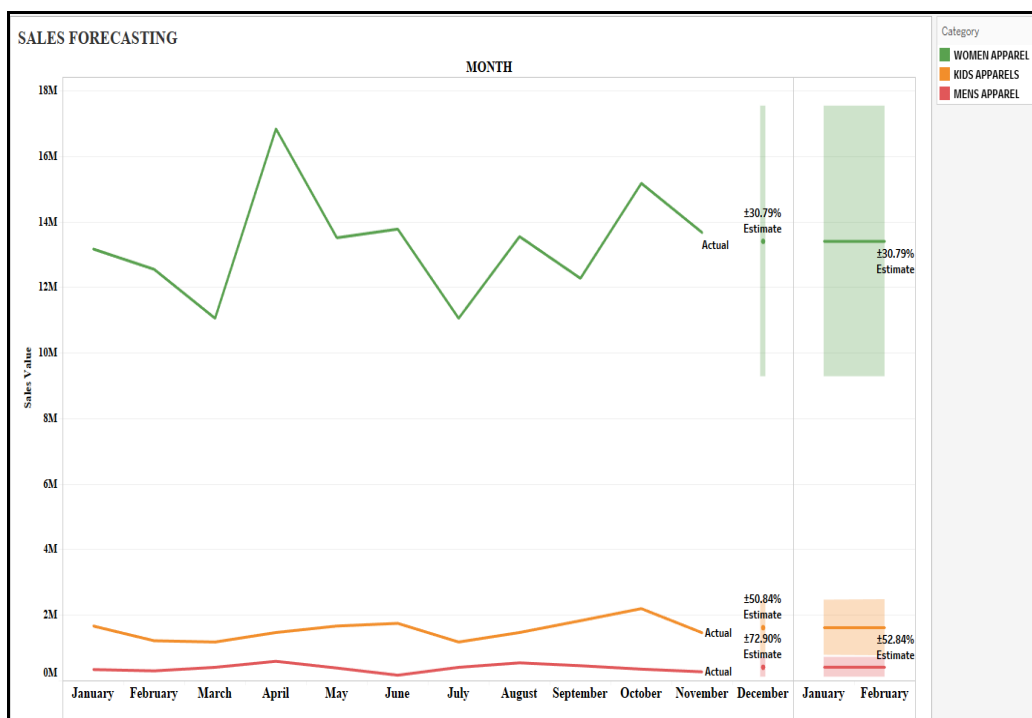
Fig 9, Trend line between the Sales value and sales quantity is positively correlated.

**Result:**

Trend Lines Model									
A linear trend model is computed for sum of Sales Value (actual & forecast) given sum of Sales Quantity (actual & forecast) . The model may be significant at p <= 0.05.									
Model formula:		( Sales Quantity + intercept )							
Number of modeled observations:		606							
Number of filtered observations:		0							
Model degrees of freedom:		2							
Residual degrees of freedom (DF):		604							
SSE (sum squared error):		2.61491e+14							
MSE (mean squared error):		4.32932e+11							
R-Squared:		0.265842							
Standard error:		657976							
p-value (significance):		< 0.0001							
Individual trend lines:									
Panes	Line	Coefficients							
Row	Column	p-value	DF	Term	Value	StdErr	t-value	p-value	
Sales Value	Sales Quantity	< 0.0001	604	Sales Quantity	938.706	63.4738	14.7889	< 0.0001	
				intercept	196789	27692.7	7.10618	< 0.0001	

**Inference:**

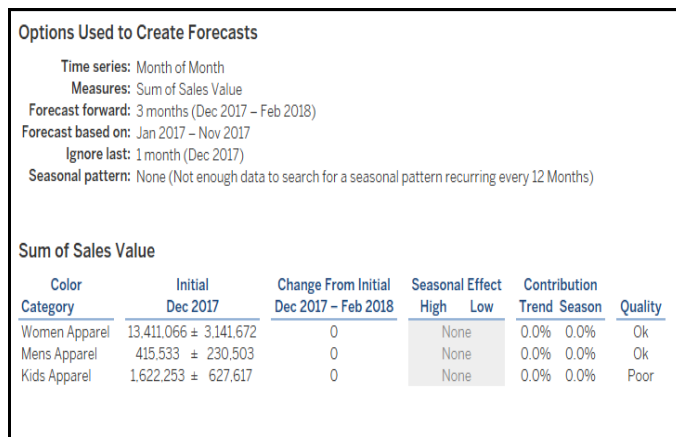
- The P value is less than 0.01 so there is a strong strength relation between sales value and sales quantity,
- From this we can clearly understand that sales value increase by selling large quantity of product,
- So the organization should concentrate in sell high quantity to increase the sales,
- They should increase the product in costly range rather than high costly and display product (costliest) product.



**Fig 10: Regression Chart showing relationship between Sales quantity and Sales value**

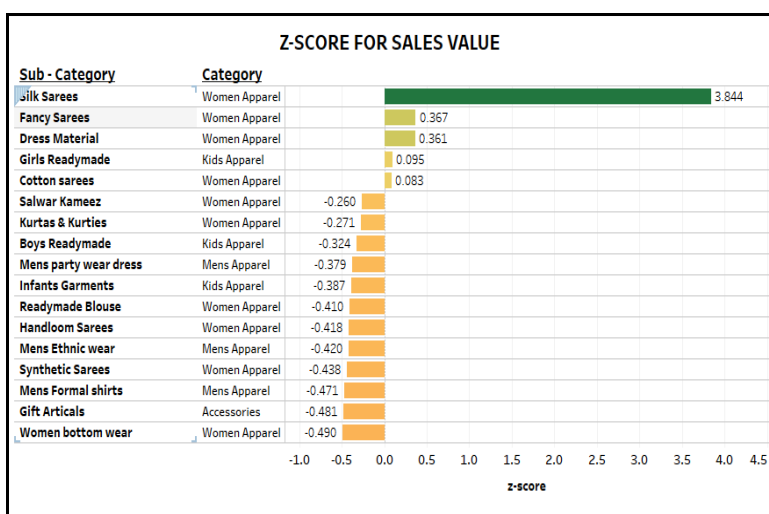
Fig 10, Trend line between sales value and sales quantity is also positively correlated. The bubble above the trend line represent the sales quantity is high.

**Result:**



**Inference:**

- From this analysis the sales of women apparel upcoming quarter is + or - 30.79% from the past 1 year result,
- Kids apparel upcoming quarter sales is + or - 52.84%,
- Men apparel upcoming quarter sales is + or -70%,
- The forecasting is predicted under exponential smoothing method seasonal analysis cannot be performed due to the data available only for limited period (1 year).



**Fig 11: Line Chart showing sales forecast for the year 2018 - Month wise - category wise**

Fig 11, Forecasting chart shows the predicated sales for upcoming quarter.

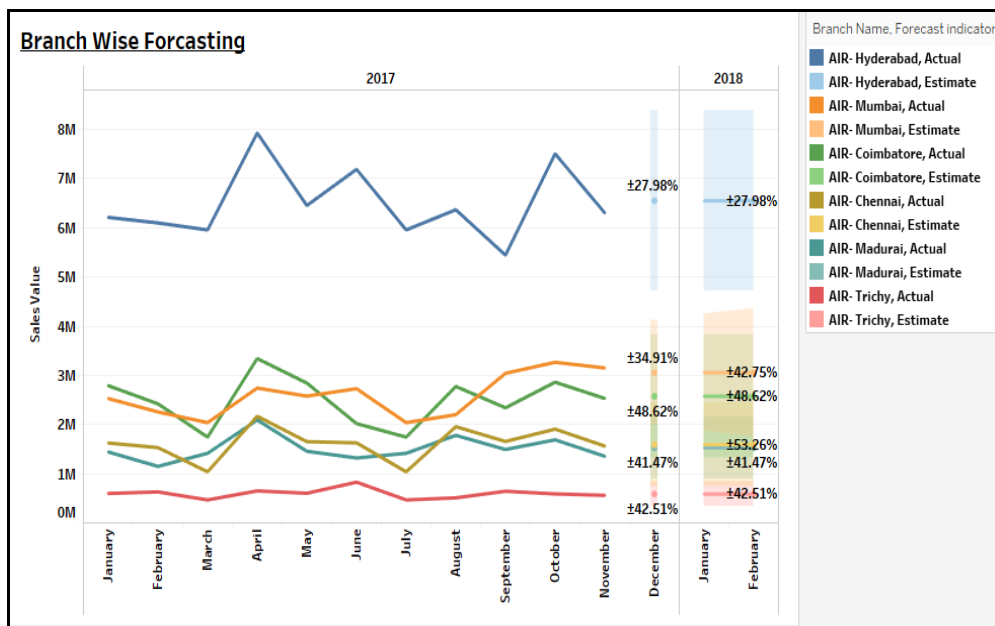


Fig 12: Bar Chart showing z-score for the product sub-category wise

Fig 12, This Z-score bar chart shows the sub-category wise product differentiation.

**Result:**

**Options Used to Create Forecasts**

Time series: Month of Month  
 Measures: Sum of Sales Value  
 Forecast forward: 3 months (Dec 2017 – Feb 2018)  
 Forecast based on: Jan 2017 – Nov 2017  
 Ignore last: 1 month (Dec 2017)  
 Seasonal pattern: None (Not enough data to search for a seasonal pattern recurring every 12 Months)

Color Branch Name	Initial Dec 2017	Change From Initial Dec 2017 – Feb 2018	Seasonal Effect		Contribution		Quality
			High	Low	Trend	Season	
AIR- Trichy	586,925 ± 249,476	0	None	None	0.0%	0.0%	Ok
AIR- Madurai	1,525,129 ± 632,492	0	None	None	0.0%	0.0%	Ok
AIR- Chennai	1,591,315 ± 847,582	0	None	None	0.0%	0.0%	Ok
AIR- Coimbatore	2,574,494 ± 1,251,634	0	None	None	0.0%	0.0%	Ok
AIR- Mumbai	3,055,399 ± 1,066,492	0	None	None	0.0%	0.0%	Poor
AIR- Hyderabad	6,548,663 ± 1,832,443	0	None	None	0.0%	0.0%	Ok

**Inference:**

- From this analysis the sales of Hyderabad branch upcoming quarter is + or - 27.9% from the past 1 year result,

- Mumbai branch upcoming quarter sales is + or - 42.7%,
- Coimbatore branch upcoming quarter sales is + or - 48.6%,
- Chennai branch upcoming quarter sales is + or - 53.2%,

- Madurai branch upcoming quarter sales is + or - 41.4%,
- Trichy branch upcoming quarter sales is + or - 42.5%,
- The forecasting is predicted under exponential smoothing method seasonal analysis cannot be performed due to the data available only for limited period (1 year).

### **FINDINGS**

- Through this study we find Silk saree is the top selling product when compare to the overall products. More than 50% of sales is happen only by selling Silk saree,
- The women's garments is selling more compare to the kids and men garments so the organization need to stock more women apparel other than children and men
- Holiday month like April (10.27%) and October (9.67%) is in top sales compare to the other month sales so stock should maintain more on this month compare to any other months.
- In the range analysis the costly product is sell more in all the branch compare to low, medium, high costly so we identified middle class customer prefer

this shop more than high class and low class so the product should maintain according to that.

### **SCOPE FOR FURTHER STUDY**

- This study states about only the Airport branch of apparel retail store only in 6 branch it can be down widely to get more insights,
- The study is down only for limited period it can be improved by using 3 or more year data to get more accurate result,
- The study involves only limited methods for predicting. Comparing with more machine learning models would confirm result.

### **CONCLUSION**

- This study identified fast selling product and slow selling product for the past one year (Jan 2017 – Dec 2017),
- It differentiate the product based on the sales value,
- The advanced chart is used to descried the sales for branch, range and sub-category wise will provide more

accuracy to view compare to the traditional charts,

- Forecasting, liner regression, and trend line is used to provide more inference regarding the feature sales and stock maintenance,
- This study is down using past one year data of all the airport branches belongs to The Chennai Silks which triggers the study to feature investigation using all the other retail shops to analyse deeper on product movement.

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