



# Marketing and Retail Analytics Capstone-Project

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# AGENDA

- ❑ Objective
- ❑ Background
- ❑ Insights
- ❑ Recommendations
- ❑ Appendix :- Data sources, Data methodology, Data assumptions

# OBJECTIVE

- ❑ Project the steps needed to amplify business
- ❑ Analyze the consumer behavior and study the buying patterns
- ❑ To use the gained insights to optimize the inventory to boost sales

# BACKGROUND

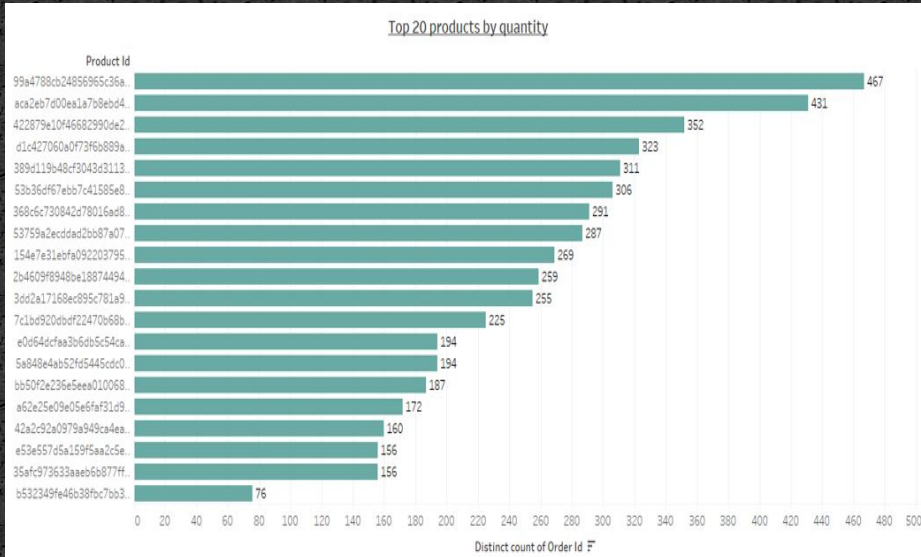
- ❑ An e-commerce company Olist incurs losses
- ❑ Unnecessary costs due to storage of low selling products
- ❑ Need to optimize inventory and recover the losses



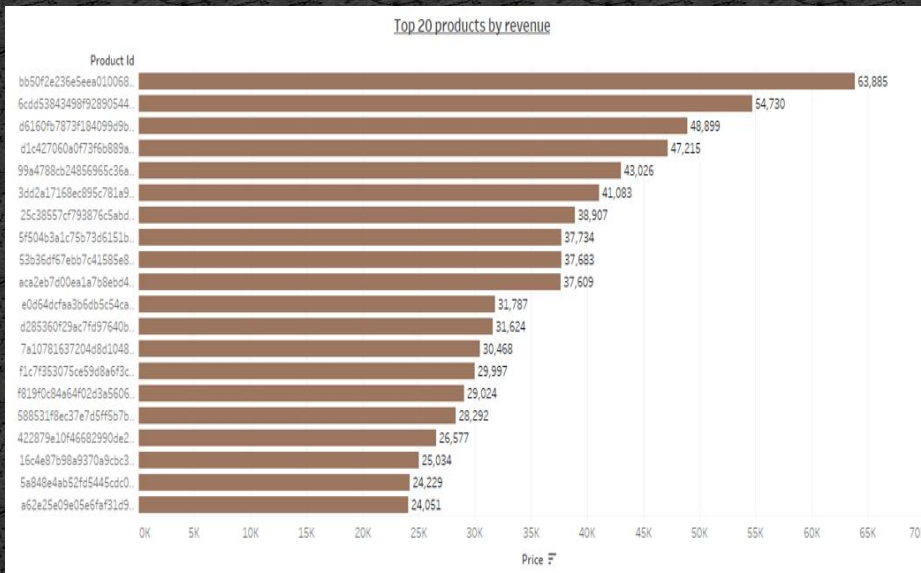


# INSIGHTS

# Product analysis by quantity and revenue



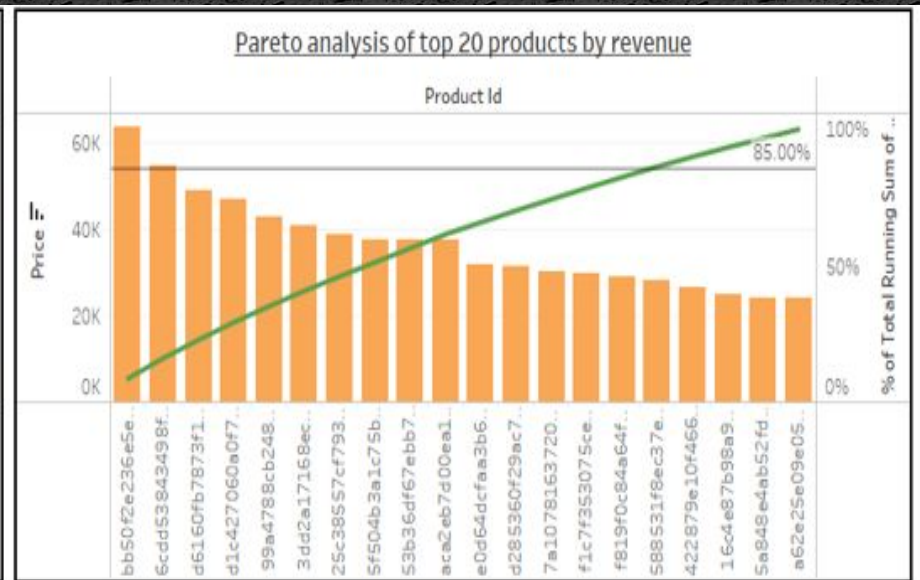
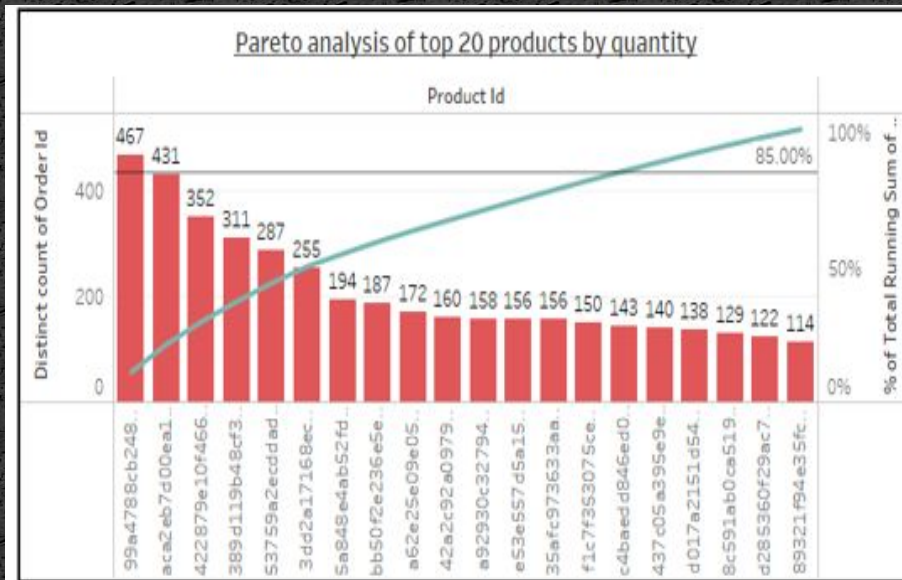
- ❑ The top 20 demanding products based on their quantity and the revenue they generate are analyzed above.
- ❑ The order of priority for products varies, i.e. it is different for quantity and for revenue hence needs to be looked upon.
- ❑ The inventory can be refreshed and store more of these products from both the visualization as they would boost sales.



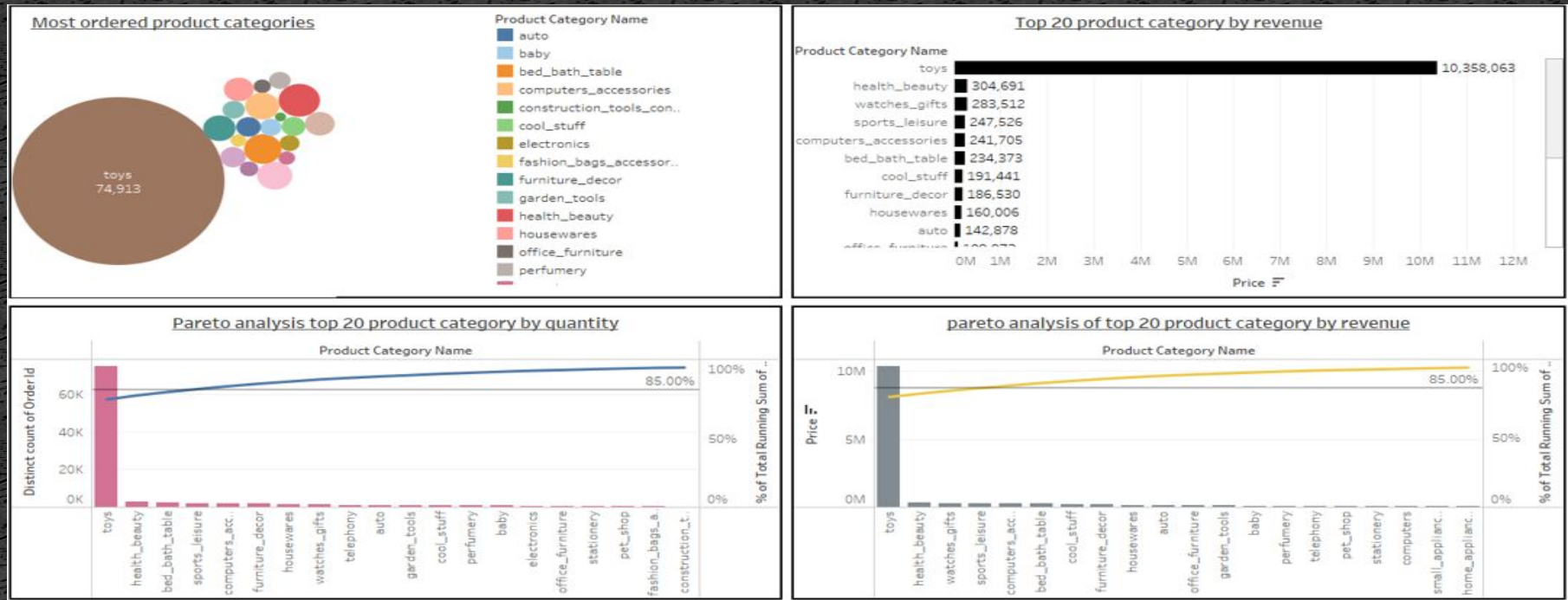


# Pareto analysis of products by quantity and revenue

- ❑ The top 20 products were further analyzed based on 85-15 rule of pareto analysis.
- ❑ The products that fall under the intersection of the constant and % of running total line contribute to 85% of the demand.
- ❑ The inventory can be refreshed and further organized with giving focus to these products to further reduce unwanted costs to company.



# Product category analysis



- ❑ The product categories were analyzed based on their order frequency and revenue generation, also pareto analysis was done to further depth our understanding.
- ❑ Toys category emerged to be the leader in both scenarios, i.e. order frequency as well as revenue wise, hence inventory should definitely focus more on it.
- ❑ Based on pareto analysis categories such as bed\_bath\_table, health, sports and gifts contribute to 85% of the revenue, hence the inventory should focus more on these categories and can have minimal stock of other categories.



# Anlasis based on % running total and number of orders

- ❑ The categories and the products under those categories were analyzed based on their % of the total revenue contribution and their order frequency as well.
- ❑ Again toys emerged to be on top however there are some products in the category that do not contribute much to the revenue, hence they can be removed.
- ❑ We can also see some categories at the bottom most that just are lying and consuming space and contribute almost nil to the revenue, hence these categories itself need to be checked and avoided.

Product Category Na.. F	Product Id F	Count of Or..	Price	Running Su..	% of Total ..
toys	bb50f2e236e5eea010..	195	63,885	63,885	0.47%
	6cdd53843498f92890..	156	54,730	118,615	0.40%
	d6160fb7873f184099..	35	48,899	167,515	0.36%
	99a4788cb24856965c..	488	43,026	210,540	0.32%
	3dd2a17168ec895c78..	274	41,083	251,623	0.30%
	25c38557cf793876c5..	38	38,907	290,530	0.29%
	aca2eb7d00ea1a7b8e..	527	37,609	328,139	0.28%
	e0d64dcfaa3b6db5c5..	194	31,787	359,926	0.23%
	d285360f29ac7fd976..	123	31,624	391,550	0.23%
	7a10781637204d8d1..	143	30,468	422,017	0.22%
	f1c7f353075ce59d8a..	154	29,997	452,014	0.22%
	f819f0c84a64f02d3a5..	45	29,024	481,039	0.21%
	588531f8ec37e7d5ff5..	20	28,292	509,331	0.21%
	422879e10f46682990..	484	26,577	535,908	0.20%
	16c4e87b98a9370a9c..	13	25,034	560,942	0.18%
	5a848e4ab52fd5445c..	197	24,229	585,171	0.18%
	a62e25e09e05e6faf3..	226	24,051	609,222	0.18%
	fd0065af7f09af4b82a..	11	22,000	631,222	0.16%
	a5215a7a9f46c4185b..	17	21,740	652,962	0.16%
	389d119b48cf3043d3..	392	21,441	674,403	0.16%
	461f43be3bd78844e6..	146	20,593	694,996	0.15%
	52c80cedd4e90108bf..	118	20,496	715,491	0.15%
	53759a2ecdda2bb87..	373	20,387	735,878	0.15%
	1dec4c88c68d5a07b..	35	19,965	755,843	0.15%
	6f3b5b605d91b7439c..	117	19,009	774,853	0.14%
	1a080577618e7fe4d9..	32	18,263	793,116	0.13%
	165f86fe8b799a708a..	109	17,821	810,937	0.13%
	fb01a5fc09b9b9563c..	24	16,732	827,669	0.12%
	e7cc48a9daff5436f63..	93	16,216	843,885	0.12%

Product Category Na.. F	Product Id F	Count of Or..	Price	Running Su..	% of Total ..
dvds_blu_ray	9d489ab920498d03a..	1	25	13,586,281	0.00%
	06cdc7832ac572e307..	1	24	13,586,305	0.00%
	9375d96ff0ad81493ff..	1	17	13,586,321	0.00%
	da61f764a3954b7d93..	1	17	13,586,338	0.00%
	e485be8a88ca64e497..	1	17	13,586,355	0.00%
	0b898ec6fedc70029a..	1	15	13,586,370	0.00%
la_cuisine	d29534bc8c74cd3d91..	2	274	13,586,644	0.00%
	b52e7c92200ed9874e..	1	174	13,586,818	0.00%
	724c49c346d2979339..	1	120	13,586,938	0.00%
fashion_sport	700a315aa104dcf3ea..	2	387	13,587,325	0.00%
	f2f960ea3804c29b5e..	1	90	13,587,415	0.00%
	8aeef27d525d6bfa3b..	1	50	13,587,465	0.00%
arts_and_craftmanship	43506d2b6b5e05350..	1	238	13,587,703	0.00%
	2b54fb9a4ac707537..	1	58	13,587,761	0.00%
	189d6b9a380642d0e..	1	40	13,587,801	0.00%
	4a24717893a6c8f3cfc..	1	25	13,587,826	0.00%
	9c313adb4b38a55b09..	1	19	13,587,845	0.00%
flowers	7620a27f1d6747511f..	10	255	13,588,099	0.00%
	57646b730d659bc73..	1	53	13,588,152	0.00%
	69530f4ebf4b017348..	1	119	13,588,271	0.00%
fashio_female_clothing	89f46d1e213867388c..	1	65	13,588,336	0.00%
	dd12801e4d1919e84..	1	45	13,588,381	0.00%
	621b15d249d471192..	1	22	13,588,403	0.00%
	e726b00d6143d630f1..	1	20	13,588,423	0.00%
	ea33fffe22b0b5efe02..	1	249	13,588,672	0.00%
furniture_mattress_and...	8cfc3506cedc062636..	2	180	13,588,852	0.00%
fashion_childrens_clothes	f3412532ea4da687ea..	1	135	13,588,987	0.00%
diapers_and_hygiene	8db75af9aed3315374..	1	100	13,589,087	0.00%
security_and_services	4fb3bad6b502eaca3b..	1	60	13,589,147	0.00%
home_comfort_2					

# MARKET-BASKET ANALYSIS

MARKET_BASKET																					
		Product Category Name																			
product cat..	bed_bat..	furnitur..	compute..	health_b..	housewa..	sports_l..	garden_...	fashion_...	auto	perfume..	telephony	statione..	cool_stuff	pet_shop	baby	office_fu..	construc..	luggage..	costructi..	musical_...	fashior
toys	291	153	103	81	63	62	45	41	39	32	30	30	25	23	20	18	12	11	11	8	
watches_gi..		1		1																	
sports_leis..				2	1		2		1				1			1					
furniture_d..	6														1						
garden_too..		3	2												1						
housewares	2	1	2				1														
home_cons..		1	1				1														
health_bea..	1																1				
cool_stuff			1																		
telephony																					
pet_shop																					

- ❑ The product categories were analyzed using the market basket association technique.
- ❑ There was strong association of bed\_bath, furniture, computer, health with toys category, meaning a consumer likely to buy these products together if the either one of the products brought.
- ❑ These categories should be organized such that these product categories are kept as combo, provided with discounts ,e.t.c.





- ❑ Organize the inventory such that the categories that contribute very less to the revenue can be focused least and can be reduced in stock or avoided so as to save the space wastage and unwanted costs, i.e. categories which do not at least contribute to 3% of the revenue or have an order frequency less than 5 should be looked into carefully.
- ❑ Further in depth of categories based on the order frequency and their revenue the products under the categories should also be looked into and those contributing to 85% of the profit should be kept more and the rest can be of least importance or could be provided with clearance sale so as to recover zero revenue from these products or categories.
- ❑ Based on the market basket association analysis the inventory should be organized such that those having a high association should appear as suggestion, could also be given discounts if brought together, i.e. the associated products should be teased to the consumer to gain their interest and hence amplify the sales.



# APPENDIX

## DATA SOURCES

- We are given Olist company's data.
- The data contains their inventory detail of the various categories and their belonging products, e.t.c.
- We have related information such as their category names, product\_id, order\_id, costumer details, orders\_status, e.t.c.

## DATA METHODOLOGY

- We did data cleaning using python, and also merged few columns and exported the cleaned data and merged data into two different excel file.
- We checked for duplicates, treated the null values either by imputing or removing them. delivered for our analysis.
- We have used the tool tableau to perform all our visualization and have also joined required sheets.

## DATA ASSUMPTION

- We assumed that the data provided is accurate.
- We assumed that List need their data to be analyzed and organize their inventory such that they improve their existing sales and recover losses.
- We have filtered the data to only order\_status as delivered for our analysis.



THANK YOU