MondoMarket Sales Data Analysis

Analysing Revenue/Sales Info

In [1]:
```
#Importing the packages

import pandas as pd
import matplotlib.pyplot as plt
```

In [2]:
```
#Read daily sales data

sales=pd.read_excel("Sales.xlsx","competitor_daily_sales")
```

In [3]:
```
#Identify type of columns in sheet

sales.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2508 entries, 0 to 2507
Data columns (total 9 columns):
 #   Column             Non-Null Count  Dtype         
---  ------             --------------  -----         
 0   sno                2508 non-null   int64         
 1   company            2508 non-null   object        
 2   date               2508 non-null   datetime64[ns]
 3   month_name         2508 non-null   object        
 4   location           2508 non-null   object        
 5   market             2508 non-null   object        
 6   channel            2508 non-null   object        
 7   product_category   2508 non-null   object        
 8   total_sale_amount  2508 non-null   float64       
dtypes: datetime64[ns](1), float64(1), int64(1), object(6)
memory usage: 176.5+ KB
```

In [4]:
```
#Filter Small business and months above March 2021

sales=sales[(sales["market"]=="small business") & (sales["month_name"]!="Feb 2021")&
sales.head(5)
```

Out[4]:

	sno	company	date	month_name	location	market	channel	product_category	total_s
5	5	0b466a81-1df4-4799-9d0e-f472513c0c64	2021-05-12	May 2021	Lisburn	small business	business-to-consumer	luggage bags	
7	7	0b466a81-1df4-4799-9d0e-f472513c0c64	2021-04-13	Apr 2021	Preston	small business	business-to-consumer	inflatable pool	
16	16	0b466a81-1df4-4799-9d0e-f472513c0c64	2021-05-15	May 2021	Salisbury	small business	business-to-consumer	cups and mugs	

	sno	company	date	month_name	location	market	channel	product_category	total_s
18	18	0b466a81-1df4-4799-9d0e-f472513c0c64	2021-06-26	Jun 2021	Dundee	small business	business-to-consumer	camping tent	
36	36	0b466a81-1df4-4799-9d0e-f472513c0c64	2021-04-01	Apr 2021	Swansea	small business	business-to-consumer	holdall bags	

In [5]:
```
#Group Sales by company name,channel and month name

products=sales.groupby(by=["company","channel","month_name"]).sum()
del products["sno"]
products.head(10)
```

Out[5]:

			total_sale_amount
company	**channel**	**month_name**	
0b466a81-1df4-4799-9d0e-f472513c0c64	**business-to-business**	**Apr 2021**	9858.85
		Jun 2021	12269.29
		May 2021	12418.06
	business-to-consumer	**Apr 2021**	11068.79
		Jun 2021	8787.38
		May 2021	5902.23
145446d2-9e45-4473-bb68-835ab651dc56	**business-to-business**	**Apr 2021**	382.33
		Jul 2021	2323.86
		Jun 2021	8164.04
		May 2021	11729.33

Analysing Expense Info

In [6]:
```
# Read Monthly expenses data for each company

cost=pd.read_excel("Sales.xlsx","competitor_monthly_costs")
cost.set_index("sno",drop="True",inplace=True)
```

In [7]:
```
# Filter expenses for months above March 2021

cost=cost[(cost["month_name"]!="Feb 2021")&(cost["month_name"]!="Mar 2021")]
cost.head(5)
```

Out[7]:

	company	year	month	month_name	fixed_costs_for_b2b_sales	fixed_costs_for_b2c_sales
sno						

sno	company	year	month	month_name	fixed_costs_for_b2b_sales	fixed_costs_for_b2c_sales
2	0b466a81-1df4-4799-9d0e-f472513c0c64	2021	4	Apr 2021	55.62	15.45
3	0b466a81-1df4-4799-9d0e-f472513c0c64	2021	5	May 2021	40.61	33.82
4	0b466a81-1df4-4799-9d0e-f472513c0c64	2021	6	Jun 2021	72.87	77.24
5	0b466a81-1df4-4799-9d0e-f472513c0c64	2021	7	Jul 2021	33.75	76.80
8	ab26de37-713d-42d5-b20d-3a769d43da67	2021	4	Apr 2021	25.37	28.58

In [8]:
```
# Grouping expenses based on company and month

monthly_expenditure=cost.groupby(by=["company","month_name"]).sum()
monthly_expenditure.head(7)
```

Out[8]:

company	month_name	year	month	fixed_costs_for_b2b_sales	fixed_costs_for_b2c_sales	varia
0b466a81-1df4-4799-9d0e-f472513c0c64	Apr 2021	2021	4	55.62	15.45	
	Jul 2021	2021	7	33.75	76.80	
	Jun 2021	2021	6	72.87	77.24	
	May 2021	2021	5	40.61	33.82	
145446d2-9e45-4473-bb68-835ab651dc56	Apr 2021	2021	4	62.33	74.29	
	Jul 2021	2021	7	97.97	88.84	
	Jun 2021	2021	6	19.02	78.96	

In [9]:
```
# Calculate Total cost = Fixed cost + Variable Cost for business and Consumer

monthly_expenditure.eval("business_to_business_total_cost=fixed_costs_for_b2b_sales+
monthly_expenditure.eval("business_to_consumer_total_cost=fixed_costs_for_b2c_sales+
```

In [10]:
```
# Get only Total costs from Complete data set for each month
```

```
month_costs = monthly_expenditure[["business_to_business_total_cost", "business_to_c
month_costs.head(10)
```

Out[10]:

company	month_name	business_to_business_total_cost	business_to_consumer_total_cost
0b466a81-1df4-4799-9d0e-f472513c0c64	Apr 2021	222.20	59.16
	Jul 2021	727.92	172.57
	Jun 2021	638.84	162.53
	May 2021	415.24	52.85
145446d2-9e45-4473-bb68-835ab651dc56	Apr 2021	260.35	128.10
	Jul 2021	452.08	103.64
	Jun 2021	786.37	99.93
	May 2021	1021.80	79.76
1f0662dd-92d2-452c-9ac2-b506161db987	Apr 2021	163.21	140.95
	Jul 2021	345.18	120.89

Evaluating results based on Sales and Expenditure

In [11]:

```
# Find products

products=products.reset_index("channel")
products.head(10)
```

Out[11]:

company	month_name	channel	total_sale_amount
0b466a81-1df4-4799-9d0e-f472513c0c64	Apr 2021	business-to-business	9858.85
	Jun 2021	business-to-business	12269.29
	May 2021	business-to-business	12418.06
	Apr 2021	business-to-consumer	11068.79
	Jun 2021	business-to-consumer	8787.38
	May 2021	business-to-consumer	5902.23
145446d2-9e45-4473-bb68-835ab651dc56	Apr 2021	business-to-business	382.33
	Jul 2021	business-to-business	2323.86
	Jun 2021	business-to-business	8164.04
	May 2021	business-to-business	11729.33

In [12]:

```
# Pivot Sales table to get business to business and business to consumer in new colu

pivot_sales=products.pivot(columns='channel')['total_sale_amount']
pivot_sales.head(10)
```

Out[12]:

company	month_name	business-to-business	business-to-consumer
0b466a81-1df4-4799-9d0e-f472513c0c64	Apr 2021	9858.85	11068.79
	Jun 2021	12269.29	8787.38
	May 2021	12418.06	5902.23
145446d2-9e45-4473-bb68-835ab651dc56	Apr 2021	382.33	12895.76
	Jul 2021	2323.86	3675.66
	Jun 2021	8164.04	11064.21
	May 2021	11729.33	22209.83
1f0662dd-92d2-452c-9ac2-b506161db987	Apr 2021	15039.08	12318.50
	Jul 2021	NaN	4237.40
	Jun 2021	11757.17	4271.54

In [13]:
```
# Merge Sales and Costs data

result=pd.merge(pivot_sales,month_costs,on=["company","month_name"])
result.head(5)
```

Out[13]:

company	month_name	business-to-business	business-to-consumer	business_to_business_total_cost	business_to_consu
0b466a81-1df4-4799-9d0e-f472513c0c64	Apr 2021	9858.85	11068.79	222.20	
	Jun 2021	12269.29	8787.38	638.84	
	May 2021	12418.06	5902.23	415.24	
145446d2-9e45-4473-bb68-835ab651dc56	Apr 2021	382.33	12895.76	260.35	
	Jul 2021	2323.86	3675.66	452.08	

In [14]:
```
# Calculate Net Profit = Expenditure - Total Cost for both the channels

result["b2b_profit"] = result["business-to-business"] - result["business_to_business
result["b2c_profit"] = result["business-to-consumer"] - result["business_to_consumer
result.head(5)
```

Out[14]:

company	month_name	business-to-business	business-to-consumer	business_to_business_total_cost	business_to_consu
0b466a81-1df4-4799-9d0e-f472513c0c64	Apr 2021	9858.85	11068.79	222.20	
	Jun 2021	12269.29	8787.38	638.84	

company	month_name	business-to-business	business-to-consumer	business_to_business_total_cost	business_to_consu
	May 2021	12418.06	5902.23	415.24	
145446d2-9e45-4473-bb68-835ab651dc56	**Apr 2021**	382.33	12895.76	260.35	
	Jul 2021	2323.86	3675.66	452.08	

In [15]:
```
# View large profit margin for Business to Business

b2b_profitmargin=result.sort_values(by=[("b2b_profit")],ascending=False)
b2b_profitmargin=b2b_profitmargin[["b2b_profit"]]
b2b_profitmargin.head(8)
```

Out[15]:

company	month_name	b2b_profit
bd827125-511f-4ab9-a1b0-c1bb73218c41	**Apr 2021**	19141.73
d12c20d2-2abd-46f2-babd-984eb96a6576	**Jun 2021**	18196.42
ab26de37-713d-42d5-b20d-3a769d43da67	**Jun 2021**	17666.39
3884b3b4-881f-43fa-a801-c4ec459fb8dd	**Apr 2021**	17275.03
	Jun 2021	16667.82
d3ecaa13-39c2-4525-ad5f-79d2dc755ef7	**Apr 2021**	15741.38
d12c20d2-2abd-46f2-babd-984eb96a6576	**May 2021**	15238.54
1f0662dd-92d2-452c-9ac2-b506161db987	**Apr 2021**	14875.87

In [16]:
```
# View large profit margin for Business to Consumer

b2c_profitmargin=result.sort_values(by=[("b2c_profit")],ascending=False)
b2c_profitmargin=b2c_profitmargin[["b2c_profit"]]
b2c_profitmargin.head(8)
```

Out[16]:

company	month_name	b2c_profit
d3ecaa13-39c2-4525-ad5f-79d2dc755ef7	**Jun 2021**	23984.70
d12c20d2-2abd-46f2-babd-984eb96a6576	**Jun 2021**	22188.94
145446d2-9e45-4473-bb68-835ab651dc56	**May 2021**	22130.07
3af5cfce-3d49-4a3f-b94d-bcd9176a92f6	**May 2021**	18005.19
3884b3b4-881f-43fa-a801-c4ec459fb8dd	**Jun 2021**	17776.58
bd827125-511f-4ab9-a1b0-c1bb73218c41	**May 2021**	17053.83
3884b3b4-881f-43fa-a801-c4ec459fb8dd	**May 2021**	16361.01
d12c20d2-2abd-46f2-babd-984eb96a6576	**Apr 2021**	15986.27

In [17]:
```
# Save results to the file :- Profit

result.to_excel("Profit.xlsx")
```

In [ ]:
```

```