MBA606

BUSINESS INTELLIGENCE (DATA ANALYTICS)

ASSESSMENT PACK

B2 - 2025

Student Name:

Submitted to:

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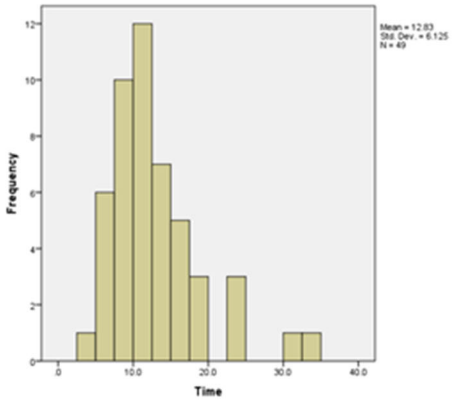
Case Study 1 Part 1

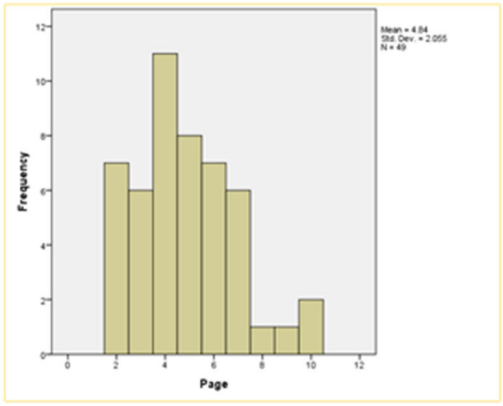
Part 1

Descriptive Statistics

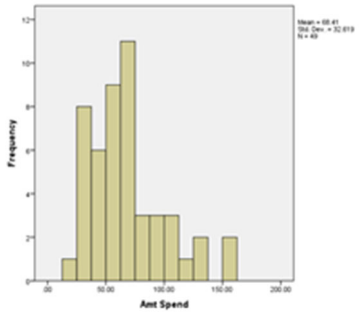
	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Time	49	4.3	32.9	628.5	12.827	6.1250
Page	49	2	10	237	4.84	2.055
Amt Spend	49	17.84	158.51	3351.89	68.4059	32.61865
Valid N (listwise)	49					

Graph





Graph



The Descriptive statistics and Histogram illustrate that around 12 min on daily average the customer visited the browser and on visiting each page. The Mean of Time Spend, Number of Pages visited, and Amount spend tells us that on average, a person spent 12.8 minutes per day and visited 4.84 pages on average and spend around $68 daily on the internet

Part 2

Frequencies

Statistics

Day

N	Valid	49
	Missing	0

Day

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fri	11	22.4	22.4	22.4
	Mon	8	16.3	16.3	38.8
	Sat	7	14.3	14.3	53.1
	Sun	5	10.2	10.2	63.3
	Thu	5	10.2	10.2	73.5
	Tue	7	14.3	14.3	87.8
	Wed	6	12.2	12.2	100.0
	Total	49	100.0	100.0	

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Amt Spend * Time	49	100.0%	0	0.0%	49	100.0%

Report

Amt Spend

Time	Mean	N	Std. Deviation
4.3	55.9600	1	.
5.0	36.4800	1	.
5.6	68.4500	1	.
6.0	27.9100	1	.
6.2	84.1700	1	.
7.1	41.2000	1	.
7.3	52.1500	1	.
7.8	71.8100	1	.

8.0	40.6950	2	11.26421
8.1	17.8400	1	.
8.4	84.1200	1	.
8.5	26.6800	1	.
9.1	52.0900	1	.
9.6	56.9300	2	3.21026
9.7	103.1500	1	.
10.2	74.4300	1	.
10.5	67.8000	1	.
10.6	39.0600	1	.
10.8	70.3800	1	.

11.0	40.5400	1	.
11.3	60.9250	2	7.55897
11.4	40.3850	2	6.14476
11.7	64.1600	1	.
11.8	78.7100	2	58.74643
12.7	70.9400	1	.
13.3	82.3450	2	40.02931
13.4	98.7500	1	.
13.7	68.1700	1	.
14.0	126.4000	1	.
14.3	48.0500	1	.

15.1	32.6900	1	.
15.9	67.4400	1	.
16.3	78.5800	1	.
16.5	59.9900	1	.
16.9	34.6900	1	.
18.0	134.4000	1	.
18.1	60.1400	1	.
19.5	94.9000	1	.
23.3	91.6200	1	.
24.4	158.5100	1	.
24.7	68.7300	1	.

30.1	104.2300	1	.
32.9	155.3000	1	.
Total	68.4059	49	32.61865

The Data shows that the most time spent was on Fri 22%., On Friday the daily average was higher. The only days the highest time spent were Fri. On start of Weekend it has was its highest on Friday.

Part 3

Frequencies

Statistics

Browser

N	Valid	50
	Missing	0

Browser

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chrome	27	54.0	54.0	54.0
	Firefox	16	32.0	32.0	86.0
	Other	7	14.0	14.0	100.0
	Total	50	100.0	100.0	

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Amt Spend * Browser	49	98.0%	1	2.0%	50	100.0%

Report

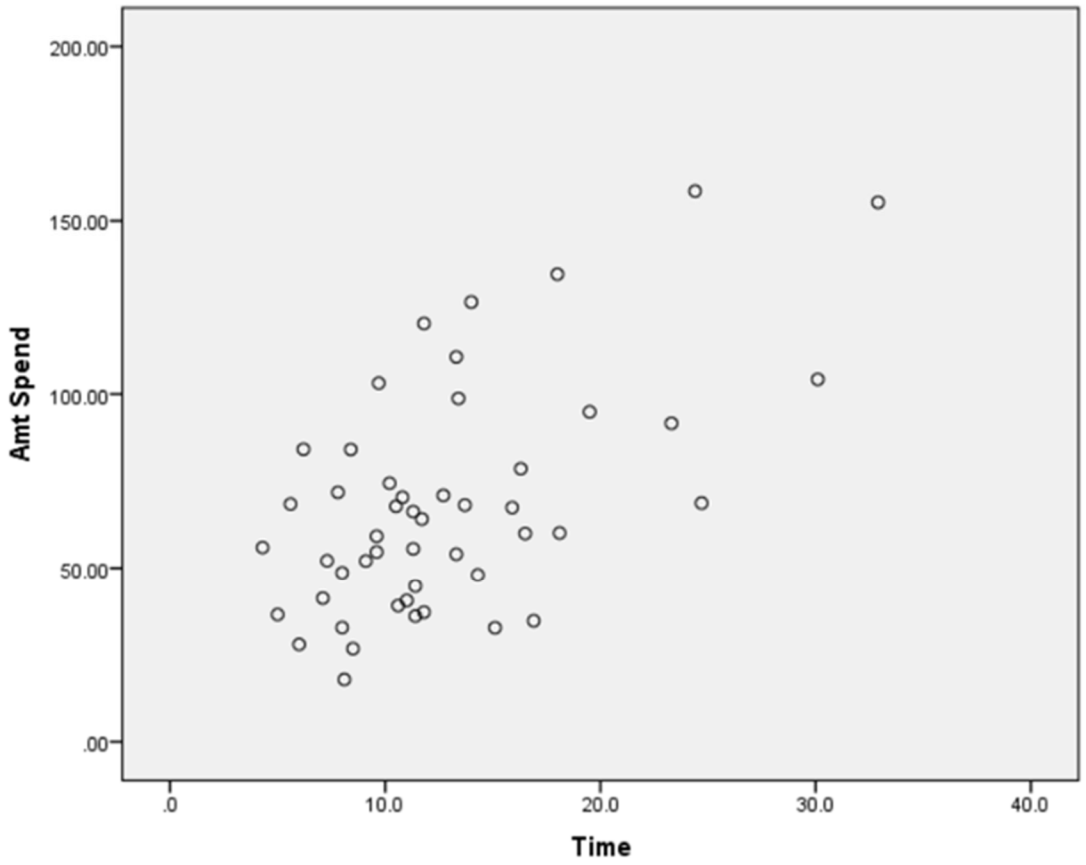
Amt Spend

Browser	Mean	N	Sum
Chrome	67.1162	26	1745.02
Firefox	71.3031	16	1140.85
Other	66.5743	7	466.02
Total	68.4059	49	3351.89

The data shows, On average most users spent on Firefox more than average than on chrome. The highest Spending was in Firefox Browser. But many People spend more time on Chrome browser.

Part 4

Graph



Correlations

Correlations

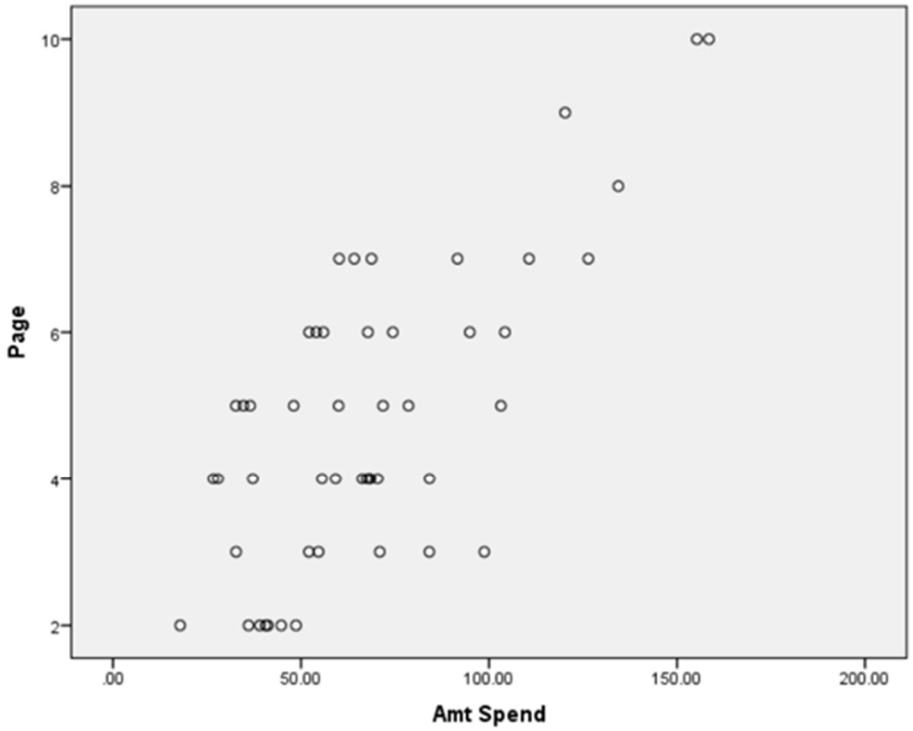
		Time	Amt Spend
Time	Pearson Correlation	1	.580**
	Sig. (2-tailed)		.000
	N	49	49
Amt Spend	Pearson Correlation	.580**	1
	Sig. (2-tailed)	.000	
	N	49	49

**. Correlation is significant at the 0.01 level (2-tailed).

The Relations Ship between Time Spent and Amount Spend interprets that relationship is Negative as its less than 0.6, which tells us that it has more time spend but less spending pattern.

Part 5

Graph



Correlations

Correlations

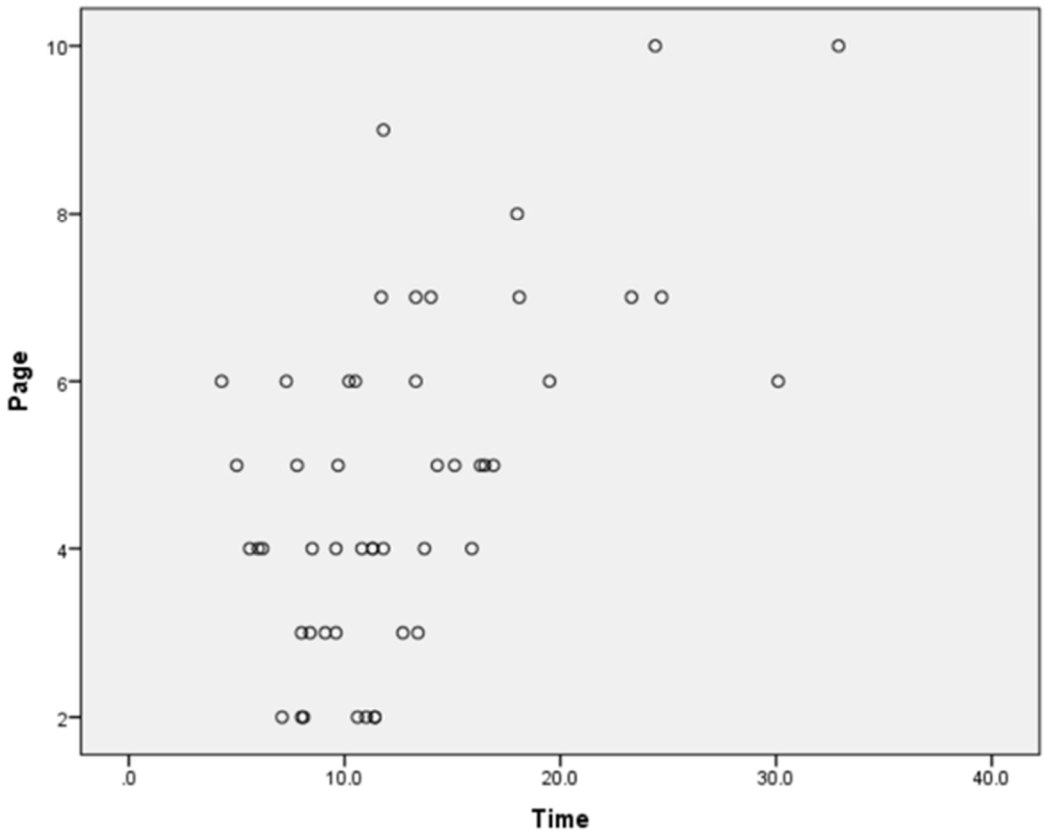
		Amt Spend	Page
Amt Spend	Pearson Correlation	1	.723**
	Sig. (2-tailed)		.000
	N	49	49
Page	Pearson Correlation	.723**	1
	Sig. (2-tailed)	.000	
	N	49	49

**. Correlation is significant at the 0.01 level (2-tailed).

The Relationship is positive between amount spent and pages viewed, as the R is More tha 0.7 which tells that more pages viewed which in turn meant more spending pattern. This also states that they have an strong relation between each other.

Part 6

Graph



Correlations

Correlations

		Page	Time
Page	Pearson Correlation	1	.596**
	Sig. (2-tailed)		.000
	N	49	49
Time	Pearson Correlation	.596**	1
	Sig. (2-tailed)	.000	
	N	49	49

**. Correlation is significant at the 0.01 level (2-tailed).

The Pearson Corellation is Less than 0.05 whih means its significant. The strength is stronger as it is closer to +-1. They have an positive relationship More pages view which in turn more time spent.

Case Study 1 Part 2

Part 2A

First let's dive into what a tree map is, A Tree Map is data visualization technique that displays hierarchical data as nested rectangles. The Area of each rectangle represents each data like cost or revenue, etc, which makes it easy to compare sizes and proportions.

In this case the tree map will be utilized as a cost breakdown of each project. Each can be broken down to single component, like Design, construction and assembly and outsourcing will affect the quality of competent which in turn affects the construction.

Let's Assume some Scenarios;

There are 3 ongoing projects all involving design, construction and assembly.

The construction tasks (alone) can be outsourced to take advantage of lower labour costs by 50%. But also come with increased cost due to introduction of additional

communication and shipping costs (10% + 15%). Let's assume,

Project 1 construction cost = High Construction Cost, $100,000 which excludes design and assembly cost which are low around $60,000 and $20,000 Respectively.

Project 2 construction cost = Medium Construction cost. $50,000 which excludes design and assembly cost which are medium around $20,000 and $30,000

Project 3 construction cost = Low Construction cost $30,000 which excludes design and assembly cost which are high around $60,000 and $70,000

If the company decides to outsource the construction cost are reduced by 50% and an additional communication and shipping costs are incurred 10% and 15% respectively. Then new costs can be calculated below;

Project 1 Outsourced Construction Cost: $101,500 * 0.50 =$50,750 + ($101,500 * 0.10 = $10,150) + ($101,500 * 0.15= $15,225) =$76.125

Project 2 Outsourced Construction Cost: $55,000 * 0.50 = $27,500 x (0.15+0.10) = 0.25x $55000= 13,750+27,500= $41,250

Project 3 Outsourced Construction Cost: $35,000x 0.50= $17,500 x (0.10+0.15) = $35,000x 0.25= 8,750+17,500= $26,250

Project Name	Category	Cost Before	Outsource Construction Cost	Outsourcing Impact
Project 1	Design	$60,000	$60,000	No impact
Project 1	Construction	$101,500	$76,125	$25,375 Saving
Project 1	Assembly	$20,000	$20,000	No impact
Project 2	Design	$20,000	$20,000	No impact
Project 2	Construction	$55,000	$41,250	$13,750 Saving
Project 2	Assembly	$30,000	$30,000	No impact
Project 3	Design	$60,000	$60,000	No impact
Project 3	Construction	$30,000	$26,250	$3,750 Saving
Project 3	Assembly	$70,000	$70,000	No impact

The Diagram above suggests that through cost breakdown, the senior managers can allocate cost efficiently and save few moneys if they out-source their construction costs.

The tree-map allows senior managers to:

Understand the impact on the total cost: The visual size and color of the total cost nodes show whether outsourcing will make the project more or less cost-effective.

Prioritize projects to outsource: Projects with larger construction costs (like Project C) may benefit more from outsourcing, whereas smaller projects (like Project A) may not see as much of a reduction in total cost

Part 2B

For better visualization and get better decision makers, the senior managers can opt for other Visualization tools than Tree-Maps Like following tools;

· Bubble Charts:

Use bubble charts to represent the cost of each component in a project, with the size of the bubble representing the cost. Different bubbles (design, construction, assembly) can be displayed for each project, and the colours of the bubbles can indicate whether outsourcing has been applied.

· Heat Maps:

The Heat Maps will show the impact of different decisions (outsourcing decision) on project costs. The colour intensity can represent the cost savings or increase due to outsourcing for each project component.

· Stacked Bar Charts:

Display a stacked bar chart showing the total cost of each project with and without outsourcing. This would clearly illustrate the percentage savings or additional costs involved in outsourcing each component.

· Interactive Dashboards:

Provide an interactive dashboard where senior managers can toggle between different scenarios (outsourcing vs. not outsourcing) and see real-time updates to project costs. This

would allow them to experiment with varying percentages of outsourcing and other variables (like shipping or communication costs) to make more informed decisions.

Conclusion:

Using a tree-map, senior managers can quickly visualize outsourcing costs versus keeping the tasks in-house. Additional tools, like bubble charts, heat maps, or interactive dashboards, can further refine decision-making by offering more detailed insights into the impact of outsourcing at the strategic level. These tools help optimize resource allocation, cost efficiency, and decision-making processes across the company's projects.