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**Heavenly Chocolates Web Site Transaction**

Managerial Report

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To: Heavenly Chocolates Managerial Team

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MEMORANDUM

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**Executive Summary**

Heavenly Chocolate’s new online store’s sales have exceeded the company expectations. To make the most of benefit from the Web site to increase sales even further and to provide the best quality service to the customers, the managerial team is interested in learning more about the online shoppers’ behaviors by analyzing a sample of random 50 transactions selected from the previous month’s sales. This report uses the selected sample data along with descriptive statistic methods to investigate the relationships between the times spent, the number of pages viewed, and the amount of money spent during the customers’ visit to the Web site. Additionally, the report discusses the effect that the day of the week and the type of browser have on sales.

1. **Introduction**
2. **Purpose:**

The purpose of this report is to analyze customers’ shopping behaviors to determine whether online shoppers who spend more time and view more pages also spend more money during their visit to the Web site and from the results, managerial team can discuss to make the best executive decision on developing the Web site.

1. **Scope**

While investigating the effect of the day of the week and the type of browser the customers use, it was important to consider updating web site content and promotions on the certain days of the week and adjusting the website to be more preferred-browser-friendly.

1. **Findings and Discussion**
2. **Graphical/Numerical Summary of:**
   1. Length of time the shopper spends on the Web site

|  |  |
| --- | --- |
| **-** | **Time (min)** |
| **Min** | 4.3 |
| **Max** | 32.9 |
| **Mean (x̄):** | 12.81 |
| **Median:** | 11.4 |
| **Mode 1** | 11.4 |
| **Mode 2** | 11.4 |
| **Range:** | 28.6 |
| **Variance:** | 36.76377551 |
| **Standard Deviation:** | 6.063313905 |
|  |  |
| **Coefficient of Variation:** | 0.473326612 |
|  |  |
| **85th Percentile:** | 17.615 |
| **25th Percentile:** | 8.65 |

According to the statistical calculation, online shoppers spend 4.3 minutes minimum, 33 minutes maximum, 13 minutes in average, and a median time of 12 minutes browsing on website. In this particular case, the median is a better measure of central tendency because the data presents extreme values (outliners) that pull the mean towards the right causing skewness in the distributional shape. Graphically, more than 70% of online shoppers spend between 4 and 16 minutes navigating the website. The upper 25th percentile spend between 15.30 and 32.9 minutes navigating the website. As we can see from previous values mentioned, there is high variability in the dispersion of this data with a standard deviation of 6.06.

|  |  |  |  |
| --- | --- | --- | --- |
| **Column1** | **Firefox** | **Internet Explorer** | **Other** |
| **Number of users of each browser:** | 16 | 27 | 7 |

Interestingly, Internet Explorer is ranked the top browser to have the highest traffic with the highest total time spent, 340 minutes, and highest number of users, 27 people.

* 1. **Length of number of pages viewed**

|  |  |
| --- | --- |
| **-** | **Pages Viewed** |
| **Min** | 2 |
| **Max** | 10 |
| **Mean (x̄):** | 4.82 |
| **Median:** | 4.5 |
| **Mode 1** | 4 |
| **Mode 2** | 4 |
| **Range:** | 8 |
| **Variance:** | 4.150612245 |
| **Standard Deviation:** | 2.037305143 |
|  |  |
| **Coefficient of Variation:** | 0.422677416 |
|  |  |
| **85th Percentile:** | 7 |
| **25th Percentile:** | 3.25 |

Although there is no great difference between the mean (4.82) and the median 4.5, the median is a better estimate of location because of the rightward skewness this variable has. Another factor that assures that there is little variation in the number of pages viewed is standard deviation with 2.04 pages viewed away from the mean. Standard deviation is low, 2.03.

The number of pages viewed is approximately bell-shaped with a slight rightward skewness, sorted by smallest Amount Spent to Largest.

* 1. **Mean amount spent per transaction**

The median amount spent per transaction equals $68.13. Extreme outliers on both sides and quite an important amount of transactions between $25 and $100 keep the mean pretty close to the median. As commented before, the data presents a rightward skewness. 70 % of online shoppers spend between $25 and $75 and the top 25th percentile of our customers spend between $84 and $158.

The graph shows data sorted from smallest to largest amount spent.

1. **Frequency, total dollars spent, and mean amount spent per transaction for each day of the week:**

Friday seems to be the day that have the highest sales which weighs 22%, followed closely by Mondays with 18% of total transactions. Also, these are the days online shoppers spend the most money with 28% on Fridays and 24% on Mondays. The average amount spent on these days are also the highest among the days of the week with $90.38. Out of the 50 transactions, 21 of them spend $50 to $75.

1. **Frequency, total dollars spent, and mean amount spent per transaction for each type of browser:**

As mentioned earlier, analyzing browser brought interesting results as Internet Explorer always ranked the top browser in all 3 categories: frequency, total amount, mean amount. It is most frequently used with 54% of online shoppers navigating with it. Also, it accounts for 48% of the amount spent among online transactions and an average of $61.36 per transaction. Secondly, follows Firefox with 32% of online shoppers using this browser, 36% of amount spent, and an average of 76.76 per transaction. Lastly, online shoppers use other browsers, and although it accounts for only 14% of customers and 15% of amount spent, the average transaction cost is 74.48, higher than customers using Internet Explorer.

1. **Scatter Diagrams:**

The correlation coefficient indicates that there is a positive relationship between the time spent on the Web site and the dollar amount spent. However, there is some outliners which may cause error variance and reduce the power of statistic tests. In this scenerio, it may indicate that the customer tends to spend more money when they spend more time on the website, however, there are some exceptions showing that time spent and amount spent do not strongly depend on each other. For example, some customer. In another word, the time spent on website and the dollar amount spent show a moderately positive correlation of 0.58 between the two variables. This means that as the time spent navigating the website increases, the amount spent increases as well.

The number of website pages viewed shows a strong positive relationship with the amount spent as expressed by the correlation coefficient of 0.72. It is also indicates that the more website pages an online shopper views, the more likely he or she is to spend a higher amount of money. For example, two customers who viewed 10 pages spent close to $160 dollars.

Similarly, when we look at the relationship between times spent on the website and the number of pages viewed, we also find a moderate positive correlation close to 0.6 between these 2 variables. So we can expect to see that online shoppers who view the higher number of pages, also spends the most time, and from previous analysis, spend higher amount of money.

1. **Conclusion**

According to the study of Heavenly Chocolates online customers behaviors, the most important discovery has been the positive relationship among time spent on website, number of pages viewed, and amount spent per transaction. It is indicates that the longer the customer browse the website, the more pages viewed, and the higher the amount spent per transaction. We have identified Fridays and Mondays as the days the customer spend more time, browse more pages and spend the most money on Heavenly Chocolates’ website, specifically, Friday is the day has highest traffic. The team can use this report to make better business decision and improve the website.