**Report of DW Assignment using Excel**

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**Q1.** **Profit analysis for vending machines at WPI**

There are 10 vending machines at WPI in total. Profit analysis for these machines are as follows:

|  |  |  |
| --- | --- | --- |
| Mac  \_id | mac\_lcn\_adrs\_scnd\_line | Sum of profit |
| 7 | Alumini Gym Bldg 1st floor | 7250.31 |
| 3 | Washburn Bldg 2nd floor | 7046.76 |
| 4 | Washburn Bldg 2nd floor | 7015.42 |
| 6 | Salisbury Lab Bldg 2nd floor | 6978.45 |
| 10 | Gordon Lib Bldg 3rdd floor | 6882.94 |
| 8 | Gordon Lib Bldg 3rdd floor | 4040.03 |
| 9 | Gordon Lib Bldg 3rdd floor | 4040.03 |
| 5 | Salisbury Lab Bldg 2nd floor | 3999.09 |
| 2 | Washburn Bldg 2nd floor | 3985.36 |
| 1 | Washburn Bldg 2nd floor | 3909.29 |

As above figure shows, the most profitable machines’ Ids (locations) are machine 7 (location: Alumini Gym Bldg 1st floor), machine 3 (Washburn Bldg 2nd floor) and machine 4 (Washburn Bldg 2nd floor). The least profitable ones are machine 1 (Washburn Bldg 2nd floor), machine 5 (Salisbury Lab Bldg 2nd floor) and machine 2 (Washburn Bldg 2nd floor).

**Q2. The usage (represented by stocking and stales) differ for machines at malls vs. companies vs. schools (WPI).**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **mac\_lcn\_ctrgy\_desc**  **/Prod\_ctrgy\_desc** | **Sum of fact\_stale\_unit\_cnt** | **Sum of fact\_restock\_unit\_cnt** |  | | **Stale\_**  **rate** |  |
| **Company** | **1347** | **23883** | |  | **5.64%** |  |
| Carbonated soft drink and Water | 0 | 10596 | |  |  |  |
| Snacks | 1347 | 13287 | |  |  |  |
| **Mall** | **572** | **21207** | |  | **2.70%** |  |
| Carbonated soft drink and Water | 0 | 13302 | |  |  |  |
| Snacks | 572 | 7905 | |  |  |  |
| **School** | **2086** | **74604** | |  | **2.80%** |  |
| Carbonated soft drink and Water | 11 | 33915 | |  |  |  |
| Snacks | 2075 | 40689 | |  |  |  |

From the above table, we can see that schools stock much more products than malls and companies. The stale rate of Company is much higher than that of the mall and school categories. What’s more, the restock number of Carbonated soft drink and Water at malls is much higher than that of snacks.

**Q3. Machines differ by the number of stales.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| mac\_id | mac\_lcn\_adrs\_scnd\_line | Stales | mac\_id | mac\_lcn\_adrs\_scnd\_line | Stales |
| 2 | Washburn Bldg 2nd floor | 0 | **1** | Washburn Bldg 2nd floor | 11 |
| 5 | Salisbury Lab Bldg 2nd floor | 0 | **7** | Alumini Gym Bldg 1st floor | 241 |
| 8 | Gordon Lib Bldg 3rdd floor | 0 | **4** | Washburn Bldg 2nd floor | 292 |
| 9 | Gordon Lib Bldg 3rdd floor | 0 | **3** | Washburn Bldg 2nd floor | 336 |
| 11 | The Hannover Insrncs1st flr | 0 | **17** | Greendale Mall Food crt | 572 |
| 13 | The Hannover Insrncs3st flr | 0 | **6** | Salisbury Lab Bldg 2nd floor | 603 |
| 15 | Greendale Mall west end | 0 | **10** | Gordon Lib Bldg 3rdd floor | 603 |
| 16 | Greendale Mall East end | 0 | **14** | The Hannover Insrncs food crt | 630 |
|  |  |  | **12** | The Hannover Insrncs2st flr | 717 |

Half of the machines just hold drinks, so their stales are 0. Another half of the machines hold snacks and their stales are also different. Machine 12 and 14 in the company Hannover insurance have the highest stales. Machine 10, 6 in WPI and machine 17 in Greendale Mall also have relatively high stale.

**Q4. Three major recommendations to the manager of the vending machine company to improve their profit.**

With all the analysis above, I have three suggestions as follows to improve your profit:

1. For the machines in WPI, Your company should stock more products in the machine 7 (location: Alumini Gym Bldg 1st floor), machine 3 (Washburn Bldg 2nd floor) and machine 4 (Washburn Bldg 2nd floor). These machines are top 3 most profitable. As there is just one machine in the Alumini Gym Bldg 1st floor, the company can load one more machine here. What’s more, you can withdraw machine 1 or machine 2 in Washburn Bldg 2nd floor. The reason is these two machines are the least profitable machines and their sum profit is roughly equal to machine 3 in the same place.
2. You should load more machines and stock more products at schools than companies or malls. School stock many more products than company, mall, and its stale rate is reasonable. Secondly, as the stale rate of Company is much higher than mall and school, you should put less snacks in company than now. Thirdly, the restock number of Carbonated soft drink and Water at malls are much higher than that of snacks. For other malls, you can stock more Carbonated soft drink and Water than snacks in vending machines.
3. You need to stock less snacks to machine 12 and 14 in the company Hannover insurance, machine 10 and 6 in WPI, and machine 17 in Greendale Mall. The reason is that history data shows that these machines have the highest stales.