BUS 320 Foundations of Statistics

Name of the Writer

Name of the University

|  |
| --- |
| Average time taken  |
| 12:00 | 4 min |
| 12:15 | 1 min |
| 12:30 | 3 min |
| 12:45 | 2 min |
| 13:00 | 7 min |
| 13:15 | 3 min |
| 13:30 | 5 min |
| 13:45 | 4 min |
| 14:00 | 6 min |
| 14:15 | 5 min |
| Mean | 4 |
| Mean range | 6 |
| Standard deviation  | 1.83 |
| Upper control limit  | 9.49 |
| Lower control limit | -1.49 |

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**Control Chart**

|  |
| --- |
| Average time taken  |
| 12:00 | 4 min |
| 12:15 | 1 min |
| 12:30 | 3 min |
| 12:45 | 2 min |
| 13:00 | 7 min |
| 13:15 | 3 min |
| 13:30 | 5 min |
| 13:45 | 4 min |
| 14:00 | 6 min |
| 14:15 | 5 min |
| Mean | 4 |
| Mean range | 6 |
| Standard deviation  | 1.83 |
| Upper control limit  | 9.49 |
| Lower control limit | -1.49 |

 The above Control Chart shows the movement of the average time taken for five customers at a given hour to receive their order. The data for this graph has been collected from the closest fast food restaurant (Mc Donald). The data collected for the graph above is shown in the table above the graph. This table, tabulates the average time in minutes it took for five individuals to get their order within the chosen fast food restaurant. Using the data in the table the control chart was formed. Furthermore, the data in the table was used to find the mean, mean range, standard deviation, central line, upper control limit and the lower control limit.

 If the data is analyzed properly, it can be seen that the average time it took to serve individuals during the period from 12:00 to 14:15 is around four minutes. Considering this is the lunch time and there is a high amount of people present who want to be served, the average time taken is exceptional. The upper limit calculated for the data is around 9.49 minutes, the lower limit calculated for the data is around -1.49 minutes and the central line was calculated at 4 minutes. If the graph trajectory is to be analyzed, none of the data moves out of the UCL or the LCL. This means that the data is cohesive and without fault. Furthermore, there are two points that also lie on the central line that give the realness of the data. A further analysis of the control chart shows that the time at 13:00 hours surpasses whom if refurbished can have positive effect on the the zone A and the time for 12:15 moves further down into zone B. Both of these zones are at equidistant to the central line and show the variation that is occurring within the values.

**How statistics (including probability) can benefit businesses by increasing the bottom line**

It is an age old tradition in the business world to use statistics and probability in order to improve business functions. This is because in the face of uncertainty statistics including probability has been the go to tool for business managers. This is because it helps in minimizing the rise in uncertainty. Furthermore, statistical thinking and its methods have become the basis for business decision making and is helping in furthering the growth of businesses (Mariappan, 2019). In simple words, the term statistics refers to the quantitative terms that are an expression of numerical values and information. Objects, activities, subjects and phenomena are some of the aspects that the information might relate to. At the micro level this is the data that is produced by small and large firms. However, the size, these firms produce gauge amounts of data. The data provided by thee companies include data on production, inventories sales, capital employed and expenditure

The data produced by these firms is usually collected through field research and scientific techniques are employed in order to collect the said data. However, this data needs to be regularly updated as the previous data collected has only one time use. On the basis of academics, students are intimately aware of the statistics in the form of a module in subjects such as mathematics, chemistry, economics and physics. This discipline, scientifically deals with data and is referred to as the science of data (Crisostomo & Chauhan, 2019). Additionally, in order to deal with the data that is collected, statistics has developed methods that are appropriate for either presenting, analyzing, collecting or summarizing data. After the data is dealt with statistics is the branch of mathematics that helps businesses and countries to decide regarding a certain situation using the data provided. This way any level of uncertainty within decision making is reduced tremendously.

For businesses statistics is a very important tool to increase its bottom line. For every business out there turning a profit is very important. Furthermore, their aim is to increase the level of their profits from the last year. In this way they are always looking for new ways to improve their bottom line. This is because they either want to expand their operations or just to keep their investors happy. The reasons can be immense and can be very specific in nature as it all depends on the type of business being looked at. This makes the use of statistics very important for business functions.

Specifically, there are multiple ways through which statistics can easily help in improving the bottom line of businesses. Primarily, statistics can help in managing the performance of a corporation. It is a known fact that the bottom line of companies is dependent on the level of performance that they show. If there is any lag in the performance within the business or the company, it will be very detrimental for the company itself (Coleman, 2016). Statistics can help managers in improving efficiency within the operations of the business. This will be done by analyzing the performance and the production of the employees within the company. For example, a manager can look at the units produced within a specific timeframe or the time taken for an employee to complete a given task. By using statistical techniques, managers can analyze the data collected regarding the different scenarios and focus on the areas within the business that are lagging behind and that need improvement.

Additionally, statistics can also be used in order to formulate alternative scenarios during the decision making process. Most businesses are made up of a combination of departments and subdivisions that help contribute their part in the bottom line of the company. In this way, managers from different departments have to work together to formulate strategies in order to increase the overall productivity of the company (Sandoz, et al, 2017). These managers have to effectively take part in the decision making process and make the best decision possible in order to create a greater profit margin and increase the bottom line of the company. An example of this is when textile industries have to choose between buying a machine that can improve the overall productivity but is costly and requires training for use. However, there is also the option of old machines, whom if refurbished can have a positive effect on the bottom line but not as much as the new one. These are some cases when statistics can be useful in decision making.

Lastly, in order to grow and increase its bottom line, businesses have to constantly innovate and research their technologies, operational methods and multiple other things. This is another place where statistics can really help businesses. Statistics can help in market research and product development. This way businesses can look for new exciting products that are needed in the market and produce them. Using statistics, a sample group would be taken to analyze the new products developed. Their actions and response would be observed towards the product testing and would be then documented (Wang et al, 2018). This data would be essential in the launch of the product as it will let businesses the defects within their products and the areas that they need to work on. Businesses would be able to fulfill a need present in the market and create a new customer base for themselves. If their products perform especially well then they will be able to retain those customers as well. This way the company would be able to increase its profits and significantly benefit the bottom line of the company.

References

Coleman, S. Y. (2016). Data-mining opportunities for small and medium enterprises with official statistics in the UK. *Journal of Official Statistics*, *32*(4), 849-865.

Crisostomo, M. E., & Chauhan, R. S. (2019). Using the O ccupational I nformation N etwork (O\* NET) to demonstrate the importance of understanding statistics for undergraduate students. *Teaching Statistics*, *41*(3), 89-93.

Mariappan, P. (2019). *Statistics for Business*. Chapman and Hall/CRC.

Sandoz, E. K., Butcher, G., & Protti, T. A. (2017). A preliminary examination of willingness and importance as moderators of the relationship between statistics anxiety and performance. *Journal of Contextual Behavioral Science*, *6*(1), 47-52.

Wang, P., Palocsay, S. W., Shi, J., & White, M. M. (2018). Examining Undergraduate Students’ Attitudes toward Business Statistics in the United States and China. *Decision Sciences Journal of Innovative Education*, *16*(3), 197-216.