

Executive Summary

This report presents analysis of data collected for 150 locations of warehouse. Click sales is an online store which sells merchandise around the world. Some sales are from warehouse locations while most are online. The analysis of the data shows the impact of gender and customer reviews in warehouse performance. Warehouse with incidents requiring Head Office intervention seemed to have performed better and medium rated reviews locations were performing better than high rated. Females were getting higher pay and constituted more than three fourth of the work force. The survey sample size needed to be revised for the future surveys and attention is required for proper coding so that the results are correct. Also a need for establishing benchmarks, using historical sales and peer stores performances, is required so Click Sales has a KPI for performances.

Introduction

The Clicksales dataset contains 150 observations of warehouses from where sales was recorded. There are 150 warehouses of which 41% were in N America, 32% in Europe and 27% elsewhere. 83% of the store managers were female and 17% male. Annual sales was highest for stores which had web presence of between 7 and 10 years, representing 62% of all sales while the stores with web presence greater than 10 years only represented 36% of the total sales. Surprisingly there does not seem to be a causal linkage between the managers' years of experience in a similar position to the Storefront Sales or with the wages per person.

Dataset Exploration

The customer reviews did not reflect the annual sales or the wages earned. The highest ranked reviewed stores had a total annual sales of \$11,538,000 while the low reviewed stores had annual sales of \$5,417,000 and medium rated stores had the highest annual sales of \$21,067,000. Similar the medium reviewed stores employed salespersons with highest overall wages, so there seems to be a disconnect with the reviews and performance measures especially in the case of medium reviews. This could also imply an error in the data coding or recording. Wages have declined in stores where there more incidents requiring head office intervention. There is an anomaly, however that it seems that having 2 incidents gave spurt to increased wages. This deviation from norm needs to be investigated, possibly one explanation could be that some sort of attention from head office helps in boosting productivity and in realizing more sales and thus increased wages. Storefront sales on the other hand had much higher magnitude for zero incidents but closely followed by two incidents. This two incidents is suspiciously linked to increased output so this causal linkage should be examined further to identify why a negative event is causing positive returns as the lessons may be helpful for the rest of the stores and in better management of incidents.

Queries Answers

There were a total of 260,825 items sent from the warehouses with 46 sent from stores rated high by customers, 23 items were sent by stores rated low by customers and 81 items were sent by stores rated medium by the customers. The most productive location for high rated stores was location 113 with 2604 items sent, followed by medium customer review rating location 78 which sent 2822 items and finally the low rated location 75 sent 2268 items. 76% of the locations with high customer reviews were female, while 89% of the medium rated customer reviews were females, so gender seems to be a factor for improved reviews. Annual sales had a correlation of 0.86 with number of employees so increasing number of employees would positively impact sales performance. After coding female as 1 and male as 2 the correlation did not show a significant linkage but ANOVA showed that the wages were significantly linked to the gender as p was less than 0.05, which shows that the results are 95% confident, a base standard. Females overshadow males and earn substantially more than their male counterparts. For Getting the average annual sales of all female managed stores the sales were filtered for females and then averaged giving a value of \$2,556,352 while the proportion of stores

with high rated customer reviews is 46 out of 150 or 1:3. Comparing the wages with other organization where an average salary of \$65,000 was assumed showed that salary of warehouse staff was significantly higher than the salary for other organization. Checking if 22% of click sales managers are male chi square tests (Excel Test, 2020) show the results are not significantly different from the expected so for salaries greater than \$65,000 the males are less than 22% while for salaries less than \$65,000 the males constitute 22% of the managerial work force. The sample size calculation helps to ensure validity of the test results and ensures that any results would be statistically significant to be used, too large a sample size is costly and requires much time for data collection and analysis (Statistics Solutions, 2021). As per Sullivan, (n.d.) for finding the relevant sample size the formula $n = p(1 - p)\left(\frac{z}{E}\right)^2$ assuming the probability of females as 104/150 the p is 0.6933 and (1-p) is 0.3067 and z for 95% or 5% significance is 1.96 with E of 0.05 giving a sample size of 327 as optimum (Qualtrics, 2021). For accurately estimating the true proportion of warehouses that have a high customer review rating to with plus and minus 5% the same process is followed but e is taken as 5%/2 or 0.0250 with sample size coming out to be 1307 (Brown, 2020).

Conclusion

The data has anomalies and certain determinations – like medium rating of customer seemingly rated higher than high rating and more wages for employee working in stores which have reported incidents requiring involvement of head office need further examination. It would be easier to gauge performance if historical figures were available and also comparable data from peer stores so Click Sales performance can be benchmarked for the future. Also future study should have a larger sample to ensure that results are scientifically valid for all of the pertinent variables.

References

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