



Comm1190

Data, Insights and Decisions (University of New South Wales)

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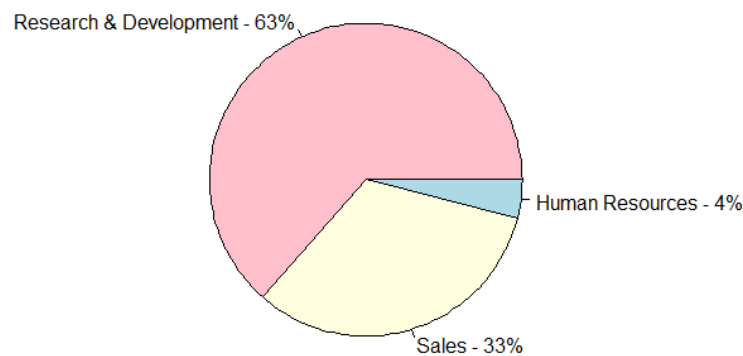
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## Executive Summary

Globex Pharma is a pharmaceutical company with a desire to strengthen employee satisfaction in the workforce. Based on qualities surrounding attributes of employment and demographics, the company has provided results from a survey they conducted to explore the common themes which contribute to a positive work experience. This report provides an evaluation of the core three factors contributing to job satisfaction, which include average income, job stability and good relationships with coworkers, along with a visual analysis of the results provided with aims to boost employee morale overall.

## General Employee Statistics

**Figure 1: Distribution of Employees in Globex Pharma's Job Departments**

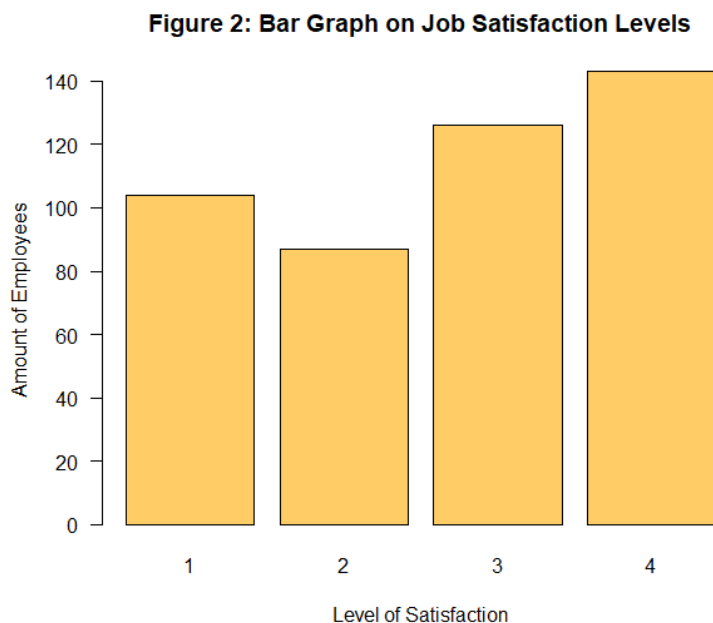


As seen from Figure 1, majority of Global Pharma's employees appear to work in 'Research & Development', taking up 63% of 460 workers. Another relatively popular job department is 'Sales', making up approximately one third of employees in the dataset. There appears to be an uneven distribution with the company's job departments.

Basic Statistics on Job Satisfaction Levels	
Mean	2.669565
Median	3

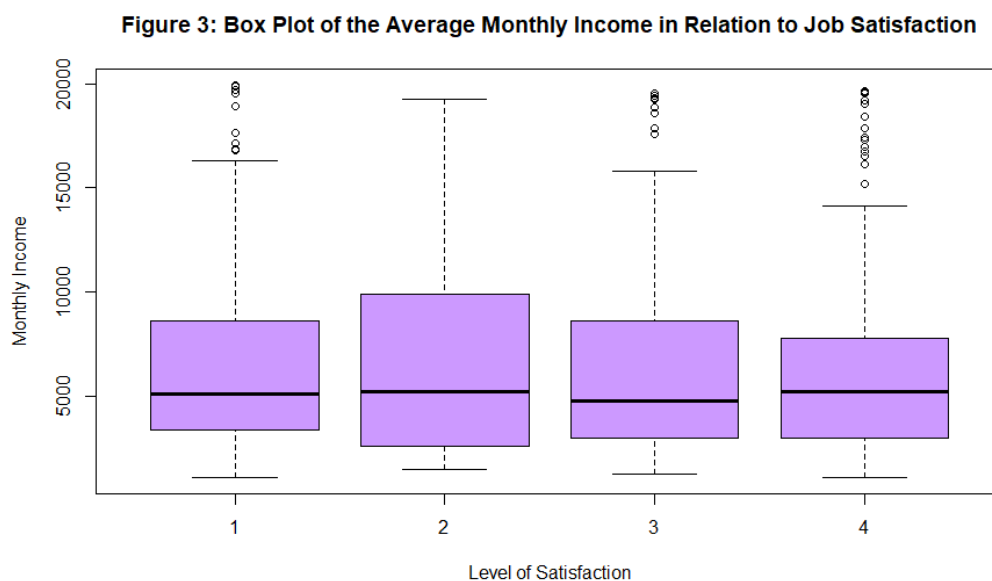
The table above provides the simple statistics on overall levels of job satisfaction in Globex Pharma, with '1' representing the lowest and '4' being the highest. We can clearly see that not all employees are satisfied with working conditions, as the mean equates to approximately 2.66, ranging from 'Medium' to 'High' levels of satisfaction, and the median sits at 3. With the values of data only ranging from 1 to 4, being based on categories from 'Low' to 'Very High', there is a low chance of outliers occurring so the mean is the more accurate measure of job satisfaction in comparison to median.

To visualise the data more clearly, Figure 2 illustrates a bar graph on the levels of job satisfaction to provide further insight with where the data lies.



## Further Analysis on Factors

Forbes, one of the largest business-focused global media companies, has revealed an “attractive fixed salary” (Morgan, 2014) was one of the top 10 factors contributing to job satisfaction. Taking this into consideration, Figure 3 goes in further depth on analysing the relationship between levels of satisfaction and the spread of data with monthly income through a box-plot.

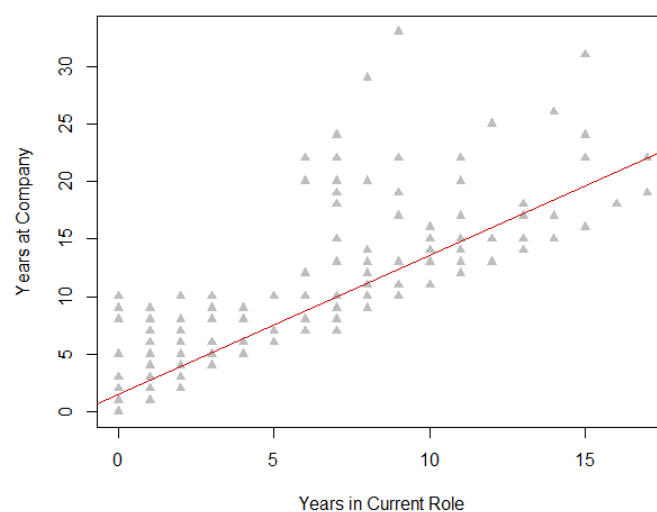


Descriptive Statistics on Figure 3				
	1	2	3	4
Min	1091	1483	1281	1118
Q1	3400	2575.5	2996	2972.5
Median	5107	5228	4799	5204
Q3	8592.5	9915.5	8620	7786
Upper Bound	16328	19246	15787	14118
IQR	5192.5	7340	5624	4183.5

In Figure 3, the median monthly income for all job satisfaction levels lie at around \$5000. Outliers can be seen in all levels besides 'Medium' past their respective upper bounds. With a correlation of -0.01579235, it's difficult to clearly determine the direct relationship between monthly income and job satisfaction levels. However, the box-plot doesn't consider the income differences with each role, and the unique perspective each employee has. For example, some may believe their wage does "not seem to be compensating for their working conditions" (O'Donnell, 2015) despite earning over \$10000 per month, thereby ranking their job satisfaction level at 2, but others may prioritise an 'attractive' fixed salary.

To utilise correlation effectively, another approach is to consider the relationship between two numerical variables (through a scatterplot) by substituting job satisfaction with years at company, through the logical assumption that an employee would work at a company longer if they were satisfied with their job. Figure 4 focuses on the job security aspect of employment, revealing the relationship between years in current role vs years at company.

**Figure 4: Years in Current Role vs. Years at Company**



The scatterplot above reveals that there is a strong positive correlation between years in current role and in the company ( $R = 0.8173531$ ), indicating that high levels of job stability has a high chance in greater job satisfaction. With extensive work experience, employees may feel more comfortable with their current role in the company, thereby increasing the likelihood of job satisfaction.

**Figure 5: Years with Current Manager vs. Years at Company**

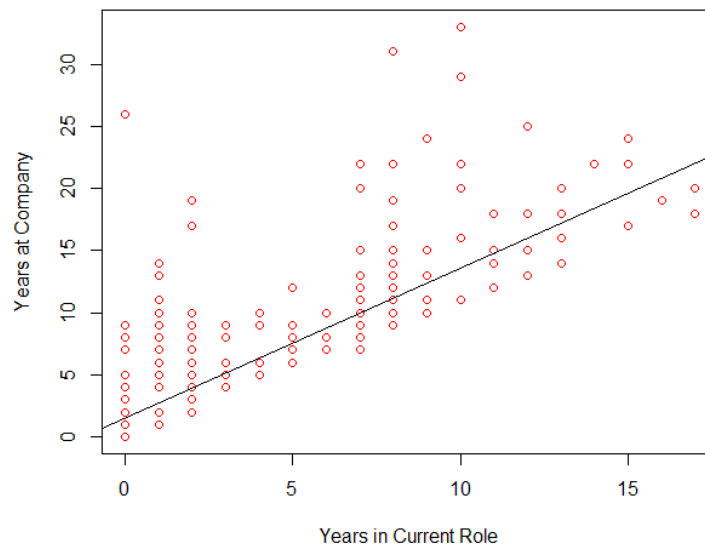


Figure 5 reinforces a strong positive relationship for years with the current manager and employment duration ( $R = 0.7858418$ ). This implies that having a good relationship with your superiors will reinforce a positive work environment, thereby increasing job satisfaction as a whole. However, this shouldn't restrict to superiors only. Maintaining close bonds with colleagues creates a sense of belonging in the workplace, having a positive impact on increasing "employee... engagement, reduces burnout and improves employee and organisational performance" (Cross, 2019).

## Possible Recommendations

Overall, an attractive pay rate for employees, maintaining job stability along with promoting good relationships with coworkers and superiors would be the factors that Global Pharma should focus on to enhance job satisfaction in the company. Although increasing wages for employees for each job role fails to be cost-effective for the business, Global Pharma could instead focus on providing external rewards as an alternative, such as vouchers, extra day off's or gifts if their performance rating is high. In addition, to encourage employees to stay in the business for a longer period of time, employers could provide optional supplementary programs to upskill, to avoid the possibility of workers being bored with their current role. This would drive career development whilst maintaining engagement with the company. Finally, to improve work culture, Global Pharma could facilitate cross-over social events between all three departments. This will provide employees the opportunity to share their concerns or ideas in a more relaxed environment.

## References

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[Accessed 8 March 2022].

## Appendix

```
g_p <- read.csv("5362496.csv")

#Figure 1: Distribution of Employees in Globex Pharma's Job Departments
#Quantity of Employees in Each Job Department
library(dplyr)

##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union

r_d <- nrow(filter(g_p, g_p$Department == "Research & Development"))
sales <- nrow(filter(g_p, g_p$Department == "Sales"))
h_r <- nrow(filter(g_p, g_p$Department == "Human Resources"))
```

```

#Pie Chart
slices <- c(r_d, sales, h_r)
lbls <- c("Research & Development -", "Sales -", "Human Resources -")
pct <- round(slices/sum(slices)*100)
lbls <- paste(lbls, pct)
lbls <- paste(lbls,"%",sep="")
par(cex=1)
pie(slices,labels = lbls, col = c("pink", "lightyellow", "lightblue"), mai
n="Figure 1: Distribution of Employees in Globex Pharma's Job Departments"

#Simple Statistics for Job Satisfaction Levels
library(moments)
j_s <- g_p$JobSatisfaction

#Mean and Median
mean(j_s)

## [1] 2.669565

median(j_s)

## [1] 3

#Figure 2: Distribution of Job Satisfaction Levels
#Bar Graph
table(j_s)

## j_s
## 1 2 3 4
## 104 87 126 143

barplot(table(j_s), xlab = "Level of Satisfaction", ylab = "Amount of Empl
oyees", las = 1, col = c("#FFCC66"))
title(main = "Figure 2: Bar Graph on Job Satisfaction Levels")

#Figure 3: Average Monthly Income in Relation to Job Satisfaction
#Box Plot
mi_js <- boxplot(g_p$MonthlyIncome ~ g_p$JobSatisfaction, main = "Figure 3
: Box Plot of the Average Monthly Income in Relation to Job Satisfaction",
xlab = "Level of Satisfaction", ylab = "Monthly Income", col = c("
#CC99FF"))

#Summary Statistics
mi_js$stats

##      [,1]      [,2]      [,3]      [,4]
## [1,] 1091.0 1483.0 1281 1118.0
## [2,] 3400.0 2575.5 2996 2972.5
## [3,] 5107.0 5228.0 4799 5204.0
## [4,] 8592.5 9915.5 8620 7786.0
## [5,] 16328.0 19246.0 15787 14118.0

```



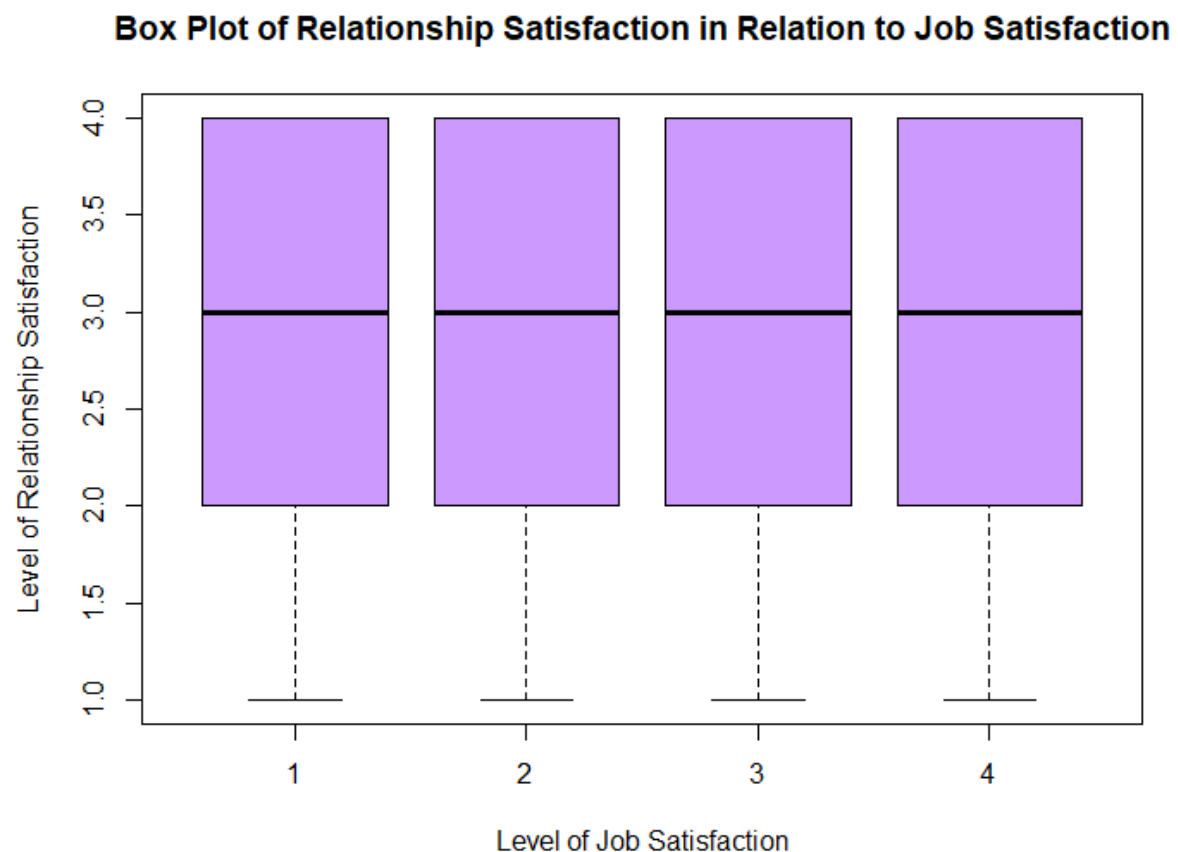
```

#Correlation
cor(g_p$MonthlyIncome, g_p$JobSatisfaction)

## [1] -0.01579235

#Relationship Satisfaction in Relation to Job Satisfaction
#Box Plot
boxplot(g_p$RelationshipSatisfaction ~ g_p$JobSatisfaction, main = "Box Plot of Relationship Satisfaction in Relation to Job Satisfaction",
        xlab = "Level of Job Satisfaction", ylab = "Level of Relationship Satisfaction", col = c("#CC99FF"))

```



```

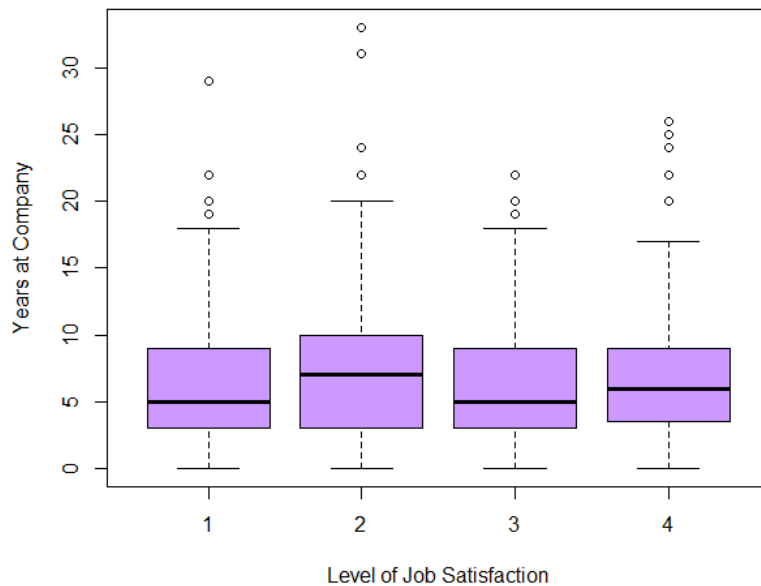
#Correlation
cor(g_p$RelationshipSatisfaction, g_p$JobSatisfaction)

## [1] -0.02204938

#Years at Company in Relation to Job Satisfaction
#Box Plot
boxplot(g_p$YearsAtCompany ~ g_p$JobSatisfaction, main = "Box Plot of Years at Company in Relation to Job Satisfaction",
        xlab = "Level of Job Satisfaction", ylab = "Years at Company", col = c("#CC99FF"))

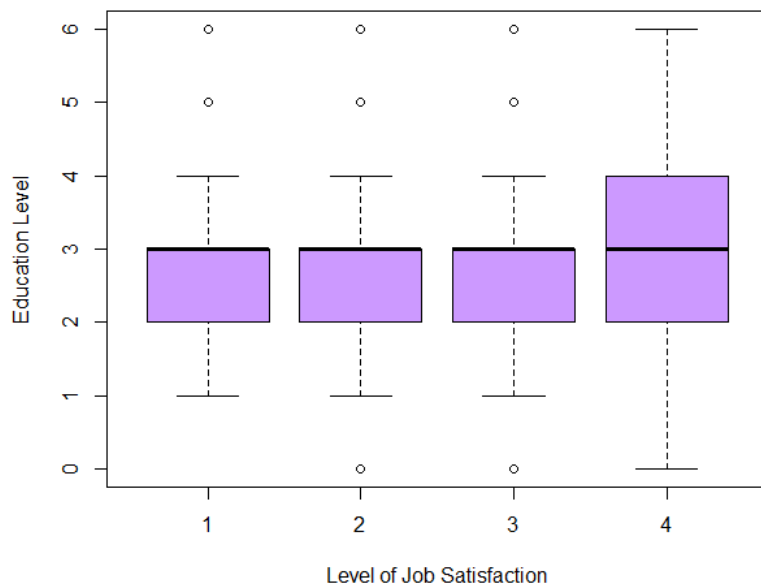
```

**Box Plot of Years at Company in Relation to Job Satisfaction**



```
#Training Times in Relation to Job Satisfaction
#Box Plot
boxplot(g_p$TrainingTimesLastYear ~ g_p$JobSatisfaction, main = "Box Plot
of Training Times in Relation to Job Satisfaction",
        xlab = "Level of Job Satisfaction", ylab = "Education Level", col
= c("#CC99FF"))
```

**Box Plot of Training Times in Relation to Job Satisfaction**



```

#Correlation
cor(g_p$TrainingTimesLastYear, g_p$JobSatisfaction)
## [1] -0.02027976

#More Correlation Coefficients in Relation to Job Satisfaction
cor(g_p$JobInvolvement, g_p$JobSatisfaction)
## [1] -0.05749147

cor(g_p$YearsWithCurrManager, g_p$JobSatisfaction)
## [1] -0.02449674

cor(g_p$EnvironmentSatisfaction, g_p$JobSatisfaction)
## [1] -0.01044137

cor(g_p$WorkLifeBalance, g_p$JobSatisfaction)
## [1] -0.02870876

#Figure 4: Relationship between Years in Current Role vs. Years at Company
#Scatter Plot
plot(g_p$YearsInCurrentRole, g_p$YearsAtCompany, main="Figure 4: Years in
Current Role vs. Years at Company",
      xlab="Years in Current Role", ylab="Years at Company", col = c("grey"
), pch=17)

#Line of Best Fit
abline(lm(g_p$YearsAtCompany ~ g_p$YearsInCurrentRole), col = c("#CC0000"
))

#Correlation
cor(g_p$YearsInCurrentRole, g_p$YearsAtCompany)
## [1] 0.8173531

#More Correlation Coefficients in Relation to Years at Company
cor(g_p$JobLevel, g_p$YearsAtCompany)
## [1] 0.5014157

cor(g_p$MonthlyIncome, g_p$YearsAtCompany)
## [1] 0.4831951

cor(g_p$TotalWorkingYears, g_p$YearsAtCompany)
## [1] 0.5673706

cor(g_p$YearsSinceLastPromotion, g_p$YearsAtCompany)
## [1] 0.5746789

```

```

#Figure 5: Years with Current Manager vs. Years at Company
#Scatter Plot
plot(g_p$YearsWithCurrManager, g_p$YearsAtCompany, main="Figure 5: Years w
ith Current Manager vs. Years at Company",
      xlab="Years in Current Role", ylab="Years at Company", col = c("red")
, pch=1)

#Line of Best Fit
abline(lm(g_p$YearsAtCompany ~ g_p$YearsInCurrentRole), col = c("black"))

#Correlation
cor(g_p$YearsWithCurrManager, g_p$YearsAtCompany)

## [1] 0.7858418

```