**Chapter 4**

**Analysis of Results and Discussion**

In this chapter the analysis of results of the quantitative techniques used in this research. This chapter includes: the method of data analysis, discussion and analysis of the online survey, demographics, discussion and analysis of the experiment, discussion and analysis of the observation, discussion and analysis in relation to the literature, discussion and analysis in relation to the hypothesis and research questions, and conclusion.

**4.1 Method of Data Analysis**

In this research, numerous methods of data analysis were used for the prototype, direct observation, and online survey. IBM SPSS is the software which was used, focusing on statistics, and aiding the use of several statistical tools to analyse the data gathered.

**4.2 Discussion and Analysis of the Online Survey**

An online survey has been conducted in the early stages of this research as shown in Appendix B. The primary reason for conducting this survey was in order to collect small pieces of statistical information. Such information in this survey included, demographics, experience in the sector, knowledge about Machine Learning, opinions of Machine Learning, current system applications and if they think this will aid their financial planning and prospective futures. Afterwards, the data collected from this survey was assembled using Google Forms and the extracted data was imported to the mentioned IBM SPSS software.

**4.2.1 Demographics**

In the early stages of this research, it was mentioned that a sample of 53 respondents were required to cover a 10% margin of error of the population of auto dealers. These 53 responses were gathered, which were used to carry out descriptive analysis and statistical analysis. The first section, which is the one after the introduction, for the survey included demographic information including gender, age, and experience in the sector. Before the analysis of this demographic data, the researcher had to clean and filter the collected data. As presented in the table below (Figure 4.1), this was done by translating string values such as male and female to 1s and 2s accordingly. This had to be done to every column within the data for it to be readable by IBM SPSS.

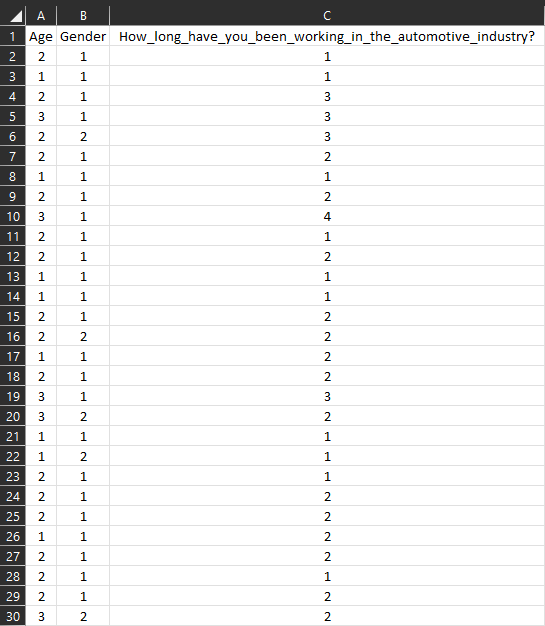


Figure 4.1: Cleaned and Filtered Data

As shown in the chart below (Figure 4.2), shows that from a total of 53 responses there were auto dealers from all age groups. The age group that had the most auto dealers was that of between 30 – 45 having 49.1% (26 auto dealers), followed by that of 15 – 30 years of age carrying 28.3% (15 learners). Combining these two age groups together amounts to 77.4% (41 auto dealers) of the total responses, which shows that most of the auto dealers were on the younger side of adulthood. The rest of the auto dealers were over 45 years of age having 22.6% (12 auto dealers). These figures demonstrated that auto dealers contributed had different age groups, and this was an advantage for this research since various age groups provide diverse opinions.

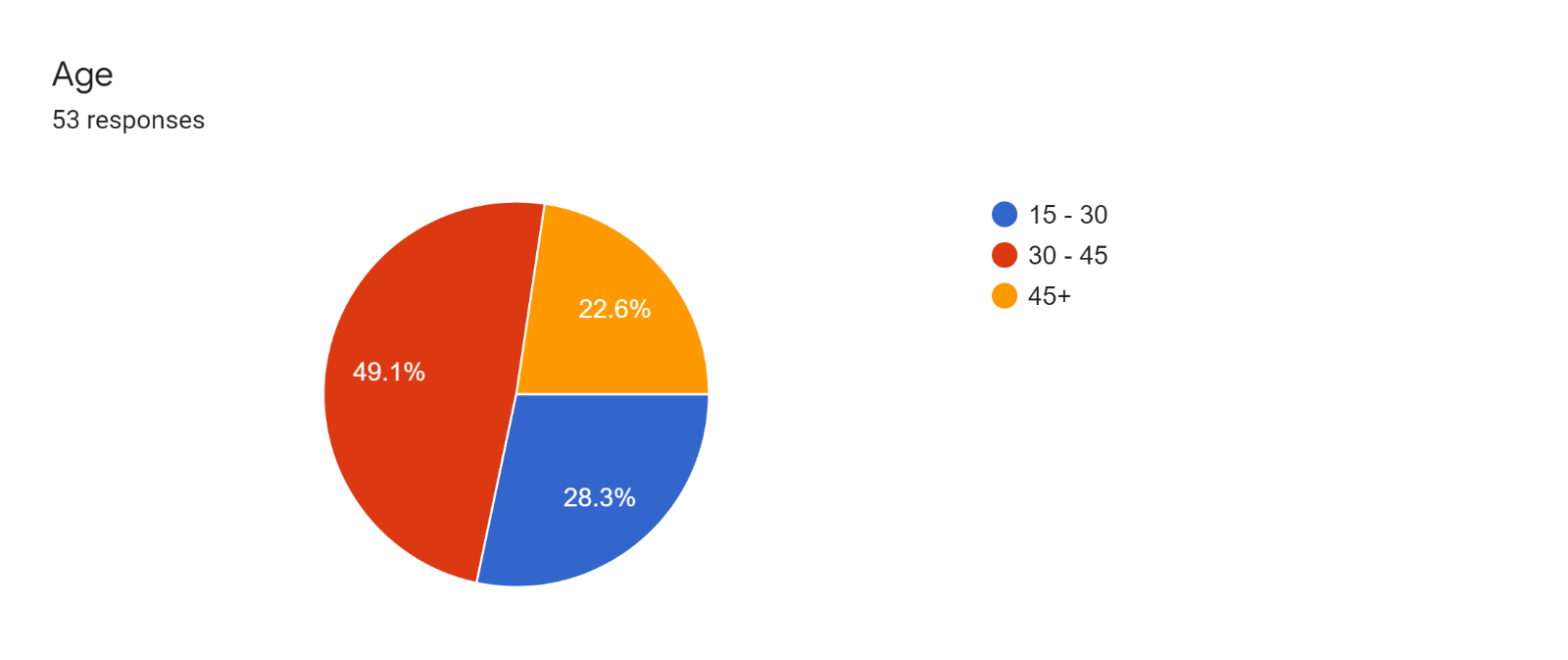


Figure 4.2: Descriptive Statistics Age

As shown in the chart below (Figure 4.3), it can be easily recognized that male auto dealers covered over three quarters of the responses, by having 81.1% (43 auto dealers), followed by female auto dealers carrying 18.9% (10 auto dealers) from the total responses.

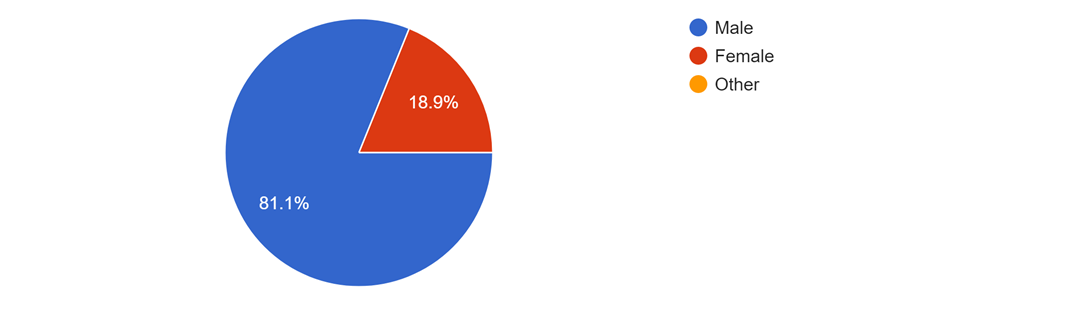


Figure 4.3: Descriptive Statistics Gender

**4.2.2 Chi-Squared Tests**

To analyze the collected data, contrast and compare variables, and cross tabulate; IBM SPSS was used to conduct these analyses. This data analysis method is used to quantitatively examine the correlation between variables.

As shown in Table 4.1 below, the researcher produced the result of the cross tabulation, which shows a statistical analysis between age and whether auto dealers are familiar with Machine Learning. The result shows that there was a higher number of auto dealers familiar with Machine learning which fall in the younger category of 15 - 30, 66.7% (8 auto dealers out of 12) of all yes votes and 53% (8 auto dealers out of 15) of the age group that are familiar with Machine Learning. This is while the older age group category of auto dealers had no respondents which knew about Machine Learning, at 0% all 12 respondents were not aware of Machine Learning. The middle age category come in at 33.3% of all yes votes yet 18.2% of the age category. This proves that the younger generation are more exposed to technological advancements.

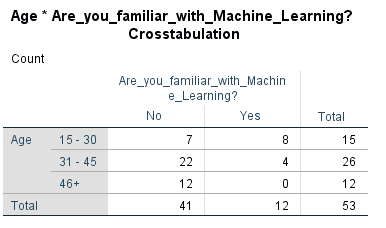


Table 4.1: Cross Tabulation on Age \* Are you familiar with Machine Learning?

Once conducting cross tabulation, the researcher conducted statistical analysis between age and whether auto dealers thought predictive analytics would be beneficial to their business. Prior to asking this question a small definition was provided to the respondents as shown in Figure B.4.

In the table below, what the researcher is interested in is the Pearson Chi-Squared, having a p-value of 0.528% and alpha level of 0.05%. This means that the null hypothesis could be accepted, and therefore there was no significant difference between age and whether auto dealers think Predictive Analytics is beneficial to their business.

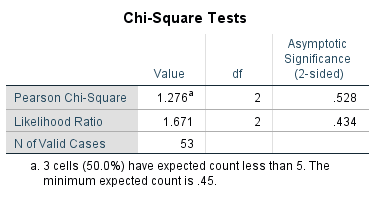


Table 4.2: Chi-Square on Age \* Given the definition, do you think that Predictive Analytics could be beneficial to businesses?

**Appendix B**

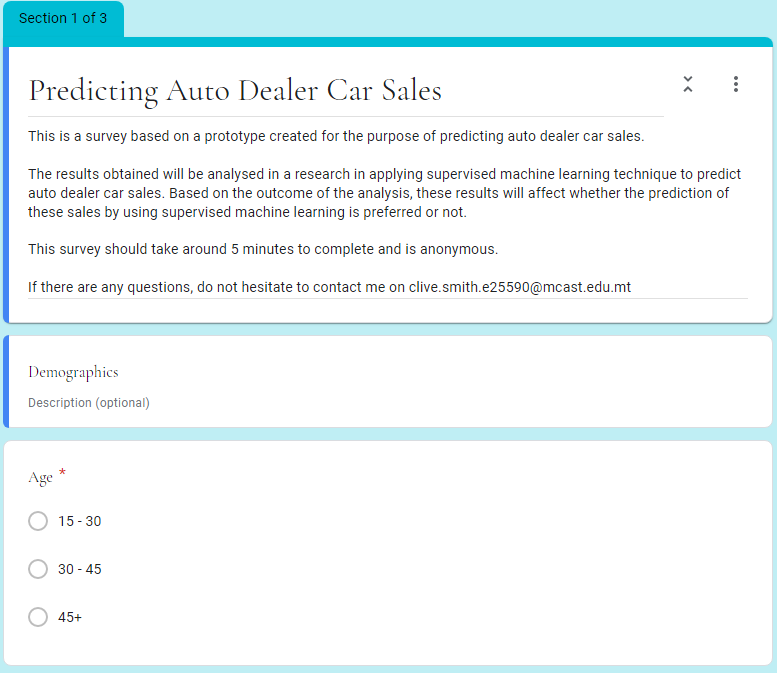


Figure B.1: Online Survey Introduction and Initial Demographics

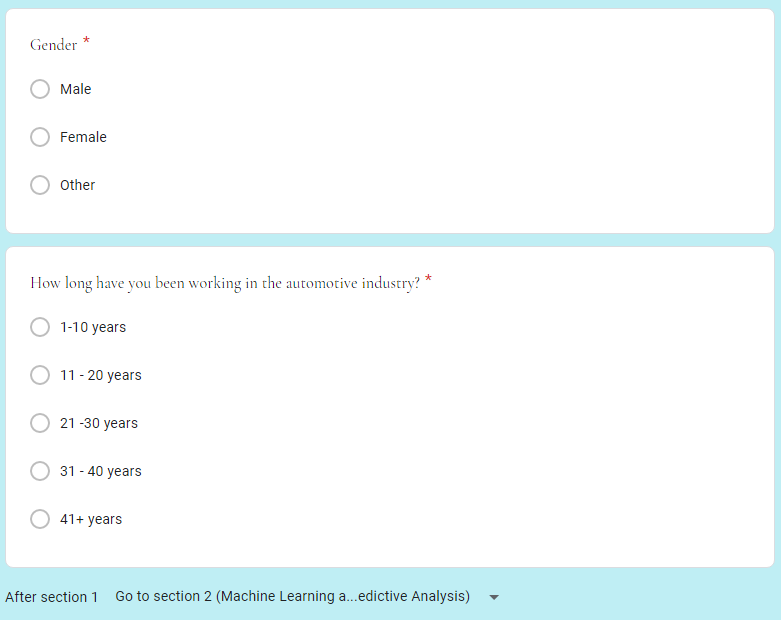


Figure B.2: Online SurveyContinuation of Demographic Information

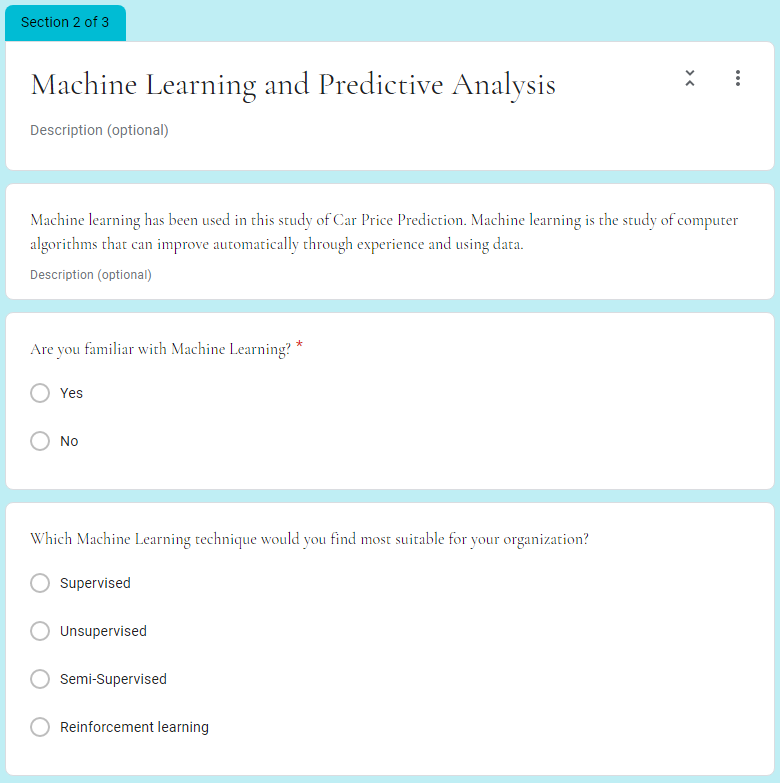


Figure B.3: Online Survey Machine Learning Definition and Knowledge Part 1

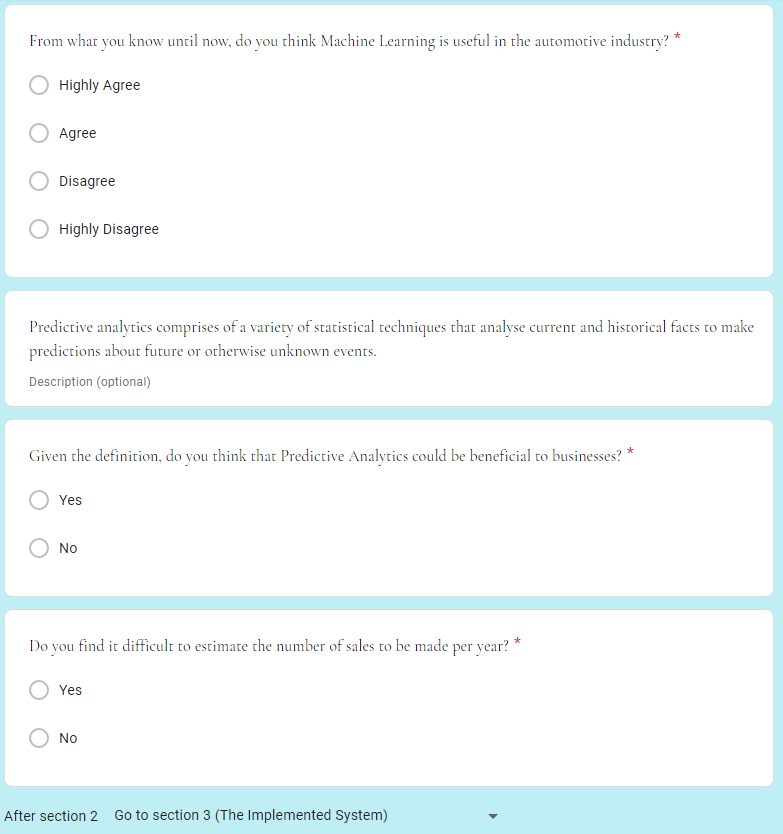


Figure B.4: Online Survey Machine Learning Knowledge Part 2 and Predictive Analytics Definition and Knowledge

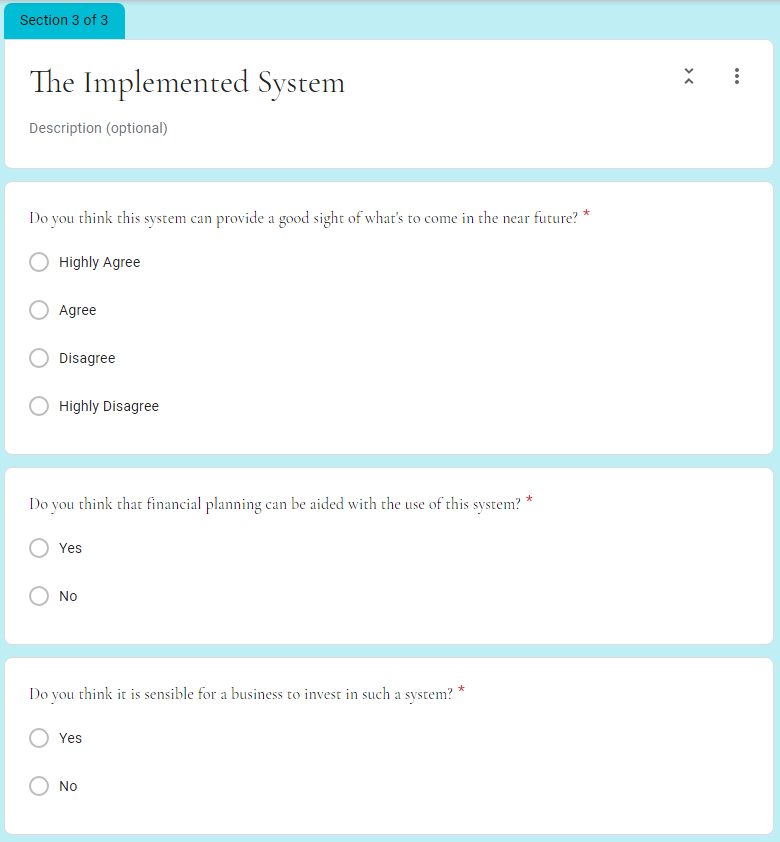


Figure B.5: Online Survey Current Implemented System Part 1

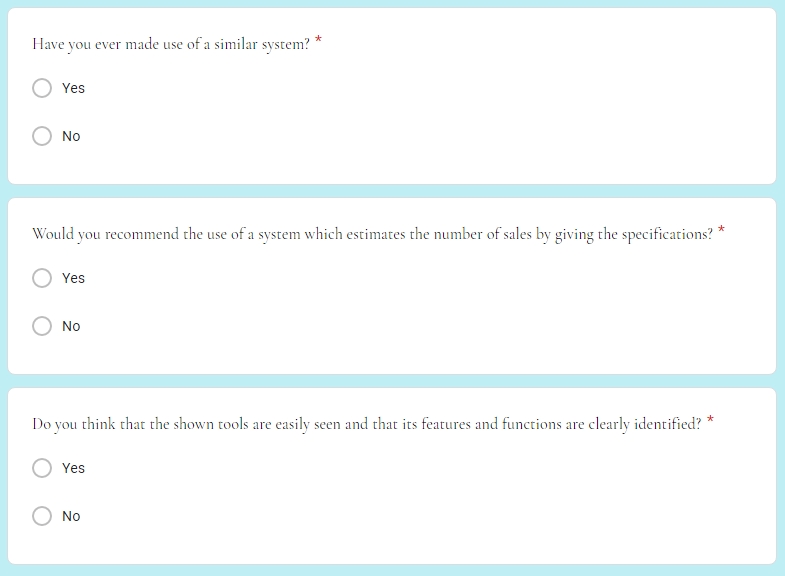


Figure B.6: Online Survey Current Implemented System Part 2