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Exploring Quality Influencing Factors for Frozen Food Industry

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Abstract. Quality is the grade of excellence or level of acceptability by the buyers. For the frozen food industry, it can be defined as the composite of those features which have significance in determining the level of acceptability by the consumer. This study was to analyse the relationship between storage, transportation, stock control, packaging, and raw material on the quality of frozen food. The research methodology of this work was a combination of observation and interview, and survey from 55 Malaysian frozen-food small-enterprise. From the findings, only two factors, Packaging, and raw material came to significantly and positively affect the quality of the frozen food. The findings of this study could be an asset for food industries to have a better understanding of the quality control of their products.

1. Introduction

From year to year, frozen food becomes more popular among consumers in Malaysia and it has been rapidly growing. Generally, frozen food is preserved by freezing the food using various freezing techniques. Frozen food ease the consumers because consumers do not have to prepare all the ingredient of the specific food, and they just heat the food before being served. According to Adeyeye [1], Fikiin [2], George and Gormley [3], and Jessen et al [4] the global food industry has invested a lot of money in new freezing technologies in order to differentiate the quality of frozen food to compete for each other. The quality of frozen food is defined when the food is maintaining in its color, flavor, texture and nutritional value from starting ingredient that the food is not preserved yet [5-7]. The quality of a product will impact the business [8,9]. This research focuses on listing the operational factor which influenced the quality of products of the frozen food industry.

2. Research methodology

For this study, data are being related to observation, interview, and self-developed questionnaire. As shown in Figure 1, for the first phase of this study, some data was collected from an interview with the managers in 55 frozen food small enterprise. The Researcher has to visit the sites where the frozen food is produced to do an interview. The language used for the interviews session was the Malay language. At the first interview, the researcher asked the company's manager about the background of the company, also ask about what is common problem occur in the frozen food that the owner produce. From the interview sessions, five factors identified which might influence the quality of frozen food. The factors are storage, transportation, stock control, packaging, and raw material. Then after the initial understanding of the influencing factors, a survey conducted to test the factors with a quantitative approach. Data collected from a survey with a questioner as the data collection instrument and the respondents were top-manager of the enterprises.



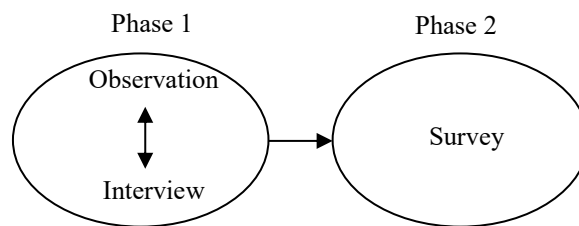


Figure 1. Research phases

3. Results

Total of 55 questionnaires regarding on factor influence the quality of frozen food was created and distributed to respondents. From the total number of the distributed, only 50 questions that have been fully answered. The data collected are obtained from 32% from male and 68% is obtained from the female. This show the majority of the respondents at frozen food are female. The collected data shown 48% of work experience is less than 5 years, follows by 5-10 years which shows 28%. Besides, 14 % is gain experience in 11-20 years and the lowest percentage is more than 20 years which only 10%. Also, from the data, it shows most of the frozen food SME are established less than 5 years which the percentage is 46, follows by 5-10 years which 26%. Next, 11-20 years shows 16% and lastly is more than 20 years with the percentage of 12%. The first step before further data analyzing, the reliability of the dependent data is tested. One of the ways to test the reliability of the data is using Cronbach's Alpha. The Cronbach Alpha of this study was acceptable, 0.79. To test relationship between storage and the quality of the frozen food, the Pearson Correlation is 0.316. It shows the weak correlation between storage and quality of frozen food. Besides, the Significant level is <0.05 thus, it has enough evidence to reject the Hypothesis of "There is relationship between storage and quality of frozen food". The graph, in Figure2, proves that there is only weak correlation between quality of the frozen food and the storage

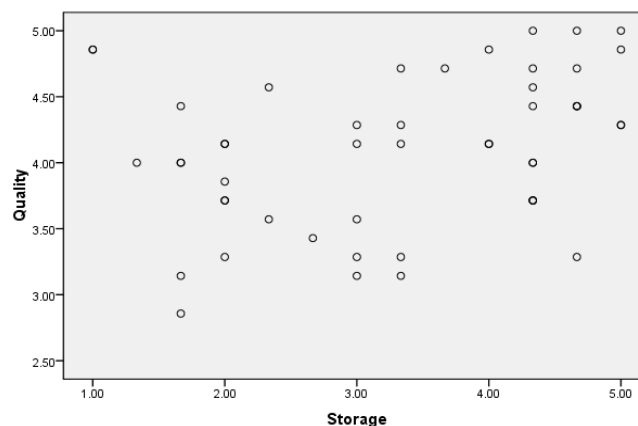


Figure 2. Correlation graph for quality and storage

The data prove that there is a very weak relationship between transportation and the quality of frozen foods. The Confidence level of transportation is 0.476 which exceeds 0.05. The graph, in Figure 3, proves that there is only a weak correlation between the quality of frozen food and transportation standards.

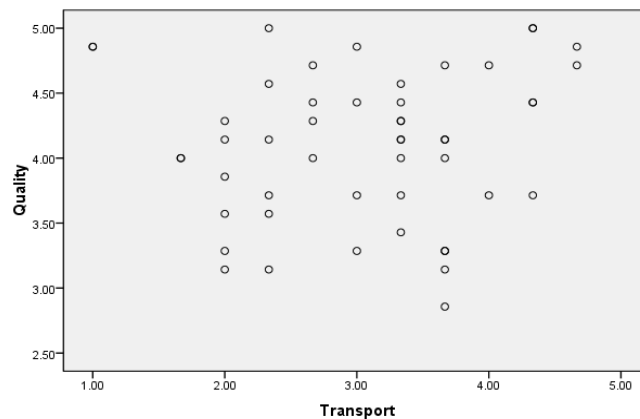


Figure 3. Correlation graph for quality and transportation

It also shows the result of the correlation between the quality of frozen food and stock control cannot be an acceptable hypothesis. From the data obtained, the Pearson Correlation is 0.071. Figure 4 shows the data collected are not fit in a line.

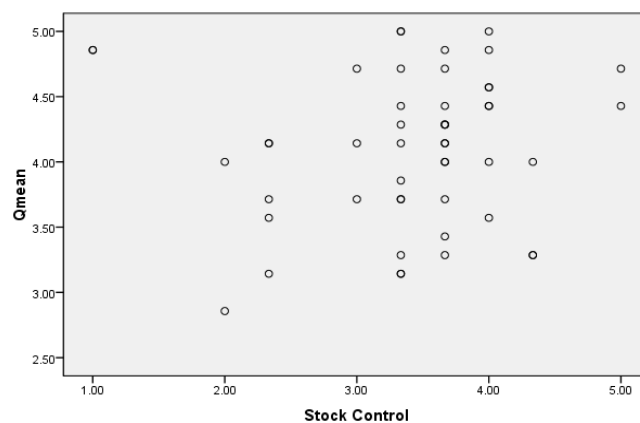


Figure 4. Correlation graph for quality and stock control

From Table 1 and Figure 5, it shows Pearson Correlation value is 0.35 which is a weak correlation for the relationship between packaging and quality of frozen foods. However, the Significant level $p < 0.05$ which is 0.012 which shows there is a relationship between the packaging and quality of frozen food.

Table 1. Correlation table for quality and packaging

		Qmean	PGmean
Qmean	Pearson Correlation	1	.354*
	Sig. (2-tailed)		.012
	N	50	50
PGmean	Pearson Correlation	.354*	1
	Sig. (2-tailed)	.012	
	N	50	50

*. Correlation is significant at the 0.05 level (2-tailed).

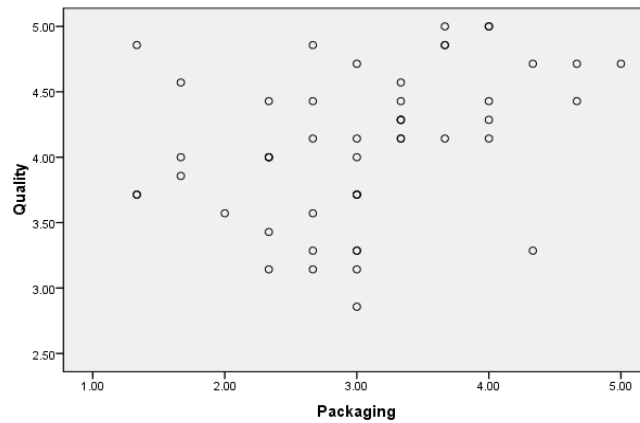


Figure 5. Correlation graph for quality and packaging

Table 2 and figure 6 show the correlation between the raw material and quality. This proves by Pearson Correlation which shows 0.5 and the significant level also accepted the hypothesis for “There is a relationship between quality and raw material”, which is 0.041.

Table 2. Correlation table for quality and raw material

		Qmean	RMmean
Qmean	Pearson Correlation	1	.511*
	Sig. (2-tailed)		.041
	N	50	50
RMmean	Pearson Correlation	.291*	1
	Sig. (2-tailed)	.041	
	N	50	50

*. Correlation is significant at the 0.05 level (2-tailed).

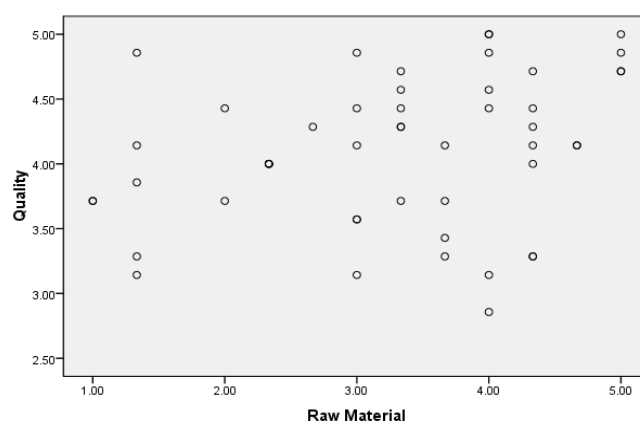


Figure 6. Correlation graph for quality and raw material

4. Conclusion

This study has explored influencing factors for Quality of frozen food as it was recommended by past studies [10]. It provides valuable information to several groups. First, this research provides valuable information for owners of the Companies to understand what the factor influence is the quality of frozen

food. A consistent pattern was found where emphasized on similar of the factor which is raw material, storage and packaging indicate these factors are the important factor that should be a focus on. Next, the finding of this paper may also assist the government in developing new strategies, such as subsidizing quality raw material as well as quality packaging, to further the Malaysian industries.

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