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A Note on the Attitudes of Retailers to Beef Carcass Classification.

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The benefits of an objective method of describing beef carcasses are being investigated through trials at several Australian abattoirs. This paper reports the results of an attitudinal study carried out with the beef retailers who trade with one of these abattoirs. Most retailers surveyed were receptive to the idea of an objective classification system and felt that it would be useful to them in carcass trading. However, other findings raised doubts about the ability of the system being trialed to meet their requirements. The results had a number of implications for the planning of specific aspects of this classification trial.

1. Introduction

The topic of carcass classification has been a point of issue in the beef industry in recent years. The debate has led to the establishment of a number of classification trials at various abattoirs throughout Australia. [1]. These trials are designed to investigate the implictions of introducing classification in the industry.

Briefly, beef carcass classification is an objective method of describing a beef carcass. The system involves the measurement of certain carcass characteristics at the time of slaughter. In the current trial work, classification is based on four measurements — sex, age, hot weight and fat depth. Carcass producers and buyers receive advice showing the measurements recorded for each carcass in their shipments.

Current literature indicates that classification could have a number of marketing advantages for the beef industry. (See, for example, B.A.E. 1976; Bond and Barker 1979; and Woodward 1979.) It is claimed that classification could lead to improvements in the operational and pricing efficiency of the beef marketing chain. A realization of many of these benefits would depend on the broad acceptance of classification as a trade language. A major objective of the present trials is to investigate the usefulness of the language to the various industry sectors.[2]

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1 There were 22 abattoirs in Australia participating in this trial work as at August, 1980.

2 This objective is embraced in a comprehensive statement of objectives for current trials submitted by the Evaluation Working Party to the National Carcass Classification Supervisory Committee in October, 1979.

One of the current classification trials is located at a privately owned abattoir near Brisbane. In this trial, attitudinal surveys of beef producers and retailers who trade with the abattoir were among the first activities carried out.

This paper reports the procedures used and the results obtained in the survey of beef retailers. Partly as a consequence of this study, a followup survey was conducted with the same group of retailers. Some of the main results obtained in this followup survey are reported as an addendum to this paper.

2. Background

2.1 Theoretical Context

The survey reported here is an example of the use of attitudinal and opinion data in a developmental project. Before presenting details of this survey, the theoretical context for the use of this type of data in project work is outlined.

The implementation of a developmental project, such as carcass classification, can be a complex process requiring any or many of a wide variety of changes, *e.g.*, technological, economic and psychological. The rationale in measuring "people" factors in conjunction with development projects lies in the key role that these factors can sometimes play in the process of change. For example, the benefits of development projects often do not accrue before the adoption of a particular technology which, in turn, may depend on certain socio-psychological changes.[3] These latter changes are frequently considered as "stepping stones" to the adoption of different patterns of behaviour (Bennett 1976, p. 9).

Studies measuring such factors as attitudes, opinions and knowledge, which are carried out early in the implementation of a project, have application mainly in two areas of project management. Firstly, these data can assist in planning by helping to define the environment in which the project is to take place. They serve as a starting point, leading to a detailed statement of project objectives. Factors may be uncovered which were previously unknown, such as resistances to change resulting from certain attitudes. On the other hand, a survey may show that psychological barriers assumed to be present are really not there at all (Hayes 1966, p. 71).

Secondly, the collection of certain socio-psychological data early in the life of a project can lead to a more complete project evaluation.[4] Such benchmark data can add meaning to comparable measurements taken at the end of a project (Hayes 1966, p. 70).

An evaluation undertaken at the socio-psychological level can add additional meaning to evaluations which measure other project impacts, *e.g.*, practice changes, economic benefits. The collection of these data can be particularly important in project evaluations where it is difficult to measure some of these other impacts (Hayes 1966, p. 17).

3 For example, people's attitudes, perceptions, beliefs, aspirations and knowledge.

4 Project evaluation is defined here as a two stage process. Firstly, it involves the measurement of change, *i.e.*, project results and costs. Secondly, it involves the interpretation of the significance of these changes.

2.2 The Trial Situation

The cattle slaughtered at the abattoir where the classification trial is being conducted are drawn from two sources. Abattoir buyers purchase cattle from auction sales. In addition, there are approximately 400 producers in south-east Queensland who consign cattle direct to the abattoir.

The abattoir supplies beef carcasses directly to retail butcher shops located in Brisbane's northern suburbs and on the north coast of Brisbane. At the time of this survey, there were 93 retailers trading with the abattoir. Carcass orders are usually placed by telephone. The abattoir also exports some beef.

A grading system is the basis of the abattoir's trading with producers and retailers. There are four main grades — first, second, third and Z. A number of criteria are used to grade each carcass. The objective criteria used are carcass weight and sex. These measurements are always recorded on the kill sheets. Other more subjective criteria are applied as the grader makes a visual appraisal of each carcass. These include — fat cover, conformation, amount of trimming due to bruising, meat colour and fat colour.

Most retailers had some involvement with the classification trial prior to the survey.[5] Some had been receiving carcasses with classification tickets attached. Also, the majority had received a newsletter informing them of the trial. However, there was no trading being conducted using the classification information.

3. Problem Statement

At the beginning of the classification trial, the attitudes to classification of the retailers who trade with the abattoir were unknown to the trial organizers. However, doubts had been expressed about the usefulness of a classification system to the retail sector (Woodward 1979; and Mullins 1979). This highlighted the need to assess whether the retailers involved in the trial held similar doubts.

It was decided to survey all retailers trading with the abattoir. *Particular questions investigated were:—*

(a) What attitudes do these retailers hold toward classification, *e.g.,* in favour, against, *etc.?*

(b) What perceptions do they have of the likely implications of classification? Are those perceptions influencing their attitudes to classification?

(c) What importance do these retailers place on the four classification measurements as indicators of the suitability of a carcass for different uses? Is there any relationship between this importance and how useful they feel access to classified carcasses would be to them?

(d) How satisfied are they with their present trading arrangements based on carcass grades? Does this have any influence on how useful they feel access to classified carcasses would be to them?

5 Classified carcasses were first despatched from the abattoir in early October, 1979. The trial was planned to last for approximately 18 months.

It was envisaged that data collected to answer these questions would be useful in the two areas outlined in section 2.1. In the first instance, the data would allow the organizers to plan specific aspects of the trial. For example, the data would be useful in designing an extension programme for these retailers. Secondly, the data would assist in a comprehensive trial evaluation. In view of the short term nature of the trial and the complexity of some of the likely implications of classification, it was recognized that there could be difficulties in undertaking a trial evaluation focussing on practice changes and economic benefits.[6] An evaluation undertaken at the attitudinal level could provide additional insights for decision making purposes, particularly in the short term. For example, the data could indicate the likely future demand for classification information.

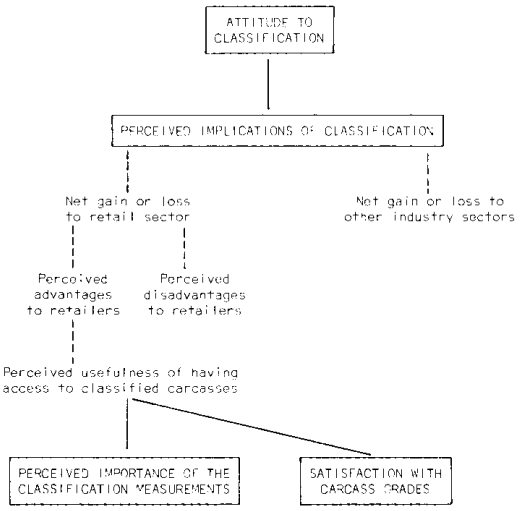

Figure 1 : Conceptual Framework for Analysis

4. Methods

Personal interviews were conducted with all retailers who purchased beef carcasses directly from the abattoir. The interviewing was conducted in October and November, 1979. Data obtained from 90 respondents were analysed.[7]

The interview schedule contained mostly attitude and opinion questions. Most questions were structured so that respondents could indicate a category which best represented their feelings. To assist interpretation, some questions allowed for free responses.[8]

A conceptual framework showing the variables measured and their predicted interrelationships appears as Figure 1. This was used to guide the data analysis.

6 A recent B.A.E. paper (1979, p.4) stated "while some of the direct benefits of classification can be assessed, many of its implications are of such a radical and long term nature that their quantitative impact on the marketing margin cannot be assessed".

7 Three other retailers were interviewed in a pilot survey.

8 A discussion of these data collection techniques is contained in Backstrom and Hursh (1963). Some questionnaire items were similar to those used by Palmer, Goss and Bond (1979) in a mail survey of producer attitudes to classification in Western Australia.

It was anticipated that attitudes to classification would most probably result from perceptions about the implications of classification. Similarly, the usefulness that retailers foresaw in classified carcasses would most likely depend on a number of factors, particularly their satisfaction with present trading arrangements and the importance they attached to the classification measurements.

All data collected were of either nominal or ordinal type. Nonparametric statistical analyses were used to test for significant relationships between the variables.[9]

The study did not collect information on current trading practices. Further, it did not investigate whether factors such as butchering experience and type of retail trade were related to retailers' attitudes and opinions.[10]

5. Results [11]

5.1 Background Information

The majority of the 90 retailers interviewed were owner/operators. Twelve were employed as managers. The retail outlets were mostly traditional butcher shops selling a variety of meats. However, five shops specialized in the bulk meat trade and a further three were part of supermarket stores.

In the opinion of the interviewers,[12] most retailers had little knowledge of particular aspects of the classification system being trialed, *e.g.*, the measurements recorded, the interpretation of coded tickets attached to the carcass.[13]

5.2 Attitude to Classification

Respondents were asked to indicate their attitude to the idea of classification.[14] The distribution of their replies is shown in Table 1.

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9 Nonparametric procedures do not assume a normal distribution in the data. These procedures are suitable for analysis of categorized (nominal) and ranked (ordinal) data. A reference text for nonparametric methods is Gibbons (1976).

10 All butchers trading with the abattoir were interviewed and there was no intention to extrapolate results to a wider retailer population.

This type of analysis could be particularly useful when attitudinal data are again collected at the end of the trial.

11 A more detailed description is contained in Wilson and Wissemann (1980).

12 The interviewers used checklists to make subjective assessments of respondents' apparent knowledge levels. These data are not reported in this paper.

13 Classification information is written in coded form on tickets attached to sides of beef.

14 This question elicited respondents' reactions to the *basic idea* of classification rather than their reactions to the possible *introduction* of classification.

Table 1: Distribution of Respondents by Attitude to Classification

Attitude to classification	Number	Percentage
Strongly in favour	34	38
In favour	49	54
Neutral	6	7
Against	1	1
Strongly against	0	0
TOTAL	90	100

A majority of respondents (92 per cent) expressed a positive attitude to the idea of classification, *i.e.*, they indicated they were either strongly in favour or in favour of classification.

5.3 Perceived Implications of Classification

(a) Effects on Industry Sectors — Respondents were asked how they felt the introduction of classification could affect different sectors of the beef industry. A summary of their responses is shown in Table 2.

Table 2: Percentage Distributions of Respondents by Perception of Classification Effects on Industry Sectors

Industry sector	Industry Effect				
	Gain	No Change	Loss	No Opinion	Total
Beef producers [a]	45	23	15	17	100
Agents [a]	15	38	6	41	100
Cattle buyers [a]	27	44	4	25	100
Abattoir management [a]	18	45	11	26	100
Wholesalers [a]	36	34	19	11	100
Retailers [a]	74	22	1	3	100
Consumers [a]	65	26	5	4	100
Exporters [a]	15	28	3	54	100

a, b —.Percentages based on 89 and 88 responses respectively.

Opinions varied as to how classification could affect different sectors of the beef industry. However, for each sector, a greater number of respondents felt there could be a gain than those who felt there could be a loss. In the case of the agent and the exporter sectors, retailers were less prepared to express opinions.

A majority of respondents (74 per cent) felt that classification could result in a net gain to their own sector, *i.e.*, retailing. Sixty-five per cent of respondents felt that consumers could benefit. Also, a reasonably high proportion (45 per cent) indicated that they felt producers could benefit from classification.

Respondents' perceptions of the effects of classification on industry sectors were cross tabulated with their attitudes to classification. These cross tabulations showed that, for the 92 per cent of respondents who expressed a positive attitude to the idea of classification, by far the most common perception was that classification could result in a net gain to the retail sector. It is likely that the positive attitudes of most of these respondents were formed as a result of this perception.

(b) Advantages and Disadvantages of Classification to Retailers — Respondents were asked to indicate the advantages and disadvantages of classification to them as an individual trader. These perceptions were generally consistent with their perceptions of the net effect of classification in the retail sector shown in Table 2.

The main advantages listed by respondents are shown in Table 3.

Table 3: Distribution of Respondents by Perception of Advantages in Classification

Do you think classification could have any advantages for you?	Number		Percentage	
YES				
• Knowing the carcass will match the order (know what you are getting).	20		22	
• Unspecified advantages associated with having one or more classification measures.	16		18	
• Being able to specify requirements when ordering.	11		12	
• Can order using a fat description.	6		7	
• Classification measures can be used to indicate quality.	5		6	
• Can get carcasses with the right amount of fat.	3		3	
• Classification will assist in phone ordering.	2		2	
• Other advantages.	9		10	
• Advantages not ascertained.	5	77	6	86
NO		9		10
DON'T KNOW		4		4
TOTAL		90		100

Eighty-six per cent indicated that classification could have some advantages for them. The majority of the advantages listed were associated with either being able to use classification descriptions when ordering, or ensuring that the beef delivered matched the order. A high proportion of respondents stated that particular classification measurements could be useful but they were unable to be specific as to how this information could assist them.

Table 4 shows the disadvantages listed by respondents.

Table 4: Distribution of Respondents by Perception of Disadvantages in Classification

Do you think classification could have any disadvantages for you?	Number		Percentage	
YES				
• Classification could increase costs.	5		6	
• There could be shortages of some carcass types.	2		2	
• Ordering will be more cumbersome.	1		1	
• Will mean more work so prices will rise	1		1	
• Bureaucracy involved in classification scheme may create costs and inconvenience for butchers.	1		1	
• Fat code may be inaccurate.	1	11	1	12
NO		77	86	86
DON'T KNOW		2	2	2
TOTAL		90		100

Only 12 per cent of respondents felt that classification could have disadvantages for them. Most of these disadvantages related to increased costs of operation.

(c) Usefulness of Having Access to Classified Carcasses — Respondents were asked to indicate how useful they felt it would be for them to have access to classified carcasses.[15] The cross tabulation of their replies to this question and their attitudes to classification is shown in Table 5.

Table 5: Cross Tabulation of Attitudes by Perceived Usefulness of having Access to Classified Carcasses

Attitude to classification	Degree of usefulness									
	Very useful		Mod. useful		Sl. useful		Of no use		Don't know	
	No.	%	No.	%	No.	%	No.	%	No.	%
Strongly in favour	26	49	7	35	1	13	0	0	0	0
In favour	27	51	13	65	6	75	2	40	1	25
Neutral	0	0	0	0	1	12	2	40	3	75
Against	0	0	0	0	0	0	1	20	0	0
	53	100	20	100	8	100	5	100	4	100

Spearman's Rho = 0.36 $p < 0.01$

A majority of respondents (73 respondents or 81 per cent) felt that access to classified carcasses could be very or moderately useful to them.

The data in Table 5 indicate a positive correlation between the attitudes of retailers to classification and their perceptions of the usefulness of classified carcasses.[16] In general, a high perceived usefulness for classified carcasses was associated with a positive attitude to the idea of classification.

5.4 Perceived Importance of the Classification Measurements

Respondents were asked to order ten carcass characteristics (including the four classification measurements) from one to ten according to their usefulness as indicators of the suitability of a carcass for various uses. The most important was ranked as number one, the second most important as number two, *etc.* Ties were allowed if respondents were unable to separate some characteristics.

15 This question elicited respondents' reactions to a specific aspect of classification. The data reported in section 5.2 resulted from a question focussing on respondents' attitudes to the idea of classification.

16 The test statistic, Spearman's Rho, is a rank order correlation coefficient.

The mean ranks given the ten characteristics are shown in Table 6.

Table 6: Perceived Importance of Carcass Characteristics

Carcass characteristics	Mean rank
	Most important
Meat colour	3.82
Age[a]	4.49
Fat cover	4.79
Fat thickness [a]	4.93
Carcass weight [a]	5.35
Fat colour	5.41
Carcass shape	6.26
Sex [a]	6.51
Eye muscle area	6.66
Breed	6.77
	Least important
Kendall Concordance Coefficient = 0.1123	$p < 0.01$

a — Carcass classification measurements.

Meat colour, with a mean rank of 3.82, was considered the most important of the ten characteristics listed. At the other end of the scale, breed was considered the least important (mean = 6.77). Three classification measurements (age, fat thickness and carcass weight) were among the five highest ranked items. Sex was ranked lower in importance.

The low Kendall Concordance Coefficient[17] indicates that there was considerable disagreement between retailers in the importance attached to the various carcass characteristics. Despite this, the coefficient is statistically significant, indicating that the characteristics were not ranked randomly. Some were generally considered as more important than others.

There appears to be a lack of similar retailer studies with which to compare these results. However, visual meat characteristics have been shown to be important in determining consumer preferences for meats (for example, Naumann *et al* 1966). In particular, the visual characteristics of meat colour and fat marbling were shown to be important in consumer studies by Dunsing (1959) and Stafford (1977). Since consumer preferences would have some influence on retailers, the high importance attached to meat colour and fat characteristics in this study is not unexpected.

17 A concordance coefficient measures the level of agreement between rankings. It can vary between 0 and 1, with values closer to 1 indicating greater agreement.

Further statistical tests were carried out to determine the relationship between the importance respondents attached to the classification measurements and the usefulness they perceived in having access to classified carcasses. Four separate values of Spearman's Rho were calculated by correlating the rankings given to each of the four classification measurements with respondents' perceived usefulness of classified carcasses. None of these coefficients approached significance at a five per cent probability level. In addition, an index was calculated by adding the rankings given to the four classification measurements.[18] The value of Spearman's Rho calculated by correlating this index with the perceived usefulness of classified carcasses was not significant either.

Thus, there appeared to be no relationship between the importance that respondents placed on the classification measurements as indicators of carcass suitability and how useful they felt it would be to have access to classified carcasses.[19]

5.5 Satisfaction with Carcass Grades

Respondents were asked to indicate their level of satisfaction with present carcass grades as a basis for buying. The cross tabulation of their replies to this question and their perceived usefulness of access to classified carcasses is shown in Table 7.

Table 7: Cross Tabulation of Satisfaction with Grading by Perceived Usefulness of having Access to Classified Carcasses

Degree of usefulness	Satisfaction with grading [a]							
	Very satisfied		Satisfied		Unsatisfied		Very unsatisfied	
	No.	%	No.	%	No.	%	No.	%
Very useful	17	59	20	55	11	61	4	80
Mod. useful	3	10	10	28	6	33	1	20
Sl. useful	5	17	2	6	0	0	0	0
Of no use	1	4	3	8	1	6	0	0
Don't know	3	10	1	3	0	0	0	0
	29	100	36	100	18	100	5	100%

Spearman's Rho = − 0.05 p = 0.33

a — 2 non responses Spearman's Rho = − 0.05 p = 0.33

18 Theoretically, this index could range between 10 and 34. It would be 10 if the classification measurements were the 4 highest ranked items (*i.e.*, ranks 1, 2, 3 and 4) and 34 if these measurements were the 4 lowest ranked items (*i.e.*, ranks 7, 8, 9 and 10).

19 The rankings given to the 6 non-classification characteristics were also correlated with respondents' perceived usefulness of having access to classified carcasses. Only the correlation with meat colour was significant at a five percent probability level (Spearman's Rho = −0.1816 p = 0.048). Respondents who attached a high importance to meat colour generally felt that classified carcasses would be less useful.

A majority of respondents (65 respondents or 74 per cent) indicated they were at least satisfied with the present grades as a buying basis. The most frequent reasons given for this were along the lines — "normally or usually get what I want" and "can send carcasses back if not satisfied". Many replies from these respondents indicated that their trading relationships with the abattoir depended on a certain amount of mutual trust.

Twenty-three respondents (26 per cent) indicated some dissatisfaction with present carcass grades. Nearly all of the reasons given for this related to "inconsistency or variability in quality and grades".

The data indicate that the usefulness that respondents perceived in having access to classified carcasses did not depend on their satisfaction with present carcass grades in buying. Almost all respondents who indicated some dissatisfaction with carcass grades felt that access to classified carcasses would be very or moderately useful. However, a high proportion of respondents who were satisfied with present grades also felt this way.

6. Discussion and Conclusions

Almost all retailers expressed a positive attitude to the idea of classification. These attitudes appeared to have been formed primarily from a personal perspective, rather than an industry perspective. The retailers generally felt that both they and their customers could benefit from a classification system. Their positive attitudes appeared to be based on a feeling that classification information would be useful in carcass trading.

Other findings, however, raised doubts as to whether these retailers would, given further experience with classification, be prepared to use it as the sole basis for trading. It appeared that the majority had high expectations of a classification system, the benefits of which have yet to be proven in practice. Most also appeared satisfied with their present basis for trading. It was surprising to find a high level of support for a system which could markedly change this basis. It could well be that some retailers were overestimating the ability of the classification language to indicate meat quality.

In addition, their perception that classified carcasses would be useful was not the result of their attaching special importance to the classification measurements as indicators of carcass suitability. The present classification language is likely to fulfill their requirements only if it can be used to indicate other carcass characteristics such as meat colour and fat cover.

The survey results were seen as having a number of implications for the design of this classification trial.[20] They indicated an immediate need for an extension programme to ensure retailers are familiar with specific aspects of both the trial itself and with the classification system being trialed. It was considered particularly important to point out the value of the four classification measurements and the reasons for their inclusion in the present language. The ability of retailers to assess the usefulness of classification to them would be

20 Preliminary results of this survey were released to members of the Working Party overseeing the trial in November, 1979.

dependent, to some extent, on them having some knowledge and skills in these areas. Most retailers surveyed would very likely be receptive to such an advisory programme.

The study did not reveal any major attitudinal barriers which would prevent a meaningful test of the classification language in carcass trading. In fact, the potential advantages of classification described by many retailers implied that they wished to use classification in trading. The study did raise doubts (discussed above) concerning the ability of the language to meet their requirements. This indicated a particular need to monitor their level of confidence in the language for trading purposes as they gained more experience with classification.

From an industry point of view, the most significant results arising from the study also relate to the importance that these retailers placed on various carcass characteristics as indicators of carcass suitability. The fact that characteristics other than the four classification measurements were considered as very important indicates that the present language could have shortcomings if used for trading purposes. This indicates a need for close involvement with the retail trade in designing an objective description system that will be satisfactory for this purpose.

The attitudes and opinions to classification of these retailers will be assessed at the end of the classification trial. The data reported in this paper will be used as a benchmark against which to assess any attitudinal changes resulting from the trial.

Addendum

The study indicated a need to obtain further information from these retailers after they had more experience in receiving classified carcasses. As part of the process of monitoring the trial, a followup survey was conducted early in 1980, approximately four months after classified carcasses were first despatched from the abattoir. Classification information had not been used for trading purposes at this time.

Interviews were conducted with 78 of the 93 retailers contacted in the initial survey. Some of the more significant survey results were as follows:

Classification Interest and Knowledge

Some retailers (44 percent of the 78 interviewed) stated that they had taken little interest in this classification trial. However, almost all (96 percent) expressed a continuing interest in seeing that the carcass classification system was trialed. In general, the retailers more strongly in favour of classification in the initial survey expressed higher levels of interest in the trial in the followup survey.

Just over half (53 percent) were unable to correctly interpret a carcass ticket using a code sheet. Predictably, there was a tendency for retailers who expressed a greater level of interest in the trial to be more proficient in interpreting carcass tickets.

These results highlighted the need to devote further resources to the retailer extension programme.

Uses Made of Classification Information

Retailers varied markedly in the attention they gave to classification tickets when carcasses were delivered to their shop. About one quarter said they always looked at the ticket and checked the codes. Approximately the same proportion said they never did this. The others varied between the two extremes, saying they did it either "usually" or "sometimes". From the comments recorded, it appeared that many retailers thoroughly checked the tickets only when they were not satisfied with particular carcasses.

Two retailers had used classification information in their dealings with consumers. However, the majority could not indicate that they had been able to use classification information.

Confidence in Classification for Carcass Trading

Eighteen percent had attempted to order carcasses using the classification language although this facility had not been offered to them. Sixty percent said they would be prepared to trade on the basis of classification for a trial period. The others gave a variety of reasons for not wishing to do so. For example, 15 percent indicated satisfaction with their present trading arrangements while 17 percent focussed on deficiencies of the classification language for trading purposes. In general, retailers who expressed a greater level of interest in the trial were more prepared to use classification in ordering.

The retailers who appeared to be either interested in the trial and/or familiar with the classification language were asked a number of questions designed to further indicate their confidence in the classification language for trading purposes. Fifty one (51) retailers answered these questions

- One quarter (of these 51 retailers) said they had noticed differences between carcasses with the same classification description. Fat differences were mentioned most often but conformation and meat colour differences were also mentioned more than once.

- Eighty three percent did not doubt the accuracy of the classification information itself. However, the others said they did have doubts, the fat code being mentioned most frequently.

- Sixty five percent felt that the fat code was a reliable indication of the fat cover "all of the time" or "often". Fourteen percent felt it was reliable less frequently than this, the balance being unable to give an opinion.

Apart from suggesting that not all retailers had a high level of confidence in the ability of classification language to adequately or accurately describe a carcass, the results were inconclusive. It appeared that only a trial period of trading, solely on the basis of classification, would provide more conclusive answers.

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