

# Beef producer attitudes to coordination and quality assurance in Canada and the UK

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## 1. Introduction

Beef supply chains around the world are experiencing unprecedented changes, particularly in regard to an increased emphasis on closer coordination mechanisms (e.g., strategic alliances and traceability programs) and on quality assurance (QA) schemes (at all levels of the supply chain). In some countries, such as the UK, these changes have largely been a direct result of consumer concerns about food safety. The existence of highly-publicized food poisoning outbreaks have been a very strong driver for change. However, in other countries, such as Canada there have been no such major food poisoning outbreaks. In such countries, the main driver for improvement is a desire for international competitiveness. A priori, it might be expected these different drivers might lead to different attitudes and priorities among the supply chain participants. For example, beef producers in the UK may see a greater sense of urgency to “get their act together” –to be more receptive to initiatives that enhance horizontal and vertical coordination and to be more receptive to the imperative to join a quality assurance scheme. The purpose of this paper is to determine whether there are differences in the attitudes of beef producers in Canada and the UK to issues of (horizontal and vertical) coordination and quality assurance. © 2001 Elsevier Science Inc. All rights reserved.

## 2. Literature review

The changing nature of vertical coordination and the reasons for the move towards closer vertical coordination in some agri-food sectors has been explored by a number of authors.

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Barkema and Drabenstott (1995), focusing on the US food system in general, emphasize, as reasons for closer vertical coordination, changing consumer preferences and technological advances which facilitate product differentiation and the tailoring of products to specific market segments. Increased awareness of food safety issues and the need to provide food safety and quality assurance guarantees to consumers is a further facet of these changing consumer preferences. Other authors have focused on specific sectors. For example, Cook (1997) discusses the emergence of end-product oriented, closely vertically coordinated firms in the US grains and oilseed sector. Changing consumer demands, technological advancements, the need to improve the measurement of end-user quality and to provide credible assurances of safety are some of the reasons he cites for the anticipated acceleration towards identity preserved supply chains. Also focusing on the US grains sector, Kalaitzandonakes and Maltsbarger (1999) explore supply chains designed to preserve grain identity and capture rents from biotechnology innovation. They discuss key drivers in the development of identity preserved grain systems. Duval and Biere (1998) compare the attitudes of members of two groups of wheat producers to growing hard white wheat under contract as part of a producer association. The responses of members and nonmembers of the association are compared. Nonmembers were less willing to try a new crop or new production methods and were less supportive of contract production. The authors suggest that producer education will be an important facet of any new coordination mechanism.

Producers' choice of marketing channel and their attitudes towards closer vertical and/or horizontal coordination are influenced by the transaction costs of different vertical coordination alternatives (Hobbs, 1997). In a survey of Spanish citrus growers, Poole and Del Campo Gomis (1998) found that high levels of uncertainty surrounding the producer-buyer transaction favored the adoption of standardized written contracts. They suggest that cooperative organizations would be better placed to offer improved information flows and traceability in the citrus sector.

Often the growth of supply chain partnerships or "value chain" relationships depends on a "channel captain" to act as the catalyst for closer coordination. Fearne (1998) discusses recent developments in the UK beef industry involving vertical alliances among retailers, processors and producers—with examples of a retailer-led and a producer-led supply chain partnership. The need to provide traceability to facilitate food safety and quality assurance guarantees were critical factors leading to these developments. Hughes and Merton (1996) discuss the use of long-term supply chain partnerships by a major UK food retailing firm. Among a list of reasons for the growth in closer vertical coordination they include quality improvements for perishable products, traceability and responding to/pre-empting food safety legislation.

In a discussion of the impact of food safety on vertical coordination, Caswell et al. (1997) suggest that foods with positive food safety and quality attributes have a competitive advantage in the marketplace. Capitalizing on this advantage, however, requires that these attributes be identified, that vertical quality control systems be implemented and that the features of quality assurance programs are credibly communicated to consumers.

A review of the literature indicates there are moves towards closer vertical (and sometimes horizontal) coordination occurring in a variety of agri-food sectors across different countries. While common drivers for change can be identified (for example, changing consumer

preferences and technology), some of these drivers are country-specific. As indicated above, food safety has been a much stronger motivator for change in the UK beef industry than in Canada. Whether this results in different motivations for—and therefore outcomes of—vertical and horizontal coordination is the subject of the remainder of this paper.

### **3. Methodology**

To address the paper's objective, we conducted random sample mail surveys of beef finishers in both Canada and the United Kingdom in late 1997 and early 1998. The Canadian survey was carried out on a random sample of feedlot operators and beef producers in Alberta and Ontario, which account for 75% of Canadian beef finishing. The UK survey was carried out on a random sample of beef producers, stratified by region, taken from a national readership database of beef producers. Both samples, and particularly the UK sample, included beef producers who were not finishers. However, only respondents who indicated they finished cattle were used in the analysis. The Canadian survey was mailed to 381 producers in April 1998 and 99 usable responses were received (a 26% response rate). The UK survey was mailed to 1100 beef producers in October 1997 (nonrespondents received a second mailing in January 1998) and 173 usable responses were received (a 16% response rate).

The relatively low response rates, particularly in the UK, were not surprising, given the complexity of the questionnaire and the timing of the survey, at the peak of the BSE crisis. However, given the resources available a mail survey was the only option and the characteristics of the sample achieved indicate a good spread of beef finishers in terms of size, enterprise mix and demographics.

The questionnaire was in three parts. The first was concerned with the nature of cattle marketing arrangements in each country and producer opinions on the effectiveness of existing trading relationships. This provided important contextual information, as the role and effectiveness of quality assurance schemes in the two countries should be assessed in relation to the supply chain structures within which they have been established. The second part focused specifically on the impact of and producer attitudes towards QA schemes for beef. The purpose of this part of the questionnaire was to establish a) the motives for such schemes and b) producer expectations, in terms of the associated compliance costs and the perceived benefits.

The literature review suggested that the drivers for QA schemes were distinctly different in the two countries, with safety (and the restoration of consumer confidence) the key in the UK and quality the key driver in Canada. Thus, the questionnaire was designed to establish the extent to which producers in the two countries differed in the way they perceived the effect of the respective schemes on their national beef industries as a whole and, more specifically, the operation of their own beef enterprises.

The questionnaire generated categorical data with respect to the existing marketing arrangements for beef, recent changes in husbandry practices, and the perceived role of QA schemes. The results for these questions are summarized in frequency tables presented in section 5 of this paper. Likert scales were used in conjunction with a series of statements

about supply chain coordination and the perceived costs and benefits associated with joining a QA scheme for beef. A five point rating scale was also used to gauge the changes associated with joining a QA scheme. Mean scores are reported for the answers to these questions, along with the results of paired *t* tests.

The depth of analysis is limited by the nature of the data generated and the scope of the study, which was broad in its coverage, rather than highly focused on detailed aspects of the respective QA schemes. Further research currently on-going, includes an extension of the country coverage, to include recent initiatives in Australia, and a more detailed examination of the *actual* benefits of QA schemes to all stakeholders in the beef supply chain, including retailers and consumers.

#### **4. Differences in the nature of the Canadian and British beef industries**

The beef finishing operation in Canada is typically quite different from that in the UK. For one thing the average size of the Canadian operations was found to be 8600 head of cattle per year as against 75 in the UK. This reflects the fact that beef finishing in Canada tends to be a specialized feedlot finishing operation while in the UK it is typically a sideline enterprise on a mixed farm. The average age of respondents was also found to be higher in the UK (50.5 years) than in Canada (46.5 years). The differing structure alone might suggest Canadian producers might be further ahead than their UK counterparts in terms of their attitude to quality assurance and forming partnerships. This a priori assessment is encouraged by the difference in the marketing arrangements used by Canadian and UK fed cattle producers. In Canada, by far the most popular method of selling fed cattle was direct to a processor (packer). In our survey, 82% of all sales by respondents (unweighted by number of cattle) were direct to a processor. Weighting by number of cattle sold this number rises to 98%. These figures compare with 45% and 60% respectively for the UK.

This highlights a major difference between the Canadian and UK beef industries. While the traditional auction system in the UK is declining in importance, it is still used far more widely to market finished cattle than is the case in Canada. This should be an advantage to the Canadian industry in developing farm to retail quality assurance guarantees. The close relationship between packer and feedlot operator creates the opportunity for improved information flow between different stages of the supply chain and should enhance the ability of the supply chain to offer traceability.

The major national UK quality assurance scheme is Farm Assured Beef and Lamb (FABL) and has been in operation for about 10 years. Independent on-farm audits are used to confirm that producers are following the QA guidelines. All major supermarket retailers now require that their beef be sourced from farms belonging to FABL. In addition, a number of private retailer-specific quality assurance schemes have emerged in the UK in recent years. The Canadian Cattlemen's Association (an industry association) introduced the "Quality Starts Here" program in 1997. Producers are encouraged to follow specified Good Production Practices. The program is voluntary and, currently, there are no independent audits of production practices.

Table 1  
Improvements in beef husbandry made over the past eighteen months (% of respondents)

Activity	Canada	UK
Improve breeding	25	30
Improve feed quality	44	19
Improve housing	10	19
Improve traceability	16	27
Lower production costs	31	23
Increase cattle numbers	34	6
Joined a producer group	3	12
Joined a QA scheme	15	44
No changes	16	19

## 5. Results of the comparative survey

As stated earlier, the objective of the survey is to compare the attitudes of beef producers in Canada and the UK with regard to closer coordination and quality assurance. The results of the survey are summarized in three sections below. In Section 5.1 are results dealing with recent changes in the management practices of producers. Here are the results comparing management changes already implemented to enhance coordination (e.g., joined a producer group) and quality assurance (e.g., joined a QA scheme). In the other two sections are the results dealing with producer perceptions about coordination (section 5.2) and quality assurance (section 5.3).

### 5.1. Recent changes in management practices

Producers were asked what improvements they had made to their beef operations in the previous 18 months. The results are summarized in Table 1 and indicate the percentage of respondents introducing a particular management change in the preceding 18 months.

Comparing the UK and Canadian results, it is apparent there are some important differences. The changes in which UK respondents most outstripped Canadians were “joined a QA scheme”, “introduced mechanisms to ensure traceability”, “improved quality of animal housing” and “joined a producer group.” The emphasis on these changes come in response to the food contamination crises which have rocked the UK beef industry in recent years and also because of heightened concerns for animal welfare. The fact that only 27% had taken steps to improve traceability is surprising given the compulsory cattle passport and national traceability scheme being introduced in the UK. It may be that producers felt that they themselves had not taken steps to improve traceability, rather the government-imposed scheme had done that for them (or perhaps they did not consider this to be an “improvement to their beef operation”).

Only 15% of Canadian respondents indicated they had joined a QA scheme in the past 18 months as against 44% for UK respondents. Furthermore, only 16% of Canadian respondents indicated they had introduced cattle traceability compared with 27% of UK respondents and only 3% of the Canadians had joined a producer group versus 12% of the British respondents.

Clearly, the adoption of mechanisms for greater coordination (producer groups and traceability) and quality assurance (QA schemes) are more advanced in the UK than in Canada. This is to be expected given the recent food contamination crises in the UK. In many cases, UK beef producers have had little choice but to adopt these changes in order to have a market outlet for their cattle. Supermarkets now require all their beef supplies to be sourced from FABL-approved farms.

The two biggest changes made by Canadian producers were an increase in cattle numbers and an improvement in feed quality. The increase in cattle numbers points to a higher degree of optimism on the part of Canadian producers compared to their UK counterparts. Cattle numbers are also influenced by the phase of the cattle cycle. Livestock industry statistics indicate that the Canadian cattle cycle peaked in early to mid 1996—the survey may have captured the tail end of this peak. The emphasis on improvements to feed quality in Canada relative to the UK is largely a function of the different production systems in the two countries. Canadian producers have more control over this aspect of production because of the grain-fed production system. In contrast, the UK system is pastoral in nature, giving producers less flexibility to alter feeding regimes.

## *5.2. Producer perceptions on supply chain coordination*

Producers in each country were asked about their perceptions of the buyer-seller relationships existing in the marketing of their cattle. UK respondents were more likely to characterize the relationship as “dominated by buyers” than their Canadian counterparts (33% for UK vs. 18% for Canada). Conversely, Canadian respondents were more likely to characterize the relationship as being “equally beneficial” (53% for Canada vs. 34% for UK). This result is understandable given the highly concentrated nature of the retail sector in the UK. However, it may also be a symptom of the greater degree of vertical coordination in the UK, where the supply chain leaders happen to be the retailers. If this is the case, then what we see happening in the UK could also happen in Canada, as the industry there becomes more closely coordinated.

We asked respondents in the two countries to respond to a set of statements to gauge their perceptions of the current state of the industry. We were particularly interested in their attitudes concerning the desirability of greater horizontal and vertical coordination. These responses are summarized in Table 2.

The average responses to these questions for Canada and the UK are presented in columns 2 and 3. The scale is 1 = strongly agree to 5 = strongly disagree. Thus, the lower the number, the greater the degree of agreement with the statement. Column 4 contains the *t* statistics for the difference between the average responses in the two countries.

The statements to which Canadian respondents expressed the greatest affinity were Statements 1 and 2. In this, they are united with their British counterparts. Producers in both countries recognize the need for greater coordination in the supply chain with vertical coordination (cooperation between buyers and sellers) ranking ahead of horizontal coordination (cooperation among producers).

Taking the remaining statements (3, 4 and 5) together, it appears Canadian cattle producers are happier with their collective situation than are UK producers. Again, in the wake of

Table 2

Perception of supply chain coordination — mean scores (1=strongly agree, 5=strongly disagree)

Statement	Average measure of agreement		t value
	UK	Canada	
1. “Greater cooperation <u>amongst beef producers</u> is essential for the future prosperity of the industry”	2.27	2.01	2.25*
2. “Greater cooperation <u>between buyers and sellers</u> throughout the beef industry is essential for the future prosperity of the industry”	1.90	1.94	−0.40
3. “Beef producers are well equipped to adapt to the changing demands of the market”	2.52	2.44	0.62
4. “Beef producers have been slow to recognize the needs of the final consumer”	3.49	2.64	6.17*
5. “Beef producers are disadvantaged when selling their cattle by a lack of market information”	2.95	3.35	−3.01*

\* Differences are significant at the 5% level.

the BSE crisis in the UK, this is not surprising. However, this also means that the motivation for change will be stronger in the UK than it currently is in Canada. One may argue it is because more change is required in the UK. However, this remains to be seen.

The biggest difference between British and Canadian producers came in their response to Statement 4. British producers were much more likely to disagree with the statement than Canadian respondents. One interpretation of this result would be that there is a sense in the UK that producers have had to get their act together. They have had to become an integral part of the food chain—to see themselves as producing food rather than animals. This stems from the very difficult set of circumstances that has ravaged their industry over the past decade or so. In the wake of the BSE and E. coli crises in the UK, all sectors of the British beef industry have been made sharply aware of the devastating effects a crisis in consumer confidence can have on their industry. Another interpretation is that—precisely because producers were reeling from the impact of the BSE crisis at the time of the survey—they had become defensive and were in a process of “denial.” Which of these interpretations is correct remains to be seen. Nevertheless, the responsiveness of UK producers to consumer needs will be essential to the long-run recovery and growth of the beef industry.

By the admission of the producers themselves, the need to be receptive to consumers does not appear to have reached as deeply into the Canadian feedlot industry, despite the long-run downward trend in Canadian beef sales versus competitor meats. Perhaps the message here for the Canadian beef industry is not only that more needs to be done in this area but that some producers are recognizing more needs to be done.

### 5.3. Producer perceptions of quality assurance

Respondents were asked which factors they thought were the most important in determining a quality beef product. The number one factor given by both Canadian and UK

Table 3  
 “The main purpose of a quality assurance scheme is . . . ?” (% of respondents)

Purpose	Canada	UK
To ensure compliance with govt. regulations	8	12
To ensure compliance with supermarket reqts.	5	9
To convince consumers that beef is safe	22	50
To protect the largest specialist beef producers	3	3
To ensure only the highest quality beef is sold	53	22
Don't know or other	8	4

respondents was “hygiene during processing.” The respondents also thought buyers viewed this as the most important factor. Behind this factor, Canadian respondents saw product quality issues, namely “level of fat” and “carcass conformation” as being next in importance. On the other hand, their UK counterparts saw as next in importance, “animal welfare” (which reflects the heightened concerns in the UK about animal welfare resulting from a very strong animal rights lobby) and “careful use of vet products” (another food safety issue).

Respondents were asked how important it was to belong to a QA Scheme using a five-point scale (1 = not at all important, . . . , 5 = critically important). Interestingly, the respondents in both countries returned almost identical average scores (3.64 for Canada and 3.66 for the UK). However, while respondents in both countries saw the importance of belonging to a QA Scheme with equal clarity, there were significant differences in their motivation.

In a subsequent question, respondents were asked what they thought was the *main* purpose of belonging to a QA Scheme. They were asked to select one of six choices as indicated in Table 3.

According to the respondents in both countries, the two phrases which best characterize the purpose of a QA Scheme are “to convince consumers that beef is safe” and “to ensure that only the highest quality beef enters the food chain.” However, while Canadian respondents picked *quality* ahead of *safety*, in the UK, the ordering is reversed. About 50% of UK respondents believe the purpose of beef QA Schemes is to convince consumers that British beef is safe. Clearly, the *quality* and *safety* imperatives are closely linked. However, the emphasis on food safety in the UK is a result of the heightened awareness of the UK industry to this issue following the recent BSE and E. Coli scares and may reflect the differential emphasis given to “safety” in the UK scheme.

Respondents were asked what changes in management practices would be required in order to comply with a QA Scheme. They were asked to indicate on a scale of 1 to 5 (1 = no change, 5 = a lot of change) their response to six management practices. For this question, we separated out the responses of those who indicated they were current members of a QA scheme from those who indicated they were nonmembers. The results are summarized in Table 4.

Overall, the Canadian respondents saw that compliance with a QA scheme would require more changes in management practices than their British counterparts. This is evidenced by the significant t values reported in Table 4, column 8. One possible explanation is differences

Table 4

Changes in management practices associated with QA membership — mean scores (1=no change, 5=a lot of change)

Management practice	Canada			UK			t value**
	non-member	member	total	non-member	member	total	
Record keeping	2.7	3.0	2.8	2.3	2.1	2.1	4.1
Housing and handling facilities	1.8*	2.6*	2.1	1.8	1.6	1.6	3.1
Transport arrangements	1.7*	2.7*	2.0	1.6	1.3	1.4	4.8
Timing of production/marketing	1.8*	2.8*	2.1	1.8*	1.3*	1.5	4.6
Training for self or staff	2.8*	3.7*	3.1	1.9*	1.4*	1.6	11.4
Husbandry practices	1.9*	3.3*	2.4	1.6	1.7	1.7	4.7

\* Differences between members and non-members are significant at the 5% level; \*\* t values are for the test of difference between the means of total responses in Canada and the UK.

in the scale of beef finishing operations in the two countries, such that the larger scale finishing operations in Canada require quality management changes that are not required on the smaller UK operations.

The perceived changes required in QA Schemes by nonmembers were similar in the two countries. However, while the Canadian members tended to view the required changes as being greater than the nonmembers, it was just the reverse in the UK. According to the results summarized in Table 4, Canadian members viewed the required changes as being greater than nonmembers in all management practices, and except for record keeping, the results were significant at the 5% level. By contrast, UK members trended to view the required changes as being less than nonmembers. This was true for five of the six management practices listed in the table, although the results were significant at the 5% level only for two of these (timing of production/marketing and training of self or staff). These results add weight to the suggestion that larger scale finishing operations in Canada require changes not required on the smaller UK operations. Another plausible explanation is that the UK schemes have been around for much longer than the relatively new Canadian scheme, giving UK members a chance to adjust. Canadian members would only recently have received the scheme manuals, so that any changes in management practices were likely made more recently and recalled more readily.

The greatest perceived change required in Canadian QA Schemes, by both the members and nonmembers, is “training for self and staff.” In the UK, this was not seen as particularly important. It was easily dominated by the requirement to improve “record keeping.” The Canadian scheme emphasizes such things as on-farm or feedlot husbandry practices, the need to eliminate lesions at injection sites and the correct use of pharmaceuticals. This is reflected in the perceptions of members that most changes in management practices were required in training and in husbandry practices (feeding and veterinary practices). Record keeping reflects the design of the “Quality Starts Here: Good Production Practices” manuals which encourage farmers to use the checklists supplied in the manuals. Record keeping also constitutes an important element of the major British QA scheme (FABL), but given that the scheme has been in place for a decade, it is likely that the adjustments necessary at the outset

Table 5

Perceived benefits of belonging to a QA scheme — mean scores (1=not significant at all, 5=highly significant)

Perceived benefit	Canada			UK			t value**
	non-member	member	total	non-member	member	total	
More secure markets	3.5*	2.2*	3.1	3.2*	2.2*	2.5	3.0
Improved consumer confidence	4.2*	2.7*	3.8	3.5*	2.6*	2.9	4.7
Information to improve production	3.7	3.4	3.6	2.1	1.9	1.9	11.5
Compliance with food legislation	3.8*	2.7*	3.5	3.1*	2.4*	2.6	5.1
Premium above normal market prices	4.0*	2.8*	3.7	3.2*	2.0*	2.4	7.0
Stronger links with the trade	3.9*	2.9*	3.6	3.2*	2.2*	2.5	6.1

\* Differences between members and non-members are significant at the 5% level; \*\* t values are for the test of difference between the means of total responses in Canada and the UK.

have become routine. This may explain why respondents did not see this as a major change associated with QA scheme membership.

To try to get a better understanding of what might affect a producer's decision to join a QA Scheme, respondents were asked what they thought were the major benefits and problems or drawbacks associated with belonging to such a scheme. Table 5 summarizes the responses on benefits while Table 6 summarizes the responses on problems. In both tables, respondents were asked to indicate on a scale of 1 to 5 their response to a number of possible benefits/problems (1 = not significant at all, 5 = highly significant).

Overall, the results suggest that Canadian respondents see both greater benefits and greater challenges/costs than their UK counterparts in belonging to a QA scheme. This is evidenced by the t values listed in Tables 5 and 6, which are uniformly positive and significant. As discussed earlier in the analysis of Table 4, this result may reflect the difference in quality management changes required in the two countries. The Canadian QA scheme may involve higher costs, but it also is seen to yield higher benefits.

Examining Table 5 more closely, it appears that nonmembers in both countries perceive the benefits of belonging to a QA scheme as being greater than do members. This is true for

Table 6

Perceived problems associated with belonging to a QA scheme — mean scores (1=not significant at all, 5=highly significant)

Perceived challenge/cost	Canada			UK			t value**
	non-member	member	total	non-member	member	total	
Inconvenience of farm inspections	2.4	1.9	2.3	2.8*	1.5*	1.9	2.6
Training self/staff to meet standards	2.5	2.3	2.4	2.4*	1.4*	1.7	5.6
Increased capital investment	2.8	2.4	2.7	2.9*	1.5*	2.0	4.5
Reduced independence	3.3*	2.3*	3.0	3.3*	1.8*	2.3	4.7

\* Differences between members and non-members are significant at the 5% level; \*\* t values are for the test of difference between the means of total responses in Canada and the UK.

all perceived benefits except *information to improve production* for which there was not found to be a significant difference.

The most important benefit in the eyes of UK respondents, whether or not they were members of a QA Scheme, was “improved consumer confidence.” This suggests that UK beef producers have looked to QA Schemes as a way of restoring consumer confidence, which has been shattered in recent years. “Compliance with food legislation” was also ranked high among the perceived benefits of a QA scheme. This suggests a feeling of coercion on the part of some UK producers, that is, that this was something they “had” to do because of a regulatory change. Canadian respondents who were nonmembers also ranked “improved consumer confidence” as most important but the members, on average, did not. Canadian members of QA Schemes saw the most important benefit as “providing information to improve production.” Yet this was the least significant of the benefits for UK scheme members. This indicates a difference in the delivery of the two schemes. The Canadian scheme is centered on the “Good Production Practices” manual which provides advice and checklists for producers. The voluntary use of this information to improve production practices is a central tenet of the “Quality Starts Here” scheme.

These results suggest a difference between the orientation of British and Canadian QA Schemes that is most discernible only when one becomes a member. The QA schemes in each country have a different focus or are motivated differently. The UK schemes are focused on improving the perception of food safety while the QA Schemes in Canada are focused on improving production methods.

Table 6 summarizes the perceived challenges/costs associated with belonging to a QA scheme. The results presented in Table 6 suggest the biggest perceived cost of belonging to a QA Scheme is “reduced independence” followed by “increased capital investment”.

In both Canada and the UK, members view the challenges/costs as being less significant than do nonmembers. While, in the UK, this result is statistically significant at the 5% level for all challenges/costs listed, in Canada, the result is significant at the 5% level only for *reduced independence* for which nonmembers show significantly greater concern. It is clear, regardless of the country, that the prospect of suffering *reduced independence* weighs on the minds of many beef producers who currently do not belong to a QA Scheme. This is something the beef production industry, the rest of the supply chain and government needs to take on board as they attempt to move the beef livestock sector to a position of closer coordination with the rest of the supply chain. In this regard, one of the interesting features to emerge from both the UK and Canadian surveys is the difference between perceptions of nonmembers and members. The prospect of “reduced independence” (by nonmembers) seems to be a lot worse than the reality (experienced by members). Perhaps this is a message that needs to be reinforced in the minds of nonmembers. The industry can no longer afford independent farmers.

## 6. Discussion and suggestions for further research

There are major changes taking place in beef supply chains around the world. A central feature of these changes is increased coordination that improves a country’s international

competitiveness by making the system more consumer-responsive and by reducing transaction costs. A related feature is the increased emphasis on quality assurance. Increased coordination and greater attention to quality assurance make important contributions to a country's international competitiveness in beef by providing a mechanism for assuring consumers (wherever they may be in the globalized marketplace) of the safety and quality of the products they buy. In the Introduction, it was hypothesized that differences in the drivers for change might lead to differences in the attitudes of beef producers to coordination and QA initiatives.

Both British and Canadian beef producers have indicated they think vertical and horizontal coordination are important to the future prosperity of the beef industry. However, British beef producers have had little choice but to embrace coordination and QA initiatives. This may explain the emphatic disagreement of UK respondents with the statement "beef producers have been slow to recognize the needs of the final consumer." They have had to get their act together. The major retailers, as "channel captains," and prompted by the due diligence requirements of the 1990 Food Safety Act, have imposed coordination and QA initiatives on beef producers and will not source beef from nonfarm assured suppliers. The survey results suggest that, despite the much more fragmented beef industry in the UK, producers there are generally more aware of the need to adopt coordination and QA initiatives. Consequently, there may be a silver lining in the severe food contamination crises faced by the UK producers. Such crises have been a very strong driver for change. By the same token, a lack of such crises in Canada raises the spectre of complacency.

Differences in the drivers for change in the two countries may also account for differences in how producers in the two countries viewed the purpose of QA schemes. While UK producers saw QA schemes as a vehicle for lifting consumer confidence, Canadian producers saw them as a vehicle for improving the product. This difference also helps to explain the greater acceptance in the UK for QA programs which are independently audited. Independent audits are essential if your objective is to convince the general public of the safety of your product.

For the Canadian beef industry, the spectre of producer complacency adds a particular competitive challenge in the future. However, the survey results do suggest areas where industry leaders may concentrate their efforts to encourage producers to accept the competitive challenge. Consider the responses we obtained on the questions of the problems and benefits of belonging to a QA scheme.

When looking at the problems (disincentives) for joining a QA scheme, Canadian producers who were not currently members listed "reduced independence" as being of primary importance. However, current members did not see this as such an important problem. This suggests a role for education on this point, particularly as the requirements of a global market place, with increasingly diligent consumers, are likely to make it increasingly difficult for any stakeholders in the supply chain to remain independent in delivering all but the lowest value commodities.

If we now look at the perceived benefits of belonging to a QA scheme, it is clear that current members view the main benefit as providing "information to improve production." The problem with this is that it will tend to color the nature of the QA scheme developed. Such a scheme will tend to be voluntary and may focus on initiatives important to producers

but which are not necessarily most important to consumers. Interestingly, the Canadian beef industry appears to have adopted a strategy that will counter these negative tendencies. It is currently focusing attention on the introduction of the Canadian Cattle Identification Program. One important outcome of such a program is increased accountability and traceability. This alone will encourage beef producers to become involved in a QA Scheme (covering food safety elements) as a way of showing due diligence. A mandatory cattle identification program may well act as the hook necessary to persuade beef producers to join the Canadian quality assurance initiatives.

It is clear that enhanced coordination and quality assurance programs are becoming increasingly important for international competitiveness. While some countries, like the UK, have very strong drivers to innovate in this area, other countries, like Canada do not. This paper provides some insights into how the differences in drivers can lead to differences in attitudes to change in the different countries. For those countries which have relatively weak drivers for change, it is important to explore compensating strategies in order to maintain competitiveness.

We have started to do this here, but much more research is still required. In particular, the country coverage needs to be expanded to include insights from countries with a dominant export orientation (such as Australia) as well those who are highly dependent upon imports (such as Japan). The industry drivers, institutional arrangements and consumer preferences are likely to differ considerably between countries and further examination is necessary, on an international basis, before we can draw conclusions regarding the relative costs and benefits associated with QA schemes for beef. In addition, such analysis would facilitate an examination of the potential trade implications of a proliferation of QA schemes with differing objectives, particularly as labeling remains a potential nontariff barrier to trade whenever consumers have a preference for more rather than less information about the nature, provenance and safety of the food they purchase.

We are still in relatively uncharted waters as far as farm-level QA schemes are concerned and the limited academic literature, like the schemes, tends to be restricted to single country studies. Thus, while this paper is limited in its scope, it is the first cross-country comparison to look specifically at the impact of QA schemes at the farm level, and why they are advancing at different rates. Given the dynamics of the market, the results reported here are unlikely to be reflected in the current situation in either country, but they do provide valuable insights into the need to establish clear objectives at the outset and ensure appropriate incentives are in place to ensure maximum compliance, particularly where schemes are voluntary.

The analysis we have conducted could also be usefully extended to other commodities, particularly as the situation pertaining to beef is unique, given the impact that the BSE crisis has had, not only in the UK but worldwide. The interesting issue here is the extent to which concern over food safety is a prerequisite for farm-level QA schemes to be effectively adopted at an industry level and accepted at the consumer level. As the perceived risks associated with food are likely to differ between food categories as well as between countries, a multicountry study of a range of different food products would provide further insights into the role and likely impact of QA schemes for different commodity groups, and the most effective means of administering them—schemes with common objectives, ad-

addressing common needs (as perceived by the consumer) could be policed and administered jointly, thereby reducing the costs and increasing participation across all subsectors, as appropriate.

From a methodological point of view, this study has made effective use of the least-cost method of survey research, providing broad insights across a range of issues rather than detailed information on a limited set of issues. This was necessary for two reasons: first, the survey was undertaken at an exploratory stage in our collective research on food safety and quality assurance and is the first, as far as we are aware, to make direct comparisons between producer attitudes towards QA schemes, at the farm level, in different countries; second, resources for the study were strictly limited, which precluded the authors from undertaking in-depth interviews, face-to-face, with farmers (members and nonmembers of QA schemes) and extending the analysis downstream, to include abattoirs, meat processors, retailers and consumers.

Further research along these lines would prove both methodologically and conceptually challenging, but would provide invaluable insights into the value of the plethora of QA schemes currently emerging at the national level and yet to be ‘tested’ in terms of international trade. Whether the benefits of such schemes outweigh the costs remains open to question, as does the extent to which they exceed compliance costs and are distributed equally among stakeholders. There are clearly important lessons that can be learned from experiences in different countries, to avoid the duplication of mistakes and ensure that the opportunities, which farm-level QA schemes provide, are exploited effectively and efficiently. Hopefully, this exploratory paper will prompt other academics to take up the challenge of comparative work, at an international level, in this under-researched area and policy-makers to make the necessary funds available for a more detailed exploration of the issues, as they relate to domestic improvements in food quality and safety as well as international competitiveness.

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