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# Assessing Bottlenecks in Vertically Organized Beef Systems

Kellie Curry Raper, J. Roy Black, Michael Hogberg, and James H. Hilker

Historically, the U.S. beef industry is an industry of adversarial relationships between supply-chain levels, in large part due to information asymmetries and the perception of one-sided opportunistic behavior. However, many of these adversaries have moved toward vertical organization through strategic alliances and formal vertical arrangements in recent years (Ward and Estrada 1999). Vertical organizations in the beef industry have taken various forms including cooperatives, alliances, contracting, and combinations thereof. Such systems are often an attempt to control quality characteristics in the end product delivered to the consumer and require tight coordination at each level within the chain. Incentives to change producer focus are built into the system to encourage marketing high-quality animals or animals that specifically meet the system's product goals (Anton 2002). Others have organized in efforts to reduce marketing risk. Regardless of the motivation for organizing, some of these vertical alignments have been quite successful (e.g. Certified Angus Beef), others have failed miserably (e.g. Future Beef), and still others are struggling to keep the components together.

Though the costs and benefits of vertical organization in the beef industry have been widely discussed in the literature, there has been little empirical analysis of vertical relationships. Most studies that have addressed vertical relationships focused on issues of market power (e.g. Azzam 1998; Ward et al. 1999). This study seeks to increase understanding of evolving vertical relationships in the beef industry. This research surveys participants in vertically organized beef groups, including seedstock producers, cow/calf

producers, stocker/backgrounders, and feedlots. Respondents were asked to rate their motives for joining an alliance or other vertical organization and to rate how well the alliance or vertical organization met their expectations with respect to those motives.

According to den Ouden et al. (1996), vertical cooperation is defined as the relationship between individual firms or organizations in two or more adjacent stages of the production-marketing channel without full ownership or control by individual firms. Here, we define vertically organized beef groups as groups where two or more adjacent stages of the beef production-marketing channel have a mutually defined ongoing relationship. It should be noted that our definition does allow a degree of ownership in that we allow those stages to be linked in a cooperative format. The sample frame was obtained via membership lists of vertically organized beef systems. This was facilitated primarily through personal contact with system administrators and university extension personnel in the beef industry.

Summary results here represent 30 respondents from 4 vertically organized beef groups. A total of 215 mail surveys were sent out, with a response rate of 14%. Respondents are distributed through live-market cattle-production stages as follows: 30% participate at the seedstock stage, 90% participate at the cow/calf production stage, 43% are stocker/backgrounders, and 40% participate at the feedlot stage. Note that several respondents participate in multiple production stages, as is common in the beef industry. In particular, it is not at all uncommon for cow/calf producers to also be in seedstock production or to background their own cattle. On average, respondents had been involved in a vertical beef system for 4 years.

In this paper we begin by defining categories of motives. A summary of respondents' ratings of motives is followed by a summary of their ratings of how the alliance has met their expectations with respect to those motives. We then compare ratings across motive and performance with respect to expectations. We close with an impetus for further research.

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The authors are assistant professor, professor, research associate, and professor, respectively, Department of Agricultural Economics, Michigan State University, East Lansing.

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## Why Vertical Organization?

Motives for joining a vertically organized beef group can be classified in five basic categories: Price and Risk, Quality Enhancement, Cost Reduction, Information Sharing, and Business Culture. We recognize that the categories are not mutually exclusive; that is, a motive to increase quality may also be tied to a motive to increase price. Additionally, increasing access to information facilitates quality improvement. However, it is also useful to assess the rating of each motive separately. Price and Risk motives are those that either increase the price received by the participant or reduce the market risk for the participant. They include earning premiums, access to niche markets, pooling calves for consistent lots, pooling calves for quantity, and reducing uncertainty and risk. Quality motives are defined here as source verification, quality improvement, source of consistent quality, and source of higher quality. Production-cost motives include those activities which ultimately reduce the production cost of live cattle. Here, they include reducing duplication of animal health costs, reducing commission costs, reducing harvest age of cattle, and reducing feed cost per unit of beef produced. Information-sharing motives are those that increase the information flow between participants and the marketplace. They are defined here to include accessing carcass information, help with interpreting carcass information, and access to management expertise. Business-culture motives included in this study attempt to capture whether the participant was enticed to join because of similar business goals, similar business cultures, or because of a good match with alliance product or process specifications.

## Motivation Ratings

Respondents were asked to rate several motives for participating in a vertically organized beef group on a scale of 1 (very important) to 7 (not at all important). Results by category are discussed below. Overall results are presented in Table 1.

### *Price and Risk*

Not surprisingly, earning price premiums and reducing risk were rated highly. Respondents consistently rated "Earn Premiums" high, with 89% of respon-

dents rating this motive either "Very Important" or "Important." Respondents gave it an average rating of 1.54, making it the highest-ranked motive among those included in the study. Respondents also indicated that risk reduction was a significant motive for participating in a vertically organized beef group. "Reduce Uncertainty/Risk" was rated "Very Important" or "Important" by 58% of respondents and received an average rating of 2.42.

### *Quality Enhancement*

"Quality improvement" as a motive for participation received the third-highest rating from respondents, with an average rating of 2.04 and 75% rating it as "Very Important" or "Important." Producing cattle with more consistent quality and with higher quality are both aspects of quality improvement and both are rated as at least somewhat important (2.58 and 2.89, respectively).

### *Cost Reduction*

In general, cost reduction was not ranked highly relative to other groups of motives for participating in a vertically organized beef system. None of the four cost-reduction motives received an average rating under 3. However, given the nature of most vertically organized beef systems, this is not surprising. For many such systems, the focus is on evolving toward a product-oriented or value-focused production system rather than a commodity-oriented or cost-focused production system.

### *Information Sharing*

Information plays an important role in economic markets. Respondents indicated that the most important aspect of information with respect to vertically organized beef systems is access to performance information once animals are slaughtered. This motive received the second-highest rating among all motives in the study, with an average rating of 1.81. Additionally, 81% of respondents rated it as "Very Important" or "Important." Clearly, those involved in the beef industry at these production stages see the importance of accessing information about the quality of their end product. Interestingly, help with interpreting that performance information and access to management expertise were both rated substantially lower.

**Table 1. Beef System Participants' Rating of Motives<sup>1</sup> for Joining a Vertically Organized Beef System and Beef-System Performance<sup>2</sup> With Respect to Those Motives.**

Motives	Motive Rating	% Rated 1 or 2	Expectation Rating	% Rated 1 or 2	Motive & Performance Disparity
Earn premiums	1.54	89	3.44	33	-1.90
Access to specialty/niche markets for beef	3.14	41	3.05	38	0.09
Pooling calves for consistent lots	3.41	41	3.55	18	-0.14
Pooling calves for truckload lots	4.12	24	3.9	20	0.22
Reduce uncertainty/risk of marketing cattle	2.42	58	3.36	27	-0.94
Source verification	3.50	33	2.71	43	0.79
Quality improvement	2.04	75	2.8	50	-0.76
Source of consistent quality cattle	2.58	74	2.73	47	-0.15
Source of higher quality cattle	2.89	63	2.8	40	0.09
Reduce duplicate animal health costs	3.47	42	3.07	43	0.40
Reduce commission costs	3.91	30	4.65	12	-0.74
Reduce maturity/harvest age of cattle	3.63	26	2.92	42	0.71
Reduce feed costs through increased daily gain	3.16	42	3.6	27	-0.44
Access to carcass/performance information	1.81	81	2.08	71	-0.27
Help with interpreting carcass/performance information	2.67	63	2.92	46	-0.25
Access to expertise that helps my management	3.08	44	3.52	22	-0.44
Common desire to provide beef with the product attributes that Alliance places value on	2.72	52	2.77	50	-0.05
Good match of pricing grid with your cattle	2.15	70	2.5	63	-0.35
Good match with Alliance Partner's specifications	2.59	48	2.78	48	-0.19
Good match with Alliance Partner's business culture	2.61	61	3.04	48	-0.43
Good match with Alliance Partner's business/marketing skills	2.68	56	2.7	48	-0.02

<sup>1</sup>Scale: 1= Very Important to 7=Not at all important. <sup>2</sup>Scale: 1=Excellent to 7=Very Poor

### *Business Culture*

The most important aspect of business culture for respondents appears to be a good match of the beef system's pricing grid with the cattle that are already being produced. It received an average rating of 2.15, with 70% of respondents rating it as "Very Important" or "Important." Results indicate that, at least for this group of respondents, the least-important aspect of business culture is a commonality of desire to provide specific product attributes.

### **Perceptions of Alliance Performance**

The second portion of the study attempts to capture participants' perceptions of alliance performance. Respondents were asked to rate how well the alliance had met their expectations with respect to their motives for joining. Results for this portion of the study are also given in Table 1. Table 1 also includes a measure of the difference between participants' average rating of individual motives for joining beef systems and participants' average rating of the beef system's performance with respect to that motive.

### *Price and Risk*

While "Earn Premiums" was the highest rated motive for joining a vertically organized beef system, respondents indicated that, collectively, their systems had only been average (3.44) in meeting their price-premium expectations. In fact, this category exhibited the highest difference between the average sample rating of the motive and the average sample rating of how well the beef group has met expectations with respect to that motive (-1.90). Inquiries regarding expected per-head profit increases and actual per-head profit increases bear this out as well. Average expected profit increase in the sample was \$59 per head, while actual per-head profit increase was only \$30. (Though this number falls below producer expectations, it does represent a significant increase in profit.) Additionally, beef groups in the sample have fallen short of expectations in reducing the uncertainty and risk involved in marketing cattle. The average sample rating for uncertainty/risk reduction as a motive is 2.42, while respondents rate performance with respect to uncertainty/risk reduction at only 3.36.

### *Quality Enhancement*

When respondents were asked to rate beef groups' performance with respect to quality-related motives, performance ratings were very consistent across various aspects of quality motives. Performance for each of the four motives (Source verification, Quality improvement, Source of consistent quality cattle, Source of higher quality cattle) received an average sample rating between 2.7 and 2.8. Additionally, the performance ratings are relatively consistent with the level of importance placed on the quality motives as reasons for joining beef groups. Interestingly, though, the difference between the motive rating and the performance rating for "Source of consistent quality cattle" and "Source of higher quality cattle" are negligible, while the performance rating for "Quality Improvement" is 0.76 less than the motive rating.

### *Cost Reduction*

For cost-reduction motives, the average sample ratings are also relatively consistent with the level of importance given to motives as reasons for joining beef groups. That is, the various aspects of cost reduction do not appear to be strong motivating factors (3.16 to 3.91), nor does it receive high marks with respect to beef-group performance (2.92 to 4.65). In fact, "Reduce commission costs" received the second-lowest rating for motives (3.91) and the lowest rating for performance among all motives (4.65). Again, the results for the cost-reduction categories may simply be an illustration that the focus for many vertically organized beef groups is adding value rather than reducing costs.

### *Information Sharing*

Results indicate that vertically organized beef groups in the sample have performed well, from participants' perspectives, in providing access to carcass/performance information. In fact, "Access to carcass/performance information" received the highest average performance rating in the study (2.08). Recall that participants also rated it highly as a motive for joining beef systems (1.81). Performance with respect to "interpretation of carcass/performance information" and "access to management expertise" was rated lower (but still average or above); however, they are also rated as

less-important motives than access to the information itself.

### *Business Culture*

Overall, the performance ratings of beef groups with respect to business culture are strikingly similar to the level of importance that sample participants place on these motives. The highest-rated individual aspect of business culture is "Good match of pricing grid with your cattle" (2.5). In general, the results for the broad category of business culture is above average, suggesting that participants generally choose to participate in beef groups that have a culture similar to their own.

### **Summary**

The greatest challenge to successful beef systems is vertically organizing the beef supply chain in a way that adds value to the final product and that mutually satisfies the objectives of the diverse participants in the system. Results from this preliminary study suggest that the vertically organized beef systems included here met participants' expectations with respect to information access, quality improvement, and business culture at nearly the same level of importance that participants gave to those motives for joining the system. Additionally, participants generally did not enter beef groups with strong motives of lowering costs, nor did they rate beef groups' performance strong in this area. Interestingly, the largest disparity in the study is between participants' motives and participants' perceptions of beef group performance with respect to price premiums, though

the average increase in profit per head reported by the respondents is certainly appreciable. Given that the study reports participants' perceptions, it is important to recognize that the source of this disparity between motive and performance may stem from unrealistic profit expectations or from poor performance on the part of the beef group. The study suggests that further research would include an examination of beef-system administrators' perceptions as compared to those of beef-system participants.

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