

Utilization of a Modified Delphi Method to Perform a Needs Assessment and Curriculum Revision of a Senior-Level Beef Systems Management Course

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Summary and Implications

Recent, new instructorship of the senior-level beef systems management course (An S 426) presented the opportunity to conduct a thorough evaluation and potential revision of the course curriculum. The objective of this study was to conduct a structured, critical evaluation of the course using a modified Delphi method, and utilize the results to update course objectives and student outcomes. Based on stakeholder feedback, the course is implementing heightened emphases on business and financial planning in addition to the basic managerial principals in the beef production process.

Introduction

In order to evaluate the effectiveness of the course and potential need for revision, a select group of industry stakeholders was invited to aid in an assessment of course objectives and student preparation for various careers in the beef industry. Fifteen stakeholders (10 males and 5 females) including cow/calf producers, feedlot operators, and industry professionals were used in the process. The stakeholders encompassed a broad range of experience within the beef industry ranging from 2 to more than 60 years, including both recent graduates and industry thought leaders. A series of surveys patterned after the Delphi process was designed to rank the importance of various aspects of the beef industry that students need to understand prior to entering the industry.

Materials and Methods

To facilitate the needs assessment, a panel of 15 industry professionals, stakeholders, and producers that constitutes a diverse, yet comprehensive knowledge of the beef industry was utilized. Participants were strategically selected based on their involvement in cow/calf and/or the feedlot sectors and diverse experience ranging from 2 to more than 60 years. Five females and 10 males constituted the stakeholder group.

To conduct the needs assessment, a modified Delphi process was utilized. The process involved three rounds of surveys and/or group discussion. During the first round, participants were asked to anonymously list what they felt

should be important subject objectives of the course. Results were then compiled with duplicate objectives removed. The compiled objectives were then given to each member of the panel and were ranked from most important to least important using continuous whole numbers. These rankings were then used to group subject matter areas into high, medium, and low priority. During the 3rd round, panel members were provided the opportunity to participate in a group discussion on the tabulated rankings of individual subject areas. Once the discussion was complete, the previous semester's curriculum/syllabus was revealed to the panel, and areas that were similar as well as dissimilar were highlighted to the panel's list. Data was condensed by production emphasis area into 21 categories and for each ranked outcome category, a composite mean, median, and standard deviation were calculated. Rankings were then used to assess and re-design the course structure and curriculum for future semesters.

Results and Discussion

Among the top ranked categories (composite mean) were understanding of basic economics/risk management (35.13), ability to calculate total cost of production (35.94), and marketing of cattle (40.65). Some of the lowest ranked categories (composite mean) included understanding beef carcass grading systems (62.05), how to use existing beef-based software programs (62.38), and EPDs and breeding systems (63.31: Table 1). As lower ranked categories are covered in prerequisite courses, this data reinforced the need to build on course prerequisites and not focus on topics covered in prior courses.

Delta values, or the difference between the mean and median, were also calculated for each category. Delta values closer to zero are an indication of panel consensus for the specific ranking of that category whereas a broader delta value (positive or negative) reflects less agreement of the category ranking. For example, while marketing ranked 3rd by the mean (31.50), the high delta value (9.15) is indicative that the stakeholders did not agree on the importance of this topic.

Following the course re-design, a formal evaluation will be conducted with students each semester. As part of the An S 426 course, students will be required to complete both a pre-course and post-course survey as part of their grade. The pre-course survey will provide the list of 21 subject matter categories identified as a result of the Delphi process utilized at the retreat. Students will be asked to prioritize these areas in rank order based on their perceived importance to being successful in a beef-based career. Also,

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students will be asked to identify what they feel their level of knowledge is on each subject matter area on a scale of one (having no knowledge) to four (expert level).

The post-course survey will be identical to the pre-course survey. The shift, or lack thereof in student rankings and perceived knowledge base of subject areas, will be assessed. The metrics associated with these surveys will provide us insight into the effectiveness of the curriculum associated with the beef enterprise management course. The purpose of this aspect of the course revision is to determine how student's perceived knowledge-base in critical subject matter areas are altered as a result of the curriculum

provided in the beef enterprise management course. The results of this study will be used internally as part of the continuous improvement process for this course.

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Table 1. Ranking of Course Objectives.

Category	Mean	Median	Delta*	Standard Deviation
Basic economics/ risk management	35.15	36.23	-1.08	10.01
Calculating total cost of production (fixed + variable costs)	35.94	33.35	2.60	19.71
Marketing of cattle (culls, replacements, finish cattle, niche/branded programs)	40.65	31.50	9.15	19.62
Acting as an advocate for the beef industry	41.10	38.46	2.64	6.39
Business planning	42.47	43.04	-0.56	17.80
Record keeping	43.67	46.92	-3.26	7.58
Reproductive management	46.73	46.73	0.00	17.35
Facilities (barns/ handling facilities, etc.)	47.36	50.69	-3.33	12.57
Nutritional requirements/ration balancing/thumb rules for nutrition	50.42	50.35	0.08	7.18
Environmental issues and relationship with beef production	50.62	50.62	0.00	19.58
Beef quality assurance (BQA)/ animal handling procedures	50.90	55.38	-4.48	9.75
Employee management/ human relations	51.39	49.27	2.13	11.37
Current status of the industry and major issues	52.52	55.15	-2.64	12.28
Know where to find info on new technologies and management practices	53.46	53.46	0.00	19.58
Herd health/ identification of sick or diseased animals	54.35	54.77	-0.42	5.12
Knowledge of companies in industry that provide information and supplies to producers	55.55	53.15	2.40	9.94
Alternative management/business schemes	57.35	57.35	0.00	22.68
Pasture/grazing systems management	57.81	57.81	0.00	13.87
Beef grading systems	62.05	64.62	-2.57	15.63
How to use existing beef-based software	62.38	64.77	-2.38	5.23
EPDs and breeding systems	63.31	63.31	0.00	0.98

* Delta is defined as the difference between mean and median.