Research poster

Using Quadrant Analysis to Identify Extension Program Priorities in a Multi-Institutional Sustainable Ag Systems Project

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Introduction/need for research

The primary goal of the Cooperative Extension Service (CES) is to address real-life issues and enhance the well-being of Extension stakeholders by building capacities (Seevers & Graham, 2012). Franke-Dvorak et al. (2010) questioned the contemporary relevance of extension services, when stakeholders can access trustworthy information more effectively via online sources rather than visiting a local Extension office. Thus, reduced program funding and increasingly complex stakeholder issues highlight the significance of designing training programs based on clientele needs. A needs assessment is "a systematic set of procedures undertaken to set priorities and make decisions about program or organizational improvement and allocation of resources" (Witkin & Altschuld, 1995, p. 4). To plan and prioritize successful programs, it is crucial to determine the importance and need of certain issues to the target audience. This poster abstract employs an integrated quadrant analysis technique and the Borich model to define program priorities based on stakeholder needs about saline-agriculture-based Controlled Environment in Agriculture (CEA) agricultural practices.

Conceptual framework

The Borich needs assessment model (Borich, 1980) used in the study is a systematic approach to detect discrepancies in importance and needs for certain aspects of CEA cultivation, which further aids in the development of effective training programs. When combined with the quadrant analysis technique, it enables us to efficiently prioritize program development, delivery, and evaluation.

Methodology and Analysis

This study utilized a descriptive research design to assess stakeholders' perceived importance and the needs regarding saline-agriculture-based Controlled Environment Agriculture (CEA) practices. A purposive sampling strategy was used to recruit key stakeholders, including CEA growers, agriculture and science teachers, extension educators, and researchers. Findings from a pilot study evaluated stakeholder training needs in areas such as CEA systems, Salinity, Crop production, Pest & disease management, Crop protection, Harvesting, Economics, and Marketing aspects. A quantitative, survey-based needs assessment measured these on a 4-point scale from *no to very high importance or need*, integrating the Borich Needs Assessment Model with Quadrant Analysis to systematically identify and prioritize training gaps.

Quadrant Analysis (as shown in Figure 1) aids in visually identifying and prioritizing the needs and their relative importance. The tool has 4 quadrants: Low importance-low need (LILN), Low importance-high need (LIHN), High importance-low need (HILN), and High importance-high need (HIHN). The LILN, i.e., lower left quadrant, suggests a lack of awareness, emphasizing the role of Extension programs in education. The quadrant on the bottom right, namely LIHN, indicates a need for change, but individuals do not prioritize it. The upper left quadrant (HILN) consists of unfelt needs, which underlines the significance of changing the perspective of the

community for enhancing the effectiveness of programs. The upper right quadrant, i.e., HIHN, is the priority quadrant where topics are both important and needed, highlighting the requirement for effective Extension programming.

The mean weighted discrepancy scores (MWDS) of perceived importance and perceived needs were used to plot the quadrant analysis graph.

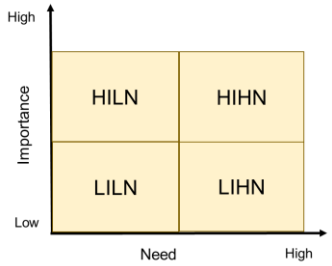

Fig 1. Quadrant Analysis Tool based on Borich Needs Assessment

Results/findings

Results from the pilot study (n = 16) indicated that the Quadrant analysis is a valuable tool for extension programming related to CEA. Findings revealed that all seven training categories, such as CEA system, Salinity, Crop production, Pest and disease management, Economics, harvesting, and marketing or post-harvest management, fell in the HIHN quadrant, highlighting the need for extensive efforts in program development and evaluation.

Among these, salinity had the lowest MWDS score and received lower mean ratings for both need (M = 2.92; SD = 0.59) and importance (M = 3.20; SD = 0.56) on a four-point scale. In contrast, crop production aspects and economics of production of saline agriculture-based CEA were ranked highest, emphasizing the need to prioritize these topics in training programs.

Moreover, item analysis revealed negative Cronbach's alpha values for the Harvesting category, with -0.40 for need and -0.06 for importance items. While, all other categories demonstrated high reliability, with Cronbach’s values ranging from 0.87– 0.96.

Conclusion

The approach we have used will enhance the effectiveness of identifying stakeholder needs, which would further aid in designing effective programs and services to meet them. Further, this approach assists in determining the amount of time and effort necessary to address needs related to CEA topics based on the quadrant in which they fall.

Implications/recommendations

This approach allows Extension educators, program development specialists, and evaluators to tailor their educational programs based on the stakeholders' needs. Further, it allows for understanding the activity-output-outcome sequencing in planning the evaluation for CEA projects and meeting the key stakeholder needs.

References:

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