



Analysis and Dissemination of Survey Data

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Academic Year 2025-2026

Why Analyze Survey Data?

Survey data analysis transforms raw responses into **actionable insights**, essential for evidence-based decision-making in plant production research and agricultural extension.



Reveal Patterns & Trends

Statistical analysis uncovers hidden patterns in farmer behavior, crop management practices, and adoption rates of new technologies.



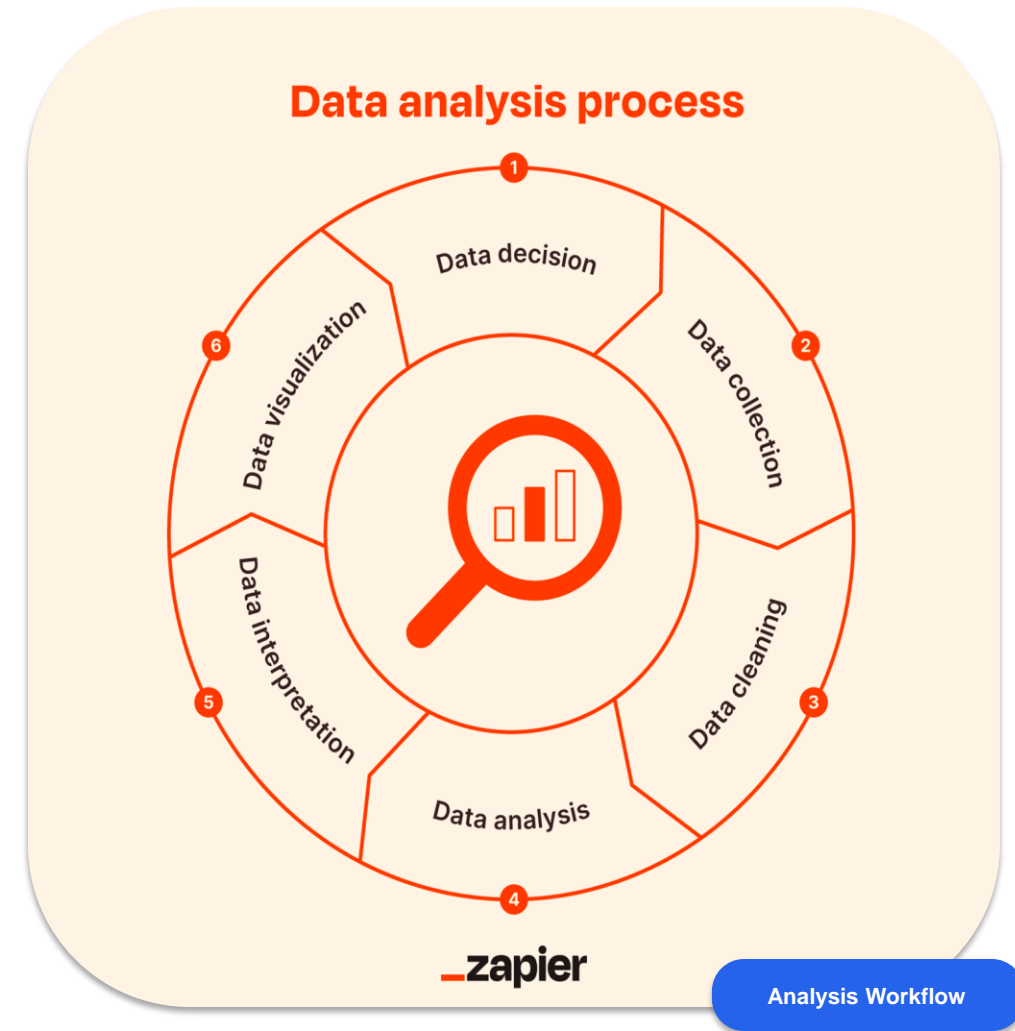
Identify Relationships

Explore correlations between variables such as soil fertility, irrigation methods, and crop yields to understand cause-effect relationships.



Support Decision-Making

Provide evidence-based recommendations for agricultural policies, extension programs, and farming practices.



Types of Survey Data



Nominal Data

Categories with **no inherent order**. Used for classification.

Examples: Crop type (wheat, maize, rice), Yes/No responses, Farming system (organic, conventional)



Ordinal Data

Categories with **meaningful order** but unequal intervals.

Examples: Satisfaction scales (Very dissatisfied → Very satisfied), Adoption level (Never, Rarely, Often, Always)



Interval/Ratio Data

Numerical values with **equal intervals**. Continuous measurements.

Examples: Yield (kg/ha), Income (USD), Frequency of fertilizer application, Farm size (hectares)



Descriptive Statistics for Survey Data

Descriptive statistics **summarize and organize** survey data, transforming raw responses into meaningful insights about your sample.

Frequencies & Percentages

Count occurrences and express as proportions. Essential for categorical survey questions.

Means & Medians

Calculate central tendency for numerical data. Median preferred for skewed distributions.

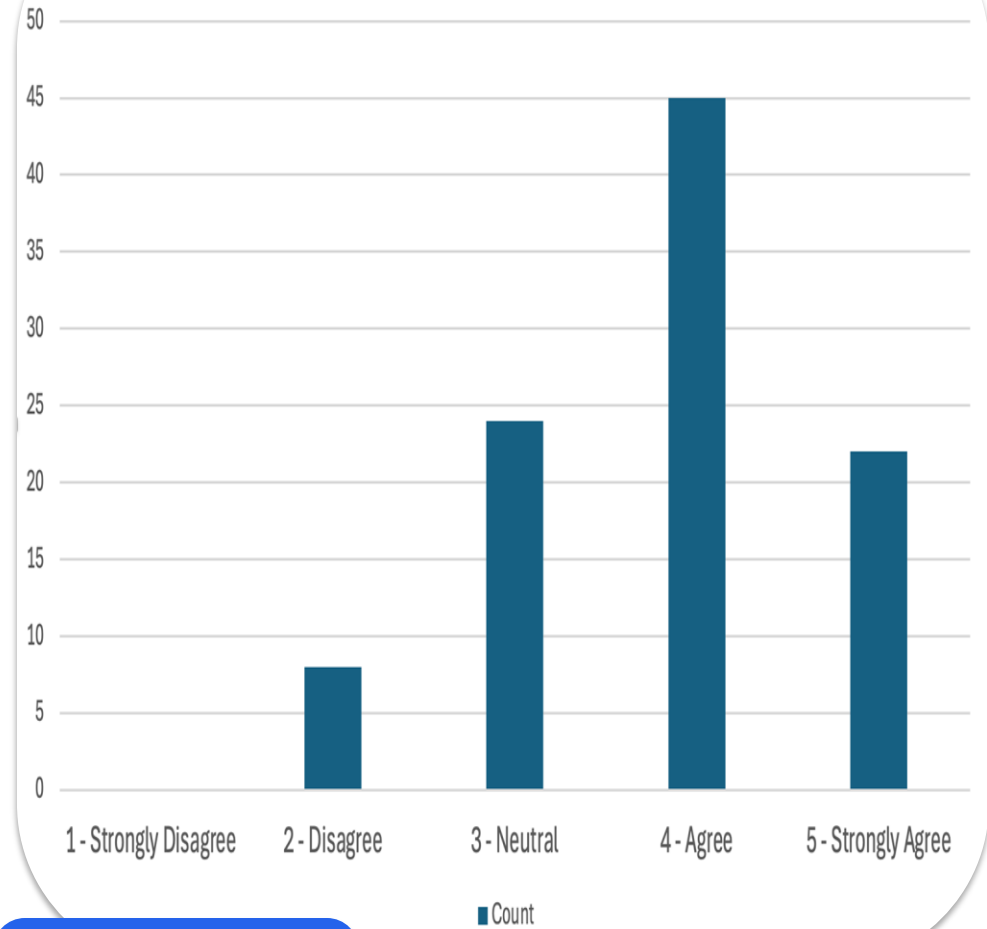
Standard Deviation

Measure data spread and variability. Indicates consistency of responses.

Cross-Tabulations

Compare responses across different groups or demographic categories.

Customer Satisfaction Responses (Q1)



Frequency Distribution

Inferential Statistics: Testing Hypotheses

Inferential statistics allow researchers to **draw conclusions about populations** based on sample data, enabling hypothesis testing and evidence-based decision-making.



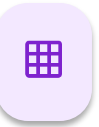
t-Tests

Compare means between **two groups** (e.g., yield of organic vs. conventional farms).



ANOVA

Compare means across **multiple groups** (e.g., yields from different fertilizer treatments).



Chi-Square Tests

Examine relationships between **categorical variables** (e.g., farming method vs. adoption level).



Regression Analysis for Survey Data

Regression analysis models **relationships between variables**, predicting outcomes based on one or more explanatory factors from survey responses.



Linear Regression

For **continuous outcomes** (e.g., crop yield, farm income, production costs).

Example: Predicting yield based on fertilizer amount, irrigation frequency, and soil quality.



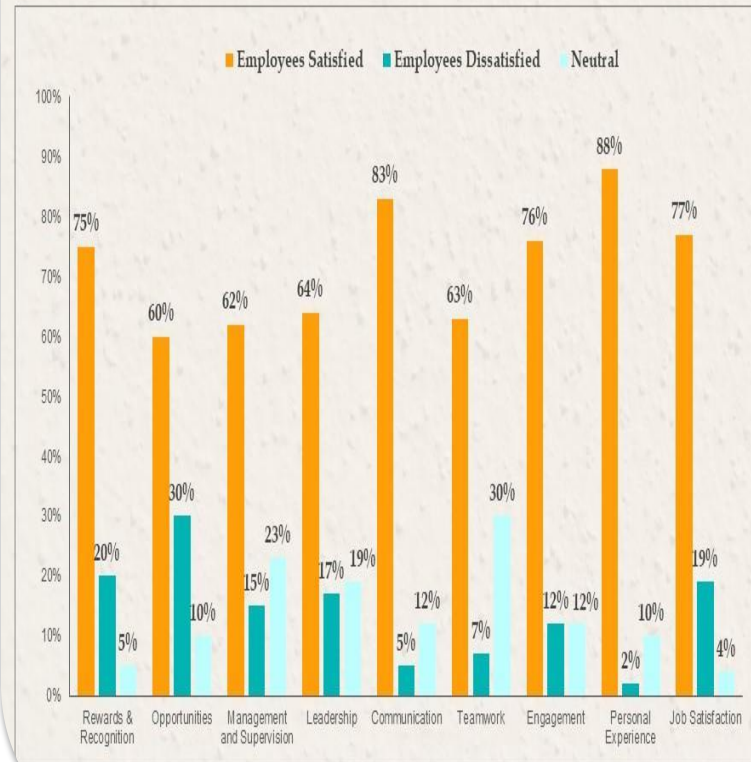
Logistic Regression

For **binary outcomes** (e.g., technology adoption yes/no, disease presence/absence).

Example: Factors influencing farmers' decision to adopt precision agriculture techniques.

Survey questionnaire result analysis

This slide presents statistical data analyzing responses of survey to measure employee experience after building employee value proposition. It includes elements such as rewards & recognition, opportunities, management & supervision, leadership, communication, teamwork, engagement, personal experience, etc.



- o Survey results presents that employees are highly satisfied post EVP implementation
- o Average of 72% employees are satisfied with work culture
- o Add text here

Survey Analysis Results

is linked to excel, and changes automatically based on data. Just left click on it and select "edit data".

Handling Complex Survey Designs

Agricultural surveys often use **complex sampling designs** to control costs and improve precision, requiring specialized analysis techniques.



Survey Weights

Compensate for unequal sampling probabilities and non-response. Ensure estimates represent the target population accurately.



Stratification

Divide population into **homogeneous subgroups** (strata) to reduce variance and improve estimate precision within each stratum.



Multistage Sampling

Cost-efficient approach selecting samples in stages (e.g., regions → villages → farms → plots) to reduce fieldwork expenses.

Communication in Agriculture

- ✓ Dissemination of knowledge, information, research findings, government policies and new innovations occurs through the proper communication between farmer and extension agents
- ✓ **Main aim: to develop positive change in knowledge, attitude and behavior in the context of the farmer/client**
- ✓ Agricultural extension has **pluralism** where different institutions and agents are involved in providing extension services
- ✓ The governmental, non-governmental and private agencies have different roles for the agricultural communication development
- ✓ Agricultural communication is a plan to **transfer of farm technology**
- ✓ **from the research system to the farmers' system**
- ✓ **through extension system and media**
- ✓ **with a view to make a desirable changes in respect of higher productivity, profitability and prosperity and also get feedback from clients.**



Survey Implementation

Interpreting Survey Results

Interpretation bridges **statistical analysis** and practical understanding, transforming numbers into actionable insights for agricultural decision-making.



Statistical Significance

p-value < 0.05 indicates results unlikely due to chance. However, significance \neq importance.



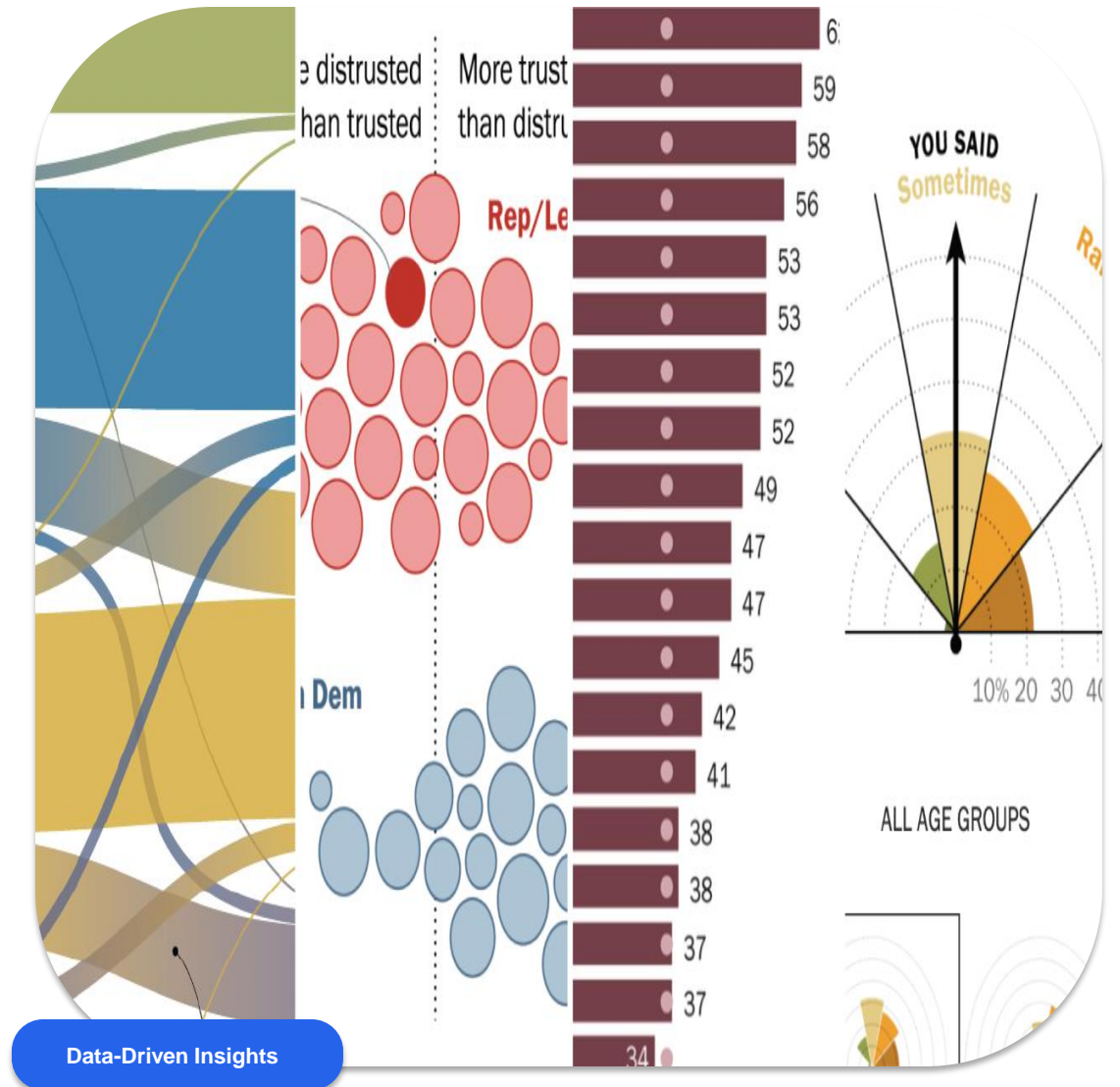
Confidence Intervals

Provide **range of plausible values** for population parameters. Wider intervals indicate less precision.



Practical Significance

Consider **real-world importance** and impact. Small differences may be statistically significant but practically irrelevant.



The Power of Data Visualization

The screenshot shows a 'Data Report' for a 'Events Satisfaction Survey'. The interface includes a navigation bar with options like 'Chart Report', 'Data Report', 'Cross Tabulation', 'Visitor Activity', 'URL Assistant', 'Notification', and 'Custom Thank-you'. Below the navigation, there are filters for 'Line-up Responses' and 'Quarantine', and a table of survey results. The table has columns for Gender, Age, Did you attend the event with anyone..., Yourself included, how many people attended..., Your occupation, and How did you find out about the event... The 'Export as' menu is open, showing 'CSV Format' and 'Excel Format' options. A blue button labeled 'Data Dashboard' is at the bottom.

Gender	Age	Did you attend the event with anyone...	Yourself included, how many people attended...	Your occupation	How did you find out about the event...
Female	ages 19 - 23	No	-	Student	From Facebook event pop-ups Have attended other events in the past
Male	ages 24 - 28	Yes	3	Teacher	From Facebook event pop-ups Have attended other events in the past
Male	ages 19 - 23	No	-	Student	From Facebook event pop-ups Already follow the event team information regularly
Diverse genders	Under age 18	Yes	3	Student	Family or friend's recommendation

Data visualization transforms **complex survey results** into intuitive graphics, making findings accessible to diverse audiences in agricultural research.



Reveals Patterns Quickly

Visual representations help identify trends, outliers, and relationships that are difficult to detect in raw data tables.



Engages Stakeholders

Charts and graphs capture attention and facilitate understanding among farmers, policymakers, and researchers.



Facilitates Decision-Making

Clear visualizations enable faster, evidence-based decisions in agricultural practice and policy development.

Visualizing Multiple Choice Questions

Multiple choice questions are common in agricultural surveys. Effective visualization makes **response patterns** immediately clear and facilitates comparison.



Horizontal Bar Charts

Best for ranking options from highest to lowest. Easy to read long labels and compare values between choices.



Pie Charts

Use for **proportional representation** when there are 5 or fewer options. Shows parts of a whole effectively.



Best Practices

Sort bars by value unless order is meaningful. For multi-select questions, label as "% of respondents who selected".



Visualizing Likert Scale Data

Likert scales measure **attitudes and opinions** using ordered categories (Strongly Disagree → Strongly Agree). Visualization must preserve this ordinal structure.



Diverging Stacked Bar Charts

Best for 5-point scales. Centers neutral responses, showing positive/negative divergence clearly with balanced visual impact.



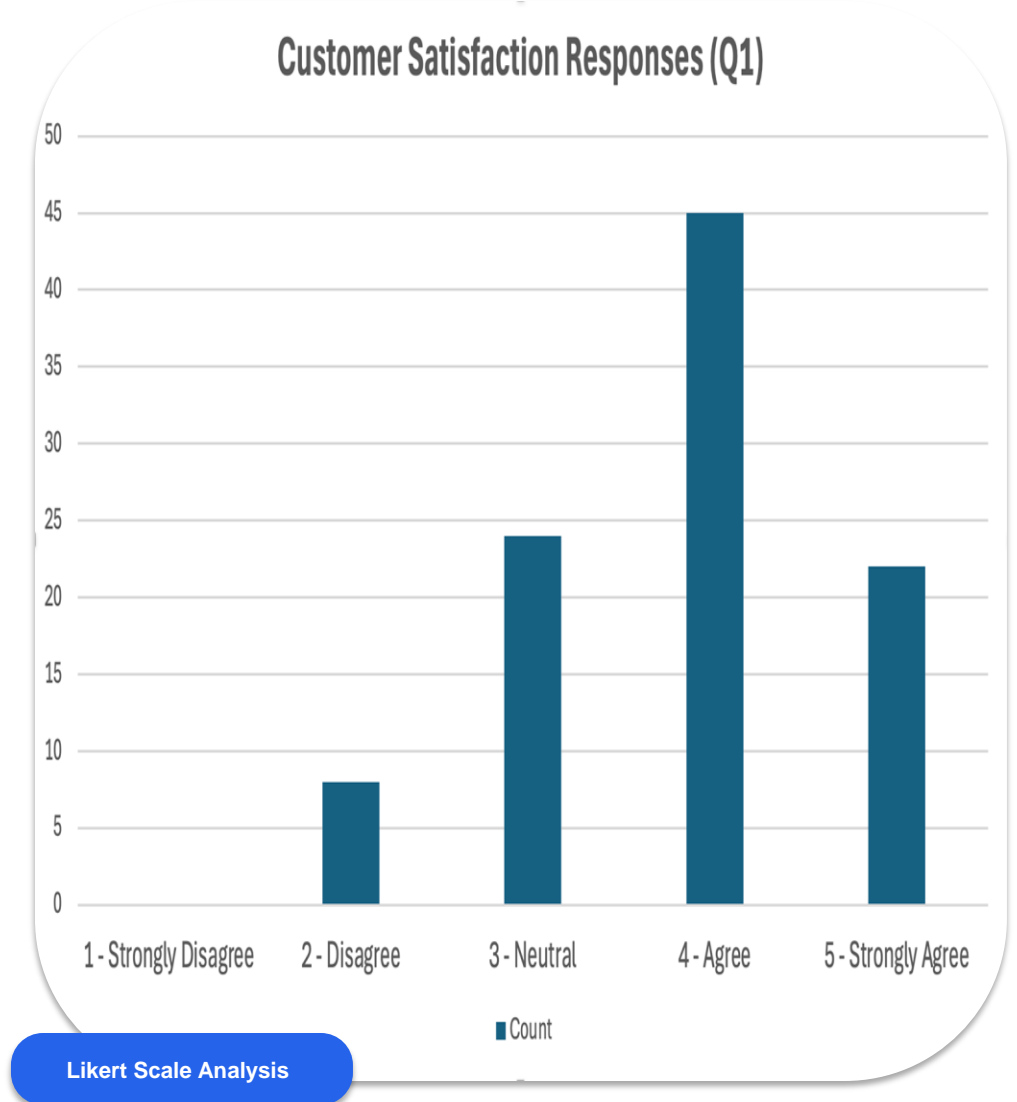
Stacked Bar Chart Matrix

For 5-10 questions. Each question gets one row, revealing which statements get strongest agreement and where sentiment varies.



Heatmaps

For 10+ questions. Color intensity shows patterns efficiently, making it easy to identify clusters and outliers across many items.



Visualizing Demographic Breakdowns

Demographic analysis **compares survey results** across different subgroups, revealing patterns and disparities among farmers, extension workers, and stakeholders.

Grouped Bar Charts

Single question by demographics. Side-by-side bars for age groups, regions, or farm sizes show direct comparisons.

Small Multiples

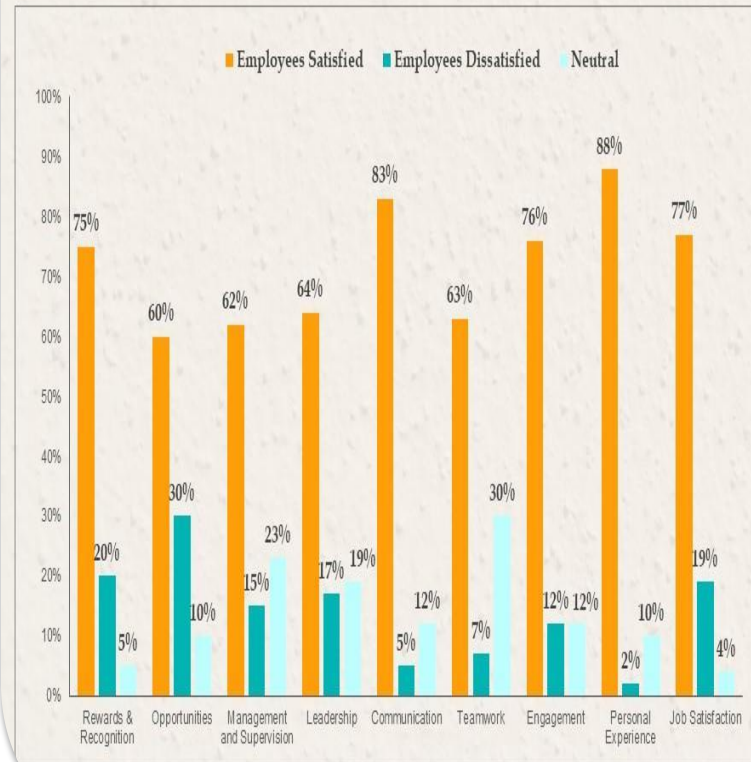
Consistent comparison across groups. Separate mini-charts for each demographic category reveal patterns clearly.

Heatmaps

Multiple questions by segments. Color intensity shows scores, revealing patterns like "younger farmers adopt technology faster".

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Demographic Analysis

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Dissemination to the Scientific Community

Disseminating findings to the scientific community ensures **peer validation**, knowledge advancement, and contributes to the evidence base for agricultural practices.



Research Papers

Follow **IMRAD structure**: Introduction, Methods, Results, and Discussion. Clear methodology and reproducible results are essential.



Journal Publication

Peer-reviewed journals ensure quality through expert evaluation. Target high-impact journals in plant production and agricultural sciences.



Conference Presentations

Oral and poster sessions provide immediate feedback, networking opportunities, and rapid dissemination of preliminary findings.



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Expert team visit to BLB affected paddy field

Scientific Exchange



Effective dissemination to end-users transforms **research findings** into practical agricultural innovations adopted by farmers and policymakers.



Extension Services

Training and demonstrations through agricultural extension officers provide hands-on learning experiences for farmers.



Farmer Field Schools

Participatory learning approach where farmers experiment and learn from each other in real field conditions.



Policy Briefs & Visual Materials

Concise summaries for decision-makers and visual materials (posters, infographics, videos) for diverse audiences.