



FoodEngineering

State-of-Food Manufacturing Study



June 2009



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Study Overview

BACKGROUND

Each year, *Food Engineering* polls its food and beverage manufacturer readers on the issues and technologies that most affect their success and productivity. The results of this study are turned into an exclusive annual article entitled “The State-of-Food Manufacturing.”

PURPOSE AND OBJECTIVES

The purpose of the State-of-Food Manufacturing Study is to examine industry professionals' attitudes and opinions of current and future industry manufacturing trends.

Specific objectives include:

- How have throughput and budgets changed from last year? Where is money being allocated?
- What structural changes have occurred since last year?
- What methods are being used to improve productivity?
- What trends do food industry professionals see happening in the near future?
- Where are manufacturing missions falling short, if at all, and what can be done to fill the gap?



Study Overview

STUDY DETAILS

Target Audience: The total sample consisted of 6,874 *Food Engineering* subscribers, selected on an Nth name basis from the domestic circulation from food manufacturing/processor companies, whose job titles were Plant Operations, QA/QC, Research and Development, and Engineering.

Sample Selection Method: Systematic random sample from the domestic circulation (on an Nth name basis)

Survey Method: Web-based and Mail

Incentive: Web-based: Chance to win one of five \$50 American Express gift checks; Mail: \$.50 coin

Fielding Dates: May 4 – June 1, 2009

Completed Returns Summary:

Survey Method	Number Mailed	Undeliverable/ Opted-out/Unusable	Usable Base	Usable Returns	Response Rate
Web-based	5,874	141	5,733	209	4%
Mail	1,000	29	971	66	7%
Total	6,874	170	6,704	275	4%

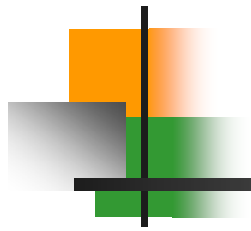
DATA TABULATION AND PRESENTATION

Upon receipt at BNP Media, the questionnaires are coded and entered into a computer database. Tabulations are generated using SPSS, a statistical software package.

The data produced by SPSS is presented in graphical and tabular format with the number of respondents who answered that particular question. This number will change throughout the report since some respondents may skip or incorrectly answer a question.

Some questions in this survey requested respondents to write in a response. Other than minor editing for readability, these responses are presented as written by the respondent.

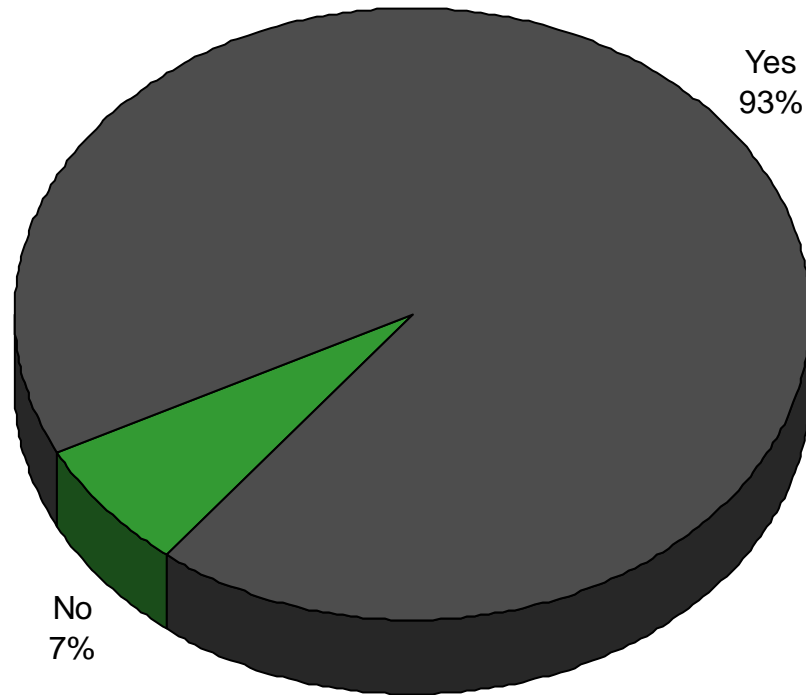
The methods used in this research study were conducted in accordance with BNP Media's Market Research Code of Ethics. A copy of the Code is available upon request.



Study Results

Purchase Involvement for a Food or Beverage Manufacturing Company

1. *Do you currently specify, recommend, authorize or purchase equipment, products, and/or services for a food or beverage manufacturing company?*

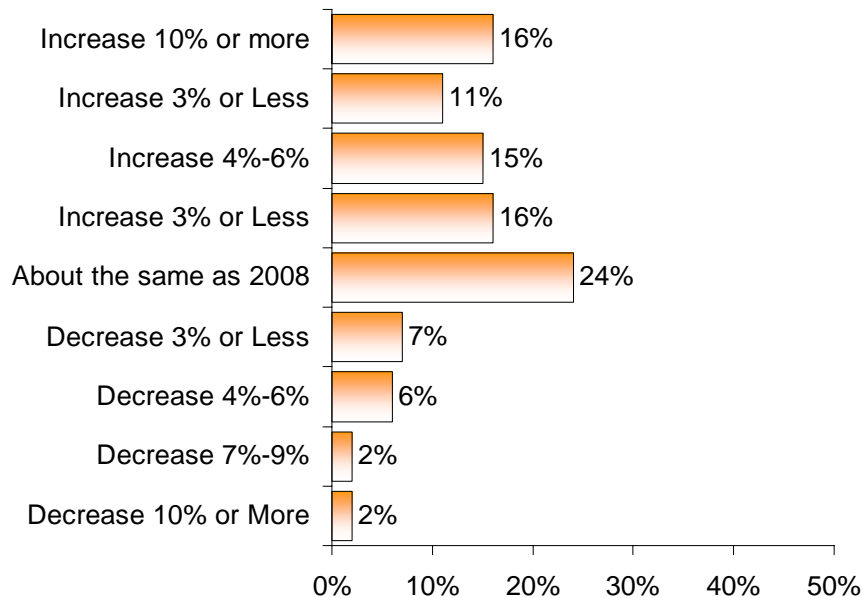


Total Respondents = 272

2009 Company Production Trends

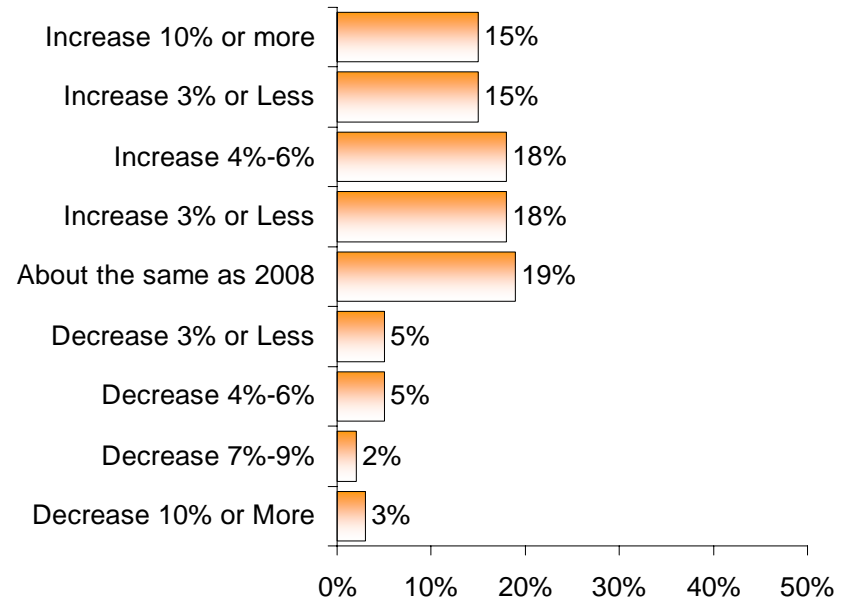
2a. Compared to 2008, how much do you think your location's gross throughput will increase in 2009? What about your company as a whole?

At Your Location



Total Respondents = 273

At Your Company

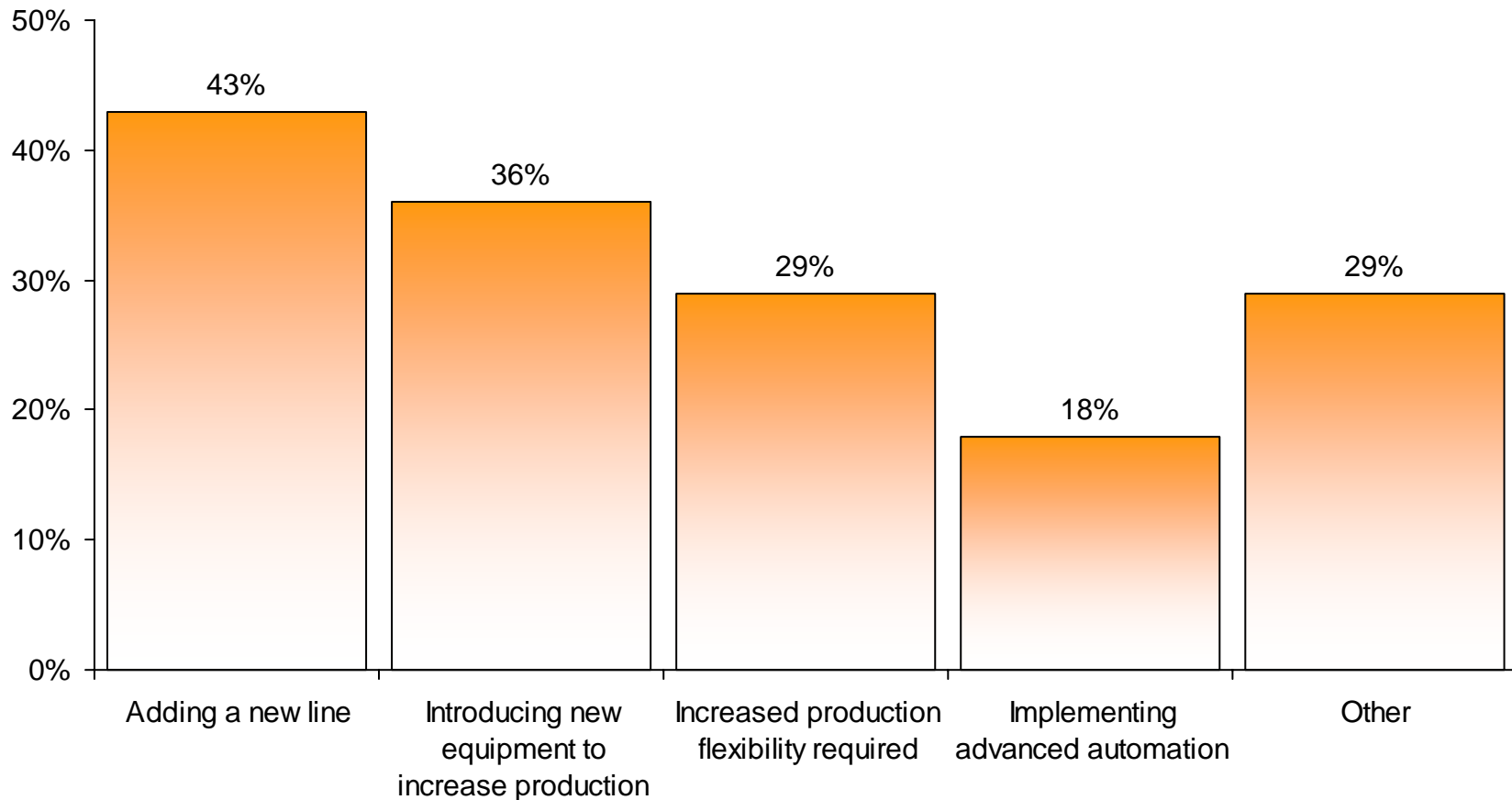


Total Respondents = 270

Note: Totals may not add to 100% due to rounding.

2009 Company Production Trends

2b. If your location's or company's gross throughput unit volume production will increase by 10% or more, please tell us why.
(Multiple response allowed)



Total Respondents = 56

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2009 Company Production Trends

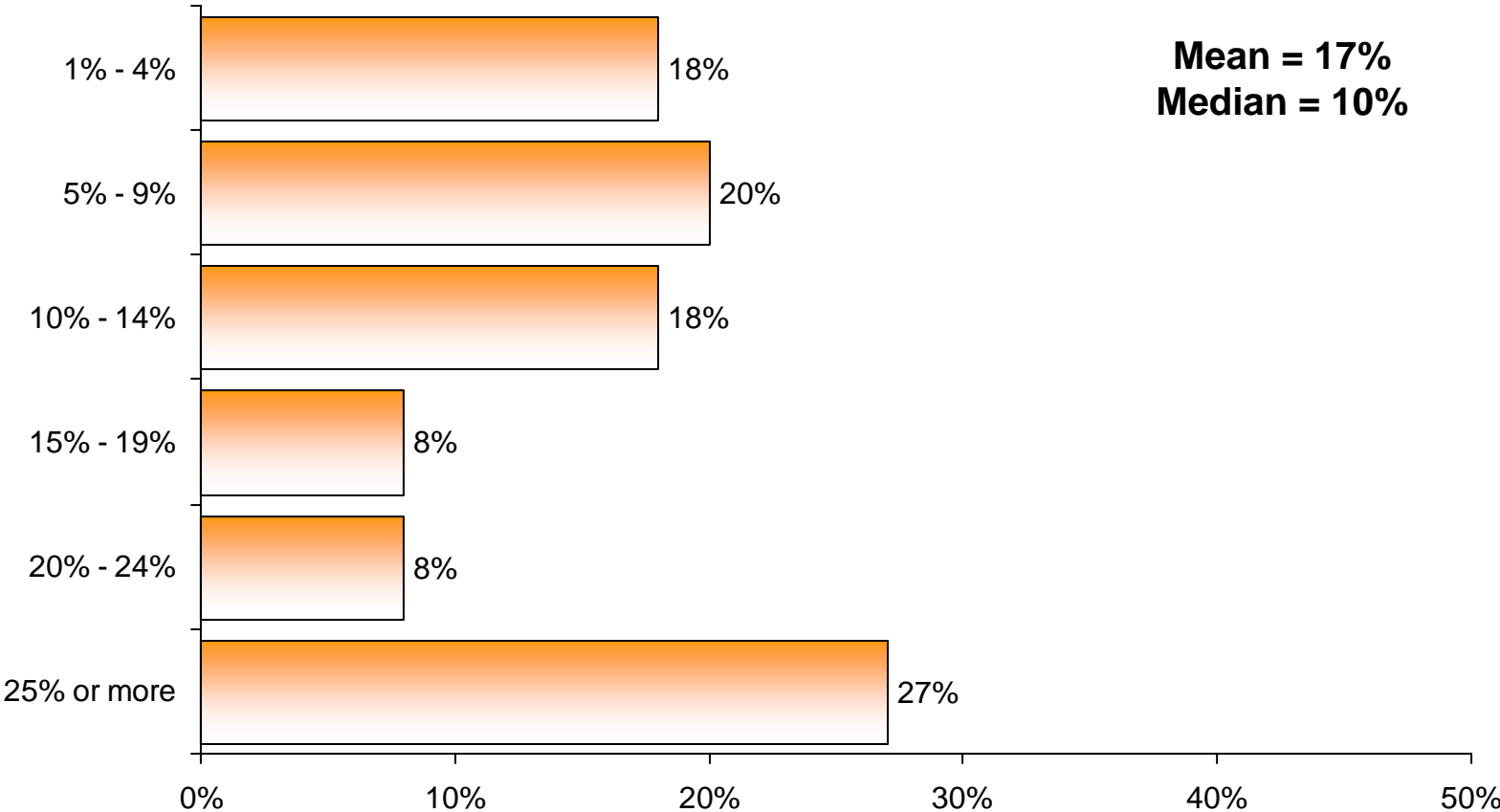
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Other Mentions:

- New products (2)
- Adding a new line, introducing new equipment
- Adding new global manufacturing sites
- Aggressive sales
- All apply; I support multiple locals
- Customer base increasing
- Customer preference toward private label
- Expansion of current product lines
- Growing into existing capacity
- Higher demand due to economic buying shifts
- If it does we are starting up our production facility
- Increased demand
- Larger crop
- Launching new products
- Lean processes less waste
- May be adding new line
- New customers
- New line for two new large distribution outlets
- New products, reduce non-productive SKU's
- Opening new stores so will start another shift
- Simplification, make items more efficiently
- Using equipment that was added last two years

2009 Budget for Production, Packaging, Process Control Equipment and Professional Services

3a. What percentage of your location's 2009 budget is designated for the purchase of production, packaging, process control equipment and professional services?

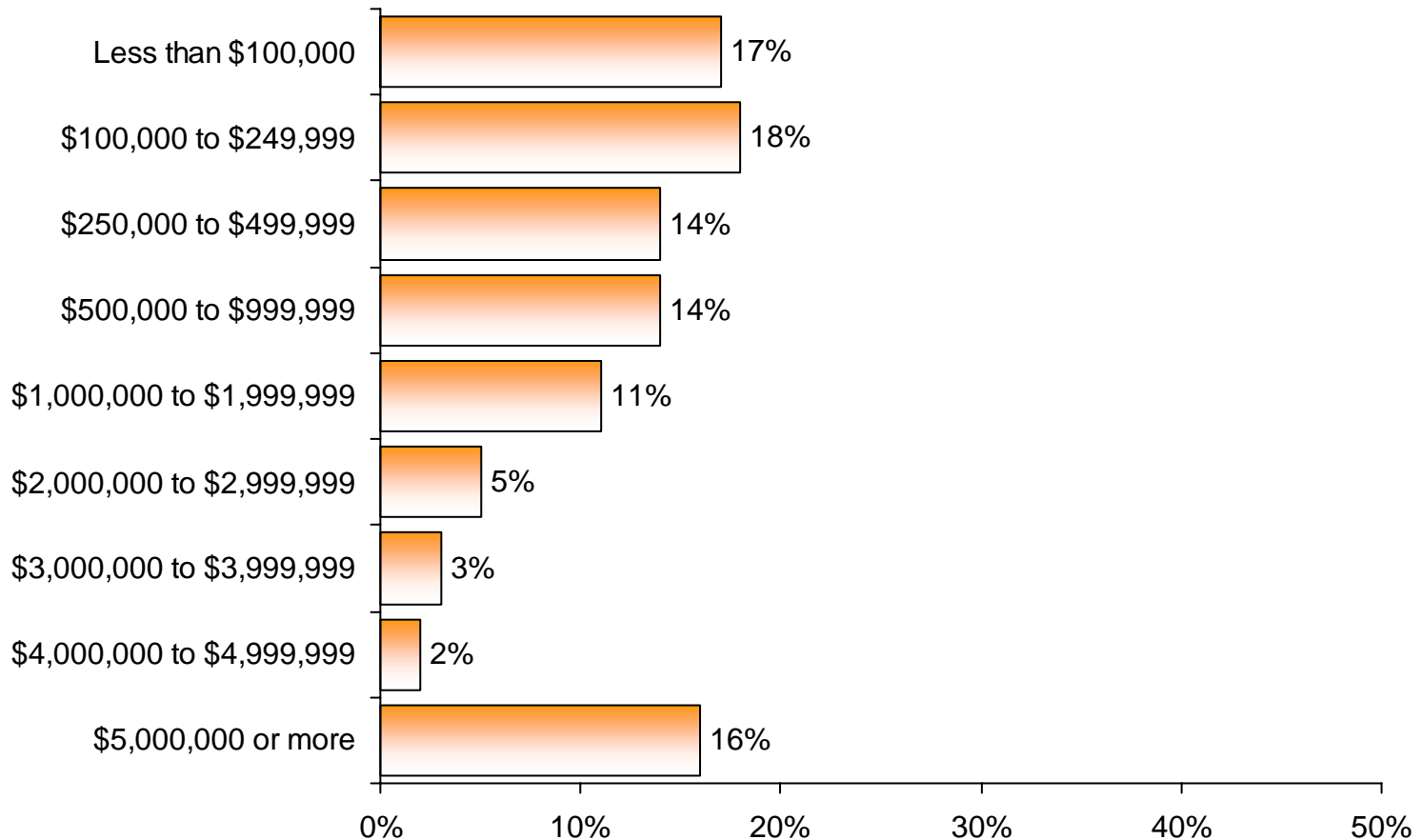


Note: Total does not add to 100% due to rounding.

Total Respondents = 176

2009 Budget for Production, Packaging, Process Control Equipment and Professional Services

3b. Of this spending, what dollar amount is for tangible assets?

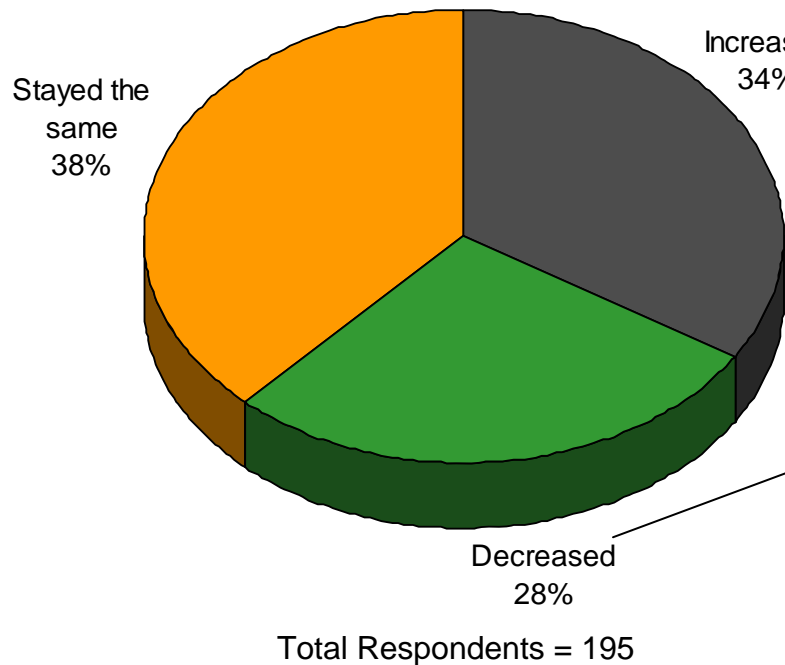


Total Respondents = 176

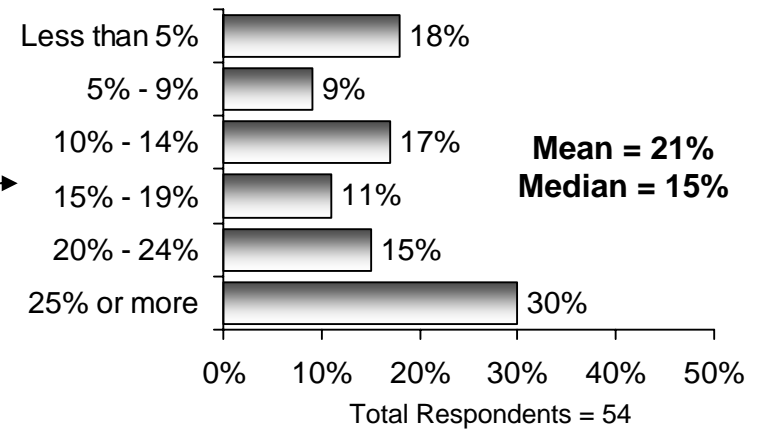
Change in Budget for Production, Packaging and Process Control Equipment

4. By what percentage has your 2009 budget for the purchase of production, packaging and process control equipment increased or decreased?

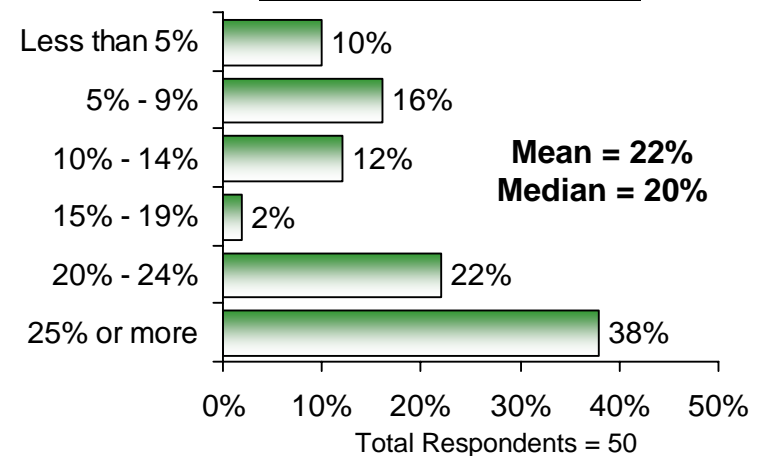
Change in 2009 Budget vs. 2008 Budget



Increased From Last Year



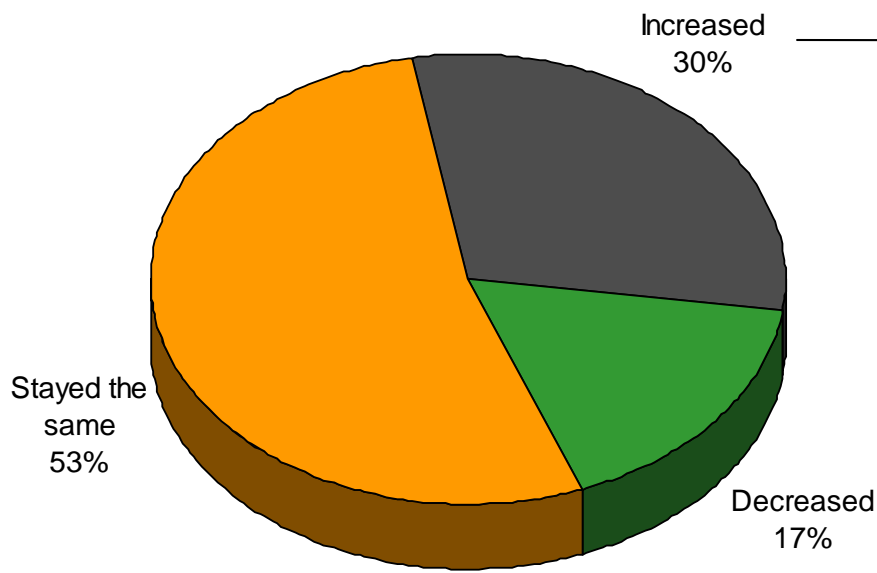
Decreased From Last Year



Change in Budget for Manufacturing Automation and Control Hardware and Software

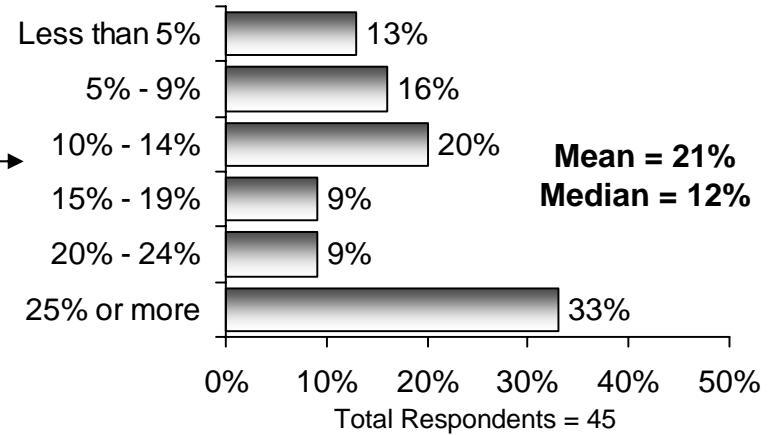
5. *By what percentage has your location's 2009 budget for manufacturing automation and control hardware and software increased or decreased?*

Change in 2009 Budget vs. 2008 Budget

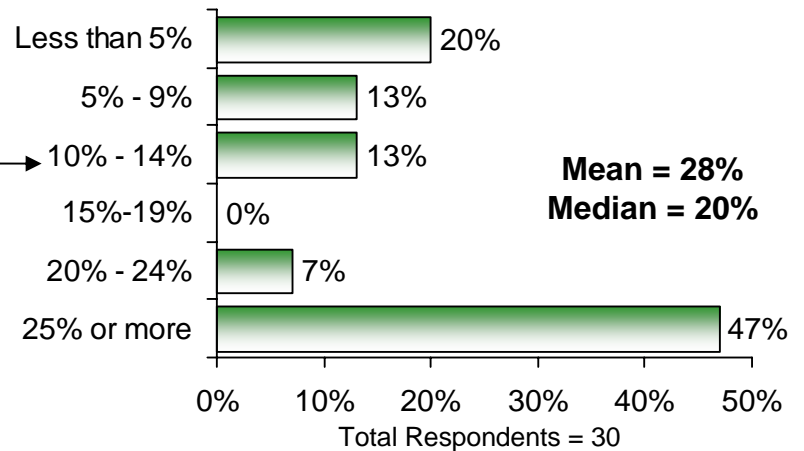


Total Respondents = 190

Increased From Last Year

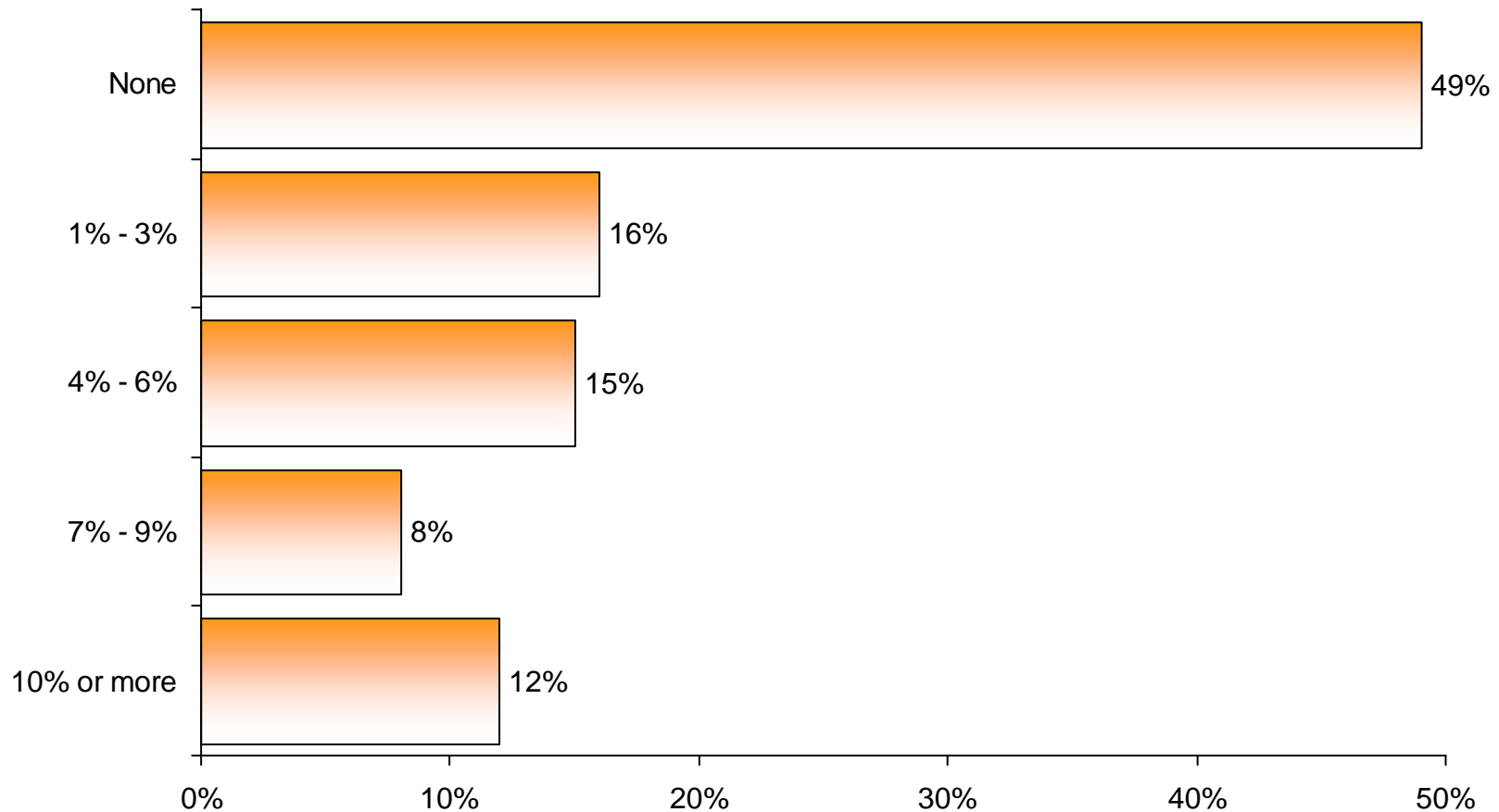


Decreased From Last Year



ROI on Investments in Asset Management Systems

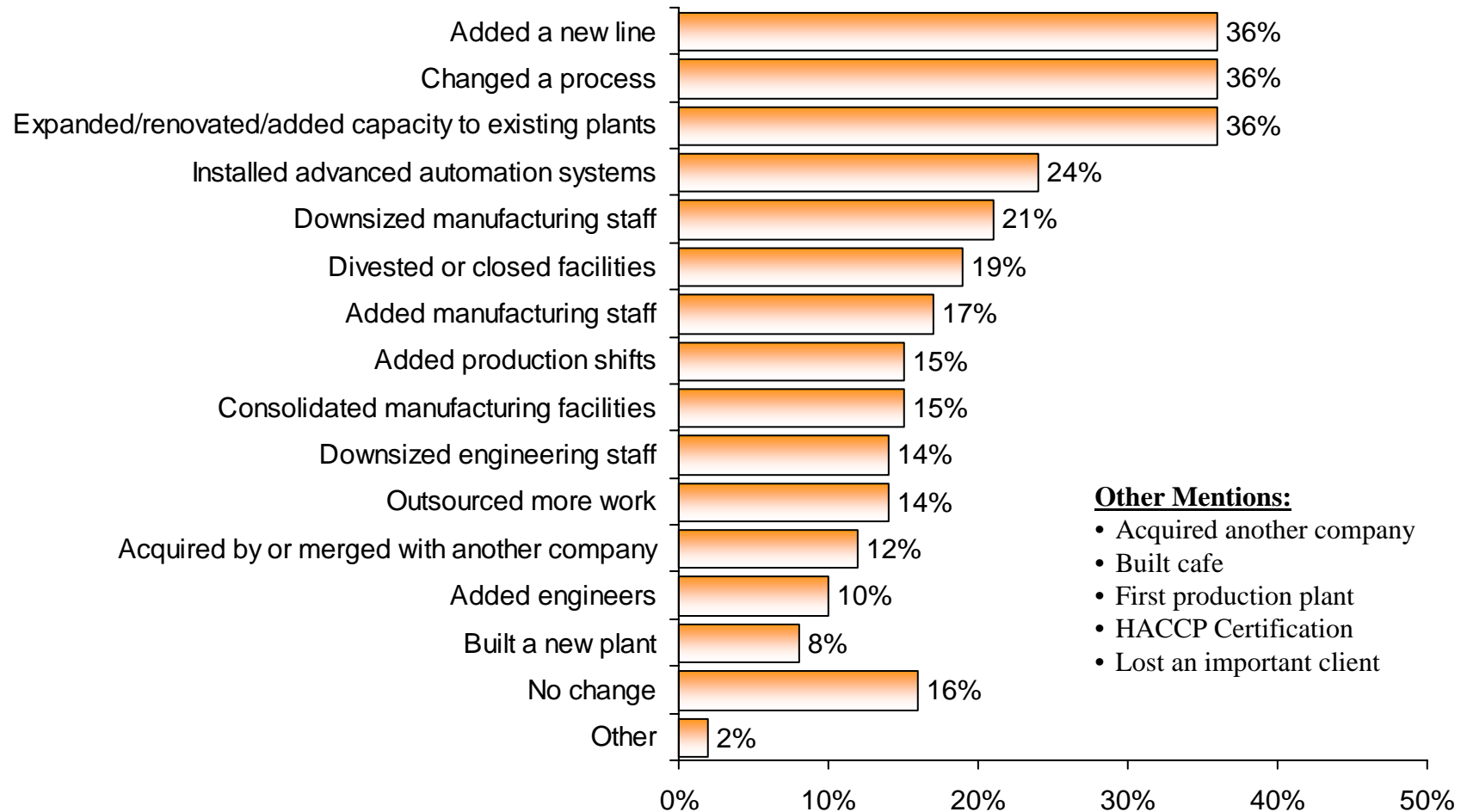
6. *If your plant has invested in asset management systems, what ROI has it produced?*



Total Respondents = 141

Structural Changes in Past Year

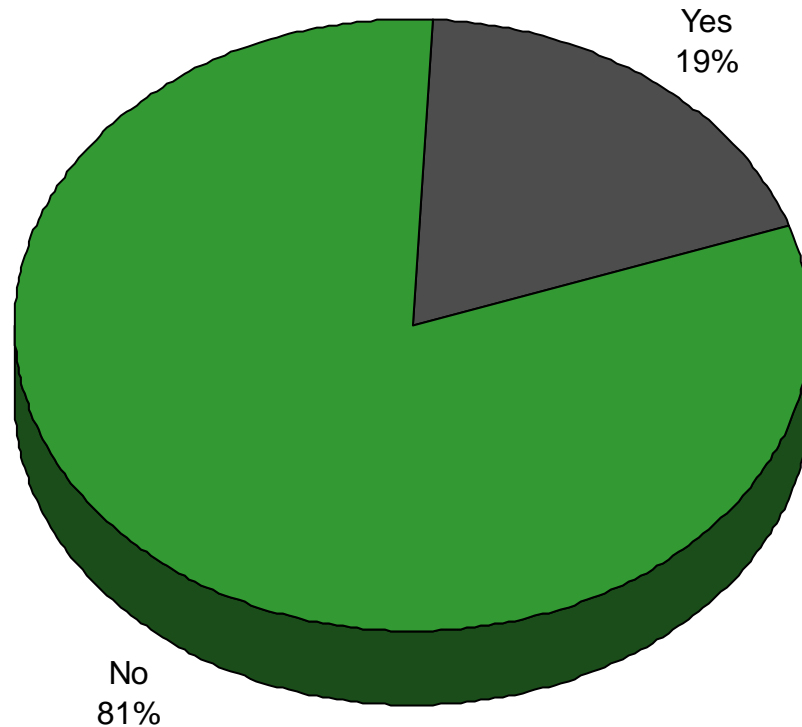
7. What structural changes have occurred at your company during the past year? (Multiple response allowed)



Total Respondents = 241

Shifting Focus Away From Foodservice Toward Retail Product Production

8a. *To capture a larger share of the at-home meal market, is your company shifting focus away from foodservice and toward more retail product production?*



Total Respondents = 226



Shifting Focus Away From Foodservice Toward Retail Product Production

8b. If yes, what changes in manufacturing and packaging has this required?

- None (4)
- Added retail package and process lines
- Adding single service lines
- All new production facility
- Autoscale machine
- Created new products along with new packaging
- Different size packages
- I do not know
- Individual/sealed packs grouped as three pound sale (use and store/freezer concept) better value
- Kabob's, Fajita kits, Meatloaf
- Modified current product lines to tailor the size to more of a take home line.
- More cartoning
- More customers require
- More deli items
- More diverse food manufacturing technologies must be added
- More packaging machines for smaller size packages, different packaging options, more labor, expanded warehouse capacity

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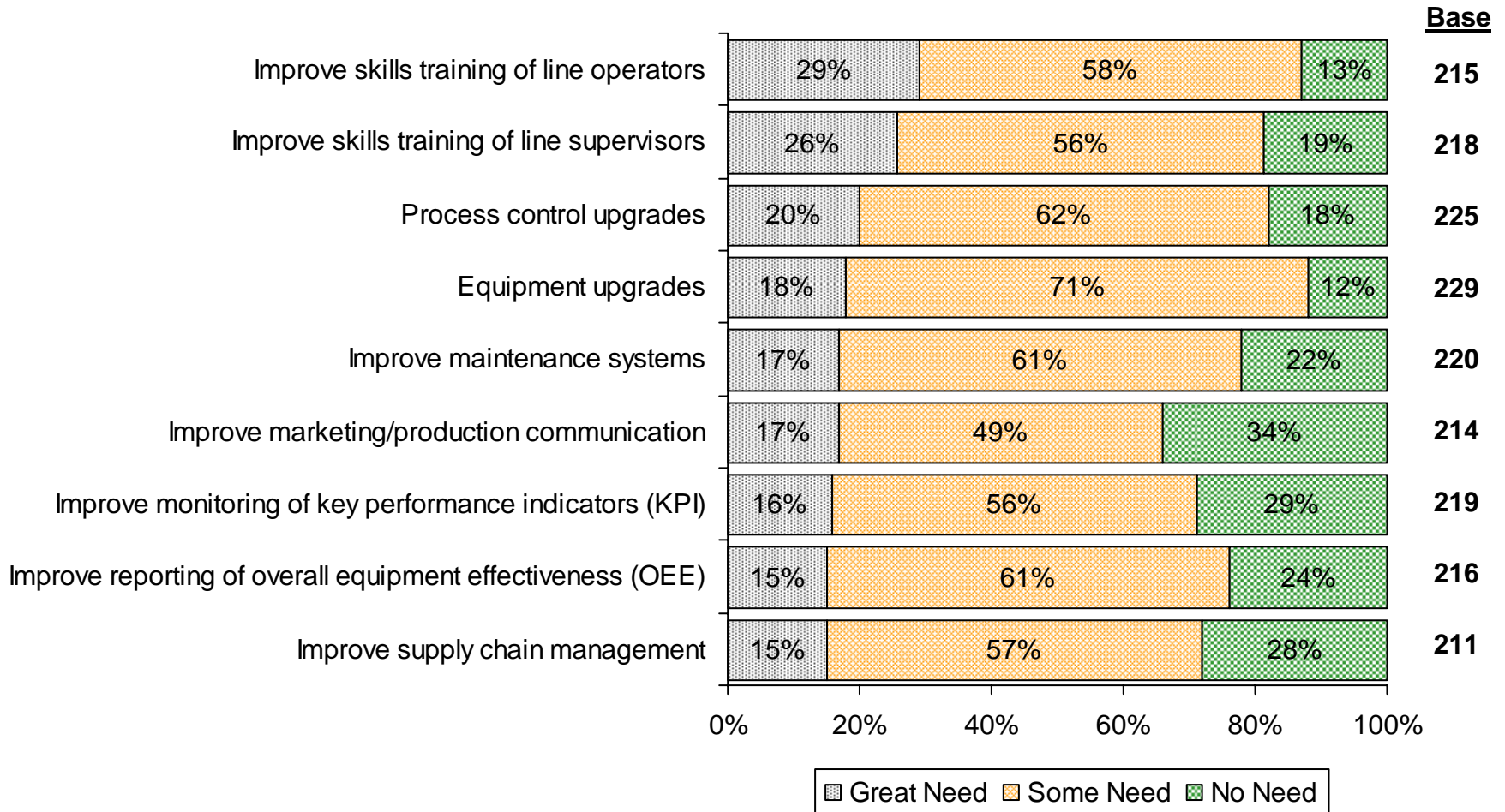
Shifting Focus Away From Foodservice Toward Retail Product Production

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- New pack size container
- New packaging
- No equipment changes, some film/wrap changes
- Packaging line adaptations
- Portion control and bagging
- Refrigerated product
- Shift resources
- Smaller, single serve and larger family size packaging
- Sold foodservice business
- We are a retail oriented company
- We are still in the planning stages
- We have and only will make convenience foods for the at home market
- We have both retail and foodservice in same production lines; just shift to more retail side

Methods to Improve Productivity

9. Listed below are some methods to improve productivity. What needs to be done at your facility?

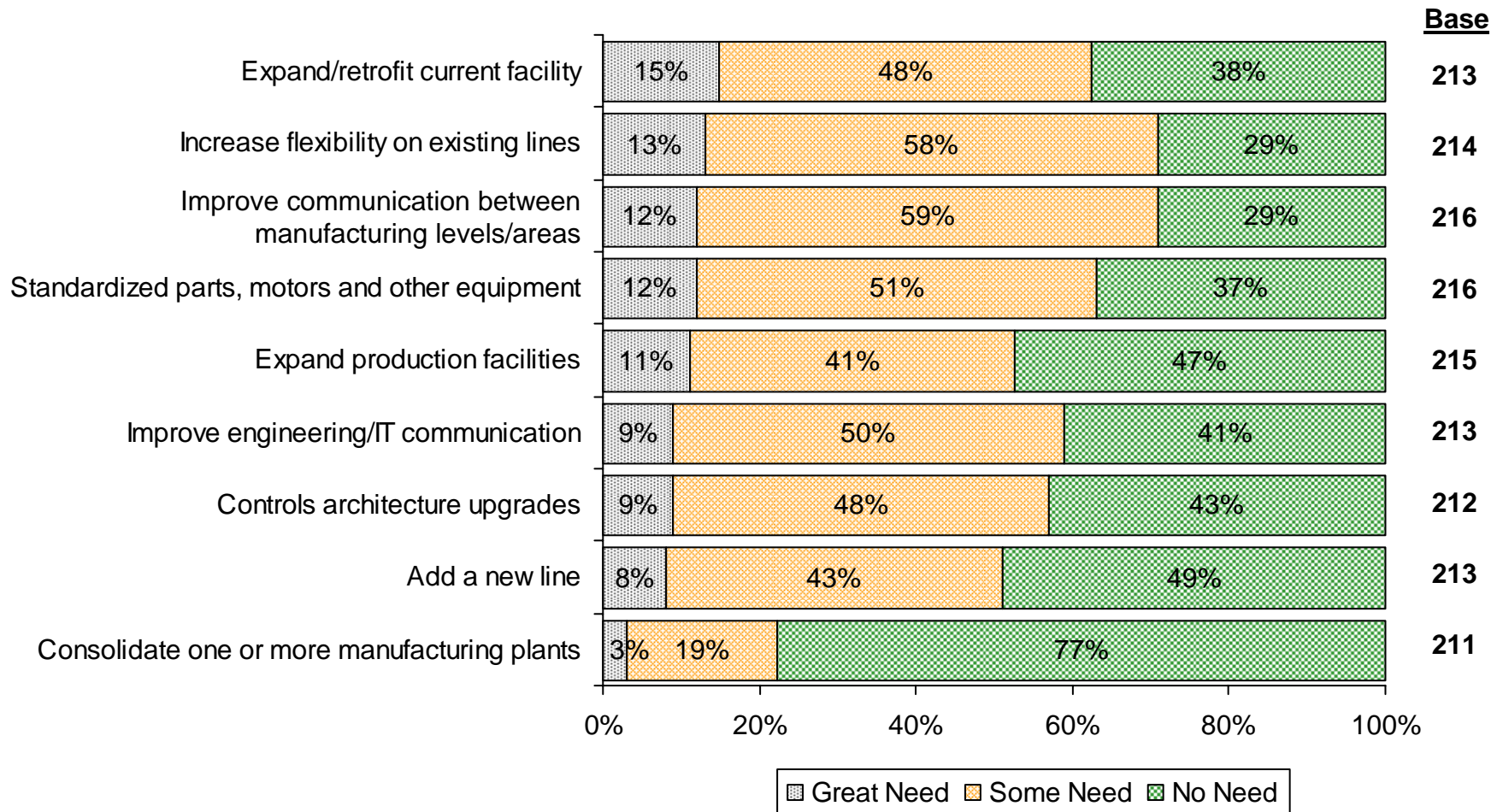


Note: Totals may not equal 100% due to rounding.

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Methods to Improve Productivity

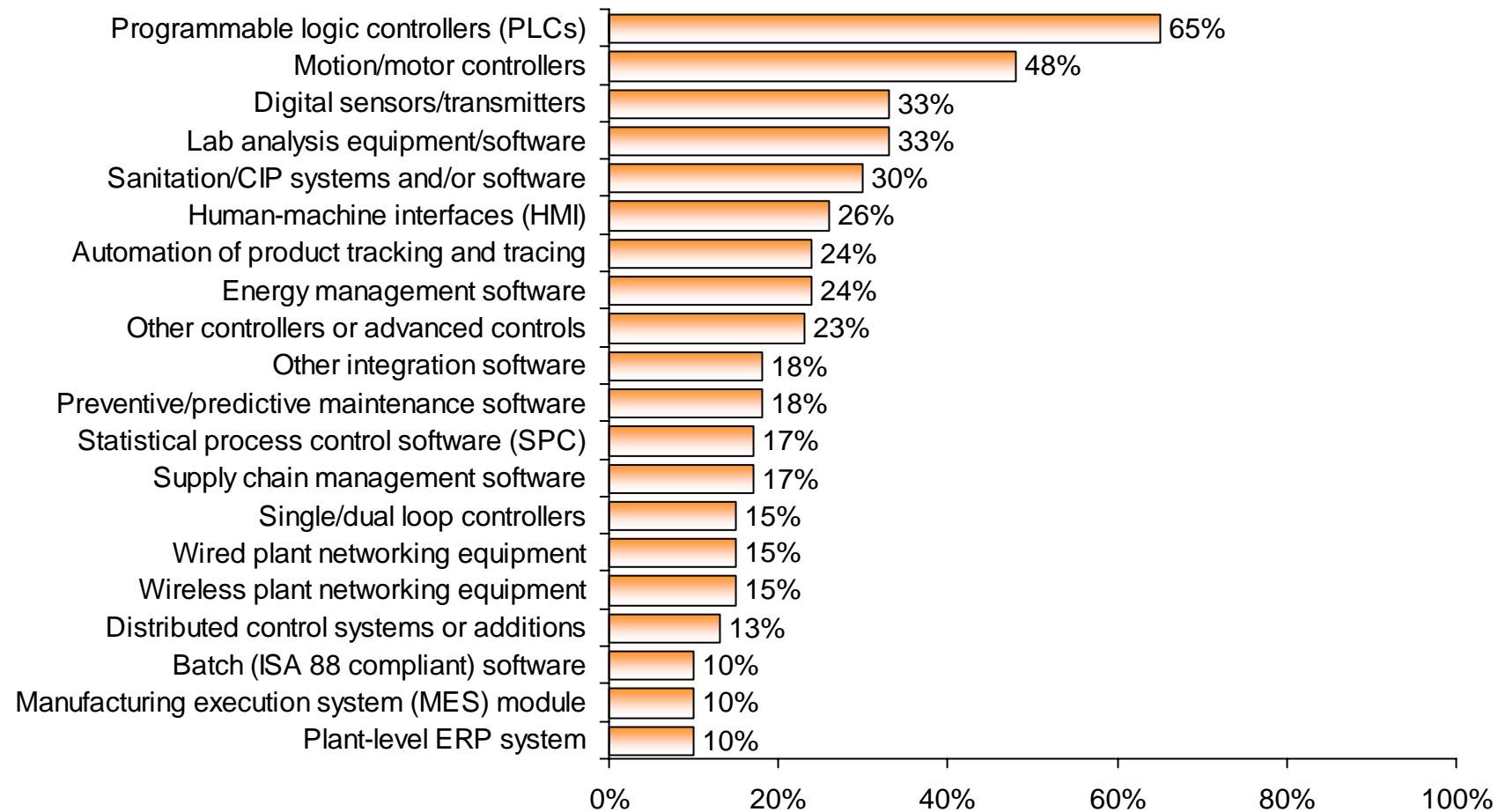
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Note: Totals may not equal 100% due to rounding.

Process Control Hardware and/or Software Purchasing Plans

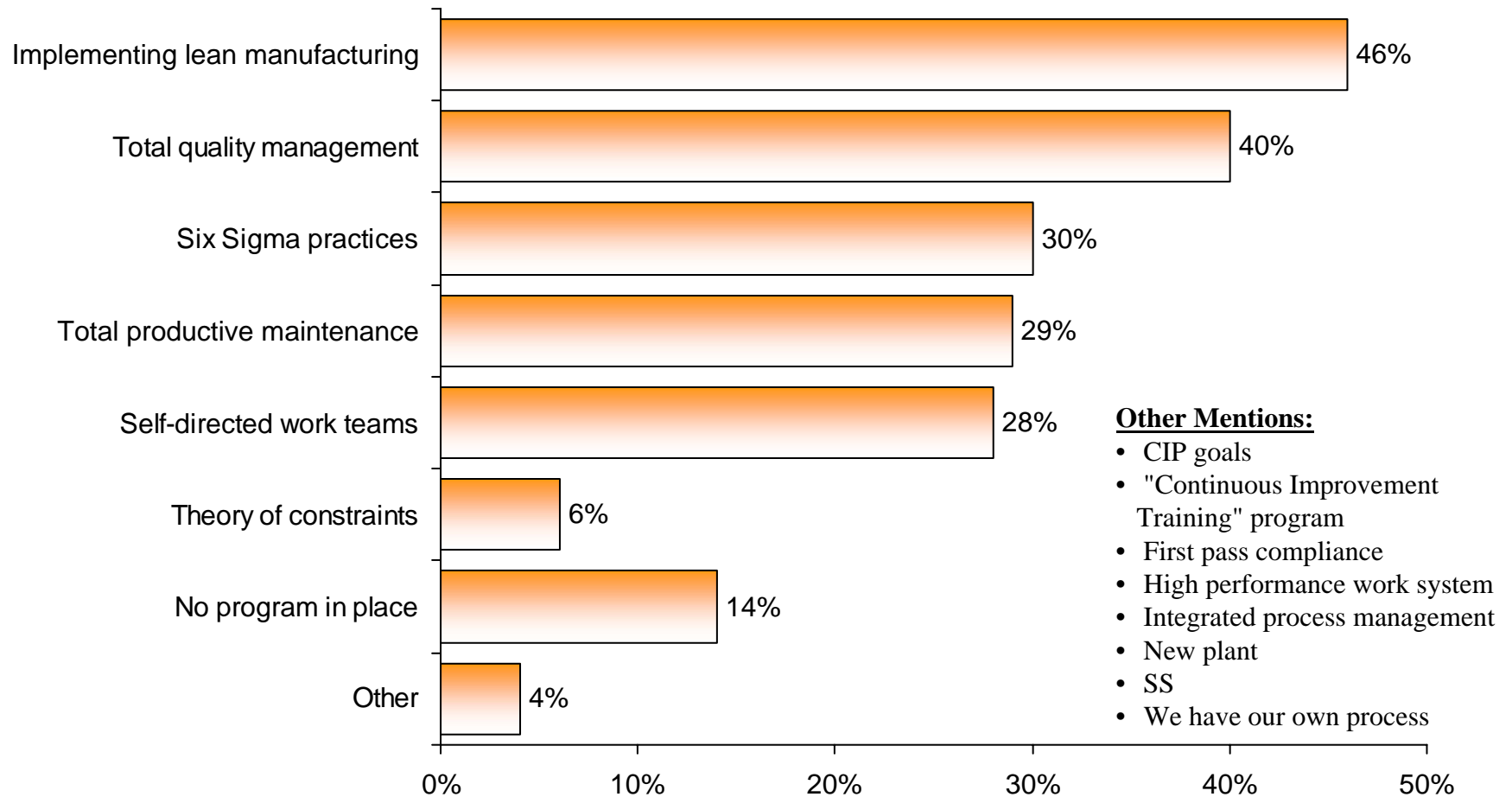
10. Which of the following process control hardware and/or software items will your location purchase in 2009?
 (Multiple response allowed)



Total Respondents = 189

Continuous Improvement Needs

11. How is your organization addressing the need for continuous improvement? (Multiple response allowed)



Total Respondents = 218



Manufacturing Operation Trends

12. What are the top two trends that will change your manufacturing operation over the next five years? Briefly explain why.

- Lean Manufacturing (7)
- Automation (4)
- Customer preference (3)
- Better tracking (2)
- Cost cutting (2)
- Energy conservation (2)
- Food safety (2)
- Global food safety initiatives (2)
- Self-directed work teams (2)
- Sustainability (2)
- Adapting management effectiveness to deal with the growth in the operation
- Add new line with new technology
- Adding new production
- Addition of more new ingredients
- Apply 5S system
- Aseptic packaging
- Automate and reduce labor costs
- Automation needed, labor costs
- Availability of labor
- Bar coding needed to track products
- Better QA

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Manufacturing Operation Trends

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- Breaking ground in 2011 for a new building and equipment
- British Retail Consortium "Global Food Safety Initiative": This new program will change the way food manufacturing companies document their activities; new, more stringent requirements make sure we do not have repeats of the peanut scare and recall events from 2008-2009; very, very in-depth requirements for HACCP, lot tracking, etc.
- Broader product offerings
- Build in more flexibility in existing processing lines
- Business demand by sales
- Cap and trade regulation for CO₂ and CO
- CDC software for operations/work
- Changes in packaging: portion controlled, customer convenience, environmental concerns will change our equipment mix
- Changing the way Americans eat; more at home food and convenience taking them away from the fast food sector
- Competition changes that will change our environment
- Computer guided supply requirements
- Consistent high product output
- Consolidation
- Consolidation of plants will probably occur to cut costs
- Consolidation of product lines
- Constraint of facility
- Consumer buying power
- Consumer fickleness; what is hot today is dead tomorrow, we have to keep up
- Continued growth of products, more expansion
- Continued plant consolidation

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Manufacturing Operation Trends

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- Control and use of information
- Convert to SAP system for production
- Cost effective product to the market
- Cost of benefits, driving labor reductions
- Costs
- Creating larger swing capacity
- Creativity and manufacturing
- Decrease labor and skill of labor; scarcity of low cost high skill labor
- Demand for higher quality products for retail and food service
- Demand for whole wheat flour
- Develop more consistent and continuous operations
- Development of new ingredients
- Direct focus on production processes and improving the operation
- Direct retail
- Diversification
- Economic downturn
- Economy downturn; needing more prefabricated items due to lack of employees
- Energy cost, electric and fuel costs will have greatest impact to better live
- Energy saving modifications and software
- Energy/Nutraceutical drinks, it's the fastest growing with most new volume beverage category
- ERP - reduce redundant information
- Existing asset reliability improvements

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Manufacturing Operation Trends

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- Expand existing lines and having new lines
- Expanding business into new plant
- Expansion and growth of the business nationally - will require greater consistency and efficiency, driving increased automation and control
- Expansion of market for our product
- Expansion of plant during 2009-2011
- Exploiting robotics applications, labor reduction
- Extend product shelf life (move to alternative)
- FARM principles fresh, authentic, real and minimally processed
- Flexibility
- Flexibility, because of market requires different size of containers
- Focusing on bottom of the pyramid consumers
- Food safety, animal and human disease and how it is spread
- Food safety, doing total facility reviews and food safety audits throughout the supply chain
- Frozen product
- GAP mandates constantly change, always changing to be in compliance
- Global demand for low cost commodities
- Governmental rules for employment
- Green energy projects
- Green manufacturing habits
- Growth
- Growth of sales

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Manufacturing Operation Trends

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- Health and wellness foods
- Health consciousness
- Health eating habits improvements
- Healthy chocolate - increase in market demand
- Healthy food attributes
- HFCS converting to sugar; it's unfounded but HFCS has gotten bad press from the food police
- Higher level of controls needed for new product line
- Implementation of software to make OEE visible; reason is real time, logical and pound control
- Improve freezing capability of the facility
- Improved business operations through Lean Six Sigma and business excellence to improve margins
- Improved capabilities will allow us to produce more quickly
- Improved use of raw materials - more is spent on raw materials than any other cost category
- Improvement of sales to generate operating capital
- Improvements to eliminate/reduce yield loss
- Improving maintenance systems
- Increase in new specialty products with specialty testing equipment
- Increase in private label
- Increase of exported finished product - many challenges
- Increase production capacity by continuing to improve supply chain and operating systems and increasing line efficiencies
- Increased automation and data tracking
- Increased automation requires more skilled workers
- Increased commodity costs; pressures to increase prices versus find cost saving reductions

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Manufacturing Operation Trends

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- Increased energy costs/transportation costs
- Increased focus on health and wellbeing
- Increased production costs will result into more centralized operations with fewer facilities such as ours
- Increased production globally by adding new manufacturing sites and expanding into new markets
- Increased quality of PL products
- Increasing movement towards our core product line
- Kaizan practices
- Larger tanks, liquid production
- Lean manufacturing will increase the amount of changeovers done while decreasing material inventory
- Lean manufacturing, altering present plant and supply chain structure
- Less CO2 operations, environment requirement
- Leverage capability and capacity between facilities
- Longer production runs to reduce changeovers
- Maintenance training
- Major packaging style change
- Making Americans eat more fresh (not frozen or old) food, making them shop more frequently
- Material cost reductions
- Materials cost increases - directs our packaging designs
- MES - quality is focus
- More consumer demand for expanded flavors in convenient at-home foods
- More distributors failing, have to keep materials coming

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Manufacturing Operation Trends

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- More diversification of products, wider array of items to address different segments
- More flexible work force by using contract workers and temps
- More hot fill OPS
- More natural/organic products
- More outsourcing
- More traceability
- More work in branded items
- Move into different product line
- Moving toward self-directed work teams will require corporate knowledge to be recorded and formalized for presentation
- Network rationalization
- New customers
- New items for retail production
- New product categories - retailing lines
- Numerous SKU require faster, more effective changeovers
- Opening our first production plant
- Organic/natural/nutritional products - increase in market demand
- Packaging changes
- Packaging changes to plastic, away from glass containers
- Packaging flexibility - customers are demanding more types of packaging.
- People eating out less
- People relearning to cook, conserve and eat at home, family time
- People spending less

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Manufacturing Operation Trends

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- Possibly bringing in a dry line to bring additional dollars in house rather than purchasing outside and sending through distribution
- Predictive, condition based maintenance; this will cut costs and improve uptime
- Prevention predicting maintenance software
- Private label growth; national brand decline
- Process control
- Process improvement to help control cost
- Product diversity in milk market
- Product flexibility across lines
- Product safety - more rigorous, more often internal inspections, and more items are now considered problems
- Production of other facilities products - adds processes
- Productivity
- Productivity, being cost effective
- Programs for lot control
- Proliferation of brand extensions, which require new ingredients and new formulations
- Quality management
- Quicker introduction of new products
- Reduce waste/recycle
- Reduced grand loyalty - increases our private label business
- Reducing personnel costs
- Reducing working capital
- Reformulate products (allergen free); no MSG, gluten, etc.
- Reformulation for sodium levels and controls that affects them

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Manufacturing Operation Trends

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- Regionalization
- Retail
- Retirement
- Sales
- Self-manufacturing of bottles
- Shifting production as distribution costs rise
- Shortened product life cycles
- Six Sigma
- Smoothie style beverages; need to change process to be able to meet production needs
- SQF Certification - forcing us to document our systems in great detail
- Standardization - all equipment in the plant is currently a hodgepodge of items from sites that have closed over the years; we are working to standardize parts needs, to decrease the number of different items we carry in our inventory
- Standardized assembly
- Static to shrinking customer requirements for products from one facility - need new markets
- Status quo - no forecast being developed
- Steadily increasing demand for ESL, probiotic and aseptic products
- Stochastic and Heuristic Simulation Process Adaptation
- Supply raw materials and energy - lack of stability
- Sustainability (Res. Conservative)
- Sustainability/green efforts
- Technology in automation and controls
- The economy: what will consumers be willing and wanting to buy

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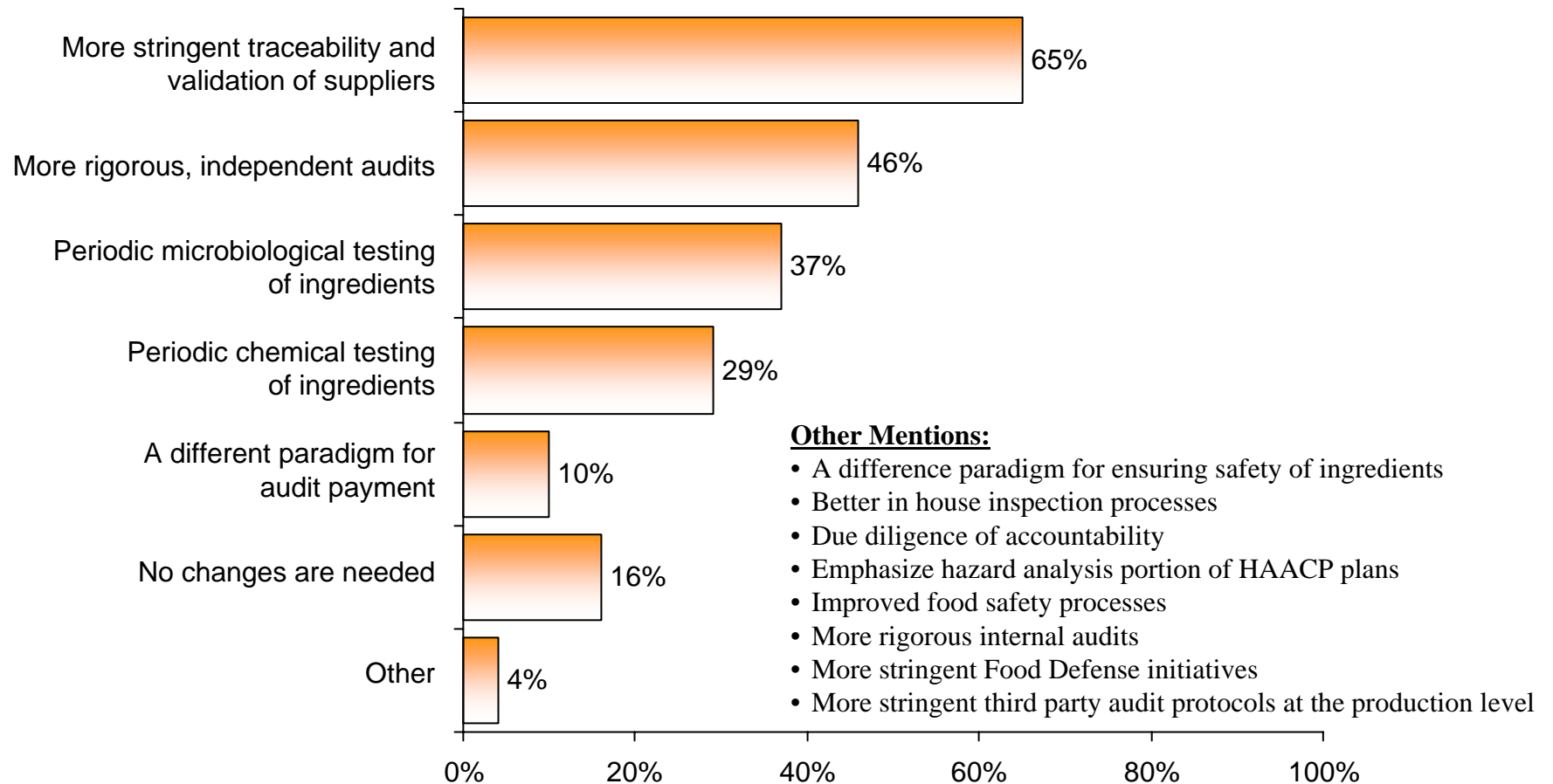
Manufacturing Operation Trends

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- The increased need for reporting of QA testing to outside agencies; since we are a small facility, we do not have the staff available to undertake such a large change, nor do we have the excess funds to hire such a staff
- The loss of English as the primary business language; as more languages must be supported, we must translate our information into more languages, raising costs; the lack of a common language within the production facility also is a safety concern, since when people are not understandable to one another, mistakes and accidents happen
- The price of fuel
- The quest for more natural foods, ingredients
- Tighter controls on spending to make the correct choices for the processes we do
- Total productive maintenance
- Total quality management
- TPM - our site is implementing the TPM philosophies, and hope to impact OEE performance over the next few years with changes stemming from TPM
- TPM, never focus on manufacturing excellence
- Transportation
- Transportation, fuel and energy cost increases
- Type of packaging material, such as bags for retail
- Upgrade machinery
- Upgrade our Transportation Management System to reduce overall costs, reduce inventories and increase cycle turns
- Upgraded and new equipment
- Virtualized server reliance
- We believe automation that has been put in place within the past two years is going to be a big improvement

Warranted Changes in Current Practices due to Contaminated Ingredients

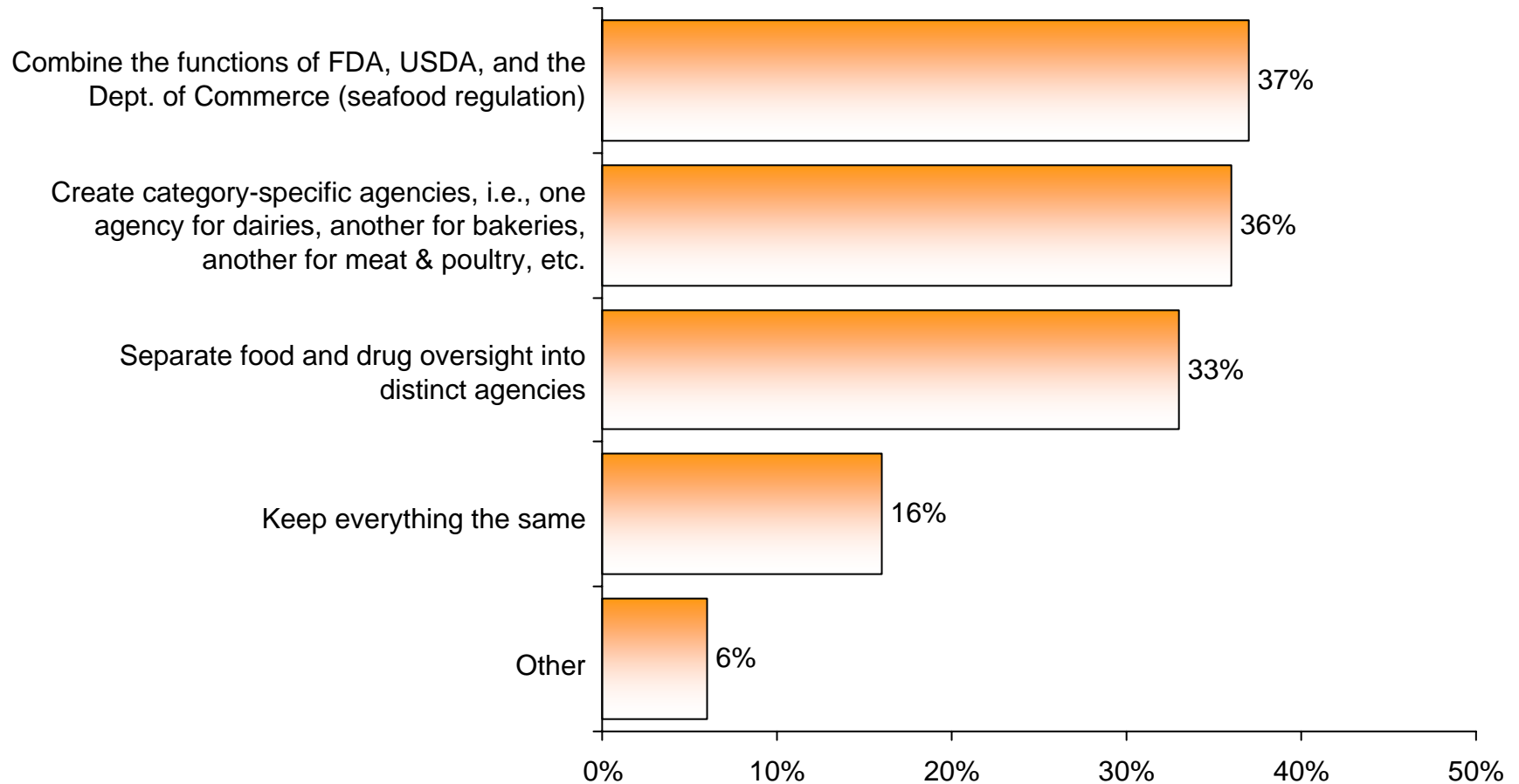
13. Contaminated ingredients have been at the root of costly and widespread product recalls in recent years. What changes in current practices are warranted? (Multiple response allowed)



Total Respondents = 215

Most Effective Changes to the Federal Food Safety System

14. Several proposals to overhaul the federal food safety system are under discussion. What changes do you think would be most effective? (Multiple response allowed)



Total Respondents = 207

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Most Effective Changes to the Federal Food Safety System

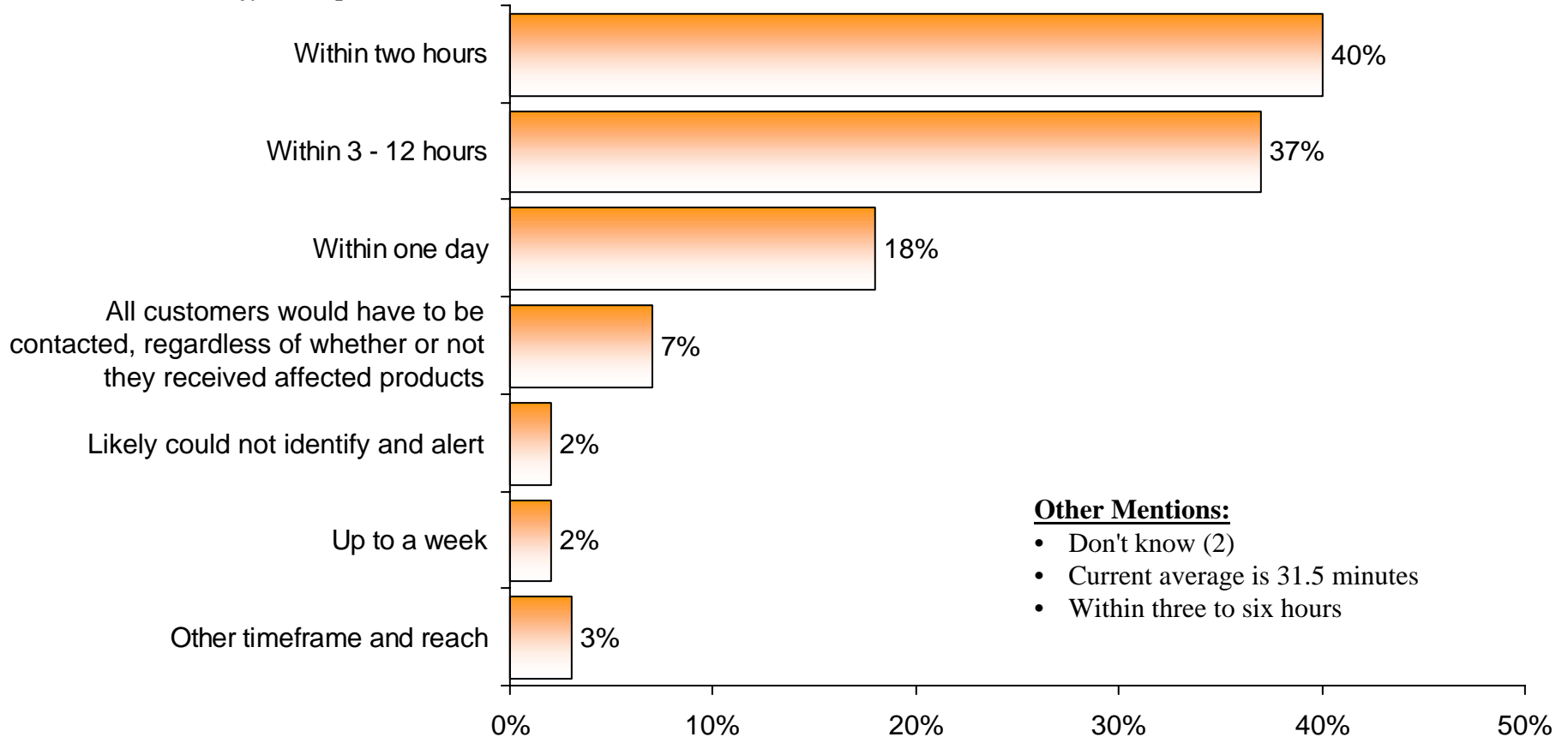
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Other Mentions:

- A hybrid of these with certified Quality managers at facilities
- Change leadership not more regulation
- Free market system dictates this
- Have USDA become the Kingpin for food safety
- Increase enforcement capabilities by auditors
- Increase funding
- Industry develops programs with regulatory oversight
- More pressure for manufacturers to seek outside audits and HACCP and GMP timing at all levels
- No more agencies; look at Europe's standards
- Recognize HACCP successes and target problem areas
- The Government should get out of the business
- USDA more checking and report

Timeframe for Notifying Involved Parties of a Contaminated Ingredient

15. *The Bioterrorism Act of 2002/2003 requires food and beverage companies to track and trace at least one step back and one step forward. If your organization found itself in a product recall scenario, how quickly could your systems identify both the suppliers of an ingredient suspected of contamination and the customers who received products made from that ingredient, and then notify those parties? (Multiple response allowed)*



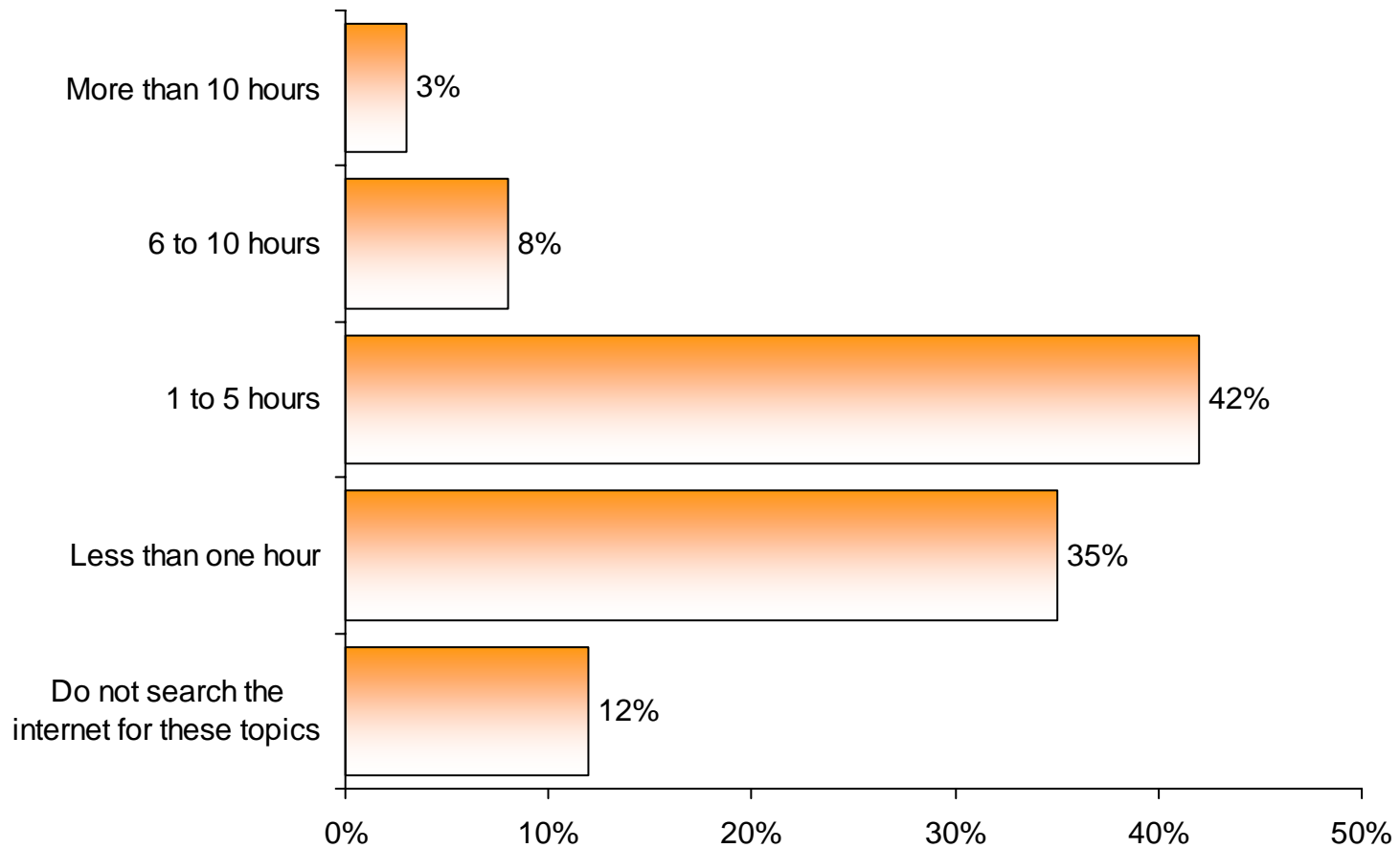
Other Mentions:

- Don't know (2)
- Current average is 31.5 minutes
- Within three to six hours

Total Respondents =205

Time Spent per Week on Internet Looking for Processing and Manufacturing Information

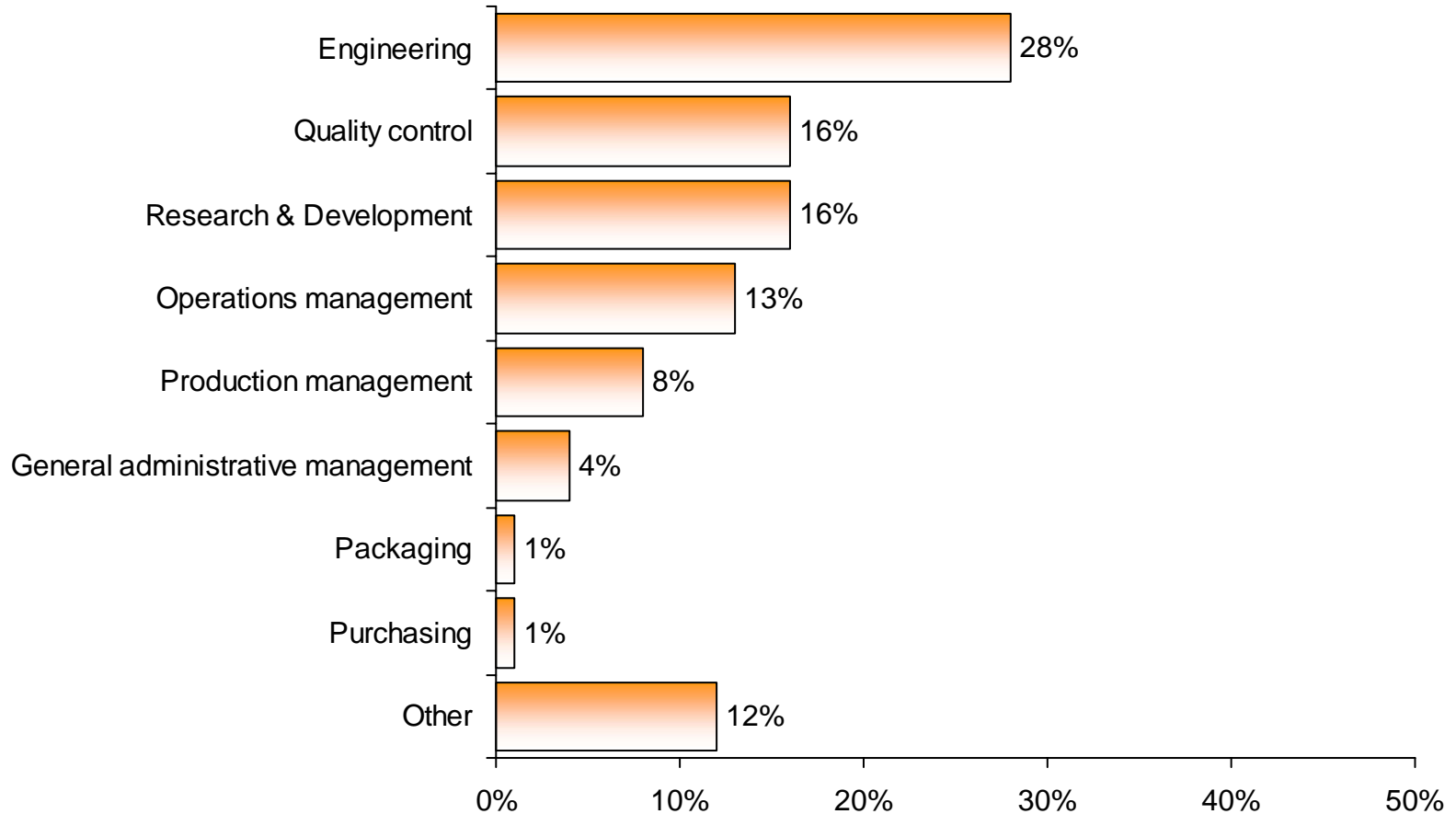
16. How much time do you spend per week on the internet looking for information on processing and manufacturing topics?



Total Respondents = 216

Job Function

17. Which of the following best describes your job function?



Note: Total does not add to 100% due to rounding.

Total Respondents = 218

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Job Function

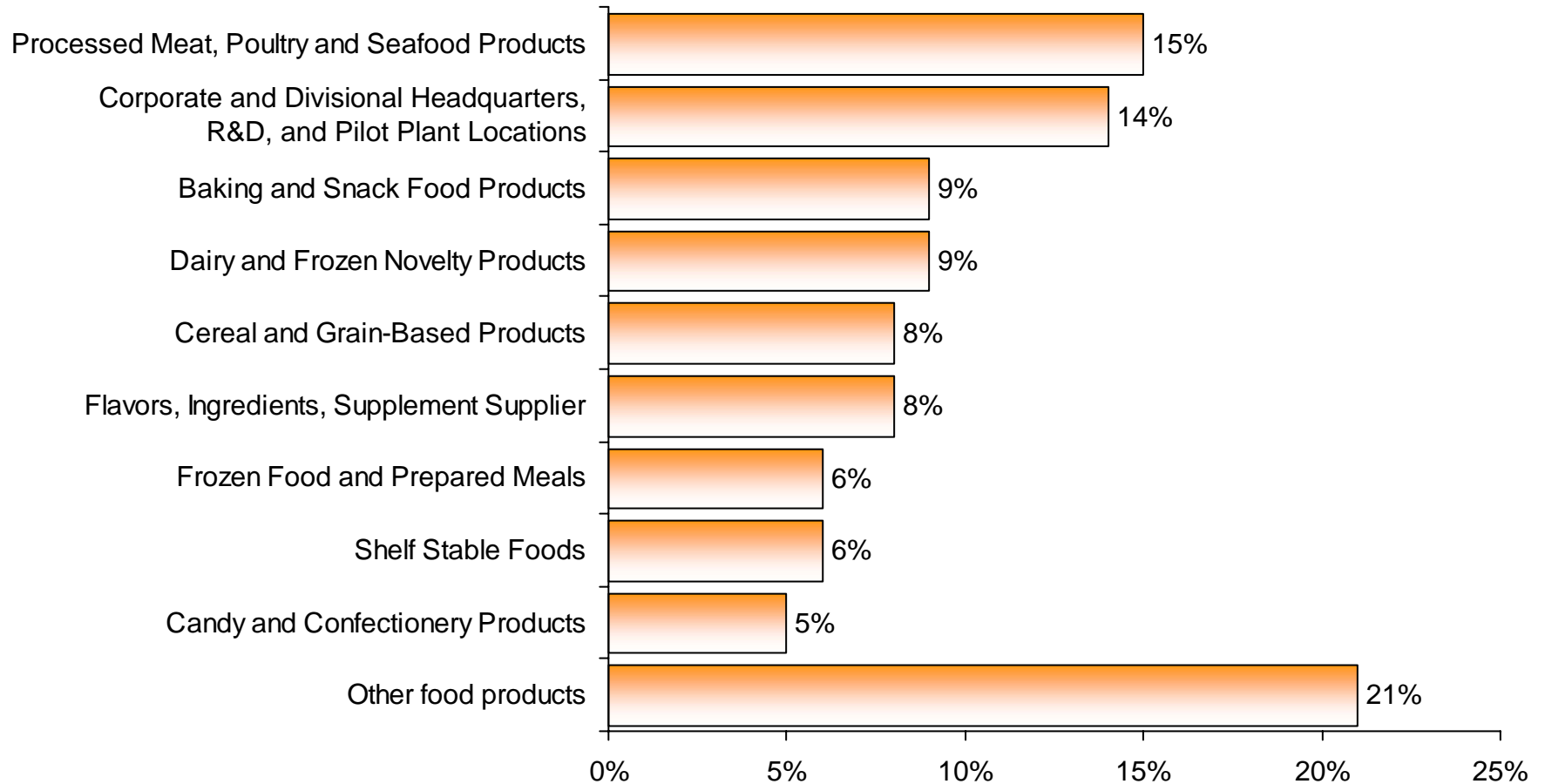
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Other Mentions:

- All apply as I cover all management for vacations
- Continuous Improvement
- Engineering and Training
- Engineering and R&D
- Environmental Affairs
- Environmental, Health, & Safety
- Head of Production
- HPO
- Lean Six Sigma
- Machine Operator
- Maintenance Tech
- Maintenance and Installation
- Maintenance Management
- Maintenance Management and Engineering
- Maintenance Scheduler
- Microbiology
- Packaging Specialist
- Quality Assurance
- Quality Assurance and Sanitation
- Quality Control, Operations, Purchasing, & Packing
- Quality Control, Research & Development
- Sales
- Steam Plant Operation/Maintenance
- Technical Services
- Vice President

Primary Product Produced at Company

18. Which of the following categories best describes the primary product produced at your company?



Note: Total does not add to 100% due to rounding.

Total Respondents = 215

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Primary Product Produced at Company

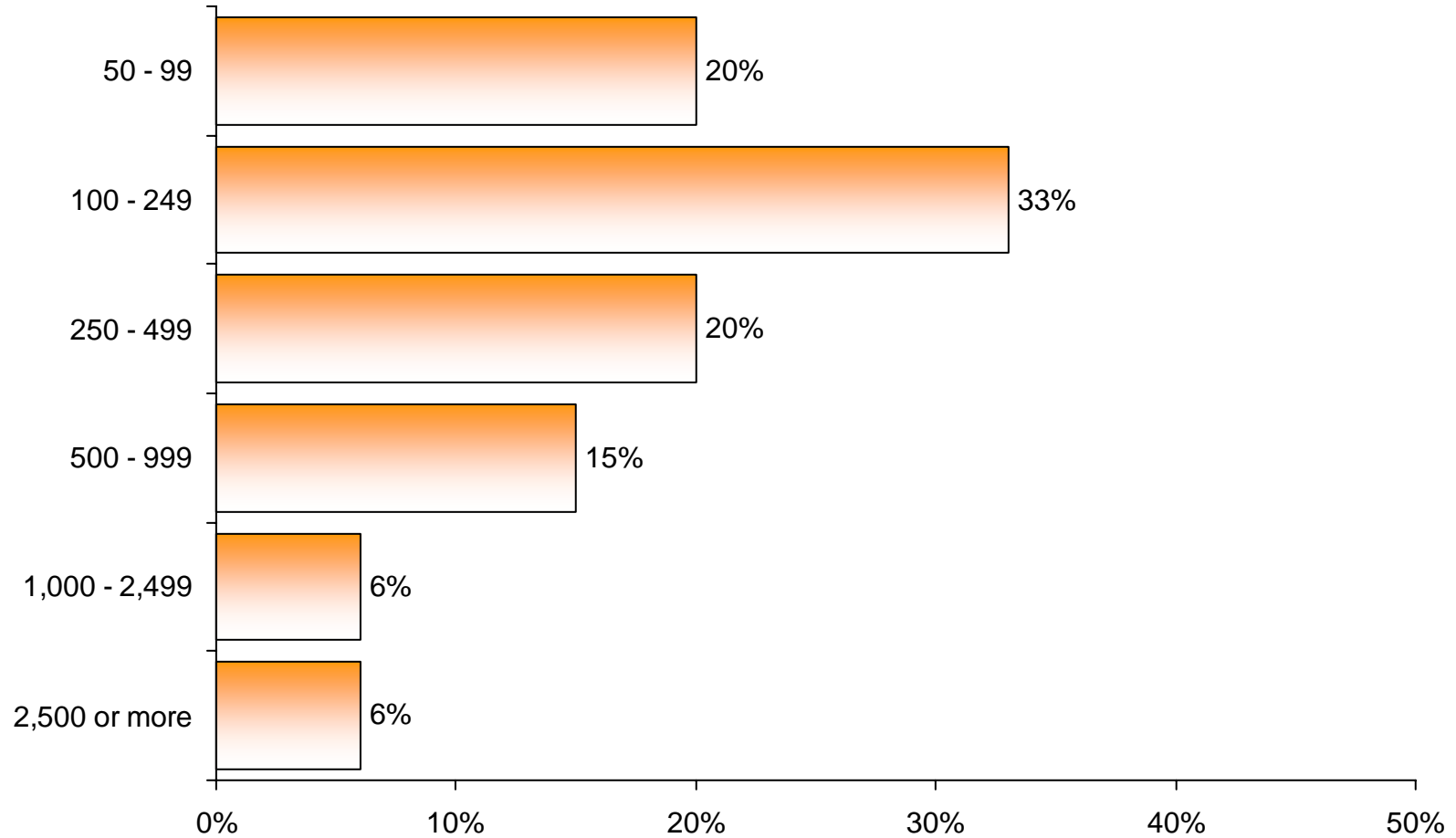
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Other Mentions:

- Beverages (17)
- Pet food (2)
- Baby formula
- Beverage manufacturer
- Cans and refrigerated
- Carrageen
- Chilled fresh prepared foods
- Citrus
- Condiment sauce
- Condiments, mustard, cooking wines, vinegars
- Drink mixes
- Egg products
- Freeze dried foods
- Fresh produce
- Frozen pizza dough
- Healthcare nutrition, infant formula
- Infant formula, medical nutritionals
- Nutraceuticals
- Nutrition for adult and infant
- Processed meat mfg, cook/chill equipment
- Produce
- Refrigerated salad dressings, dips and sauces
- Rolls and bread
- Snacks
- Spices and food bases
- Spray drying and dry blending, and EMC's
- Spreads

Number of Employees

19. What is the number of employees at your location?



Total Respondents = 216

Respondents by U.S. Region

Region	%
Midwest	30%
South	18%
West	17%
Northeast	11%
Unknown	24%
Total Respondents	275

