

Modern Machine Shop Top Shops 2024

Welcome to *Modern Machine Shop*'s Top Shops Benchmarking Survey. By completing this survey, you will receive a benchmarking report customized for your facility and have opportunities to earn top shop status as well as special recognition.

Modern Machine Shop's Top Shops survey has a lot of questions. That's because we know each question is useful to some people. We also know you want the benefit of benchmarking and recognition without investing a ton of time in a survey. That's what you told us.

And we listened. For 2024, we've divided the survey into core and modules. Core questions have been answered by most people in past surveys. The rest of the questions are organized into modules. You may pick and choose modules based on areas of particular interest to you/your business. Once you select a module, we encourage you to answer all of the questions it includes.

Now for your part

- 1. Complete the core survey by <u>April 30, 2024</u>, for the opportunity to receive a customized benchmarking report, earn Top Shops status, and/or be recognized as an honoree.
- 2. Opt-in to up to (4 or 5) modules of additional benchmarking questions. More on that after you complete the core survey.

FAQ's on answering Q's

If your company:

- 1. has multiple locations, answer for the location or combination of locations you know the most about.
- 2. is a captive facility, answer in the terms your facility uses to report metrics internally to the broader company.

Tips

You may stop and start the survey using the same device as many times as you like until you select 'Submit Responses' on the final page.

- We encourage you to review the list of questions for data you will need to complete the core survey. You may download a PDF of the core survey by <u>clicking here</u> before entering answers online.
- If you have questions, please contact Jan Schafer, Director of Market Research Gardner Intelligence, at jschafer@gardnerweb.com.



Company & Contact Information

1. To receive a cust provide your email	om report of results, <u>please fully complete the core survey questions</u> and address here:
2. To enter the 2024	4 Top Shops Honors Program, also provide the following contact
information:	
Name:	
Job Title/Position:	
Company:	
Address:	
City/Town:	
State/Province:	
ZIP/Postal Code:	
Country:	
Company Website:	
Phone Number:	



Section 1: Profile Information

This first section of the survey includes questions pertaining to the general characteristics that help describe your facility.

3. Which processes does your shop perform? Select ALL that apply.
Machining
Injection Molding
Mold Making
Additive Manufacturing
Finishing
Other (please specify)



Profile Information

Please read the instructions at each question for the accepted format for responses. If you receive an error message, the format may be off or your value is outside of the set reasonable range. If both are correct, you may leave it blank.

4. Approximately how many part numbers (SKUs) did your business produce in 2023?		
Please enter a whole number only; no decimals, commas or other symbols.		
5. Approximately how many <u>total parts</u> did your business produce in 2023?		
Please enter a whole number only; no decimals, commas or other symbols.		
6. Approximately what was your <u>median batch size</u> in 2023?		
Please enter a whole number only; no decimals, commas or other symbols.		



Profile Information

7. Which descriptor below best applies to your shop? Select ONE response. Contract/custom/job shop Captive shop (component of a larger company)
8. Which quality certifications did your shop hold in 2023? <i>Select ALL that apply.</i> ISO 9001:2015
ISO 13485:2016
☐ IATF 16949:2016 ☐ AS9100D
Nadcap None of these

Aerospace, commercial	Industrial Motors/Hydraulics/Mechanical Components
Aerospace, general aviation Appliances Architectural/Infrastructure/Construction Components	Machinery/Industrial Equipment Marine/Ship & Boat Building Mass Transit
Automotive	Medical/Dental
Consumer Goods Defense/Government	Offroad/Construction/Agricultural Machiner Oil/Gas Field & Mining Machinery
Electronics/Computers	Packaging Payor Congretion (turbings, betteries)
Energy Storage (pressure vessels) Firearms/Ammunition	Power Generation (turbines, batteries) Pumps, Valves & Plumbing
Forming & Fabricating (non-automotive) Furniture Manufacturing	Sporting Goods Wind Energy
Hardware/Fasteners	Wire Goods/Pipes
Other (please specify)	



Section 2: Machining Technology

This section of the survey includes questions pertaining to the technology your facility uses.

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10. Which types of machining equipment does	your snop use? Select ALL that apply.
Automatic screw machines (non-CNC)	Milling machines (non-CNC)
Broaching machines	Multi-spindle CNC
Drilling machines	Plasma or oxy-fuel CNC cutting machines
Flexible manufacturing systems (FMS)	Rotary transfer machines
Gear-cutting machines	Sawing machines
Grinding machines (for regrinding cutting tools)	Swiss-type lathes
Grinding machines (for workpieces)	Turn-mill/multitasking machines
Honing machines	Turning centers, horizontal CNC
Laser-cutting machines	Turning centers, vertical CNC
Lathes (non-CNC)	Twin-spindle CNC turning machines
Machining centers, horizontal	Waterjet machines
Machining centers, vertical	Wire, sinker, small-hole EDM
Other (please specify)	
11. Which machining strategies does your sho	p use? Select ALL that apply.
Five-axis machining (full contouring)	Hard turning
Five-axis machining (positioning only)	High-speed machining
Four-axis machining (full contouring)	Lights-out or unattended machining
Four-axis machining (positioning only)	Micromachining
Hard milling	Prototyping
Other (please specify)	



12. Describe your shop's 3D printer or select the response indicating you do not have one. <i>Select ALL that apply.</i>
Desktop 3D printer for plastic parts
Standalone and/or industrial 3D printer for plastic parts
Standalone additive manufacturing machine for metal parts
Hybrid machine tool combining additive manufacturing and machining
We do not have 3D additive manufacturing/part printing capability



13. What does your shop produce using 3D printing or additive manufacturing capability?
Select ALL that apply.
Look-and-feel prototypes to validate designs
Functional prototypes to test parts prior to production
Tooling and fixturing used internally
Tooling and fixturing produced for customers
Short-run initial production
Full production of end-use parts
Moldmaking and tooling (conformal tooling; inserts)
Mold maintenance and repair



14. Which tooling strategies does your shop use? Select ALL that apply.		
Burnishing	Shopfloor tool vending systems	
Carbide recycling program	Tool balancing	
Coolant management system	Tool inventory management/usage tracking	
Coolant chiller	Tool presetting	
Custom/specialty tooling	Tool regrinding	
High-pressure coolant delivery	Thread milling	
Knurling	Thread rolling	
Live tooling on lathes	Thread whirling	
Minimum quantity lubrication	Through-tool coolant delivery	
On-machine probing for tool breakage/measurement	None of these	
Reaming		
15. Which workholding and work handling equipment does your shop use? Select ALL that apply.		
Bar feeders	Multiple workpiece fixturing	
Bar pullers	Pallet changers	
Face drivers	Quick-change devices	
Hydraulic/pneumatic-actuated fixtures	Tombstones	
Indexers/rotary tables	Vacuum chucks	
Magnetic chucks	None of these	



16. Which types of software does your shop use? Select ALL that apply.		
CAD systems—2D	Mold flow analysis	
CAD systems—3D	PLM software	
CMM programming software	SPC/quality management software	
ERP/MRP software	Toolpath simulation/verification software	
CAM programming software	None of these	
Job-estimating software		
17. Which types of inspection equipment does	your shop use? Select ALL that apply.	
CT scanning	Portable measuring arms	
CMM in quality department	Shopfloor CMMs	
Laser trackers	Thermography/thermal imaging	
Microscopes	Vision systems	
On-machine probes for workpiece measurement	None of these	
Optical comparators		



Machining Technology

Please read the instructions at each question for the accepted format for responses. If you receive an error message and your format is correct, your value is likely an exception outside of the reasonable range, and won't be accepted.

exception outside of the reasonable range, and won't be accepted.
18. How many CNC machine tools did your shop have in production (non-tool room) in 2023? Please enter a whole number only; no decimals, commas or other symbols.
19. What was your shop's average capacity utilization in 2023?
There is no single formula that fits how every shop figures capacity utilization. For this
question, please think about what you consider to be at full capacity for your shop. Then
enter as a percentage the degree to which your shop's capacity was typically in use relative
to being at full capacity in 2023.
You may enter a decimal, but no other signs or symbols.
Example: If your shop was typically using capacity that represented about 85% of full
capacity in 2023, meaning your shop typically had 15% capacity available, you would enter 85
for capacity utilization.



Section 3: Shop Floor Practices and Performance

This section includes various operations, practices, and metrics.

20. Which of the following practices and impro- Select ALL that apply OR the last option only.	vement methodologies does your shop use?
5S workplace organization	Lean manufacturing
Benchmarking	Overall Equipment Effectiveness (OEE) monitoring and analysis
Centing Continuous improvement and grown	Poka yoke (error prevention)
Customer surveys	Six Sigma
Daily layered accountability	Theory of constraints
Design of experiments Just-in-time movement of materials	Total productive maintenance Total quality management
	Value-stream mapping
Kaizen events/blitzes Kanban and pull systems	No formal methodology
21. Does your shop use robots to perform part	loading/unloading for any of your machine
tools?	
Yes	
○ No	



Shopfloor Practices & Performance

22. Are any of the robots your shop uses collaborative models (using sensor technology to
work safely alongside humans without traditional fencing, guarding, etc.)?
○ Yes
○ No
○ No



Shopfloor Practices & Performance

Please read the instructions at each question for the accepted format for responses. If you receive an error message and your format is correct, your value is likely an exception outside of the reasonable range, and won't be accepted.

exception outside of the reasonable range, and won't be accepted. 23. What was your shop's order lead time in 2023, defined as the average number of days from receipt of an order to delivery to customer. You may enter a decimal, but no other signs or symbols. Example: For 6 days, you would enter 6. For 6 1/2 days, you would enter 6.5. 24. What was your shop's on-time delivery rate in 2023, defined as the percentage of goods delivered on the timing committed. Enter your number without a % sign. You may enter a decimal, but no other signs or symbols. Example: For 80%, you would enter 80. For 80.5%, you would enter 80.5. 25. What was your shop's average setup time in 2023, defined as the time, in minutes, between the completion of the last good piece of one run and the first good piece of the next run. Please enter a whole number only; no decimals, commas or other symbols. Example: If the last good piece of Run A ends at 11:45, and the first good piece of Run B ends at 12:10, you would enter 25. 26. What was your shop's finished product first-pass quality yield in 2023, defined as the percentage of product that passed inspection on first attempt; i.e. no re-work was required. Enter your number without a % sign. You may enter a decimal, but no other signs or symbols. Example: For 80%, you would enter 80. For 80.5%, you would enter 80.5.



Shopfloor Practices & Performance

27. What was your shop's <u>scrap and rework COST percentage</u> , defined as the <u>cost</u> of 2023 scrapped or reworked <u>materials</u> as a percentage of 2023 <u>total dollar sales</u> . Enter your number between 0 and 100 without a % sign. You may enter a decimal, but no other signs or symbols. Example: If \$550 worth of materials were scrapped and sales were \$50,000, you would enter 1.1.
28. What was your shop's <u>scrap and rework UNIT percentage</u> , defined as the <u>number</u> of 2023 scrapped or reworked <u>parts</u> as a percentage of 2023 <u>total parts produced</u> . Enter your number between 0 and 100 without a % sign. You may enter a decimal, but no other signs or symbols. Example: If 83 parts were scrapped or reworked, and 1000 parts were produced, you would enter 8.3.
29. What was your shop's <u>machine usage</u> in 2023, defined as the average number of <u>hours</u> machines are in production in a 24-hour day. You may enter a decimal, but no other signs or symbols. Your answer should be between 1 and 24. Example: For 8 hours, you would enter 8. For 8 1/2 hours, you would enter 8.5.
30. What was your shop's <u>spindle utilization</u> time in 2023, defined as the average amount of in-cut time <u>as a percentage</u> of the average machine total up-time. Enter your number without a % sign. You may enter a decimal, but no other signs or symbols. Example: If total machine up-time is 22 on average, and average in-cut time is 17, you would enter 77.



Shopfloor Practices & Performance

31. Installing a Web-enabled, shop-wide machine monitoring system has been suggested as
the first step towards data-driven manufacturing/Industrial Internet of Things concepts.
Please select the statement that best describes your shop regarding machine
monitoring. Select ONE only.

We have a machine monitoring system in place for some or all machine tools.
We plan to install a machine monitoring system.
We do not plan to install a machine monitoring system.



Shopfloor Practices & Performance
32. Briefly describe your shop's machine monitoring system. <i>Please be specific</i> .
33. Briefly explain one new technology, machining strategy or strategic initiative that has been most influential in contributing to the overall success of your shop in recent years. <i>Please be specific.</i>



Section 4: Business Strategy & Performance

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his section of the survey includes question ustomer information.	s pertaining to financial, operational and
34. Which of the following supply chain practi	ices does your shop use? Select ALL that apply.
Accessing/using customer forecasts	Just-in-time deliveries to customers
Certification of major suppliers	Sharing forecasts with suppliers
Collaborative design/DFM with customers	Inventory managed by suppliers
Collaborative design/DFM with suppliers	Inventory managed for customers
Customer satisfaction surveys	None of these
Just-in-time deliveries from suppliers	
35. Which of the following sales/marketing to	ols does your shop use? Select ALL that apply. Industry awards/recognition
Advertising - print (e.g. magazines)	Online keyword advertising (e.g. Google)
Blogs	Online videos
Brochures/catalogs	Open house
Company website	Sales personnel
Customer tours of your shop	Social media (Facebook, Twitter, YouTube, etc.)
Directory listing - online	Trade shows/events
Directory listing - print	None of these
Email promotions	

Facebook	TikTok
Twitter	YouTube
LinkedIn	Did not actively use social media in 2023
Instagram	_



Business Strategy & Performance

37. What was your shop's <u>customer retention rate</u> for 2023? This is the number of your shop customers in 2023, who were also customers in 2022, as a percentage of your 2022 total customer base. Enter your number without a % sign. You may enter a decimal, but no other signs or symbols. Example: If you had 50 customers in 2023 who were also customers in 2022 and a total of 6 customers in 2022, your customer retention rate would be 83%, and you would enter 83.
38. What were your shop's investments, in US dollars, in the following areas in 2023?
Please enter whole numbers only; decimals, commas, other symbols, and words are not accepted.
Enter '0' if your shop made no investment in a category.
Capital equipment (not tooling)
Tooling
Employee costs (all wages, benefits, etc.)
Materials and components
39. Please provide your shop's <u>total revenue</u> in US dollars for 2023. Providing your shop's
revenue confidentially enables us to perform useful calculations on your behalf.
Please enter a whole number only; no decimals, commas, or other symbols.



business strategy & Performance
40. Please provide your shop's 2023 gross sales per number of machines in US dollars. You may enter a decimal, but no other signs or symbols. Example: If your shop's 2023 gross sales were \$5000 and you have 2 machines, you would enter 2500.
41. Please provide your shop's 2023 gross sales per number of total employees in US dollars. You may enter a decimal, but no other signs or symbols. Example: If your shop's 2023 gross sales were \$5000 and you have a total of 20 employees, you would enter 250.
42. Were any <u>capital investments</u> made in your shop in 2023? Select ONE only.
Yes
○ No
O Not sure



Business Strategy & Performance

43. Please provide your shop's 2023 capital equipment expenditure as a percentage of gross sales. Enter your number without a % sign.

sales. Enter your number without a % sign.

Formula = [(2023 cap equip expense / 2023 gross sales) * 100]

Example: If your shop's capital equipment expenditure was \$500 and your gross sales were \$5000, you would enter 10.

44. What, if any, type(s) of machining or manufacturing capital equipment does your shop plan to purchase in 2024? If none, please enter 'none' here. Please be specific.



Business Strategy & Performance

45. Please provide your shop's percent change in annual sales from 2022 to 2023 using the
following formula. Round to the nearest whole number, using a minus sign if necessary.
Formula = [(2023 gross sales - 2022 gross sales) / 2022 gross sales] * 100
Example: If your 2023 sales were \$5000 and your 2022 sales were \$4000, you would enter
25.
46. Please provide your shop's 2023 overall profit margin percentage, defined as your shop's
$\underline{\text{net income (after tax) relative to gross sales}}, \ \text{rounded to the nearest whole number}. \ \\ \text{Include a}$
minus sign if your number is negative.
Formula = [(2023 net income / 2023 gross sales) * 100]
Example: If your 2023 net income was negative \$300 and your gross sales were \$5000, you
would enter -6.



Section 5: Human Resources

The final section of the core survey pertains	to employees, programs, and training.
47. Which human resource practices/program	ns did your shop use in 2023? Select ALL that
apply.	
401(k) plan	Formal safety/health program
401(k) matching	Leader/supervisor development
Annual review and raise program	Paid medical benefits
Apprenticeship program	Paid holiday/vacation
Bonus plan	Profit- or revenue-sharing plan
Education reimbursements	Teaming/team-building practices
Employee ownership options (ESOP)	
Formal employee training programs	
Other (please specify)	
No LID programs in place	
No HR programs in place	
48. How many total people did your shop employ	y in 2023 at the location(s) to which your
other answers apply? This includes shopfloor, fro	•
Please enter a number only; no decimals, commo	as or other symbols.
49. What was your shop's annual labor turnover	rate of shopfloor employees in 2023? This is
the number of voluntary plus involuntary separa	·
of the total usual number of shopfloor staff. Ente	er your number between 0 and 100 without a
% sign.	
You may enter a decimal, but no other signs or s	rymbols.
$Example: If \ 6 \ shopfloor \ employees \ left \ in \ 2023 \ a$	nd your usual shopfloor staff totals 30, you
would enter 20.	

e operators	
personnel	
ogrammers	



Thank you for completing the core questions!

Next are opportunities for additional benchmarking that can be just as useful as the core. The choice to take advantage is yours.

There are 4 categories of questions that we call modules: profile, machining technology, business strategy, and human resources. Some modules may be of more interest to you than others. If you are, for example, re-examining your shop's business strategies, you may want to complete that module. Any questions you do answer will be included in your custom benchmarking report.

If you opt out of all modules, you will be taken to the end of the survey to submit your core responses.

* 51. Please select the additional modules in which you'd like to participate. Choose as many
as you like \mathbf{or} select the last option to proceed to a screen where you submit your core
responses.
Profile (9 questions)
Machining Technology (5 questions)
Business Strategy (11 questions)
Human Resources (11 questions)
I cannot benefit from additional benchmarking