



# **A Purchasing and Purchasing-Related Benchmarking Study**

for the

## **National Shipbuilding Research Program Business Process Technologies Panel**

Prepared by:  
CAPS Research  
P.O. Box 22160  
2055 E. Centennial Circle  
Tempe, AZ 85285

[www.capsresearch.org](http://www.capsresearch.org)



Approved for public release; distribution is unlimited



## Executive Summary

### Purchasing and Purchasing-Related Benchmarking Study

for the

### National Shipbuilding Research Program Business Process Technologies Panel

#### Summary:

CAPS Research was contracted by the National Shipbuilding Research Program's (NSRP) Business Process Technologies (BPT) Panel to conduct a Purchasing and Purchasing-Related Benchmarking Study for the shipbuilding industry based on calendar 2002 performance data. The study was conducted in accordance with the terms and conditions of Support Services Agreement No. 2003-305, awarded to CAPS Research by the Advanced Technology Institute (representing NSRP).

Forty-six (46) shipyards were invited to participate in this study, 8 of which were non-US shipyards. Eleven (11) shipyards, including 2 non-US shipyards, participated in the survey for an overall response rate of 24%.

The results of the study have been provided to participating shipyards and the NSRP. Study results are also available from CAPS Research by sending a query to [benchmark@capsresearch.org](mailto:benchmark@capsresearch.org).

The report shows demographic information (Sections A through E) and benchmarks pertaining to Professional Development, Financial Information, Electronic Commerce and Related Procurement Systems, Supplier Relationships and Alliances, and Miscellaneous Information. The report indicates the number of shipyards responding to each question, and the mean, minimum, maximum, and median observations. For those benchmarks that correspond to a previous report published in 2001, the previous report mean is also provided.

**Demographic Information:** The 11 participating shipyards reported US \$14.96 billion in total sales. The average sales/revenue of US \$1.36 billion is skewed by the fact that 5 shipyards reported sales of US \$13.75 billion, and the remaining 6 shipyards reported a total of US \$1.21 billion. The median is US \$516.92 million. Participants were asked to provide sales/revenue as a result of their Commercial Ship New Construction/ Ship Repair and Military Ship New Construction/Ship Repair. The responses were aggregated as follows:

**Commercial Ship New Construction:** Four of the 11 participants reported total revenues/sales of US \$2.74 billion; 2 participants reported no sales in this category; and 5 participants did not provide information.

**Commercial Ship Repair:** Five participants reported US \$3.13 billion in total revenues/sales. The average (US \$ 521.50 million) and median (US \$3.00 billion) revenues noted on the Benchmarking Report are skewed because one major defense-related shipyard reported 'zero' sales; and revenues reported by 4 of the reporting shipyards total only US \$129 million.

**Military New Construction:** Only 2 shipyards reported sales/revenues from this category (total of US \$ 2.45 billion).

**Military Repair:** Six shipyards reported total revenues/sales of US \$1.54 billion. The average of US \$257 million is skewed in that one participant reported 'zero' dollars in this category, and based on the information provided, the mean revenues/sales from 4 shipyards is US \$55 million.

**Comment:** All participating shipyards reported total sales/revenues, but 3 shipyards did not break down revenues by new construction or repair activities (commercial & military).

### **Organizational Information:**

Nine of the 11 participating shipyards indicated their purchasing organizations are centralized, meaning that the authority and responsibility for most purchasing is assigned to a central organization. Six shipyards reported their Chief Purchasing Officer (or equivalent) reports to a Vice President or a Director of Engineering. A listing of the key areas of engagement for the purchasing organization are listed in the benchmarking report.

### **Professional Development Benchmarks:**

In comparing purchasing employees against the total number of employees (benchmark 1), the current mean observation of 1.57% is influenced by data which shows 3 shipyards have a ratio greater than 2.00. The median observation (1.27%) may be a better measure, and this observation compares favorably with the most recently published *Report of Cross-Industry Standard Benchmarks* wherein the average of averages for purchasing employees against the total number of employees is 1.13%.

<b>2002 mean observed:</b>	<b>1.57%</b>
<b>1999 mean observed:</b>	<b>1.10%</b>

Benchmark 2 is influenced by the number of contract/temporary employees that two shipyards reported. Five shipyards reported 'zero' contract/temporaries, and 3 shipyards did not provide any response. The median observation of 0.00% supports the data provided and may be a better measure than the mean observation of 5.11%. Simply put, of the 59,112 employees reported, there are only 556 purchasing and purchasing-related

employees identified. And of the 556 purchasing employees reported, 50 were reported as contract/temporary employees. This benchmark was not previously reported.

In looking at benchmark 3, the average change in purchasing staff during the past year, 5 shipyards reported an average increase of 5.8 persons; 5 shipyards reported no change in staffing levels; and 1 shipyard reported that their staffing level had decreased. This benchmark was not previously reported.

The data presented in benchmark 4, relative to education levels, is reasonably consistent with other CAPS Research data. Compared to the previous benchmark report, more purchasing employees now have 2- and 4-year college/university degrees.

Benchmark 5 reports the percent of purchasing employees that hold a purchasing-related professional designation (i.e., C.P.M., A.P.P., etc.). Although this benchmark scored high on the Critical Benchmarking Exercise, there is less than a 1% change with the previous report. (With an average of 15% and a median value of 5.35%, the data are highly skewed by two responses of 62.50% and 42.86%, respectively. Four shipyards indicated 'zero' as the number of staff who hold a purchasing-related professional designation. Benchmark 6 shows that 2 of the 11 shipyards adjust compensation based on professional designation, down slightly from the previous report. One shipyard did not respond.

Benchmarks 7 through 10 pertain to training hours and training costs. The observed mean of 23 hours is slightly higher than the previous report (20 hours) and is consistent with related CAPS Research surveys. The training dollars per purchasing employee (\$945) is slightly higher than the most recently published cross-industry average of averages, which is \$827 per employee. In comparing this information to the previous report, the average spend on training for the purchasing function is US \$ 41,846 vs. \$21,378 (reported in 1999).

#### **Financial Information Benchmarks:**

The questions for benchmark 11 were developed to ascertain how much of total revenues/sales were the result of commercial new construction and repair activities, and military new construction and repair activities. Four companies reported commercial new construction activities and 2 of the 4 reported 100% of their revenue was from commercial new construction. The other 2 shipyards reported that on average 43.30% of their revenue was from commercial new construction activity. Five shipyards reported that commercial repair activities accounted for 33.60% of their total revenue. Two shipyards reported revenue as a result of military new construction activities, and 5 shipyards reported that military repair activities did account for an average of 41.15% of their total revenue. Benchmark 11 scored high on the Critical Benchmarking Exercise. This data was not previously reported.

Benchmarks 12 and 13 address the average number of ships built during the reporting period and the number of ships overhauled. Seven shipyards reported that a total of 51 ships completed new construction, and 9 shipyards reported 66 ships currently in construction during the reporting period. Six shipyards reported a total of 550 ships completed overhaul and 6 shipyards reported that 45 ships are now undergoing

overhaul. Benchmark 12 did not score high on the Critical Benchmark Exercise, but benchmark 13 did. The ship types being constructed or overhauled are provided in benchmark 14 and are listed in the benchmarking report.

Benchmark 15 reports the purchase spend as a percent of total revenue/sales and benchmark 18 reports the purchase spend per purchasing employee. The questions that correspond to these benchmarks could have been structured better. The intent of the questions were to segment US spend data or country of origin spend data, then add the remaining purchase spend from other geographical areas to arrive at a total global spend. CAPS Research verified that spend data was not double-counted. Future reports will provide more detailed instructions about summing total spend amounts. Two US shipyards and one non-US shipyard did not break out their purchase spend by direct, indirect, or services purchases. There are no significant disparities between the mean and median observations of these benchmarks, and each of these benchmarks were identified as being critical. In the previous benchmarking report, the total purchase spend as a percent of overall revenue/sales was provided. That report did not break out direct, indirect, or services purchases.

Benchmarks 16 and 17 report the purchasing operating expense as a percent of total revenue/sales and as a percent of total purchase spend, respectively. Benchmark 16 shows the mean and median values of 0.50%, which are reasonably consistent with the most recently published Cross-Industry average of averages (0.38%). This value is consistent with the 1999 benchmarking report (0.50% observed). With respect to benchmark 17, the purchasing operating expense as a percent of total purchase spend, the observed value of 1.23% is compared to the value of 1.4% that was observed in the 1999 benchmarking report.

Only 2 shipyards were able to provide data for benchmark 19 (value-add percent performed by the shipyard) and the average value for these two observations was 57.5%. The lack of response indicates that those responding to the survey did not understand the question or that participants were unable to determine the value-add percent being performed by the shipyard.

Benchmark 20 provides data on direct spend, indirect spend, and services spend. The survey question was designed such that these spend categories would be broken out by US spend, Country of Origin spend, and Global spend. CAPS Research did not receive sufficient data to develop these breakouts. Breakouts were not provided in the previous benchmark report. Global spend values could not be calculated separately because of insufficient data. Therefore, the breakdown of this benchmark is as follows:

Direct Spend – 7 US shipyards and 1 non-US shipyard reported 56.88% (avg) of their total US Spend or Country of Origin spend is for direct goods. Two US shipyards and 1 non-US shipyard did not provide data to calculate this ratio. Three shipyards reported Global Spend (other than US or Country of Origin) of \$152 million for direct goods. Three responses are insufficient to benchmark so CAPS Research included Global Spend in the ratio with US Spend and Country of Origin Spend. The combined ratio for the total spend on direct goods then becomes 64.06%

Indirect Spend – 6 US shipyards and 1 non-US shipyard were able to provide data on their indirect spend, which averages 7.24% of total spend.

Services Spend – 6 US shipyards and 1 non-US. shipyard provided data on their services spend which averages 27.86% of total spend. The 4.12% delta between the mean and median observations in benchmark 20 indicate the data is skewed by 2 shipyards that reported more than 48% and 63% of their total spend, respectively, was on services. Based on the services study CAPS Research completed in August 2002, which indicates an overall average of 33.11% spend on services, the observed mean of 27.86% is reasonable. However, when comparing the shipyard data for services spend against only the shipyards engaged in heavy manufacturing and mining, there is a difference of 10.96% (27.86% shipyard vs. 16.90% for manufacturing and mining).

Benchmark 21 reports that 98.68% of the total purchasing spend for direct goods is controlled and/or managed by the purchasing organizations in 7 US shipyards and 1 non-US shipyard. The observed percentages for indirect goods and services are 92.44% and 92.86%, respectively. All median observations were consistent with the mean values indicating that all responses were fairly consistent.

Data in Benchmark 22 indicates that 7 of the 11 participating shipyards have a cost savings goal, and that the goals reported were 0.50% to 15% of total cost. Participants reported US \$ 288.97 million in cost savings (\$149,000 to \$195,000,000). These cost savings represent an average of 5.53% of the total purchase spend against an average goal of 7.42%. The cost savings reported are influenced by two shipyards that reported savings goals of 12 % and 15%, respectively and actual savings of 10.01% and 15%, respectively. If these 2 observations were factored out, the average cost savings goal is 4.38% and the reported savings were 2.74%.

Benchmark 23 reports the percent of total spend processed through one-time contracts. The mean value of these transactions (US \$160,254,380) is highly influenced by two participants who reported values of US \$482 million and US \$796 million. The median observation (US \$41.50 million) is more representative of 8 of the 10 participating shipyards. Benchmark 24 provides a listing of transactional contracting methods reported.

Benchmark 25 is the percent of total purchase spend processed through long-term contracts, and total spend reported is US \$927,727,468 for an average of US \$92,772,747. The types of long-term contracts used are provided for in Benchmark 26.

Benchmarks 21 through 26 were not observed in the 1999 benchmarking report.

Benchmarks 27 through 33 report data on electronic commerce activities and related procurement systems. Only 3 shipyards reported that they do not use an integrated procurement system. A listing of system in use is provided in benchmark 27. In summary:

Benchmark 28 shows that 6 shipyards use bar code receiving; 4 shipyards use B2B eCommerce technologies; 5 shipyards use EDI transaction sets; 5 shipyards use EFT; and only 2 shipyards are using Evaluated Receipt Settlement (ERS) tools. B2B eCommerce was not reported in the previous benchmarking report.

Two shipyards provided the number of suppliers with whom purchase transactions were processed for a reported spend of US \$5.46 million (benchmark 29). There was insufficient data reported to provide more detail.

Benchmark 30 provides the percent of total purchase spend processed through B2B eCommerce and EDI activities. There was insufficient data to report B2B eCommerce spend as a percent of total purchase spend. Four shipyards reported that their EDI transactions accounted for an average of 4.47% of the total spend (avg US \$8.40 million).

For eAuction activities (benchmark 31), 4 shipyards reported 85 eAuctions were completed for a spend value of US \$57.71 million. A total of 89 eAuctions were completed but only 85 were awarded.

Benchmark 32 shows that 8 shipyards pushed US \$12.84 million in spend through purchase/procurement card (pcard) activities (or 0.67% of the total spend observed). Of this total, 6 shipyards were able to provide the number of corresponding transactions processed through pcard activities for an average of 4,898 transactions per shipyard (benchmark 33). This mean value is skewed in that two shipyards reported more than 10,000 transactions each for a median number of 3,100 transactions each.

Benchmarks 29 through 32 were not observed in the 1999 benchmarking report; however, the current mean of purchase transactions processed through procurement cards has increased from an average of 4.30% (1999) to an average of 21.84 % (2002). Again, this average is impacted by the two shipyards that reported more than 10,000 transactions each.

With a reported total of 25,967 active suppliers, benchmark 34 indicates that there is an average of 44 active suppliers per purchasing employee. In the previous report, the ratio was 136 suppliers per purchasing employee.

Benchmark 35 breaks out these suppliers as follows:

Direct goods:	17,067 suppliers	(65.73% total – 68.83% mean)
Indirect goods:	2,775 suppliers	(10.68% total – 16.61% mean)
Services:	6,125 suppliers	(23.59% total – 15.88% mean)

**Comment:** The sum of the mean is greater than 100% (101.32%) due to rounding and averaging across calculated data sets.

The percent of suppliers that account for 80% of the purchase spend is expected to be significant for direct goods and materials for the shipbuilding industry as with other large-scale manufacturing operations. Benchmarks 36 and 37 show that 10.50% of the active suppliers (1,474) account for 80.00% of the purchase spend. Another way to look at this number is to say that the 1,474 active suppliers provide goods and services to the reporting shipyards account for a total spend of US \$ 4.75 billion. These suppliers account for 78.72% (avg) of the purchase spend for direct goods; 9.19% (avg) for

indirect goods; and 13.01% (avg) for services. These data elements were not reported in the 1999 benchmarking report.

Benchmark 38 shows the purchase spend per active supplier is \$225,535. The 1999 benchmarking report showed an average of \$162,519 spend per active supplier.

Benchmark 39 addresses the purchasing operating expense per active supplier. The average (\$1,937) is calculated by dividing the total purchasing operating expenses by the number of active suppliers. CAPS Research feels that this benchmark has little value in that the factors to determine the purchasing operating expense varies considerably, and there is no known method to extract the same data elements from the participating shipyards.

Benchmark 40 looks at the number of active suppliers that are unique (i.e., sole source). Of the 25,967 active suppliers reported by 10 participating shipyards, the total number of unique suppliers is 800.

Nine US shipyards reported on diversity spend (benchmark 41): 5 shipyards reported a goal for diversity spend, and those shipyards reported a total diversity spend of US \$284.56 million, more than twice the stated goal of 4.24%

Benchmarks 42 through 48 provide data on supplier measurements. The scores from the Critical Benchmark Exercise indicate there is no strong interest in reporting the results beyond the Benchmarking Study. However, for future planning purposes it is noted that there were insufficient responses to calculate the percent of total purchase spend through strategic partnering activities and through consortia activities: 3 shipyards reported US \$378.80 million spend through strategic alliances; and 2 shipyards reported US \$138.20 million in consortia spend. Benchmark 48 indicates that the 5 shipyards who reported that they had at least one supplier bring to their attention a new technique that provided value-add did report savings from adopting the techniques. A listing of the techniques identified is provided for in the Benchmarking Study, under benchmark 48 (page 7).

Benchmark 49 reports total ship specifications that are customer-specific. The mean and median observations are reasonably close but there are significant differences in the observations. Five shipyards reported that 90% to 100% of the specifications were customer-specific, and five shipyards reported that 15% to 40% of the specifications were customer-specific. No shipyard reported customer-specific specifications in the mid-range percentages (41% to 89%).

Benchmark 50 was intended to determine the percent of new construction specification content developed by the shipyards participating in this study. Although this benchmark was not written to be the opposite of benchmark 49 (defined above), 6 of the 11 participating shipyards did report a sum value of 100% for benchmarks 49 and 50. Two participating shipyards reported that 'zero' percent of the spec content was developed by the shipyard; 2 shipyards did not provide any response; 2 shipyards reported 5% and 20%, respectively; and 5 shipyards reported 50% to 80%.



Benchmark 51 looks at the percent of a ship that is built in advance of an order. Two shipyards did not respond to the corresponding question, and 6 shipyards responded with 'zero' percentage. Data provided by 3 of the shipyards ranged from 2% to 60%. The mean observation (7.11%) is highly skewed by the number of 'zero' responses and the maximum (60%) response from one shipyard.

The percent of completion of the module at first assembly to the ship on the shipway, benchmark 52, had responses from 'zero' percent to 90%. Four shipyards did not respond; 2 shipyards responded with 'zero'; and the 5 remaining shipyards reported a range of 35% to 90%. When the 'zero' responses are factored out, the mean observation is 75.8% and the median is 89% in lieu of the report's observed mean of 54.14% and 75%, respectively.

The question on average short ton value of the typical modules used in assembly was answered by 7 participating shipyards. With a range of 20 tons to 600 tons, the report's average and median observations of 278 and 300 are skewed slightly by the minimum observation.

Benchmark 54 was developed to indicate how shipyards use purchasing performance measures. Only 1 shipyard did not provide an indication of its purchasing performance measures. None of the 10 shipyards who answered this survey question used Economic Value-Add (EVA); compliance with procure-to-pay processes; or return on capital employed as purchasing performance measures. Otherwise, the range of responses are found on the final report, page 8, under benchmark 54.

Nine shipyards provided information on the percent of direct goods purchased for point-of-use consumption. With an observed mean of 51.25% and a median of 50% respectively, there does not seem to be any issues with this benchmark. However, when looking at the goods purchased for point-use-consumption that are supplier-managed inventory, the mean is highly skewed by the fact that 8 of the 10 responses ranged from 0% to 10%, and 2 responses were 90% and 100%, respectively. No mid-range values were observed.

Benchmark 57 (the percent of requisitions for direct goods that were received by the buyers in time to meet internal customer requirements) scored high on the Critical Benchmark Exercise. Seven of the 10 participating shipyards reported a range of 90% to 99%, and 3 shipyards reported a range of 50% to 88%.

Five participating shipyards reported their purchasing organizations employ target costing analysis (benchmark 58), and of those 5 shipyards, 3 participants require only their Tier 1 suppliers to participate in target costing analysis.

Benchmarks 59 and 60 report the percent of participating shipyards whose purchasing organizations are either profit centers or cost centers. Four shipyards reported they are profit centers, and 7 shipyards reported they are cost centers.

Benchmark 61 shows that only 3 of the 8 shipyards that reported have implemented continuous improvement programs require their key suppliers to implement the same or similar programs.

## **Conclusions**

- 1. CAPS Research does not publish Best-in-Class statistics; nor will we designate any participating shipyard as being Best in Class. We develop and employ ratios that are used to validate specific data. There are no concerns or questions relating to the integrity of data provided by the participating shipyards, but there are occurrences when data that not validated were removed from the data analysis process.**
- 2. The purpose of the study is to provide participating shipyards with average values and ranges for comparing the characteristics of purchasing performance.**
- 3. The support of each participating shipyard is sincerely appreciated, and CAPS Research looks forward to NSRP's participation in the next Purchasing Performance Benchmarking Study for the Shipbuilding Industry.**

**Submitted By:**

**D. Steven Wade  
Director of Research/Benchmarking  
CAPS Research  
P.O. Box 22160  
2055 E. Centennial Circle  
Tempe, AZ 85285**

**June 10, 2003**

**CAPS Research  
 Purchasing Performance Benchmarking Study  
 for the Shipbuilding Industry**

Data Year: 2002  
 Release Date: May 30, 2003

<b>The following companies provided data for this study:</b>			
Atlantic Marine, Inc. Bath Iron Works Corporation Bender Shipbuilding & Repair Co., Inc. Colonna's Shipyard, Inc Electric Boat Corporation Kvaerner Philadelphia Shipyard, Inc. Mitsubishi Heavy Industries, Ltd., Shipbuilding Division Mitsui Engineering & Shipbuilding Co., Ltd. National Steel and Shipbuilding Company Northrop Grumman Newport News Todd Pacific Shipyard			
<b>A. Sales (in dollars):</b>			
Total	\$	14,959,665,560	
Average	\$	1,359,969,596	
Range	\$	41,000,000	to \$ 5,767,000,000
<b>Organization</b>			
<b>B. Company is reporting at the following level:</b>			<b>11 Companies Reported this Data</b>
Corporate Level	45.45%		5
Business Unit Level	54.55%		6
<b>C. Percent of companies that utilized the following organizational structure for performing their purchasing/contracting function:</b>			<b>11 Companies Reported this Data</b>
<i>Centralized:</i> The authority and responsibility for most purchasing and purchasing-related functions are assigned to a central organization.	81.82%		9
<i>Decentralized:</i> The authority and responsibility for most purchasing and purchasing-related functions are dispersed throughout the organization.	0.00%		0
<i>Hybrid:</i> Centralized sourcing with decentralized execution.	18.18%		2
<i>Outsourced:</i> Most purchasing and purchasing-related activities are being performed by an external organization.	0.00%		0

**CAPS Research**  
**Purchasing Performance Benchmarking Study**  
**for the Shipbuilding Industry**

Data Year: 2002  
Release Date: May 19, 2003

<b>D. Direct report for the Chief Purchasing Officer:</b>		<b>11 Companies Reported this Data</b>
COO	9.09%	1
Director of Shipbuilding Division	9.09%	1
VP or Director of Engineering	54.55%	6
VP or Director of Manufacturing	9.09%	1
VP or Director of Operations	18.18%	2
Number of levels down from the CEO	2	11
<b>E. Activity areas included in the purchasing organization:</b>		<b>11 Companies Reported this Data</b>
Component Engineering	9.09%	1
Contract Management	45.45%	5
Cost/Price Analysis	81.82%	9
Direct Materials	90.91%	10
Export	36.36%	4
Import	72.73%	8
Incoming Material Inspection	18.18%	2
Indirect Materials	90.91%	10
Information Systems	9.09%	1
International Offset Agreements	36.36%	4
Inventory Control	63.64%	7
Investment Recovery	0.00%	0
Legal	9.09%	1
Logistics	63.64%	7
Manufacturing Data Files	0.00%	0
Material Bid/Estimating	63.64%	7
Materials Management	63.64%	7
Production Control	9.09%	1
Purchasing	100.00%	11
Procurement	90.91%	10
Professional Services	27.27%	3
Receiving	45.45%	5
Requirements Planning	27.27%	3
SB/SDB Administration	45.45%	5
Shipping/Packaging	27.27%	3
Source Inspection	0.00%	0
Specs Generation	9.09%	1
Subcontract Management	72.73%	8
Supplier Development	81.82%	9
Supplier Quality	45.45%	5
Traffic/Transportation	63.64%	7
Warehousing	45.45%	5
Other: eCommerce	9.09%	1

**CAPS Research**  
**Purchasing Performance Benchmarking Study**  
**for the Shipbuilding Industry**

#	Benchmarks	Previous Report Mean	Current Mean	Minimum	Maximum	Median	# of Co Reporting
<b>Professional Development</b>							
1	Purchasing employees as a percent of company/organization employees	1.10%	1.57%	0.72%	3.07%	1.27%	10
2	Percent of purchasing employees that are contract/temporary	n.r.	5.11%	0.00%	24.55%	0.00%	8
3	Average change in the purchasing staff during the reporting period	n.r.	2	-6	10	0	11
	Reason for change:	n.r.	Downsizing; Increase in work load demand; Reorganization				
4	Percent of purchasing employees that have attained the following highest education level:						
	Secondary school or less	52.00%	35.34%	11.56%	75.45%	33.33%	10
	Two-year degree	8.00%	16.83%	5.41%	28.57%	17.42%	10
	Four-year degree	39.00%	43.92%	23.64%	77.78%	42.18%	11
	Graduate degree	9.00%	8.43%	0.00%	15.65%	10.93%	10
5	Percent of purchasing employees that hold a purchasing professional designation	15.00%	15.91%	0.00%	62.50%	5.38%	11
6	Percent of companies that adjust compensation based on professional designation	25.00%	18.18%				10
7	Percent of companies that have a formal college-hire program	0.00%	0.00%				11
8	Training hours per purchasing employee	20	23	0	80	22	10
9	Training dollars per purchasing employee	n.r.	\$945	\$191	\$2,424	\$556	9
10	Percent of purchasing operating expense spent on training	n.r.	1.69%	0.16%	4.88%	0.63%	9
<b>Financial Information</b>							
11	Percent of total organization sales/revenue from:						
	Commercial new construction	n.r.	71.65%	37.31%	100.00%	74.64%	4
	Commercial overhaul/repair	n.r.	33.60%	17.10%	52.02%	34.43%	5
	Military new construction	n.r.	62.53%	25.06%	100.00%	62.53%	2
	Military overhaul/repair	n.r.	41.15%	22.86%	65.57%	45.60%	5
12	Average number of ships built during the reporting period:						
	Completed	n.r.	7	2	19	5	7
	In Progress	n.r.	7	0	18	7	9
13	Average number of ships overhauled during the reporting period:						
	Completed	n.r.	79	1	245	46	7
	In Progress	n.r.	5.625	0	20	4	8

**CAPS Research**  
**Purchasing Performance Benchmarking Study**  
**for the Shipbuilding Industry**

#	Benchmarks	Previous Report Mean	Current Mean	Minimum	Maximum	Median	# of Co Reporting
14	Ship types that were built/overhauled by the shipyards	n.r.	Aircraft Carriers; Amphibious Assault Ships; Amphibious Landing Ships; Barges; Bulk Carriers; Cargo Ships; Coast Guard Vessels; Coastal Ferries; Commercial Container Vessels; Commercial Tugs; Commercial Fishing Ships; Cruise Ships; Destroyers; Dredges; Fast Combat Support Ships; Guided Missile Cruisers; Guided Missile Destroyer; Guided Missile Frigates; Liquefied Natural Gas Carriers; Liquefied Propane Carriers; Maritime Administration Ships; Nuclear Submarines; Ocean Survey Vessels; Research Vessels; Ro-Ro (Roll on-Roll off) Ships; Salvage Ships; Tankers; USCG Ice Breakers; Vehicle Cargo Ship; Very Large Crude Carriers				
15	Purchase spend as a percent of total organization sales/revenue	38.00%	46.80%	19.07%	98.99%	42.86%	11
16	Purchasing operating expense as a percent of total organization sales/revenue	0.50%	0.50%	0.07%	0.78%	0.50%	10
17	Purchasing operating expense as a percent of total purchase spend	1.40%	1.21%	0.37%	2.34%	1.22%	10
18	Purchase spend per purchasing employee	\$5,817,416	\$7,981,627	\$2,275,000	\$15,505,973	\$7,463,719	10
19	Percent of shipyards that were able to determine the value-add percent performed by the shipyard	n.r.	18.18%				11
20	Percent of total purchase spend that is:						
	Direct Spend	n.r.	64.06%	25.40%	82.35%	69.10%	8
	Indirect Spend	n.r.	7.24%	0.12%	11.94%	6.95%	8
	Services Spend	n.r.	28.33%	5.97%	63.33%	23.74%	8
21	Percent of purchase spend that is managed and or/controlled by purchasing:	78.00%	97.24%	86.57%	100.00%	100.00%	11
	Direct Spend	n.r.	97.97%	89.40%	100.00%	100.00%	8
	Indirect Spend	n.r.	92.44%	75.00%	100.00%	100.00%	8
	Services Spend	58.00%	89.40%	50.00%	100.00%	100.00%	8
22	Percent of companies with a cost savings goal	n.r.	63.64%				11
	Average goal	n.r.	7.42%	0.50%	15.00%	6.50%	6
	Cost savings attributed to purchasing as a percent of total purchase spend	n.r.	5.10%	0.25%	15.00%	3.58%	7
23	Percent of total purchase spend processed through one-time contracts	n.r.	57.50%	2.26%	100.00%	73.69%	10
24	Transactional contracting methods used during the reporting period	n.r.	Blanket Order; Cash Sales; Consignment Agreements; Contracts; Electronic Order Releases; Master Pricing Agreements; Procurement Cards; Purchase Orders; Reverse Auctions; Standing Order				
25	Percent of total purchase spend processed through blanket orders/long term contracts	n.r.	17.55%	0.00%	94.12%	6.70%	10
26	Strategic contracting methods used during the reporting period	n.r.	Annual Contracts; Competition; Corporate Contracts; Cost Plus; Cost Reimbursable; Cost Type; Firm Fixed Price; Fixed Price Incentive Fee; Labor Hour; Maximum Price; Penalty LDs; Time & Material with Limits				

**CAPS Research**  
**Purchasing Performance Benchmarking Study**  
**for the Shipbuilding Industry**

#	Benchmarks	Previous Report Mean	Current Mean	Minimum	Maximum	Median	# of Co Reporting
<b>Electronic Commerce and Related Procurement Systems</b>							
27	Percent of companies that used an integrated procurement system	n.r.	72.73%				11
	Systems used	n.r.	Finnish System for shipyards with Oracle assist; IFS; JD Edwards; Mac-Pac; MRPII; SAP/MM; SAP				
28	Percent of companies that used the following electronic methods to process purchase transactions:						10
	Bar code receiving	33.00%	54.55%				
	B2B eCommerce	n.r.	36.36%				
	EDI	33.00%	45.45%				
	Electronic funds transfer	11.00%	45.45%				
	Evaluated receipt settlement	22.00%	18.18%				
29	Percent of active suppliers with whom purchase transactions were processed using:						
	B2B eCommerce	n.r.	i.d.				
	EDI	n.r.	4.47%	0.00%	20.00%	1.34%	8
30	Percent of total purchase spend processed using:						
	B2B eCommerce	n.r.	i.d.				
	EDI	n.r.	3.46%	0.00%	11.67%	0.55%	7
31	Percent of companies that conducted electronic auctions during the reporting period	n.r.	36.36%				11
	Of those companies that conducted electronic auctions:						
	Awarded auctions as a percent of total auctions	n.r.	82.33%	33.33%	100.00%	98.00%	4
	Average dollar value of awarded auctions	n.r.	\$14,426,416	\$250,000	\$50,000,000	\$3,727,831	4
32	Percent of total purchase spend processed through procurement cards	n.r.	0.64%	0.07%	2.02%	0.54%	8
33	Percent of total purchase transactions processed through procurement cards	4.30%	21.84%	5.48%	55.65%	17.49%	6
<b>Supplier Relationships and Alliances</b>							
34	Active suppliers per purchasing employee	136	44	18	141	29	10
35	Percent of active suppliers that are for:						
	Direct Goods	n.r.	68.83%	45.50%	100.00%	64.52%	11
	Indirect Goods	n.r.	16.81%	0.00%	50.89%	8.83%	10
	Services	n.r.	15.88%	0.00%	50.00%	11.44%	11

**CAPS Research  
Purchasing Performance Benchmarking Study  
for the Shipbuilding Industry**

#	Benchmarks	Previous Report Mean	Current Mean	Minimum	Maximum	Median	# of Co Reporting
36	Percent of active suppliers that account for 80% of total purchase spend	n.r.	10.50%	1.61%	21.15%	8.70%	11
37	Percent of suppliers that account for 80% of purchase spend that provide:						
	Direct Goods	n.r.	78.72%	36.59%	100.00%	86.61%	10
	Indirect Goods	n.r.	9.19%	0.00%	25.00%	6.67%	10
	Services	n.r.	13.01%	0.00%	39.02%	10.80%	10
38	Purchase spend per active supplier	\$162,519	\$245,098	\$3,592	\$651,014	\$214,201	10
39	Purchasing operating expense per active supplier	\$2,405	\$1,937	\$84	\$3,478	\$1,856	10
40	Percent of active suppliers that are unique (sole source) suppliers	n.r.	3.08%	0.00%	9.62%	1.95%	10
41	Percent of companies that have a goal for diversity programs spend (US Only)	n.r.	45.45%				11
	Average diversity spend goal	n.r.	4.24%	1.20%	5.00%	5.00%	5
	Percent of US purchase spend with diversity programs suppliers	n.r.	4.03%	0.93%	6.20%	4.12%	5
42	Percent of companies that have a structured program to measure key suppliers	50.00%	63.64%				11
	Average number of key suppliers measured	n.r.	409	15	1000	220	7
43	Percent of companies that use the following supplier measures:						11
	Delivery	67.00%	100.00%				
	Price	n.r.	90.00%				
	Quality	67.00%	90.91%				
	Service	n.r.	87.50%				
	Other: Material Performance	n.r.	12.50%				
44	Percent of companies that are ISO compliant	n.r.	100.00%				10
	Percent of companies that are ISO certified	n.r.	88.89%				9
45	Percent of total purchase spend with strategic partnering	23.00%	i.d.				
46	Percent of total purchase spend through consortia	n.r.	i.d.				
47	Methods used to qualify new suppliers	n.r.	Capability; Data Submittals; D&B Reports; Delivery Records; Evaluation Form; Financial Condition; Niche Supplier; On-site Inspections; Price; Product Line Required; Quality; QA Audit; QA Department Review; Quality Control System; Reputation; Technical Merit; Viability				10



**CAPS Research**  
**Purchasing Performance Benchmarking Study**  
**for the Shipbuilding Industry**

#	Benchmarks	Previous Report Mean	Current Mean	Minimum	Maximum	Median	# of Co Reporting
48	Percent of companies that had a supplier bring to their attention a new technique that is value add	n.r.	45.45%				11
	Technique	n.r.	Consumables Return Program; Design Changes to Reduce Costs; eSourcing; Improved Ship Equipment; Install Improvement; Steel Processing Building and Contracting Management (VIR); Technically Advanced Products; Value Engineering; Wafer Blasting Equipment; Welding Method Improvements				
	Percent of companies in which savings were gained from this technique	n.r.	45.45%				
<b>Miscellaneous</b>							
49	Percent of ship specification that is customer specific	n.r.	61.50%	15.00%	100.00%	65.00%	10
50	Percent of the ship final specification content that was developed by the shipyard	n.r.	81.82%	0.00%	80.00%	50.00%	9
51	Percent of a ship that is built in advance of an order	n.r.	7.11%	0.00%	60.00%	0.00%	9
52	Percent of completion of the module at first assembly to the ship on the shipway	n.r.	54.14%	0.00%	90.00%	75.00%	7
53	Average short ton value of the typical modules used in assembly on the shipway	n.r.	278	20	600	300	7
54	Percent of companies that used the following purchasing performance measures:						10
	(Internal) Customer Satisfaction Surveys	44.00%	40.00%				
	(External) Customer Satisfaction Surveys	11.00%	20.00%				
	Supplier Satisfaction Surveys	11.00%	20.00%				
	Cost reduction targets	44.00%	90.00%				
	Economic Value Added (EVA)	n.r.	0.00%				
	Compliance to procure-to-pay process	n.r.	0.00%				
	Cycle-time reduction	33.00%	50.00%				
	Price reduction targets	67.00%	90.00%				
	Supplier base reduction targets	33.00%	30.00%				
	Lost discounts	n.r.	20.00%				
	Return on capital employed	n.r.	0.00%				
	Utilization of performance process	n.r.	20.00%				
	Other:	n.r.	20.00%		Cash Flow; ROA; ROI; Sales; Supplier Base Rightsizing		
55	Average number of active parts (direct) purchased	60,125	90,464	4,000	500,000	26,000	9
56	Percent of direct goods purchased for point-of-use consumption	23.90%	51.15%	2.00%	100.00%	50.00%	10
	Of those direct goods, percent that are supplier-managed inventory	n.r.	21.00%	0.00%	100.00%	2.00%	10

**CAPS Research  
Purchasing Performance Benchmarking Study  
for the Shipbuilding Industry**

#	Benchmarks	Previous Report Mean	Current Mean	Minimum	Maximum	Median	# of Co Reporting
57	Percent of requisitions for direct goods received by buyers in time to meet the need date of the internal customer	70.00%	85.37%	50.00%	99.70%	90.00%	10
58	Percent of purchasing organizations that employ target costing analysis	n.r.	45.45%				11
	Percent that require suppliers to be involved in target costing analysis	n.r.	27.27%				5
	Suppliers involved						
	Tier 1	n.r.	27.27%				4
	Tier 2	n.r.	i.d.				
59	Percent of companies in which the purchasing organization is considered to be a profit center	n.r.	36.36%				11
60	Percent of companies in which the purchasing organization is considered to be a cost center	n.r.	63.64%				11
61	Percent of purchasing organizations that have implemented continuous improvement programs	n.r.	72.73%				11
	Percent of organizations that require key suppliers to implement the program(s)	n.r.	37.50%				8

n.r. indicates a metric not previously reported  
i.d. indicates insufficient data to report the metric