

A Study of the Hospital Supply Chain

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Executive Summary

- ▶ Supply expenses represent the second largest expense for hospitals after labor costs. Thus, effective supply chain (SC) management will greatly improve the bottom line of hospitals.
- ▶ This study aims to understand the supply chain practices of the hospitals in the U.S. and identify factors that are associated with hospital supply chain excellence. Specifically, the study looks at:

- Incentive alignment
- SC Training and competence
- SC Leadership and Senior Management Support
- SC Processes

- Information Systems (IS)
- Data analytics
- GPO relationships
- Internal and external collaboration
- Outsourcing

Disclaimer : *The views represented here does not reflect that of University of Houston or AHRMM. The findings are based on the authors' interpretation of the survey data.*

Executive Summary

- ▶ Overall, participating hospitals appear to actively improve supply chain processes via initiatives such as lean and Six Sigma, process standardization, and benchmarking.
- ▶ Hospitals with higher internal collaboration are associated with higher supply chain savings, while hospitals that collaborate better with external supply chain members (e.g., GPOs) tend to perform better than their peers.
- ▶ Hospitals on average perceive that they have relatively low levels of IS integration, IS planning for supply chain, and incentives for clinical staff to engage in supply chain initiatives.
- ▶ There is still room for improvements in data analytics in hospital SCs, especially in analyzing product utilization, using statistical tools, and tracking supplier performance metrics.

Executive Summary

- ▶ Supply chain leadership, information systems integration, and the percentage of spend through GPOs are the most significant factors that drive supply chain cost savings.
- ▶ Improving procurement costs has the strongest effect on supply cost savings.
- ▶ Improving logistics costs and utilization, and reducing number of SKUs surprisingly have relatively small or insignificant effects on supply chain cost savings.
- ▶ Supply chain training is associated with increased SC performance and savings.
- ▶ Hospitals involved in the AHRMM's CQO movement tend to perform better than those not involved in CQO movement.

Demographics

▶ Number of respondents: 266

▶ Respondents' job title :

▶ Director: 43%

▶ Manager: 21%

▶ Vice President: 12%

▶ Supply Chain Leader: 5%

▶ Assistant Director: 3%

▶ Other: 16%

▶ Hospital profile

Teaching Hospitals: 49%

Non-teaching Hospitals: 51%

Ownership

▶ Government: 14%

▶ Non-profit: 73%

▶ For-Profit: 11%

Hospital Type

▶ IDN: 54%

▶ Single Free Standing: 25%

▶ Multi facility: 18%

Supply Chain Department Profile

- ▶ Title of the supply chain (SC) leader
 - ▶ Director: 59%
 - ▶ Vice President: 22%
 - ▶ Manager: 9%
 - ▶ Chief Supply Chain Officer: 2%
 - ▶ CEO: 2%
 - ▶ Executive Vice President: 1%
 - ▶ Other: 5%
- ▶ Number of supply chain employees
 - ▶ Less than 5: 10%
 - ▶ 5 -10: 10%
 - ▶ 10 – 50: 33%
 - ▶ 51 -100: 17%
 - ▶ More than 100: 30%

In a majority (60%) of the hospitals, the supply chain leader reports to a CFO or Vice President of Finance.

Supply Chain Expenditure and Savings

SC Expenditure		< \$1M	1 to \$10 M	10-\$50 M	\$50-\$100 M	\$100-\$300 M	\$300-\$500 M	>\$500 M
		2%	20%	23%	15%	17%	9%	13%
No savings	1%	*17%						3%
Less than \$1 M	32%	83%	80%	46%	13%	9%		
\$1 - \$5 M	33%		20%	48%	63%	38%	12%	6%
\$5-\$10 M	15%			5%	18%	36%	40%	12%
\$10 - \$20 M	8%			2%	8%	13%	24%	15%
> \$20 M	11%					4%	24%	64%

*The percentage value in each gray-shaded cell represents the percentage of hospitals within each SC expenditure level (each column) that realized a specific level of SC savings

Supply Chain Expenditure and Savings

- ▶ The supply chain cost savings on average are higher in teaching hospitals than non-teaching hospitals.

Teaching Hospitals

SC Savings	SC Expenditure	
	<\$100 million	>\$ 100 million
<\$ 5 million	45	16
\$5 - \$10 million	7	26
>\$ 10 million	5	32

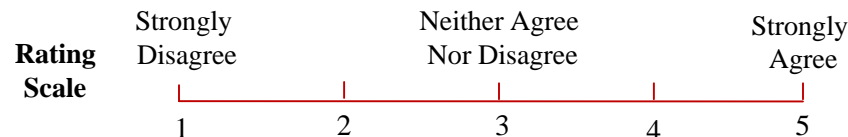
Non-Teaching Hospitals

SC Savings	SC Expenditure	
	<\$100 million	>\$ 100 million
<\$ 5 million	102	11
\$5 - \$10 million	3	4
>\$ 10 million	0	14

*The cell value represents the number of hospitals within each SC expenditure level (each column) that realized a specific level of SC savings

Physician Incentive Alignment

- ▶ In general there is no significant incentives for physicians to help improve supply chain efficiency (3.23 / 5.0).
- ▶ There is virtually no difference between teaching and non-teaching hospitals in terms of incentives for physicians to participate in supply chain cost saving initiatives.
- ▶ There are slightly better incentives for physicians in non-profit hospitals and IDNs than in for profit hospitals among our samples.
- ▶ Overall the number of hospital employed physicians is increasing.



Supply Chain Training and Awareness

- ▶ Supply chain training is higher for non-profit hospitals compared to government and for-profit hospitals.
- ▶ There is no significant difference in training between hospitals of different types (IDN, multi-facility, and single free standing) or teaching status.
- ▶ On average, supply chain awareness is low among physicians and nurses in the hospital.
- ▶ Training is associated with increased SC performance and cost savings.
 - ▶ Hospitals with higher levels of SC training tend to have larger cost savings.
 - ▶ Hospitals with higher levels of procurement and analytic training tend to have lower costs and increased product utilization.

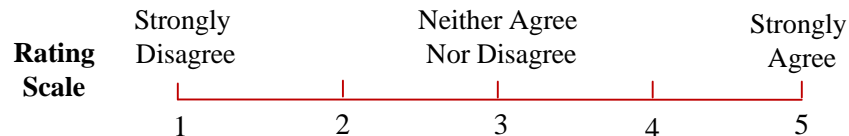
Supply Chain Training

Training	Overall	Teaching Status		Hospital Type			Hospital Ownership		
		Teaching	Non Teaching	IDN	Single free standing	Multi facility	Govt.	For profit	Non-profit
Value Analysis	2.88	2.65	3.11	2.96	2.92	2.71	2.75	2.66	2.96
Negotiation	2.66	2.37	2.95	2.68	2.67	2.62	2.61	2.31	2.73
Contracting	2.82	2.57	3.07	2.86	2.85	2.74	2.83	2.38	2.89
Process Mapping	2.50	2.26	2.75	2.57	2.58	2.33	2.28	2.21	2.61
Lean Management	2.72	2.55	2.89	2.70	2.81	2.70	2.83	2.28	2.79
Data Analysis	2.86	2.69	3.04	2.89	2.88	2.79	2.81	2.52	2.93
Communication	2.75	2.63	2.88	2.68	2.73	2.89	2.72	2.48	2.81
Project Management	2.58	2.39	2.78	2.58	2.60	2.59	2.50	2.14	2.69

Note : The highest rating is 5 and the lowest rating is 1.

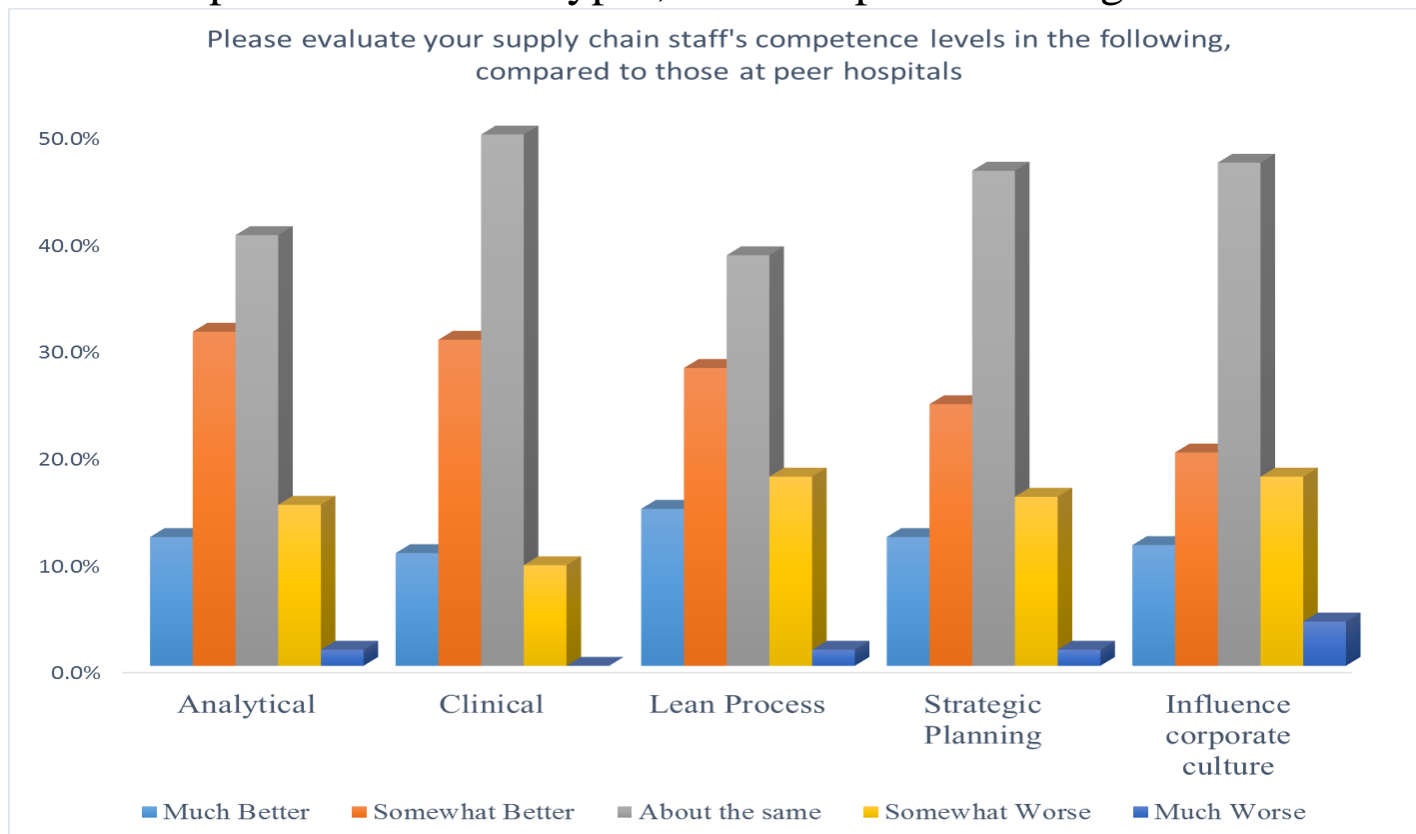
Supply Chain Leadership and Senior Management Support

- ▶ On average hospitals report moderately strong senior management support for supply chain management (3.65/5).
- ▶ Senior management support for supply chain management is lower in government hospitals (3.38/5) when compared to non-government hospitals (3.71/5).
- ▶ Strong SC leadership and senior management support are associated with higher supply chain cost savings and increased supply chain performance.



Supply Chain Competence

- ▶ There are no significant differences with respect to perceived SC competence across hospitals of different types, ownerships or teaching status.



Information Systems

- ▶ IDN and multi-facility hospitals on average have high levels of information systems (IS) planning and integration than single, free-standing hospitals.
- ▶ Teaching hospitals on average have higher levels of IS planning and integration than non-teaching hospitals.
- ▶ IS planning and integration are stronger in non-profit and government hospitals compared to for-profit hospitals.
- ▶ Better IS planning is associated with increased supply chain cost savings.
- ▶ IS integration is positively associated with competitive (relative to peer) performance, while IS planning is positively associated with performance improvements.
- ▶ Overall, information systems in hospitals do not adequately capture the effectiveness of materials and equipment used.

Electronic Linkages with Supply Chain Partners

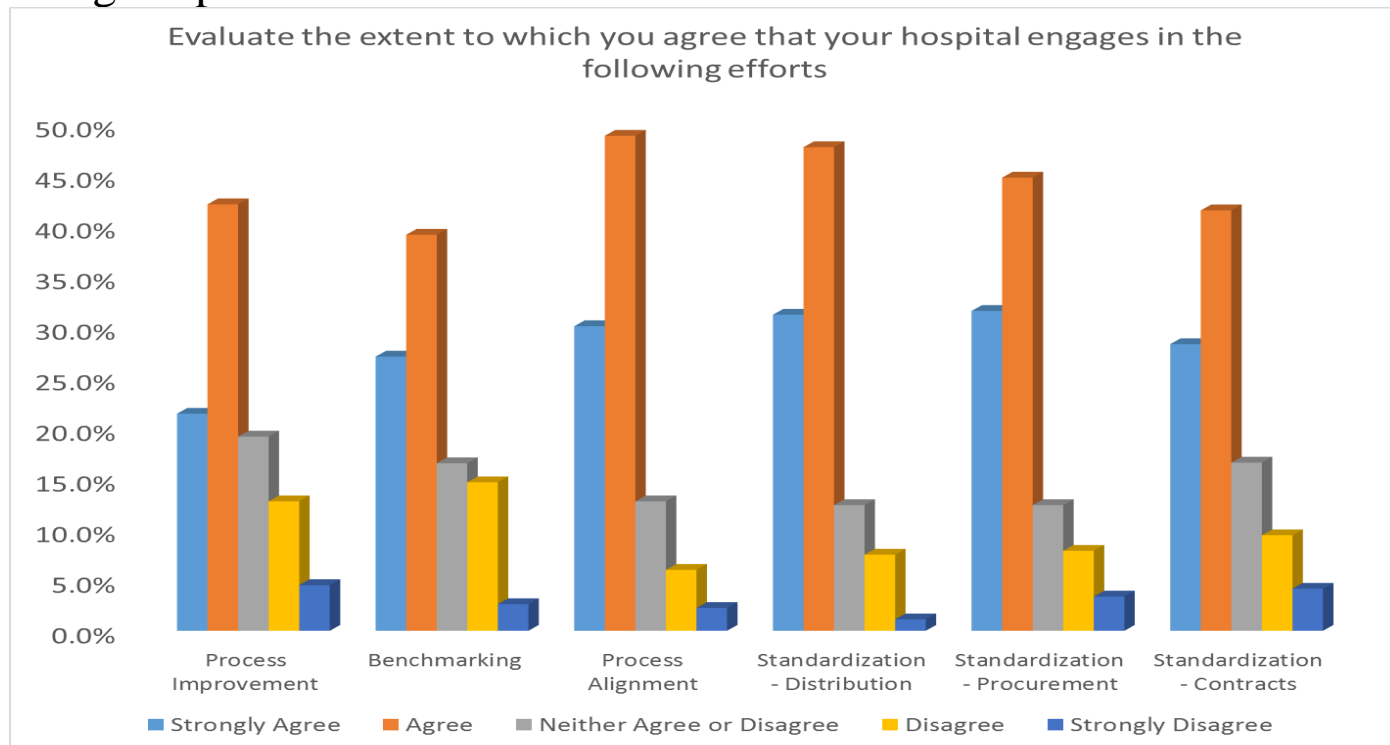
- ▶ Hospitals have stronger electronic linkages with distributors (4.07/5) and GPOs (4/5) than with vendors (suppliers) (3.58/5).
 - ▶ This may be because a majority of hospitals probably do not transact directly with vendors.
- ▶ Single, free-standing hospitals have the weakest electronic linkage in each category.
- ▶ Non-profit hospitals have the strongest electronic linkage in each category.
- ▶ Teaching hospitals have stronger electronic linkages than non-teaching hospitals.

Outsourcing

- ▶ Outsourcing levels are relatively high in the areas of support services (2.96/5), but hospitals on average have relatively low outsourcing levels in the areas of distribution (1.71/5), procurement (1.62/5), contracting (1.82/5), IT services (1.94), and clinical services (2.04).
 - ▶ These findings are interesting since prior studies report that IT services and clinical services are major areas of hospital outsourcing.
- ▶ For-profit hospitals outsource to a greater extent than non-profit and government hospitals.
- ▶ Multi-facility hospitals outsource to a greater extent when compared to single free standing hospitals.
- ▶ The level of outsourcing has no significant association with supply chain cost savings.
- ▶ Outsourcing IT services is negatively associated with supply chain improvement metrics, while outsourcing distribution services is positively associated with increased supply chain performance relative to peers.

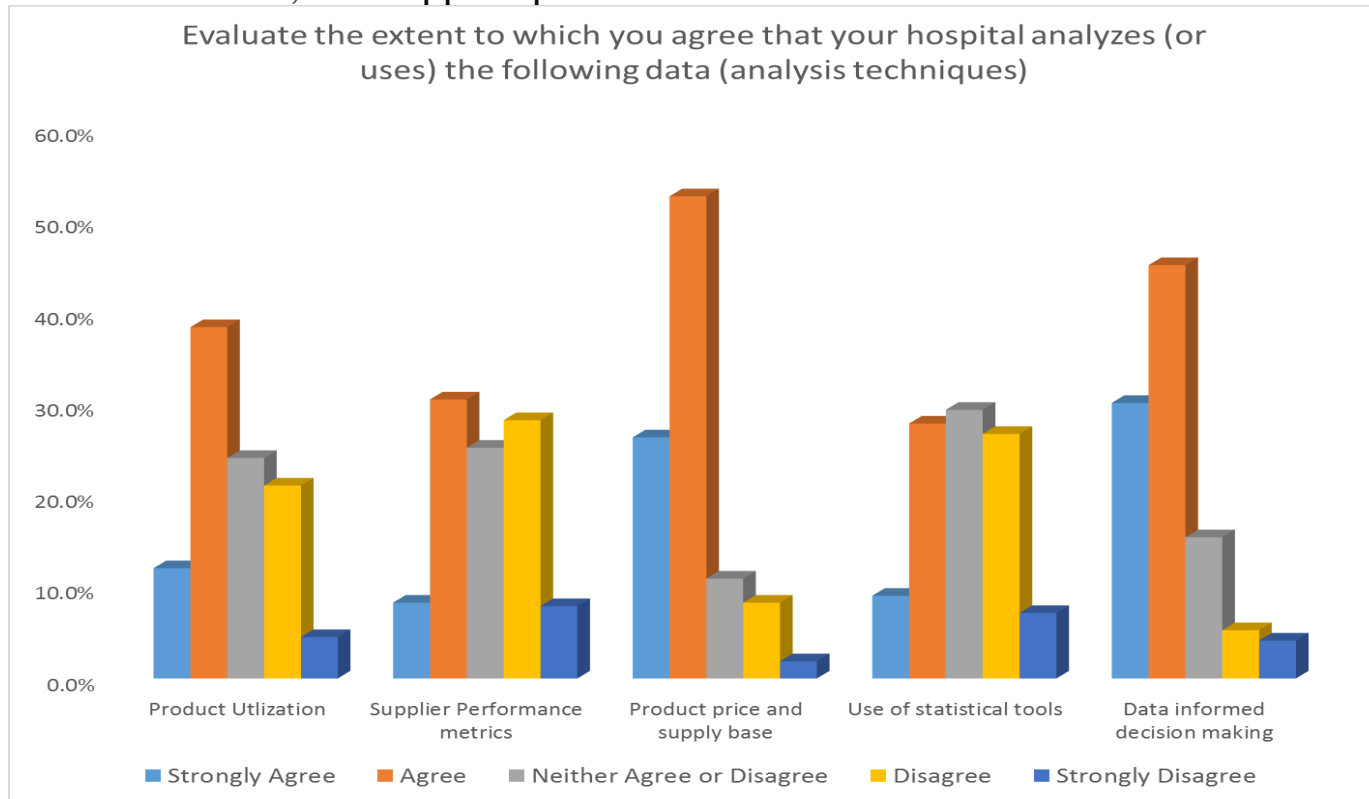
Supply Chain Processes

- ▶ Hospitals on average are committed to supply chain process standardization and improvements.
- ▶ Teaching hospitals are more committed to process standardization than non-teaching hospitals.



Data Analytics

- ▶ Hospitals on average do not adequately utilize and analyze the data available to them, suggesting room for improvements, especially in the areas of product utilization, use of statistical tools, and supplier performance metrics.



Coordination and Collaboration

- ▶ Hospitals in a multi-hospital system generally coordinate supply chain activities to a high extent at the system level (4/5).
- ▶ Internal collaboration is significantly associated with hospital supply chain cost savings.
- ▶ External collaboration is significantly associated with both logistics and procurement cost improvements.
- ▶ Hospitals with higher external collaboration tend to perform better than their peers.

Value Analysis Team

- ▶ The vast majority of hospitals (95%) have a value analysis team (95%).
- ▶ Only a small percentage of value analysis teams have a physician as the team leader (20%).
- ▶ Hospitals with physician-led value analysis teams tend to be associated with slightly better supply chain performance.
 - ▶ With one exception: hospitals with physician-led value analysis teams tend to be less inclined to reduce the number of SKUs.

GPOs

- ▶ On average, 65% of the hospital supply spend is through GPOs. But this percentage varies by hospital types, ownership and teaching status.
- ▶ The percentage of supply spend through GPOs
 - ▶ By Teaching Status : Teaching: 60%; Non Teaching: 70%
 - ▶ By Ownership: Non-profit: 64%; Government: 70%; For profit: 70%
 - ▶ By Types: Multi-facility: 60%; IDN: 63%; Single free-standing: 73%
- ▶ 60% of the sample hospitals are associated with only one GPO;30% are associated with two GPOs; only 8% are associated with three GPOs.

GPOs

- ▶ The GPO services used by hospitals to a relatively high extent include:
 - ▶ Benchmarking with peer hospitals (3.64/5)
 - ▶ Assistance in supply chain analysis and improvements (3.66/5)
 - ▶ Selecting and standardizing materials (3.82/5)
- ▶ Hospitals indicate that they are more likely to have multiple suppliers for physician preference items (4/5) than for commodity items (3.28/5).
- ▶ Single, free-standing hospitals have a higher dependency on GPO contracts than IDN and multi-facility hospitals (3.60/5 versus 3.25/5 and 3.38/5).

GPOs

- ▶ Increased use of GPO services is associated with lower logistics costs, lower procurement costs, and increased product standardization.
- ▶ As expected, a higher percentage of spend through GPO contracts is associated with lower procurement costs.
- ▶ There is wide consensus among hospitals that GPOs provide more than one vendor for their product choices.

CQO and SC performance

- ▶ Hospitals involved in COQ initiatives tend to perform better in each performance dimension.

SC Performance	Hospital not involved in COQ initiative	Hospital involved in COQ initiative
^a Logistics Cost Improvements	3.63	3.81
^a Procurement Cost Improvements	3.78	4.04
^a Contract Flexibility Improvements	3.51	3.87
^a Improvements in Product Utilization	3.60	3.64
^b Logistics Cost*	3.45	3.64
^b Utilization	3.36	3.58
^b Number of SKUs	3.30	3.48
^b Percentage of Supply Cost	3.49	3.68

^aImprovements in the last three years; ^bPerformance compared to peer hospitals

Drivers of Supply Chain Cost Savings

- ▶ Supply chain leadership, information systems integration, the percentage of spend through GPOs are significant drivers of supply chain cost savings.
- ▶ Procurement cost improvements are positively associated with supply chain cost savings. Logistics cost improvements, however, are negatively associated with supply chain cost savings.
- ▶ Using multiple suppliers for preference items are positively associated with supply chain cost savings; using multiple suppliers for commodity items has a smaller positive effect on supply chain cost savings.

Note : The results are based on regression analysis which controlled for hospital total spend, ownerships, types, and teaching status