

LOAD OPTIMIZATION

THE CRITICAL LINK IN TRANSPORTATION EFFICIENCY

With fuel prices on the rise, drivers in short supply, a diverse product mix and strict customer requirements, order fulfillment has become an increasingly complex process. Consumer goods (CG) manufacturers are faced with uncontrollable costs that are squeezing the margins in an already competitive market, and the spotlight is turning to transportation management to help manage costs. Specifically, companies are looking to optimize the loads being shipped via various methods, whether truck, ship or rail. In addition to keeping on top of the rising cost of fuel, pressure to be green has companies striving to make shipments more efficient.

To get a better understanding of current transportation utilization in the CG industry, CGT partnered with ORTEC this month to ascertain what the challenges are in this critical process and how companies are attempting to improve their load efficiency. We also took a closer look at who is responsible for load management, how much flexibility companies have in adjusting orders to optimize shipments and if technology is being leveraged. The results aren't surprising — current load optimization rates leave room for improvement and companies who take advantage of existing technology to make improvements will realize substantial cost savings, particularly for fuel.

CURRENT STATUS

Before getting into the complexities of load management, it's important to understand current usage levels. Figure 1 shows the level of cube utilization in the respondents' given mode of transportation, whether its truck, rail or ship. The good news is that one-third of those surveyed are utilizing more than 90 percent of their given mode of transportation. The bad news is that two-thirds are far less efficient with 17 percent utilizing 50 percent to 74 percent of loads and 10 percent are shipping half-empty containers. When considering weight utilization, the numbers are almost identical, with one-third using more than 90 percent and 30 percent utilizing less than 74 percent. Many companies (38 percent) both weigh out and cube out shipments, but 38 percent just cube out and 24 percent just weigh out.

Environmentalists would argue that even 90 percent is inefficient, yet with the complexity in load rules companies are sometimes forced to set capacity limits lower than they would in ideal situations with no restrictions. When we asked our respondents about the percentage of shipments they are forced to set lower capacity limits to ensure adherence to load rules, 20 percent responded that this

FIGURE 1

How much cube are you utilizing in your given mode of transportation?

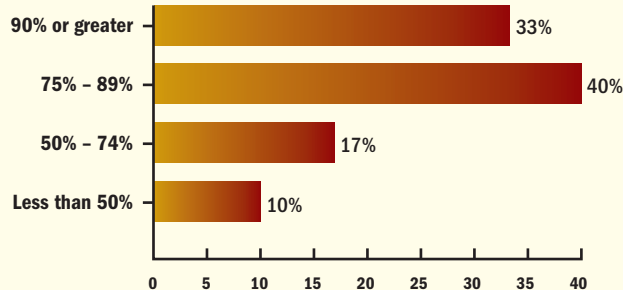
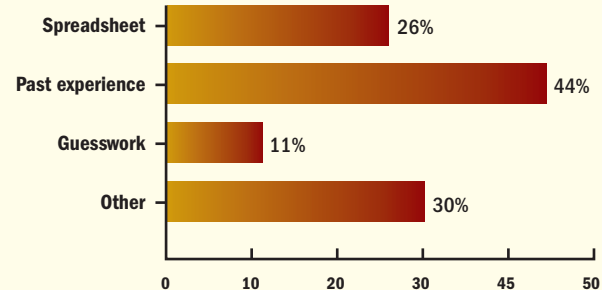


FIGURE 2

How does your business manage stackability and weight constraints?



NOTE: multiple responses permitted

FIGURE 3

For what do you rely on your personnel?

	Warehouse Personnel	Customer Service Personnel
Ensure asset utilization	7%	3%
Make decisions on cutting and splitting orders	10%	47%
Ensure that pallets are built optimally	28%	0%
All of the above	41%	13%
None of the above	14%	37%

practice impacts more than 90 percent of their shipments. Another 10 percent set lower capacity limits on 75 percent to 89 percent of shipments, but a full 50 percent reported that this practice impacts less than 50 percent of shipments.

ORDER COMPLEXITY = SHIPPING COMPLEXITY

In addition to load rules, CG companies must adhere to business rules involving order and shipment quantities that sometimes adversely impact a company's ability to reconcile optimal loads with ordering quantities. Sometimes customer orders are received and processed without much emphasis on real cube or weight utilization, particularly for standard turn business. If the customer has been sending orders that consume 28 floor positions in a normal 53-foot trailer, those orders are usually accepted and shipped on 28 floor positions without looking at what else could go along with that shipment.

Business rules enforced by customers, however, often dictate how much flexibility suppliers have regarding order quantities. We asked about three types of orders: the majority of our respondents are able to increase (upsized or add swing items) to stock transfers or VMI (62 percent) and sales orders (60 percent), but only 38 percent are able to combine interplant and customer direct orders.

CALCULATING LOADS

Calculating the optimal load is a challenge all CG companies face, and unfortunately, it is a manual process for many organizations. Figure 2 depicts how most companies manage stackability and weight constraints when managing shipments. For some companies, technology plays a role: 26 percent leverage spreadsheets while the 30 percent that responded "other" are using formal enterprise software systems. Many rely on past experience (44 percent), oftentimes in conjunction with a technology-based tool, but 11 percent are still guessing.

Less than one-third of those surveyed believe their current technology solves their load building requirement, despite attempts to provide tools to help. This is often due to the complexity of managing orders in conjunction with load optimization goals. Many traditional TMS and WMS solutions only look at cube or

weight, for example, and do not take into account full order footprint, including business rules and loading restrictions that must be adhered to. Promotions add another wrinkle as they are balanced with turn replenishments to try and avoid out of stocks at the retail shelf. All of these factors must be combined to truly optimize loads and reduce costs.

EXECUTION

Regardless of how the load is calculated, building a shipment is often a manual process and success depends on people executing properly. Figure 3 shows the division of labor between warehouse personnel and customer service per-

MORE THAN TWO-THIRDS OF RESPONDENTS ARE UTILIZING LESS THAN 90% OF THEIR GIVEN MODE OF TRANSPORTATION.

sonnel. Warehouse personnel are called on to ensure that pallets are built optimally and decisions on cutting and splitting orders are made in conjunction with customer service. Customer service is typically not involved in ensuring asset utilization or building optimal pallets, while 41 percent of companies surveyed claim that warehouse personnel are relied upon for asset utilization, cutting/splitting orders, and building pallets.

To get instructions to those warehouse personnel, particularly pickers and loaders, technology is again found in various forms. Graphical instructions are provided by 39 percent of companies, while past experience or guesswork is used by 33 percent of respondents. **CG**

VENDOR PERSPECTIVE

Reducing Logistics-Related Spend

Like most consumer products manufacturers, there is the need to provide incentives for their customers to place orders in full truckload (FTL) quantities based on the total "cube" of the order. Some consumer products customers use trade spend incentives to improve truckload utilization. There are new and innovative ways to reduce logistics-related spend. ORTEC's load optimization and route planning solutions have enabled advanced visibility to address the problem. ORTEC's embedded SAP solutions have been proven to reduce overall transportation costs for several of the top 50 *Fortune* 500 companies by 5 percent to 15 percent.

With ORTEC's solution in place, SCA Tissue is realizing immediate benefits. "We have seen significant value from day one. In the short time since implementation, we have already increased the size of our FTL orders by an average of approximately two full pallets," says Mike Jansen, vice president of Supply Chain Management for SCA Tissue.

Advanced visibility can give customer service the intelligent capability to understand at order taking time how much the order is actually consuming in the truck. This ability provides answers to questions such as; "how many floor pallets and true space has the order consumed," "are order policies such as ordering in layered quantities being respected" and "which swing item will fill out the truck if additional room is available?"

In the case of less than truckload (LTL) orders, the ability to consolidate orders in advanced is another area

of opportunity. Traditionally, big box store retailers require a significant amount of orders be consolidated together for multi-stop deliveries. Customer service personnel normally consolidate the loads through instructions and experience. This situation may cause multi-stop deliveries to be either too large for one truck or require complicated loading requirements.

Companies are in need of a solution that can in advance identify the optimal pallet and vehicle sizes while also identifying optimal load consolidation. ORTEC's solutions have addressed these requirements using years of operations research, global industry knowledge and experience. The solution focuses on five components to meet the complex requirement of building optimal cartons, pallets, vehicles, consolidation and picking to meet high delivery service levels while addressing customer service constraints. The approach to solving the requirements is addressed by providing embedded SAP solutions in the logistics execution system as well as comparable solutions for the non-SAP environments. ORTEC has developed solutions that complement SAP directly in the areas of customer orders, stock transfers, deliveries and shipping. The consumer products customer complexities has been cut down by simultaneously palletizing the order, building the vehicle, consolidating the loads, identifying the routes if required all in one transaction set within SAP. In addition, these results are developed into picking strategies for warehouse operations.

Consumer products companies embedded the solutions to provide advance visibility and optimization. The key advantage? Decision making in advance to upsize customer and VMI orders, increase interplant transfer loads, sequenced instructions to loaders, optimal routing for dedicated fleets, as well as mobile voice picking capabilities. In particular, beverage and packaged goods companies have gained a significant amount of freight savings and increased load efficiencies. Since the solutions are embedded into the SAP environment, IT requirements are also reduced because there is no need for integration layers. The SAP user experience does not require the use of multiple systems like traditional bolt-ons.

Looking forward, companies will require these capabilities even more to address the changing retailer requirements, the growing automation and continued IT consolidation trend.

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ORTEC
PROFESSIONALS IN PLANNING

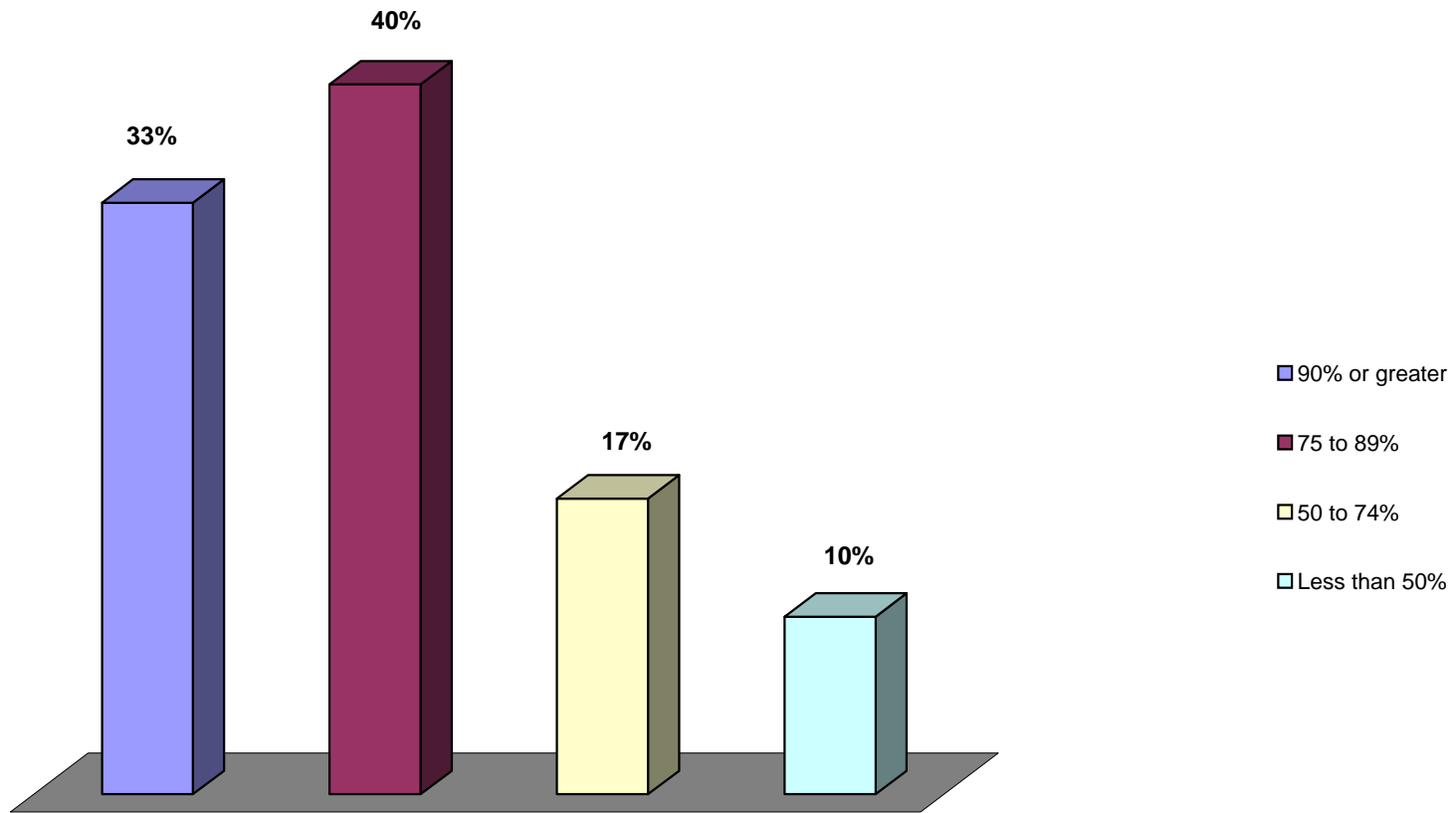


***Consumer Goods Technology
Load Optimization***

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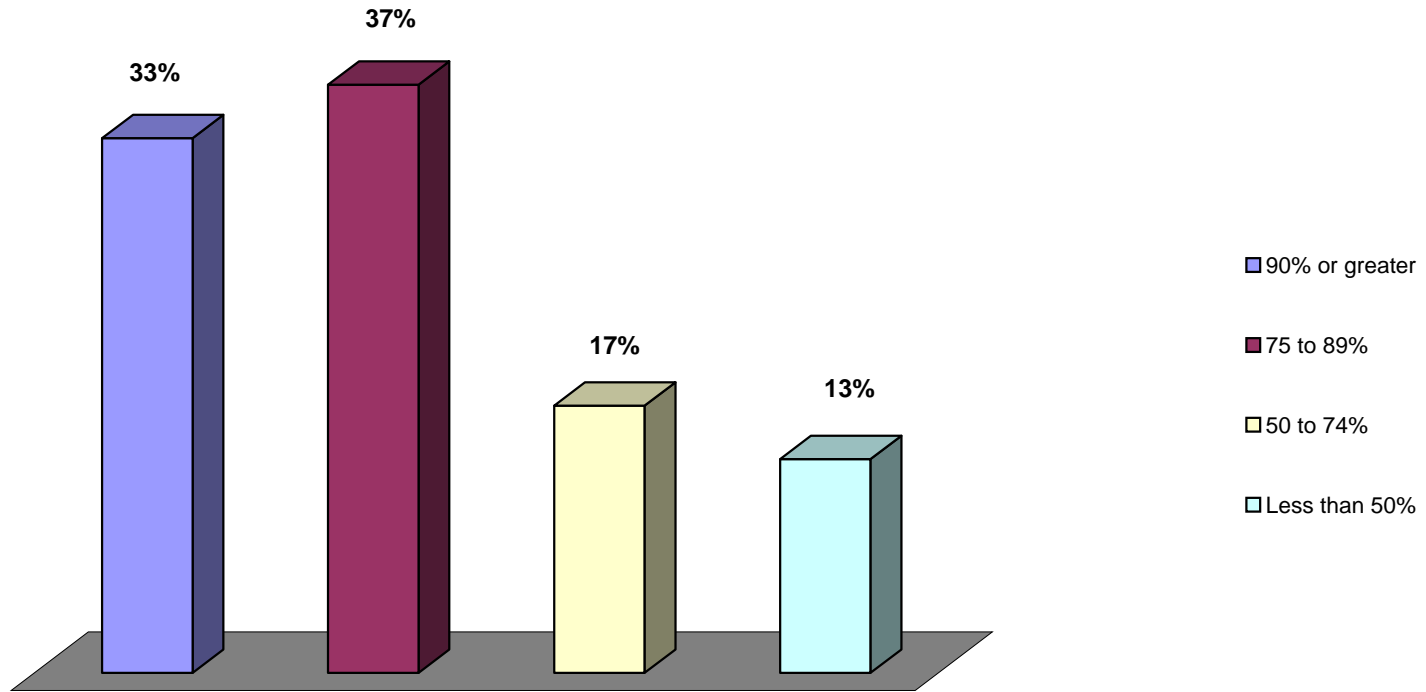
1. How much cube are you utilizing in your given mode of transportation (truck, rail, export, etc.)?

Cube	%
90% or greater	33%
75 to 89%	40%
50 to 74%	17%
Less than 50%	10%



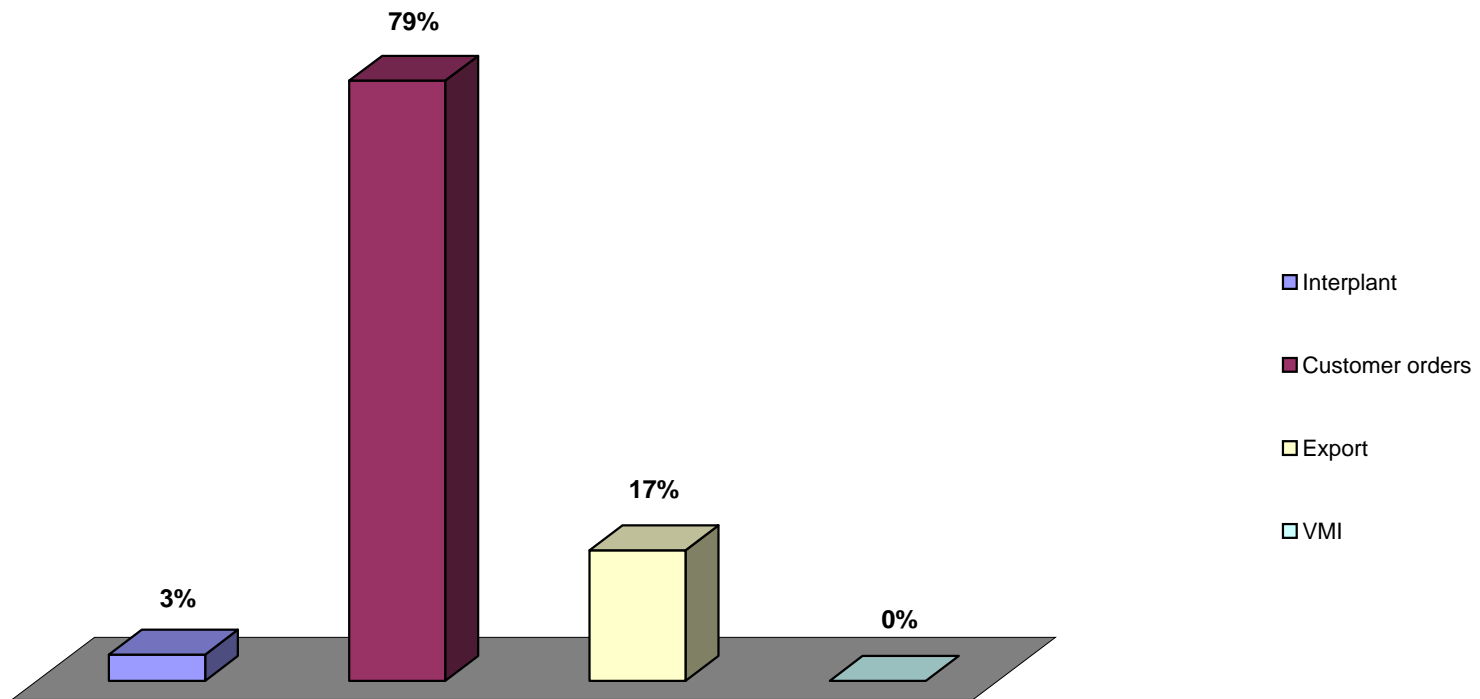
2. How much weight are you utilizing in your given mode of transportation (truck, rail, export, etc.)?

Weight	%
90% or greater	33%
75 to 89%	37%
50 to 74%	17%
Less than 50%	13%



3. Which part of your business would benefit the most from load optimization?

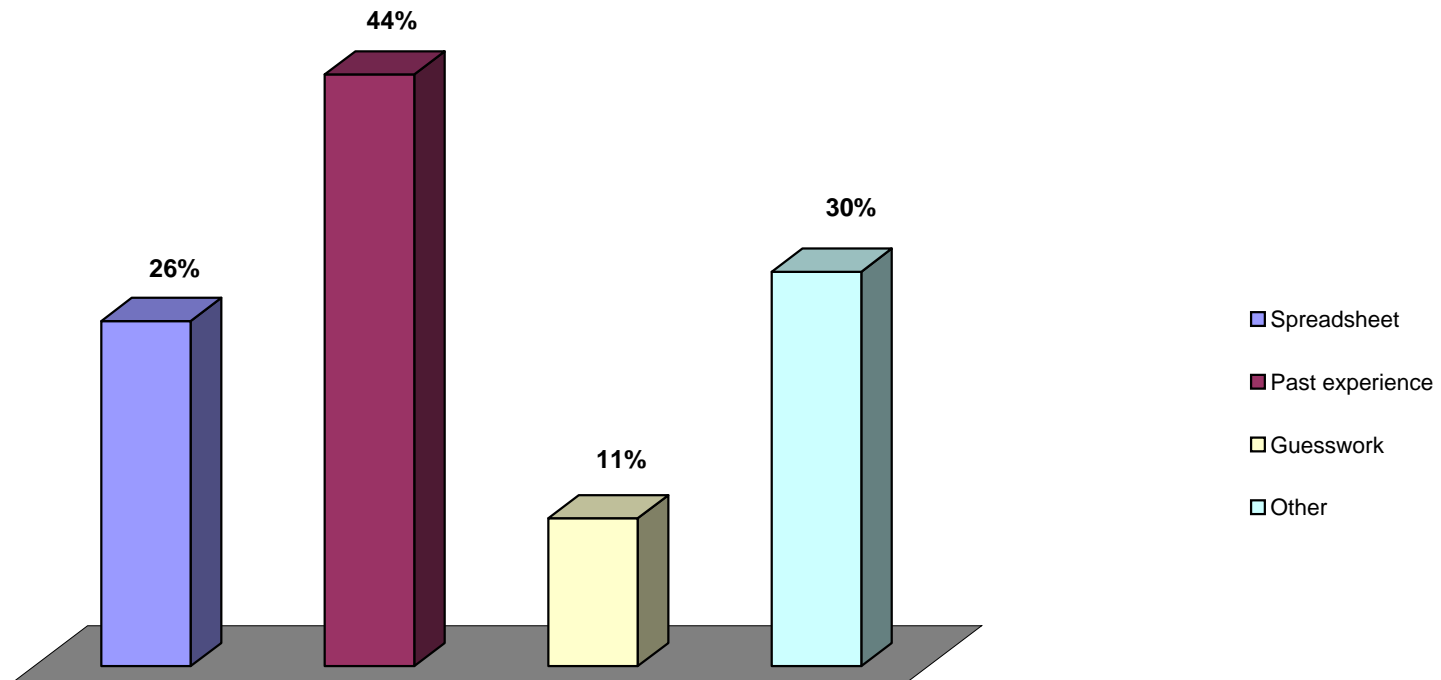
Business	%
Interplant	3%
Customer orders	79%
Export	17%
VMI	0%



4. How does your business manage stackability and weight constraints?

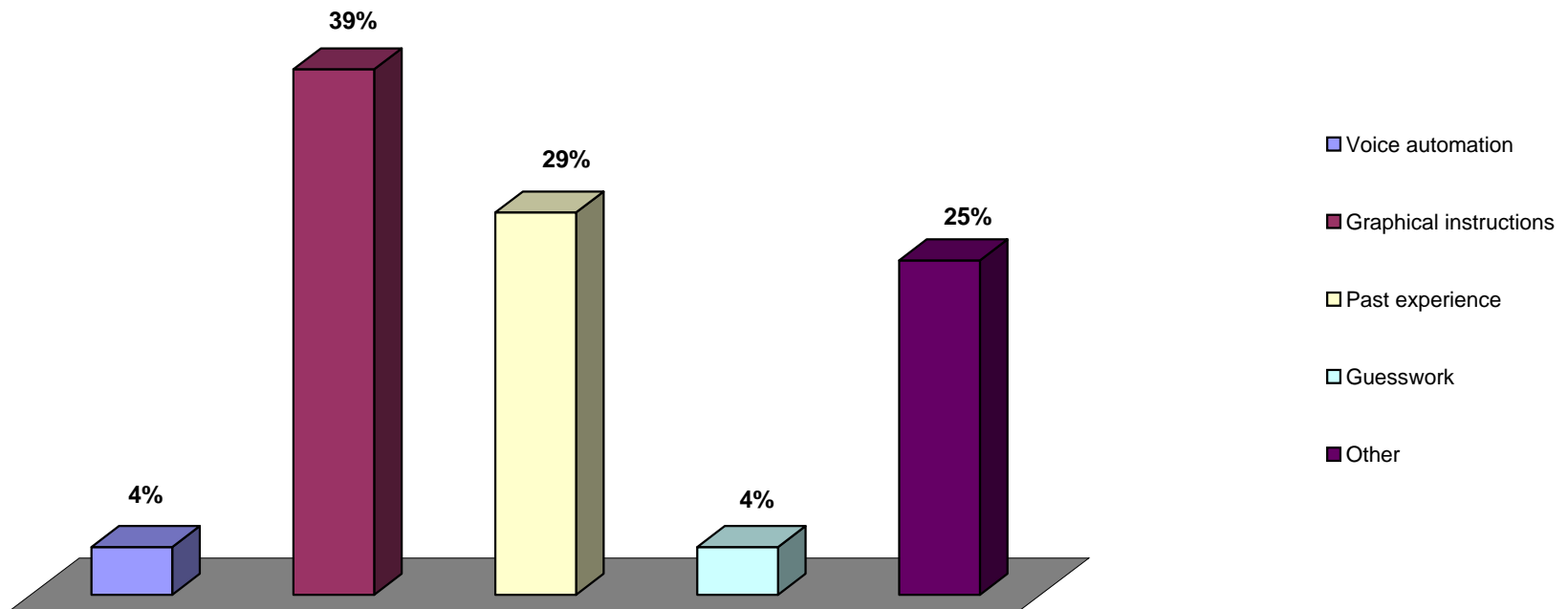
(Multiple responses permitted)

Stackability and Weight	%
Spreadsheet	26%
Past experience	44%
Guesswork	11%
Other	30%



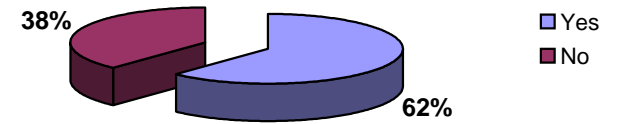
5. How do you provide instructions to the pickers and loaders?

Instructions	%
Voice automation	4%
Graphical instructions	39%
Past experience	29%
Guesswork	4%
Other	25%



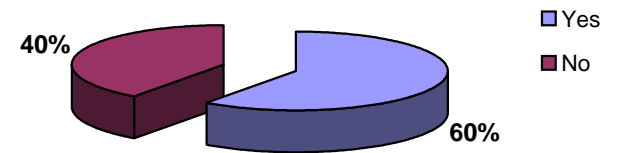
6. Do you have the ability to increase (upsize or add swing items) any of your stock transfers or VMI?

Increase stock transfers or VMI?	%
Yes	62%
No	38%



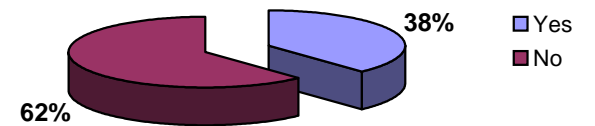
7. Do you have the ability to increase (upsized, upsell, or add swing items) any of your sales orders?

Increase sales orders?	%
Yes	60%
No	40%



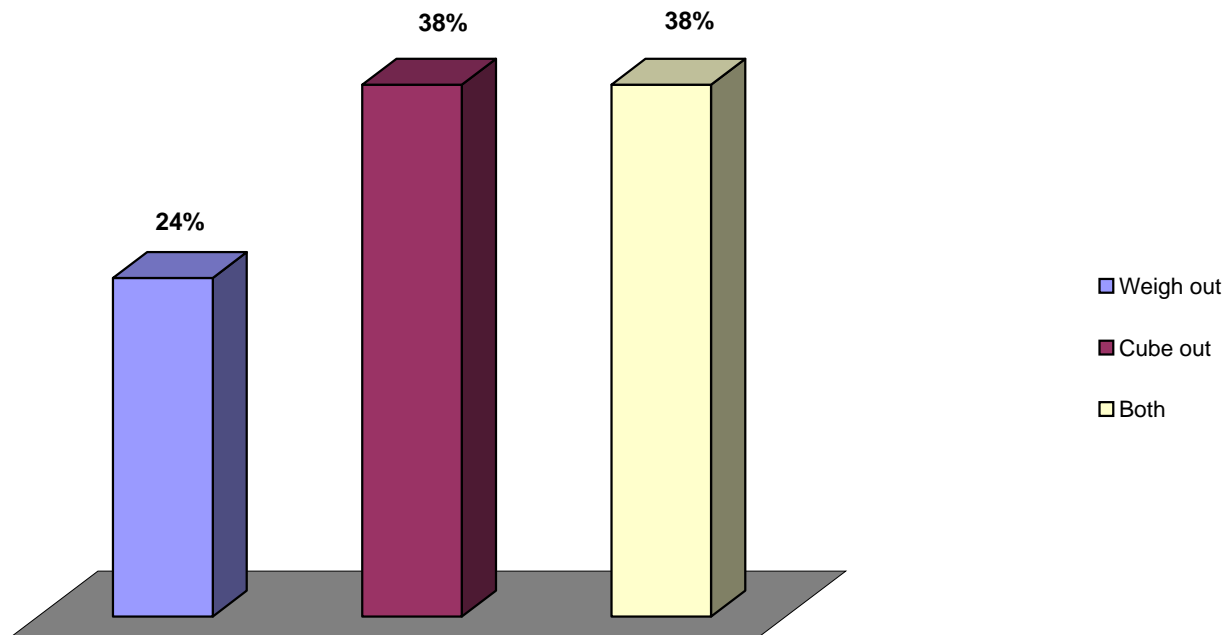
8. Can you combine interplant and customer direct orders?

Combine interplant and customer direct orders?	%
Yes	38%
No	62%



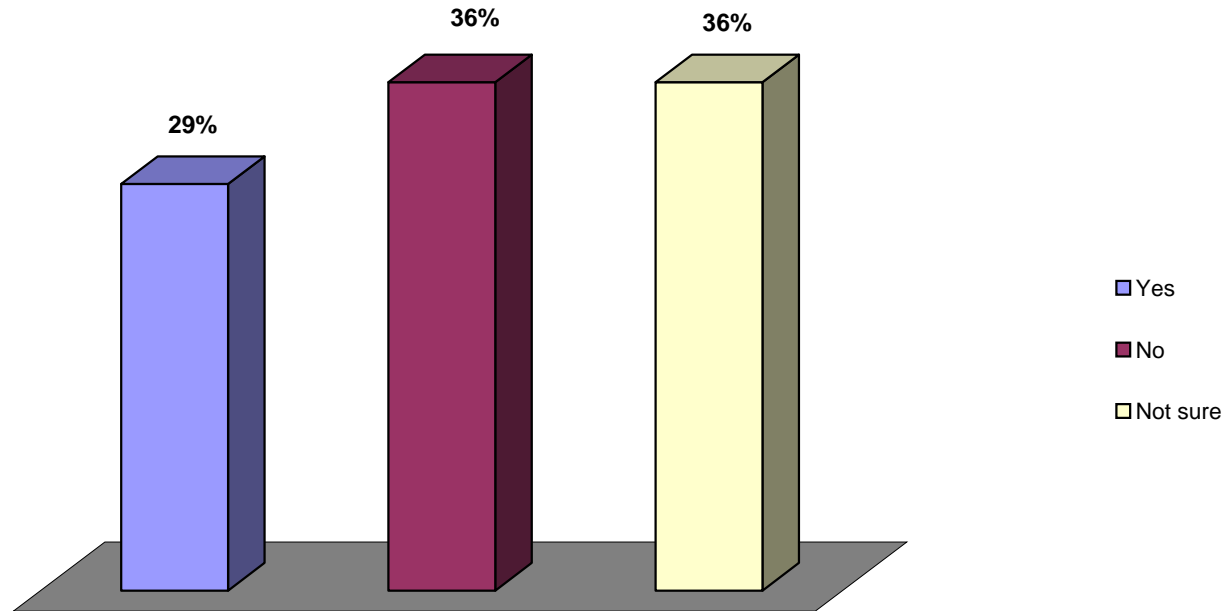
9. When shipping your products, do you:

Process	%
Weigh out	24%
Cube out	38%
Both	38%



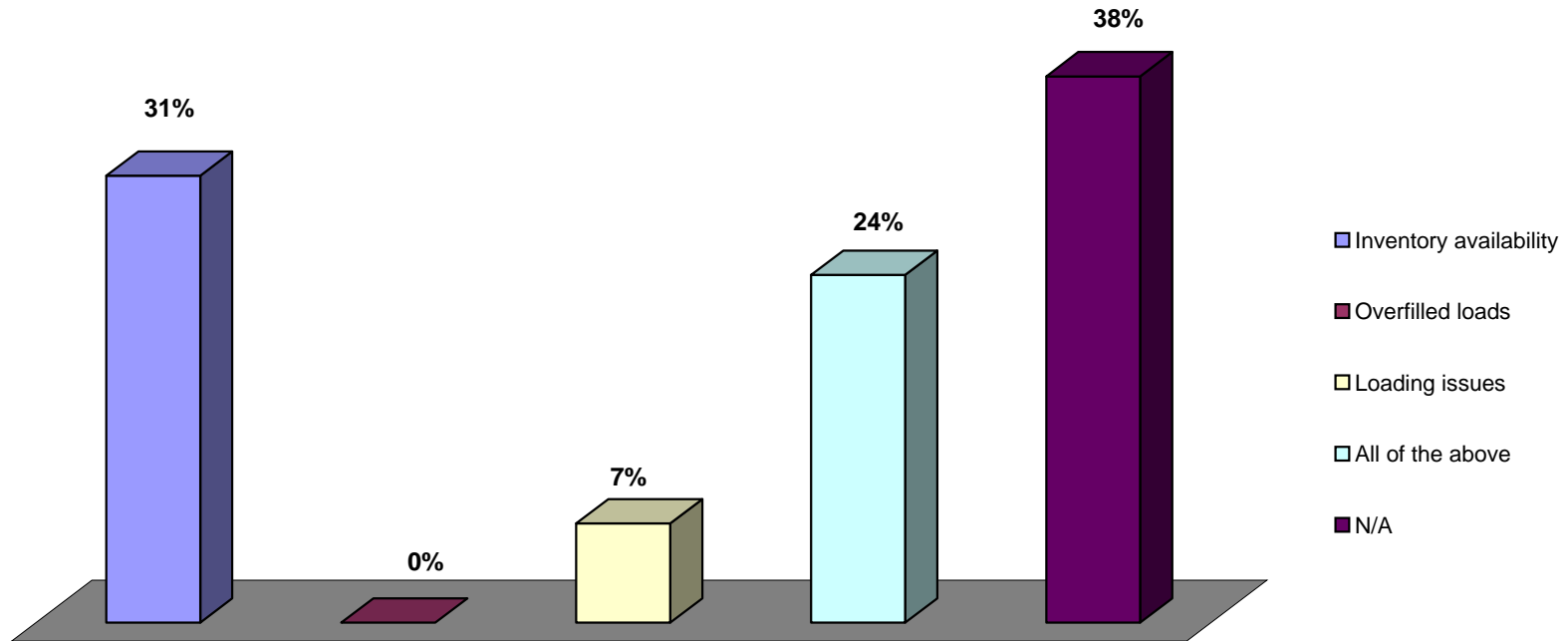
10. Do you believe your current TMS/WMS solves your load building requirements?

Solves requirements?	%
Yes	29%
No	36%
Not sure	36%



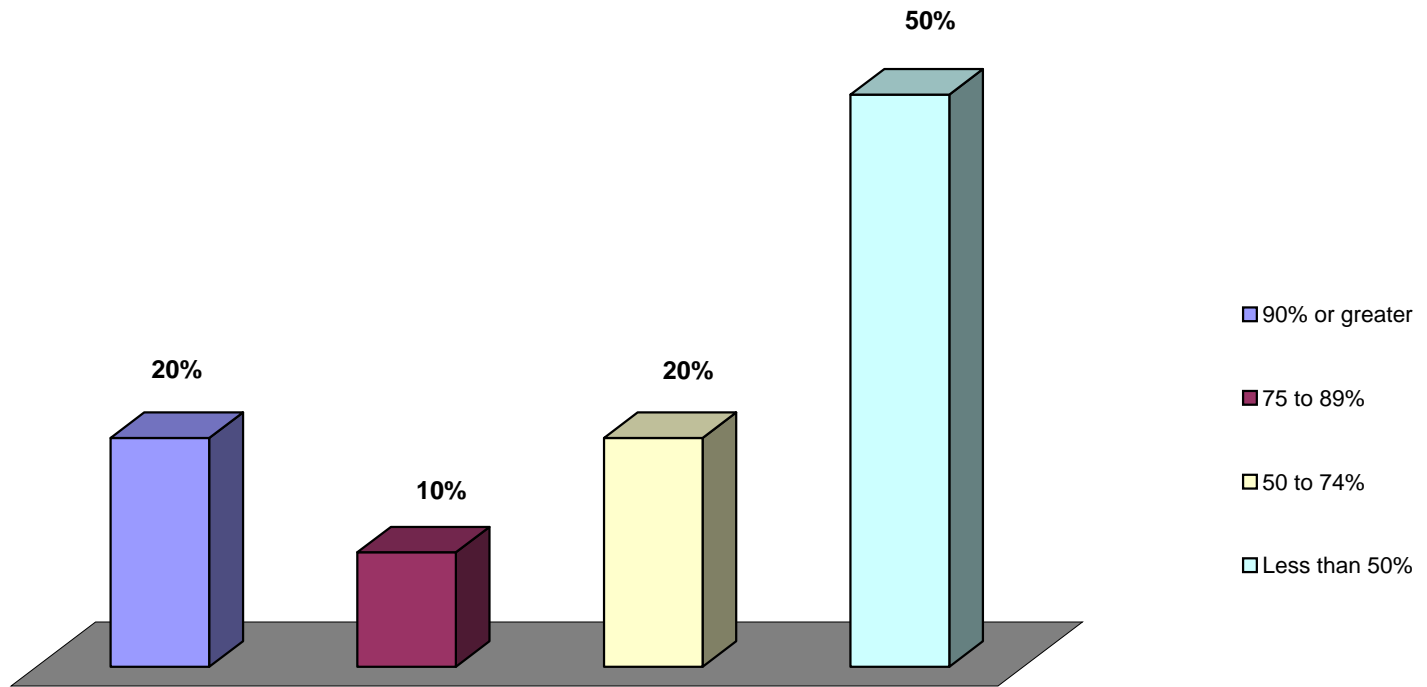
11. Do you lose shelf space if your order is not delivered/received because of:

Lose shelf space?	%
Inventory availability	31%
Overfilled loads	0%
Loading issues	7%
All of the above	24%
N/A	38%



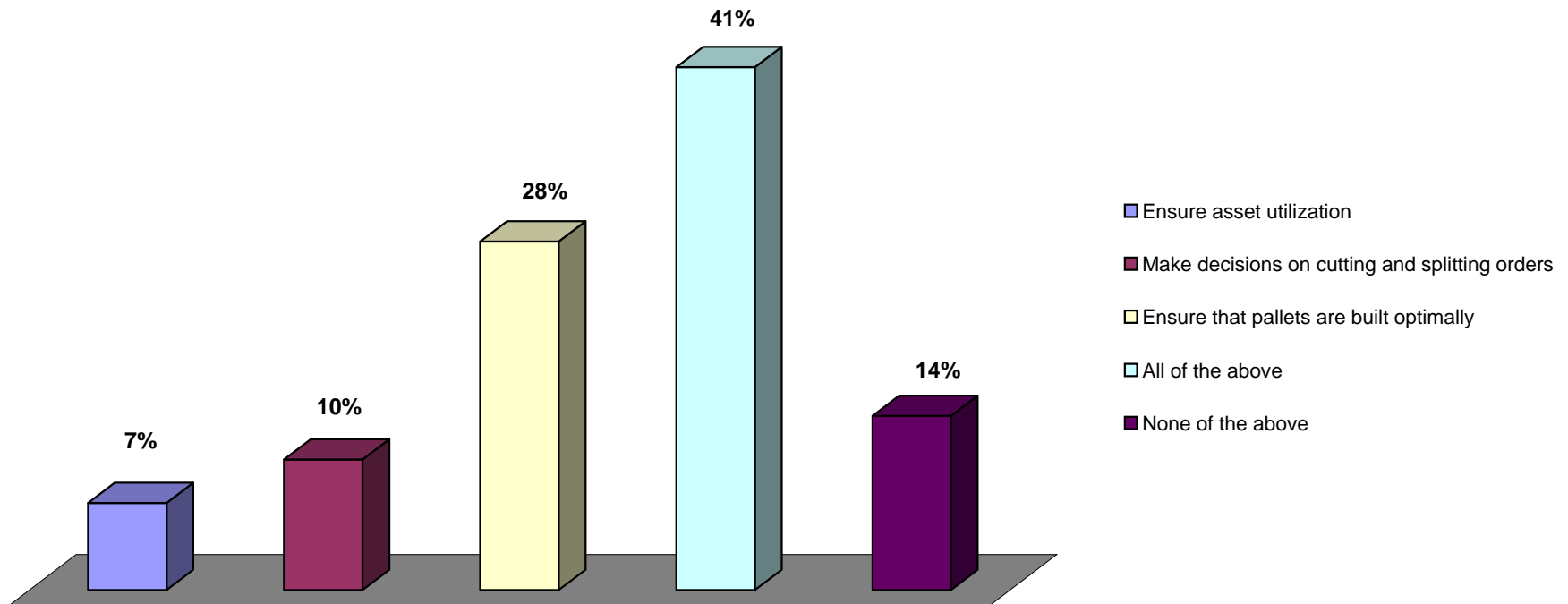
12. What percentage of your shipments are you forced to set capacity limits low to ensure adherence to load rules?

Set capacity limits	%
90% or greater	20%
75 to 89%	10%
50 to 74%	20%
Less than 50%	50%



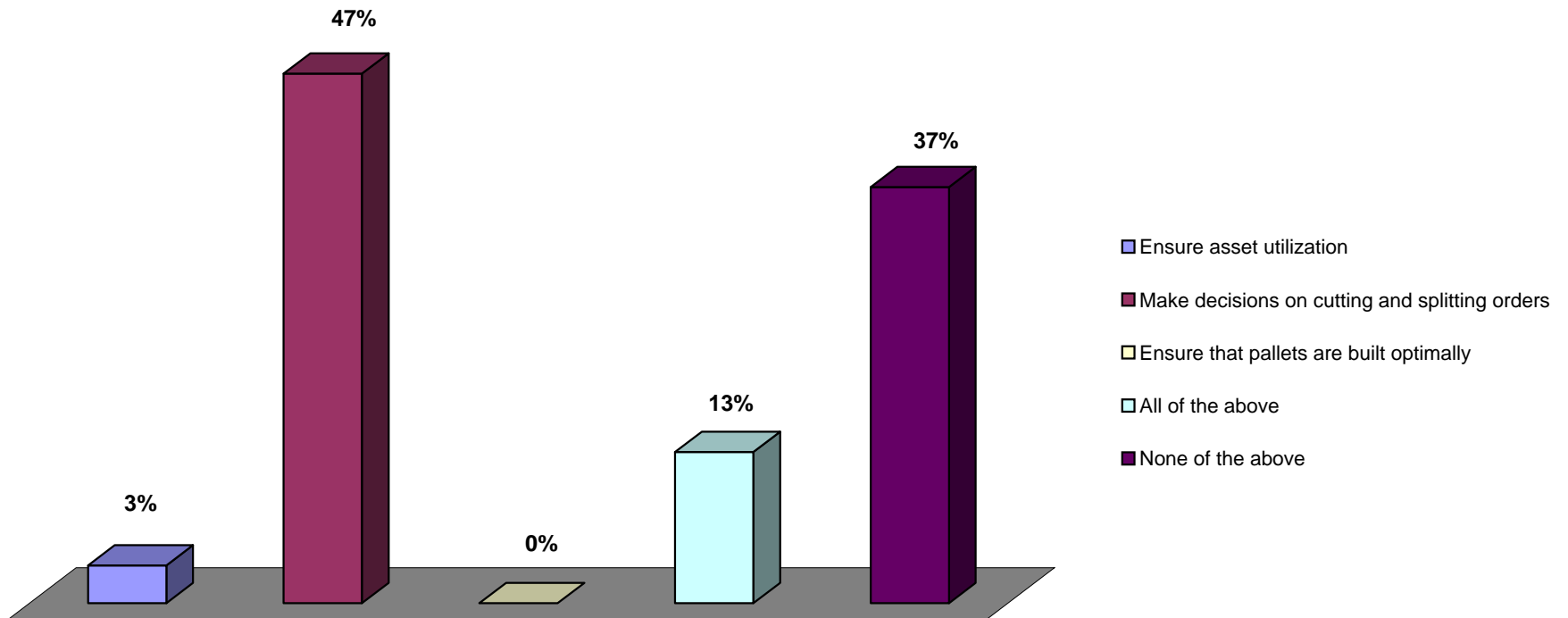
13. Do you rely on warehouse personnel to:

Warehouse personnel	%
Ensure asset utilization	7%
Make decisions on cutting and splitting orders	10%
Ensure that pallets are built optimally	28%
All of the above	41%
None of the above	14%



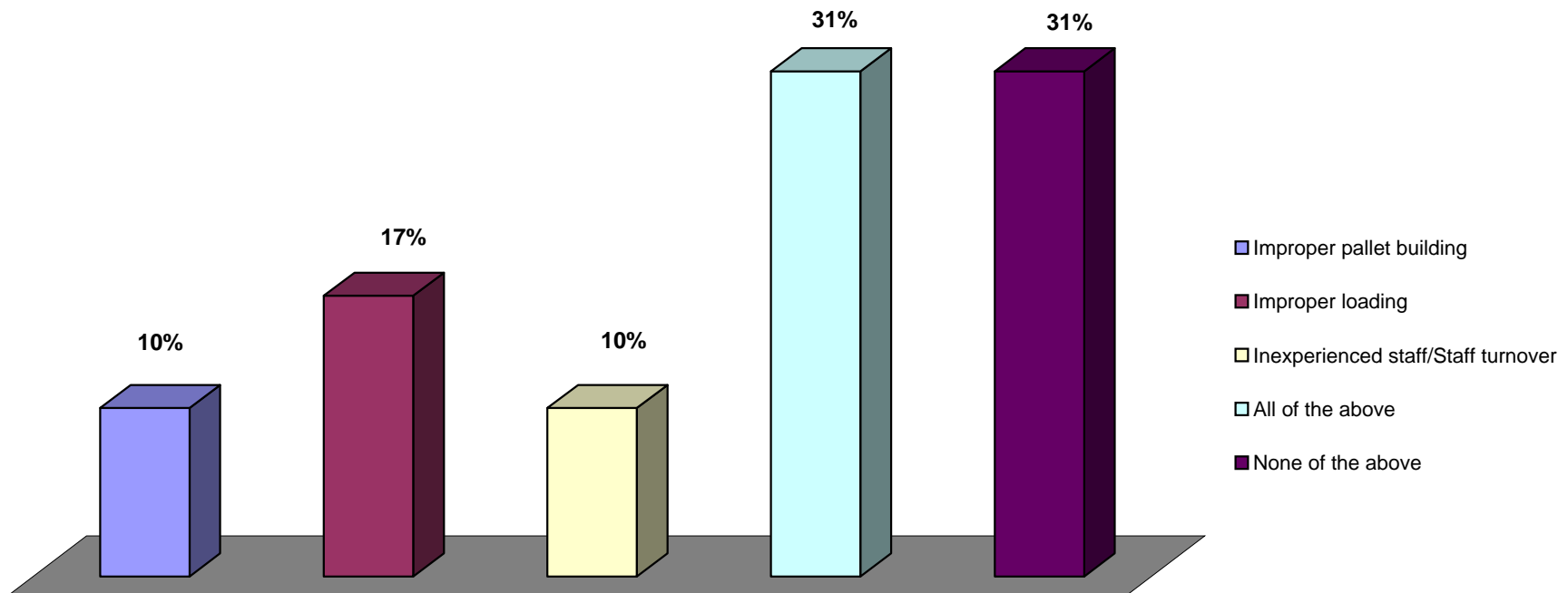
14. Do you rely on customer service to:

Customer service	%
Ensure asset utilization	3%
Make decisions on cutting and splitting orders	47%
Ensure that pallets are built optimally	0%
All of the above	13%
None of the above	37%



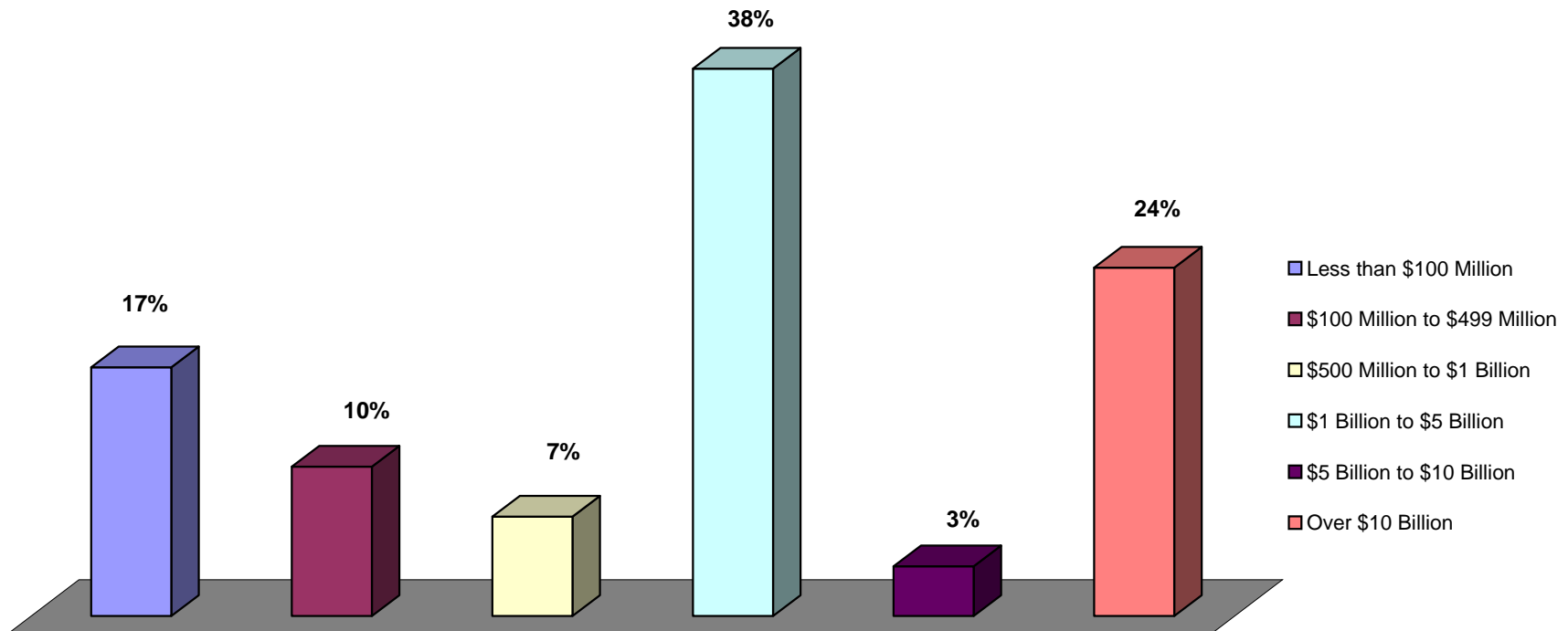
15. What are your major challenges with mixed load shipments?

Mixed load shipments	%
Improper pallet building	10%
Improper loading	17%
Inexperienced staff/Staff turnover	10%
All of the above	31%
None of the above	31%



16. What was your company's annual revenue for 2006?

2006 Revenue	%
Less than \$100 Million	17%
\$100 Million to \$499 Million	10%
\$500 Million to \$1 Billion	7%
\$1 Billion to \$5 Billion	38%
\$5 Billion to \$10 Billion	3%
Over \$10 Billion	24%



17. What product segment do you primarily manufacturer/distribute?

Product segment	%
Food	27%
Beverage	7%
Health/Beauty	13%
Household goods	20%
Footwear/Apparel	10%
Consumer electronics	7%
Other	17%

