



Supply Chain Insights

Packaging Development Study

Summary Charts
June – August 2012





Agenda

- **Study & Respondent Overview**
- Packaging & Artwork Performance
- Packaging Sustainability
- New Product Development Process



Study Overview

WHY

- Objectives:
 - To understand the complexity of packaging design and development and the role of technology in improving process reliability.
- Hypothesis:
 - Packaging has grown more complex and companies that have invested in technology can address packaging changes faster.

WHAT

- Survey topics:
Packaging and artwork activities at company, including
 - sustainability efforts
 - use of technology and process barriers
 - new product development process
 - collaborators & owners



HOW

- Respondents recruited via email
- Surveys conducted online
- Survey dates: June 21 – August 9, 2012

WHO

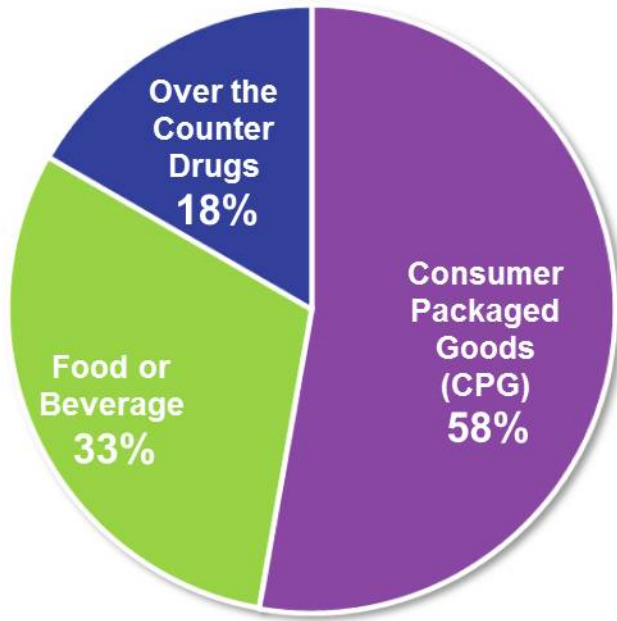
- 33 completed surveys
- Respondent requirements:
 - Work in the Consumer Packaged Goods, Food & Beverage and/or Over the Counter Drug industries
 - Work in Packaging Development or Design
 - Manager or higher



Company Overview

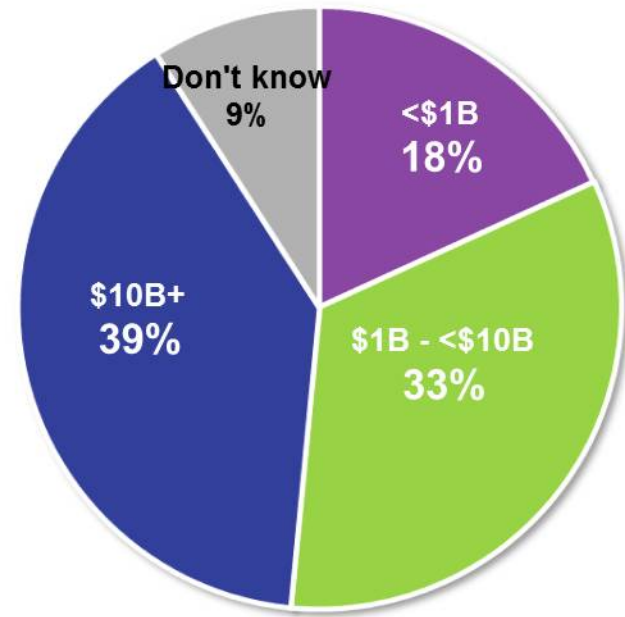
Company Overview

Industry



Annual Revenue

\$10B revenue on average



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q1. First, what is your company's primary type of business? Please select all that apply.

Q6. What is your company's approximate annual revenue? Your best estimate is fine.

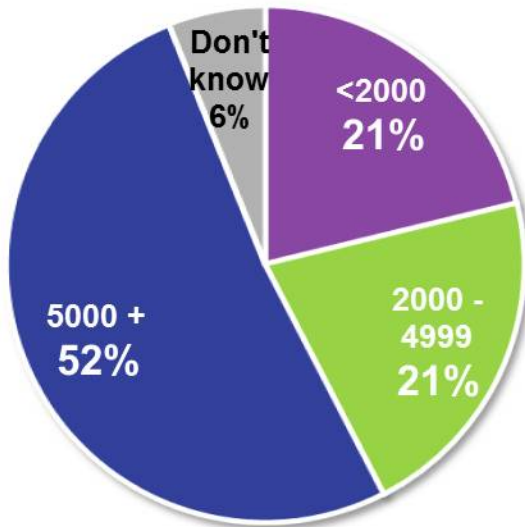


Items Produced by Company

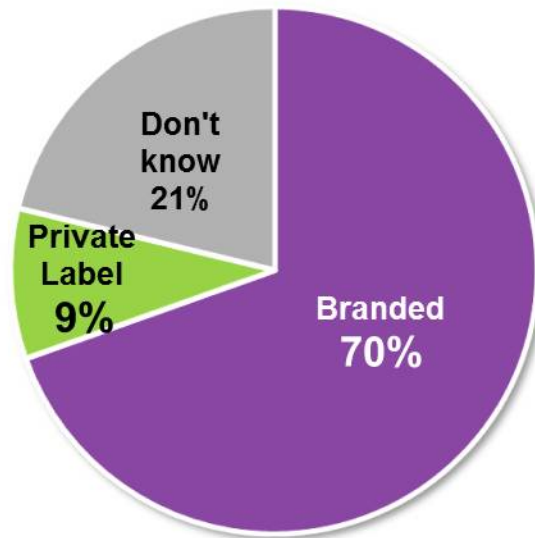
Items Produced by Company

Unique GTINs Produced

4K items on average



Branded vs. Private Label Items



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q7. How many items, or unique GTINs (Global Trade Identification Numbers), does your company produce? Your best estimate is fine.

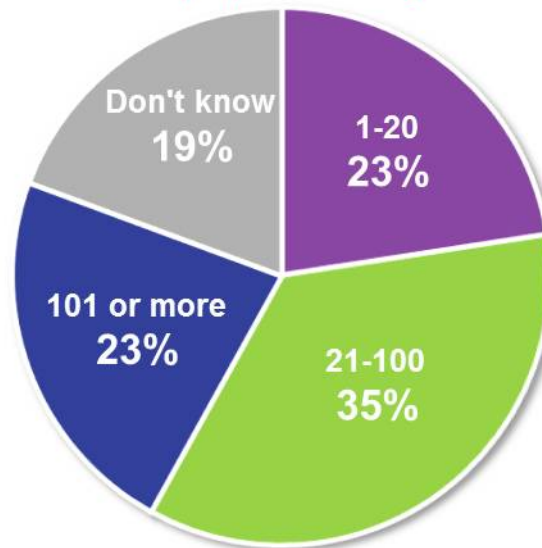
Q8. What percentage of items are branded and sold by your company versus private label (products made for a third-party using their brand)? Your best estimate is fine.



Percent of People Dedicated to Packaging and Artwork

People Dedicated to Packaging & Artwork Creation or Management

150 people on average



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

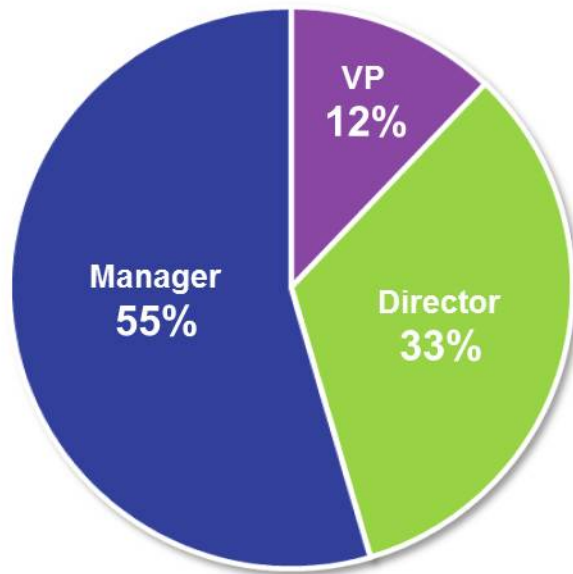
Q9. How many people are dedicated to the creation and management of packaging and artwork in your company? Your best estimate is fine.



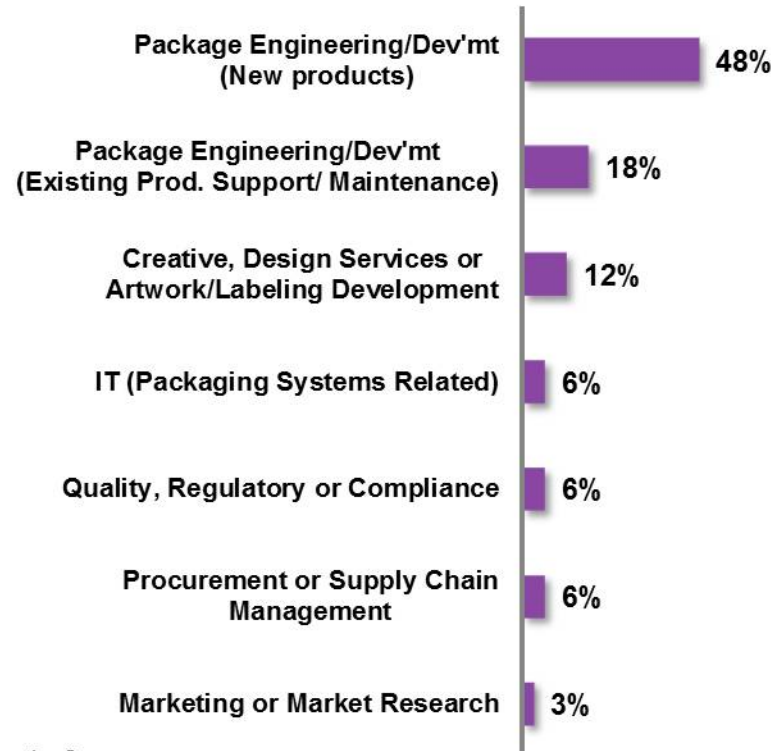
Respondent Overview

Respondent Overview

Current Level



Job Area and Function



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q2. Which of the following most accurately describes your job area or function?

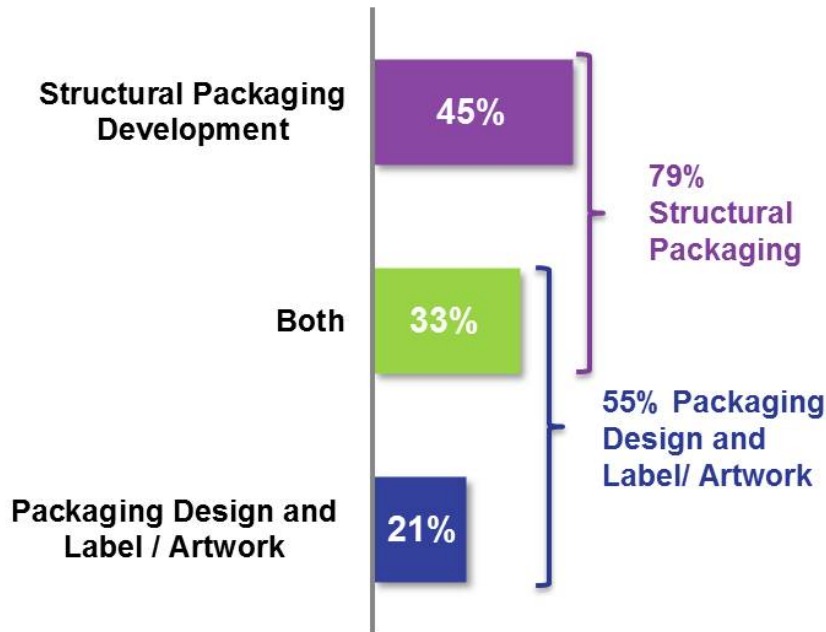
Q3. Which of the following levels best describes your title or approximate level?



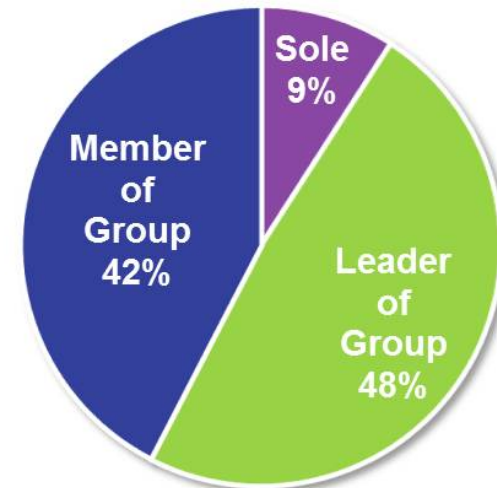
Respondent Overview

Respondent Overview

Packaging Involvement



Level of Responsibility for Purchase of Packaging or Artwork Services, Applications & Technology



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q4. Which of the following best describes your primary involvement with packaging-related activities at your company? **Structural packaging development** begins with packaging brief creation and extends through the lifecycle to select materials, component manufacturing, package filling, manufacturing scale-up and validation. In between, it includes an iterative process of design options, package prototypes and package testing, which leads to the definition of package specifications. **Packaging design and label / artwork development** begins with creative brief and results in final package design including size, shape, color, artwork and labeling. It enables an iterative process of concept developments, designs and proof approval, collaboratively across a work team. This leads to the development of an artwork spec that has been validated in assembled form with the package.

Q5. Which of the following statements best describes your level of involvement in your company's purchase of services, enterprise applications or technology for structural packaging development / design and label / artwork development?



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- **Packaging & Artwork Performance**
- Packaging Sustainability
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Importance of Packaging & Artwork Projects

Importance of Packaging & Artwork Projects (Rated 8-10 on 10-point Scale)



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

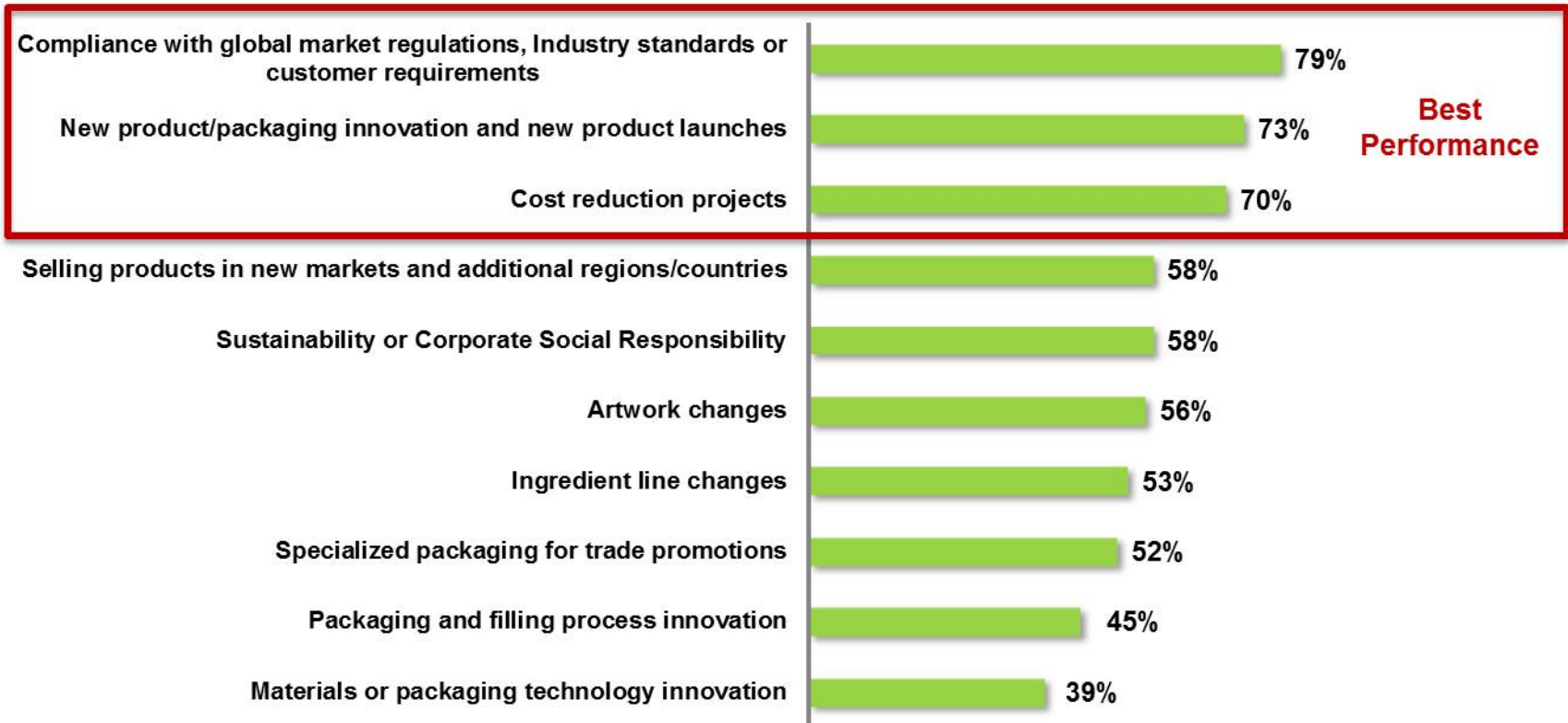
Base: Packaging Development/Design Professionals (n=33)

Q10. How important are the following types of product packaging/artwork development to your organization?



Performance in Packaging & Artwork Projects

Performance within Packaging & Artwork Projects (Rated 8-10 on 10-point Scale)



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals and have area in company (n varies by project = 30-33)

Q11. How well does your company execute in each of these same areas of product packaging/artwork development?

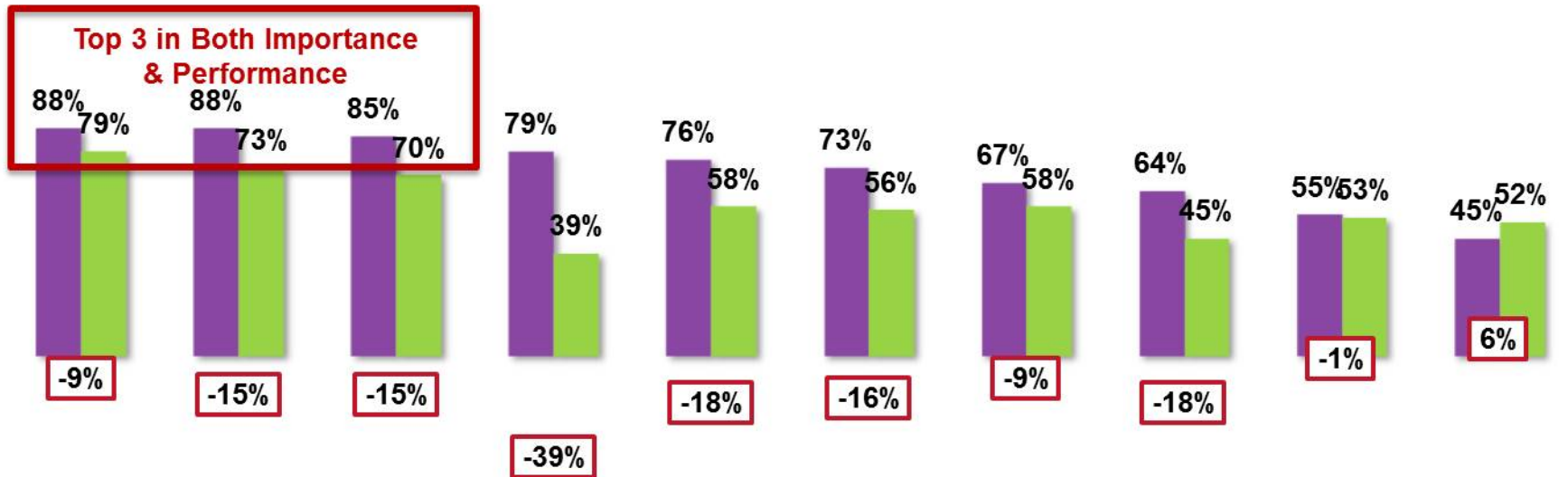


Importance vs. Performance of Packaging & Artwork Projects

Importance vs. Performance of Packaging & Artwork Projects

(Rated 8-10 on 10-point Scale)

■ Importance ■ Performance □ Gap (Perf - Impt)



Compliance (regulations, standards or requirements) New product/packaging innovation/launches Cost reduction projects Materials & packaging technology innovation Selling products in new markets Artwork changes Sustainability or CSR Packaging and filling process innovation Ingredient line changes Specialized packaging for trade promotions

Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q10. How important are the following types of product packaging/artwork development to your organization?

Base: Packaging Development/Design Professionals and have area in company (n varies by project = 30-33)

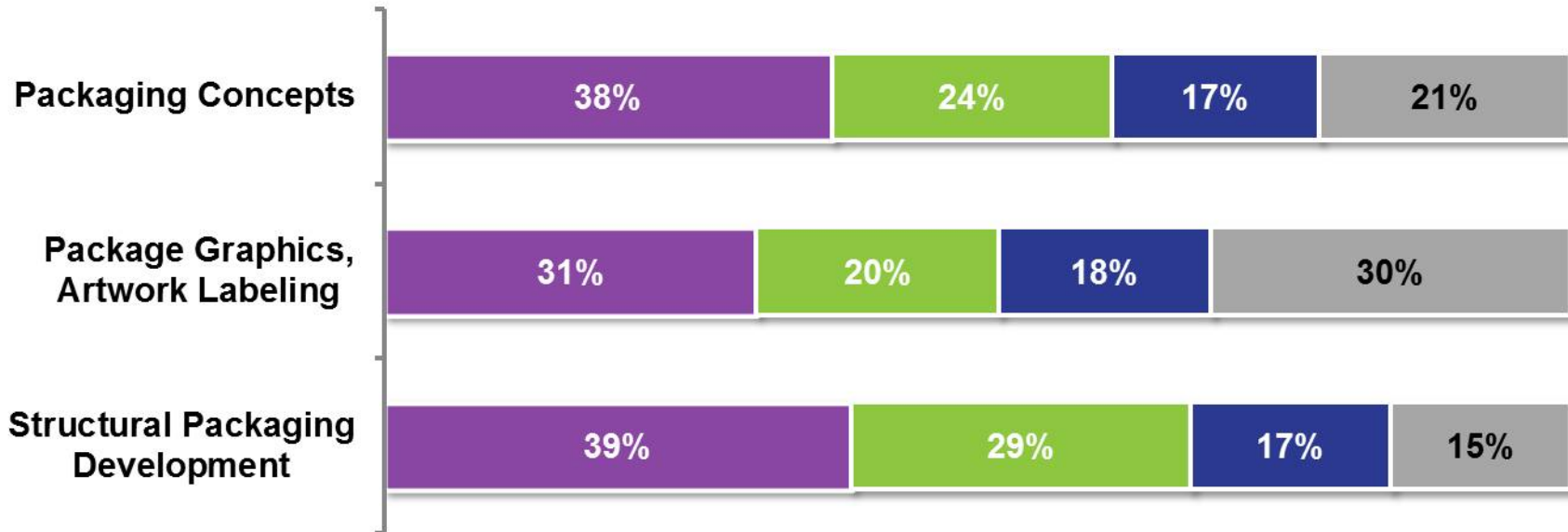
Q11. How well does your company execute in each of these same areas of product packaging/artwork development?



Percent of Packaging In-House vs. Vender: Currently

How CURRENTLY Develop Packaging

■ In-house ■ Collaborative (in-house + vendor) ■ Outside vendor ■ Don't know



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

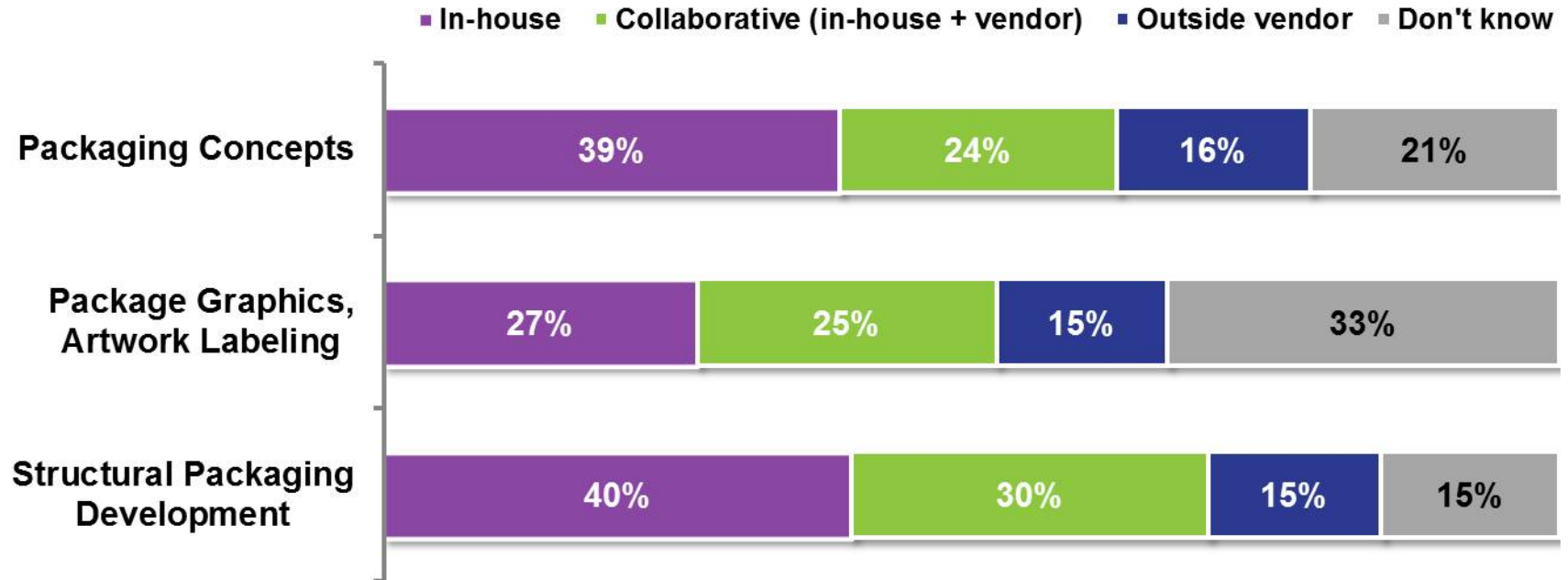
Base: Packaging Development/Design Professionals (n=33)

Q13. For each of the following areas, what percentage of packaging is currently designed in-house versus by an outside vendor?



Percent of Packaging In-House vs. Vender: Next 3 Years

How Will Develop Packaging in NEXT 3 YEARS



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

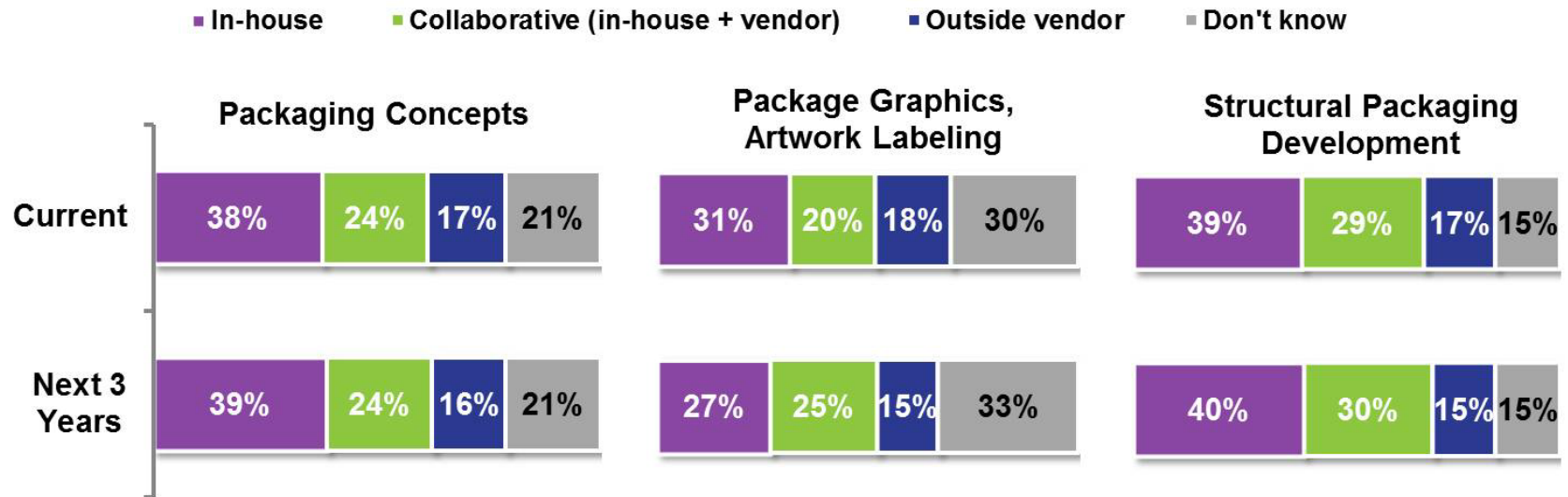
Base: Packaging Development/Design Professionals (n=33)

Q13. For each of the following areas, what percentage of packaging is currently designed in-house versus by an outside vendor? And then, what do you think this will look like in the next 3 years?



Percent of Packaging In-House vs. Vender: Current vs. Next 3 Years

How Develop Packaging: Current vs. Next 3 Years



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

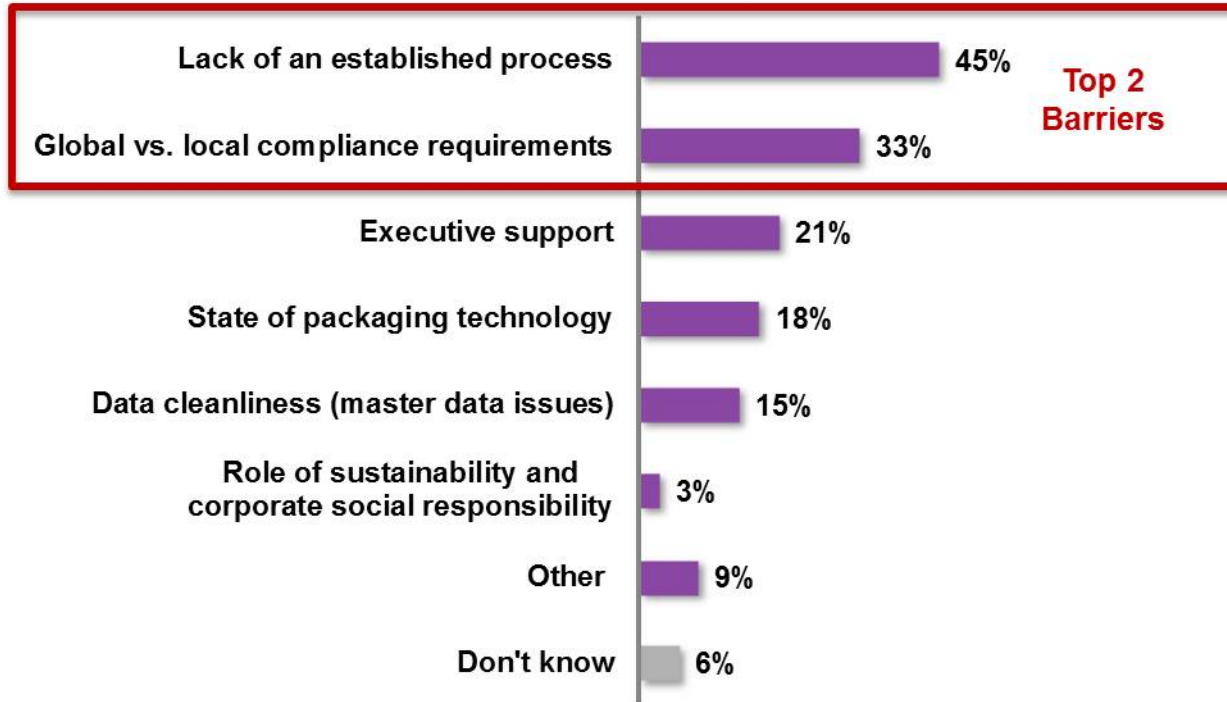
Base: Packaging Development/Design Professionals (n=33)

Q13. For each of the following areas, what percentage of packaging is currently designed in-house versus by an outside vendor? And then, what do you think this will look like in the next 3 years?



Top Two Barriers to Product Packaging & Artwork Development

Top Two Barriers to Product Packaging & Artwork Development



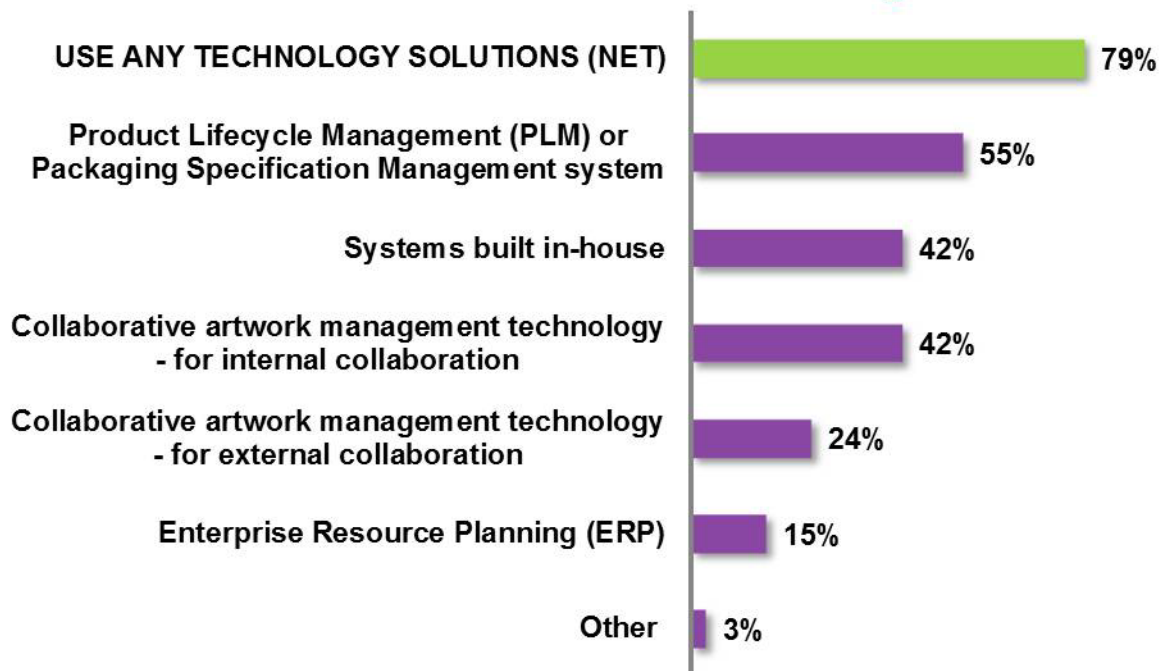
Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)
Base: Packaging Development/Design Professionals (n=33)
Q22. What are your top two barriers to product packaging/artwork development?
Please select no more than 2 from the list below.



Technology Solutions Use to Improve Product Packaging/Artwork

Technology Solutions Use to Improve Product Packaging & Artwork Development

2.3 solutions used on average



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q23. Which technology solutions, if any, do you currently use to improve your product packaging/artwork development? Please select all that apply. NET for any technology used does not include "don't know"



Technology Features & Functions Needed (Open-Ended)

Volunteered Technology Features & Functions Needed

Consistently modeled data for apples-to-apples comparisons.

End to end solutions – one piece of software for everything.

A detailed project report export file.

End to end workflow with strong change management. We also miss the single source of truth, which we are trying to build with PLM (Oracle-based).

Real-time render to the final unit (structure design) across the entire line up and what-if scenarios related to costs.



Very few companies have a software system that can capture the 360 degree view of packaging artwork.

We do not involve the design phase in the current business process and the system cannot help evaluate sustainability of the package.

There is a need to drive speed and reapplication of artwork across.

Integration of 2D, 3D, copy management and flexible workflow.

Artwork routing software that works within PLM.

Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

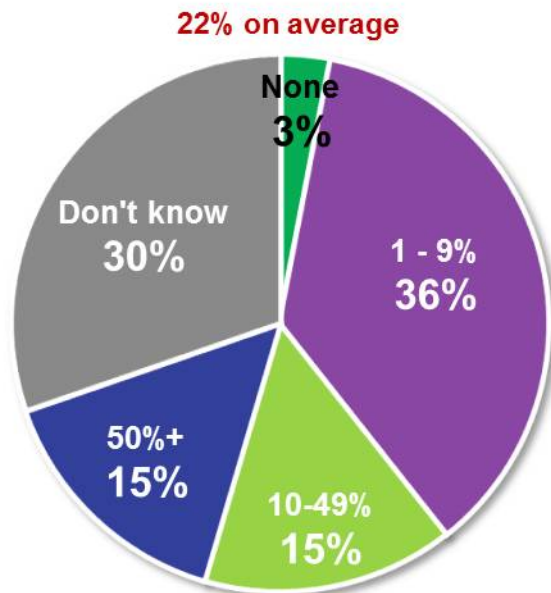
Base: Packaging Development/Design Professionals (n=33)

Q25. When it comes to packaging and artwork management software, what's missing? What feature or functionality do you want that you aren't currently getting or aren't seeing in technologies you've evaluated? OPEN-ENDED



Percent of Recalls/Write-offs Related to Packaging/Artwork

Percent of Product Recalls/Write-offs Related to Packaging/Artwork



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q12. In 2011, what percentage of your product recalls or write-offs were related to packaging and artwork issues? Your best estimate is fine.



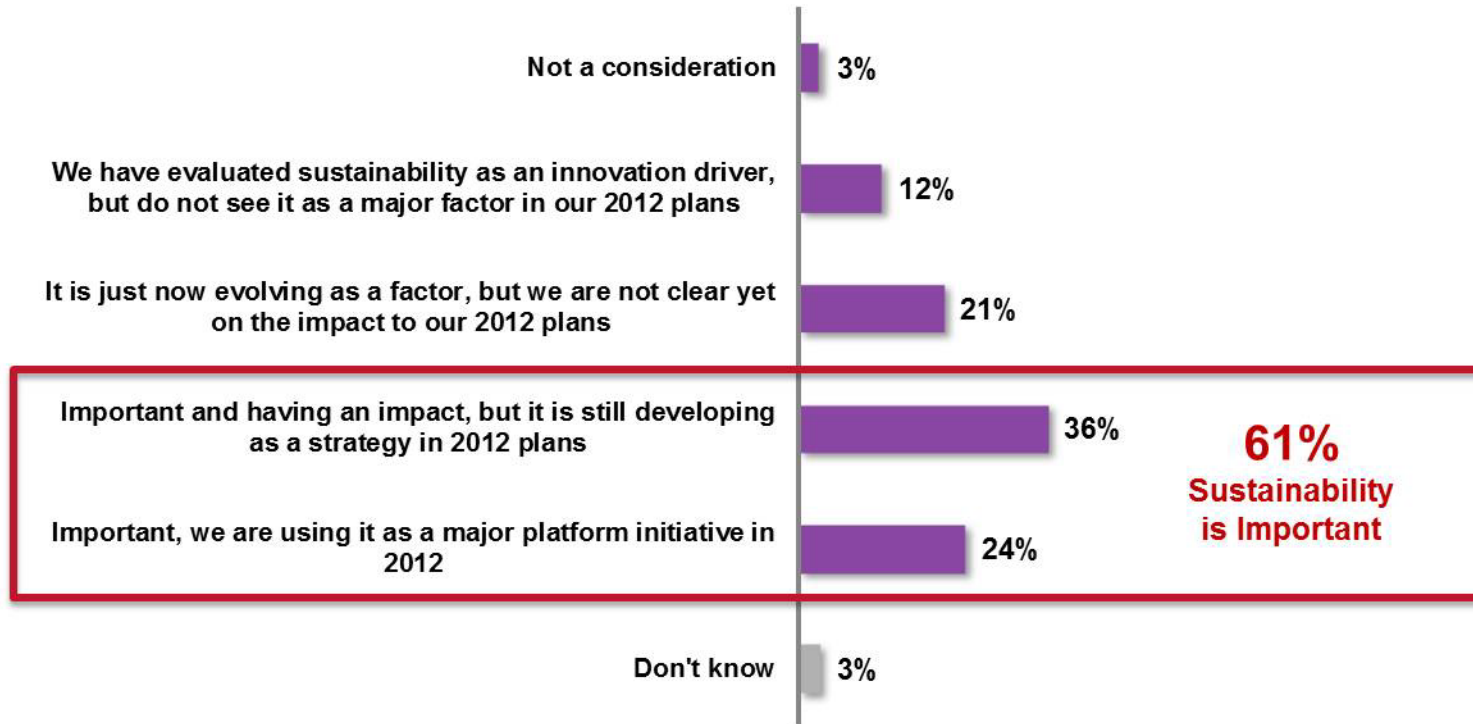
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Sustainability Importance in Packaging Development

Importance of Sustainability in Packaging Development

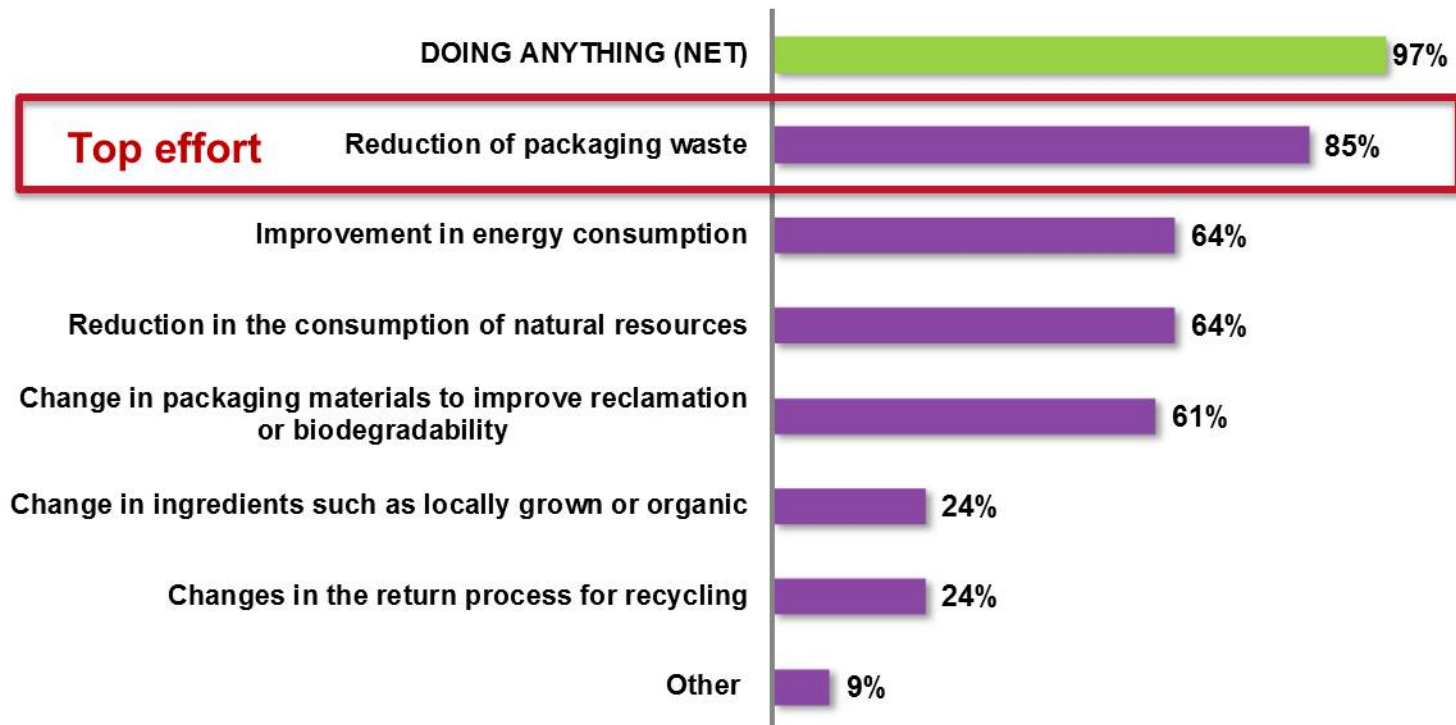


Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)
Base: Packaging Development/Design Professionals (n=33)
Q14. How important is sustainability in packaging development at your company?
Note: Differences between sums and percentages are due to rounding.



Packaging Sustainability Efforts

Current Sustainability Efforts in Packaging Development



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

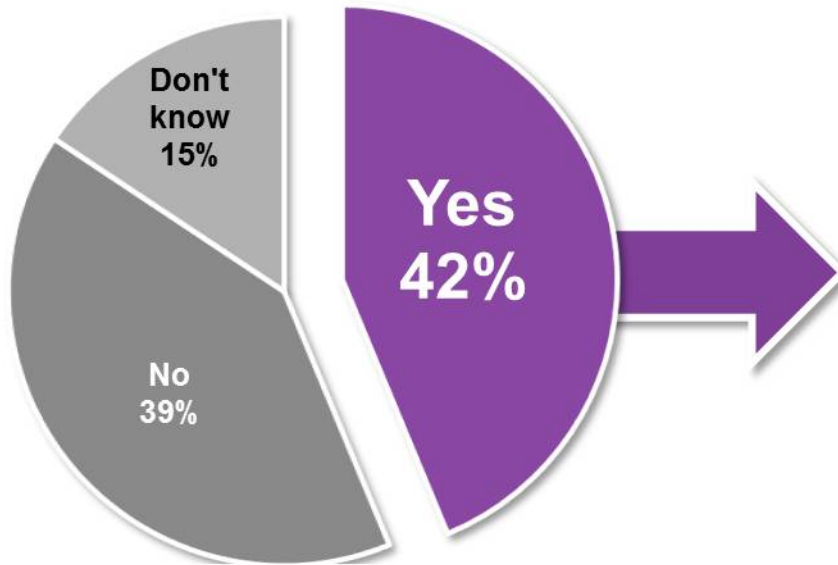
Base: Packaging Development/Design Professionals (n=33)

Q15. What, if anything, is your company currently doing to address sustainability? *Please select all that apply.*



Software Technology to Support Packaging Sustainability

Use Software Technology to Support Sustainability Efforts



Software Used to Support Packaging Sustainability Efforts

- Adobe InDesign
- Collaboration tools
- COMPASS
- COMPASS, Earthster, WM Scorecard, GEMS
- Compass, Walmart scorecard
- EskoArtwork – Packedge, ArtiosCAD, Studio, Visualizer
- Internally developed tools and licensed tools (COMPASS, various LCA/LCI tools)
- Life Cycle Assessment Tools
- Package Modeling from ECRM
- PIQET for packaging. Just completed an LCA
- Quark Xpress
- TOPS

Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q16. Does your company use any software technology that helps support your packaging sustainability efforts?

Base: Packaging Development/Design Professionals who use software to support sustainability (n=14)

Q17. Please describe the type(s) of software your company uses to support your packaging sustainability efforts. OPEN-ENDED



Software Functionality Desired to Support Sustainability (Open-Ended)

Volunteered Software Functionality Desired to Support Sustainability (among those not currently using software)

Accurate estimation of the CO2 footprint.

An extension to our current packaging specification database that includes sustainability calculations so we can evaluate packaging changes with regards to sustainability.

Internally developed programmes based upon excel.

It would capture the type of sustainability and would be able to work with Walmart Scorecard software.



I would like the application to ensure accuracy to my materials management system and my demand, consumption and costs not only on a project level but also on a business, region or package design level extending to my principle unit through my pallet unit load designs. I would also like to understand the impacts of changes in design – what-if scenario options and analysis capabilities.

I didn't even know that there was any software for this. I don't know what to ask for.

Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals who do NOT use software to support sustainability (n=13)

Q18. Please describe any software application functionality that you would like to have, to support your company's packaging sustainability efforts. OPEN-ENDED



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NPDI Packaging/Artwork Collaborators by Phase

NPDI Packaging/Artwork Collaborators by Phase					
Top 3 Collaborators	NET	Concept	Development	Testing & Validation	Launch
Marketing	97%	91%	85%	48%	61%
Package Engineering/Development	97%	82%	91%	85%	79%
Creative, Design Services or Artwork/Labeling Development	97%	79%	79%	36%	39%
Packaging Suppliers (External)	97%	45%	67%	79%	76%
Procurement	97%	30%	76%	39%	67%
Quality	97%	9%	36%	67%	82%
Finance	94%	24%	61%	36%	61%
Regulatory or Compliance	94%	21%	55%	70%	58%
Manufacturing Operations	94%	33%	73%	76%	85%
Supply Chain Management	91%	15%	52%	52%	76%
Design/Prepress Agency (External)	91%	55%	58%	39%	21%
R & D (Non Packaging Related)	82%	58%	58%	58%	42%
Market Research	79%	73%	42%	24%	15%
Sustainability	67%	39%	45%	21%	33%

Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q19. During the NPDI process, who collaborates in packaging/artwork design and development during each of the four phases? Please select all that apply for each phase.



NPDI Packaging/Artwork Owners by Phase

NPDI Packaging/Artwork Owners by Phase					
Top Owner	NET	Concept	Development	Testing & Validation	Launch
Package Engineering/Development	61%	12%	48%	42%	18%
Creative, Design Services or Artwork/Labeling Development	52%	36%	30%	18%	18%
Marketing	48%	36%	9%	3%	9%
Manufacturing Operations	36%	3%	-	9%	27%
Quality	12%	3%	3%	9%	6%
Packaging Suppliers (External)	9%	3%	3%	-	3%
Market Research	9%	-	-	9%	-
Design/Prepress Agency (External)	6%	-	3%	-	3%
Procurement	6%	-	-	3%	3%
Supply Chain Management	6%	-	-	-	6%
Finance	3%	3%	-	-	-
Sustainability	3%	-	-	3%	3%
R & D (Non Packaging Related)	-	-	-	-	-
Regulatory or Compliance	-	-	-	-	-

Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q20. And who primarily owns packaging/artwork design and development during each of the four phases? Please select one response per phase.



NPDI Collaboration & Ownership on Packaging/Artwork: Net Across Phases

Collaboration & Ownership of Packaging/Artwork During NPDI: Net Across Phases



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q19. During the NPDI process, who collaborates in packaging/artwork design and development during each of the four phases? Please select all that apply for each phase. Q20. And who primarily owns packaging/artwork design and development during each of the four phases? Please select one response per phase.



NPDI Collaboration & Ownership on Packaging/Artwork: **Concept**

Collaboration & Ownership of Packaging/Artwork During NPDI: Concept Phase



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

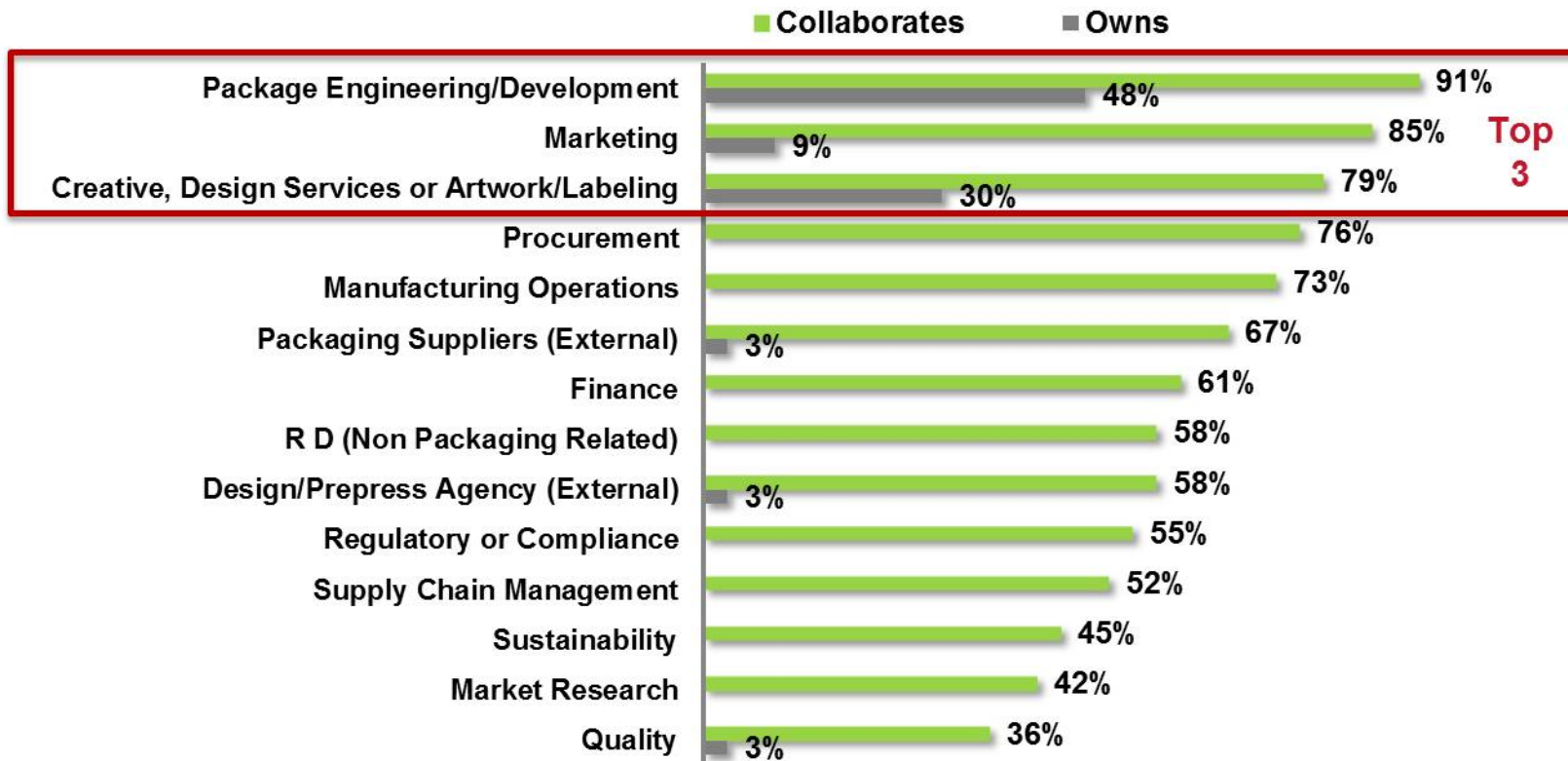
Base: Packaging Development/Design Professionals (n=33)

Q19. During the NPDI process, who collaborates in packaging/artwork design and development during each of the four phases? Please select all that apply for each phase. Q20. And who primarily owns packaging/artwork design and development during each of the four phases? Please select one response per phase.



NPDI Collaboration & Ownership on Packaging/Artwork: Development

Collaboration & Ownership of Packaging/Artwork During NPDI: Development Phase



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

Q19. During the NPDI process, who collaborates in packaging/artwork design and development during each of the four phases? Please select all that apply for each phase. Q20. And who primarily owns packaging/artwork design and development during each of the four phases? Please select one response per phase.



NPDI Collaboration & Ownership on Packaging/Artwork: Testing/Validation

Collaboration & Ownership of Packaging/Artwork During NPDI: Testing & Validation Phase



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

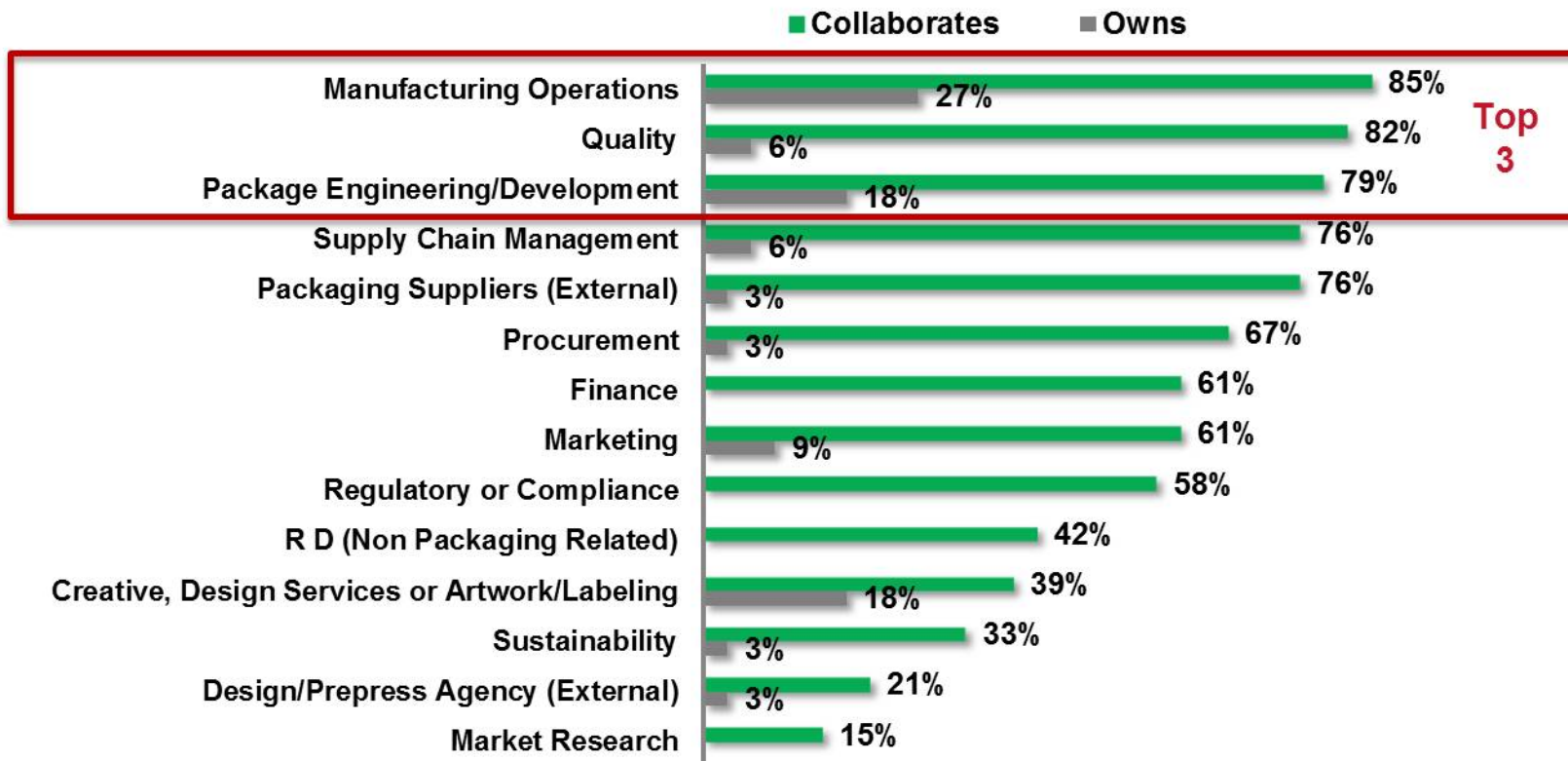
Base: Packaging Development/Design Professionals (n=33)

Q19. During the NPDI process, who collaborates in packaging/artwork design and development during each of the four phases? Please select all that apply for each phase. Q20. And who primarily owns packaging/artwork design and development during each of the four phases? Please select one response per phase.



NPDI Collaboration & Ownership on Packaging/Artwork: **Launch**

Collaboration & Ownership of Packaging/Artwork During NPDI: Launch Phase



Source: Supply Chain Insights LLC, Packaging (June-Aug 2012)

Base: Packaging Development/Design Professionals (n=33)

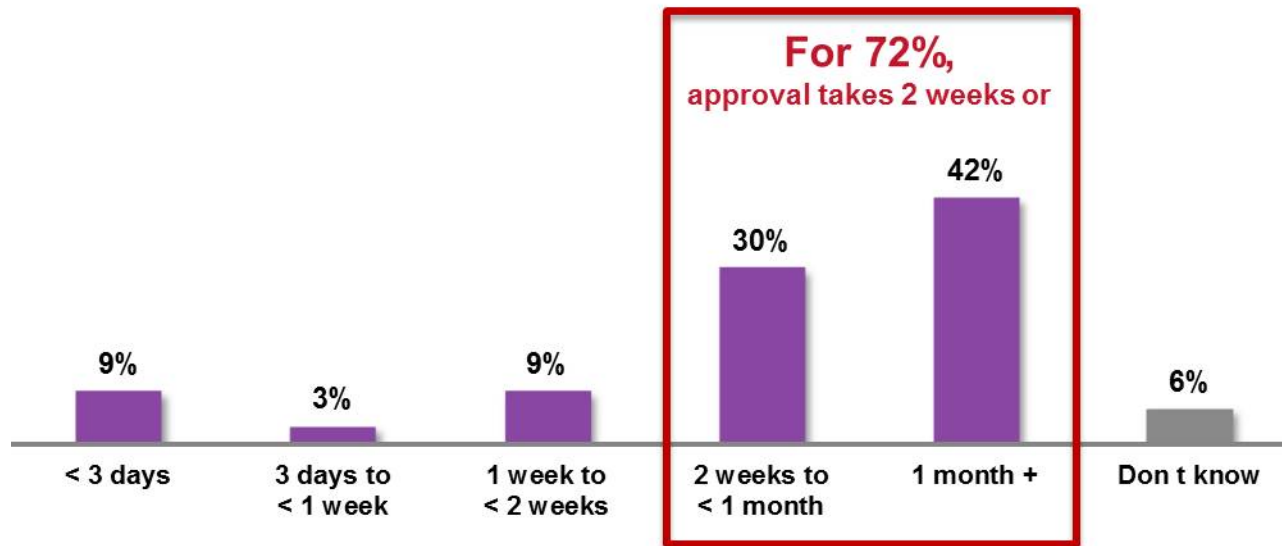
Q19. During the NPDI process, who collaborates in packaging/artwork design and development during each of the four phases? Please select all that apply for each phase. Q20. And who primarily owns packaging/artwork design and development during each of the four phases? Please select one response per phase.



Length of Typical Approval Process for Artwork

Length of Typical Approval Process for Artwork (including review & approval)

3 weeks for approval on average



Those who take 2 weeks+ for approval compared to respondents overall:

- Somewhat more likely to have 5000+ unique GTINs (67% vs. 52%)
- Less likely to have manufacturing operations collaborate on the Concept phase of NPDI process (13% vs. 33%)