

## Packaging complexity How to cope with increasing numbers of small volume SKUs

**KEYWORDS:** Packaging complexity, product portfolio, packaging facility, packaging operations, product packaging, labelling and artwork.

### ABSTRACT

Portfolios are becoming increasingly complex due to four main drivers:

- Maximising value from current assets
- New products for complex conditions
- Local market requirements
- Commercial advantage

Within the packaging facility, outdated equipment and packing lines down to each module need to be examined, along with line specification versus product requirements, the physical layout of the facility and the effectiveness of supporting business operations. Packaging techniques such as late stage customisation and postponement may have specific requirements for structural and artwork design, and these might require different solutions to those typically applied.

There are consequences to a company when complexity is not managed appropriately: namely compliance issues, lost commercial opportunities and product unavailability, packaging inefficiencies, support function inefficiencies and obsolescence.

Pharmaceutical packaging operations are generally labour and capital intensive and often a source of senior management frustration:

- They can be expensive in terms of either labour or capital investment, and sometimes both.
- They can often provide non-optimal levels of service, for example long lead times or inappropriate minimum order quantities.
- They can be inflexible with poor utilisation.

To offset these issues, supply chains are forced to either offer poor service levels or carry excessive stock, with the associated issues of high working capital, ageing stock and high write-offs.

A key underlying issue is balancing the demands of the product portfolio to be packed with the capabilities of the packaging facilities utilised. Portfolio complexity is very necessary for many businesses and there are numerous factors that drive increasing complexity, including different legal requirements, increasing customer service demands and product differentiation.

There are ways to effectively address these challenges:

- Assessing the portfolio complexity, ensuring it is appropriate
- Optimising the packaging facility design, to deliver optimal service levels at minimum cost
- Assessing the product packaging, ensuring its suitability for the optimised portfolio and facility

In this article we will consider these three topics and look at how you may approach a process of improvement for each in turn.

### ASSESSING THE PORTFOLIO COMPLEXITY

Portfolios are becoming increasingly complex. Many companies have broad product portfolios sold in multiple markets which can provide significant advantage for that business. We see four main drivers increasing portfolio complexity:

1. **Maximising value from current assets:** launching as many product variants, into as many markets, through as many channels as possible.
2. **New products for complex conditions with increasingly tailored therapies:** these products may be very high value, but the product volume is typically much lower than traditional pharmaceutical products. Moreover, they often have complex dosing regimes, devices or combination products that require specialist and complicated packaging.
3. **Local Market requirements:** you cannot sell the product in a certain market without meeting specific market requirements, whether they be legislative or local preferences.
4. **Commercial advantage:** providing certain features gives an advantage in the market and the incremental impact on cost of goods is outweighed by the commercial benefits obtained.

Beyond the US and big five European markets, sales volumes can drop dramatically for individual SKUs (Stock Keeping Unit). Even with the large markets, portfolio expansion and specialised products can result in very low individual SKU volumes. The result is an explosion of packaging components of ever decreasing volumes. We have seen companies where more than fifty percent of their SKU portfolio have daily sales volumes of less than 30 packs and minimum order quantities of packaging batches supply years of stock. These are the key steps to addressing your product portfolio complexity:

1. Understand the product / therapy strategy and value of complexity
2. Understand the portfolio, volumes and lifecycles of SKUs
3. Have clear approval and control processes for portfolio changes
4. Prune the portfolio regularly
5. Share components or packs where possible

### OPTIMISING THE PACKAGING FACILITY DESIGN

Often the first issue within the packaging facility can be the packaging equipment itself. Old, unreliable equipment that is slow to change over might just need to be upgraded. However, it may not be the whole line that is the issue. Packing lines consist of numerous components, each doing part of the packaging process. The overall reliability and speed of the line is a function

of the reliability and speed of each component. Replacing one part may beneficially impact the overall line performance. It is also worth considering the line specification versus the product requirements to be packed. We often see complex, high speed, automated and highly integrated packaging machinery being used for low volume short run packaging batches and can also see manual lines being used to pack larger volume SKUs. A more flexible line may be more appropriate.

Facility layout can also impact productivity. Many packaging facilities evolve over time. How is the flow of materials in your facility? Is there unnecessary handling or waiting? Where are there bottlenecks? Where are you wasting time and effort? Finally, consider the effectiveness of business processes supporting packaging operations. Are processes optimised and efficient? Moreover, are the collective cross-functional processes tuned to work in unison or do dependencies between processes promote delays wasting time and effort? These are the key steps to optimising your packaging facility:

1. Plan for runners, repeaters and strangers: products with different order and volume profiles
2. Effectively manage order quantities of components and finished packs
3. Postpone customisation to as late as possible in the supply chain
4. 'Late Customise' components and products
5. Build flexibility into packaging equipment
6. Reduce line changeover time
7. Utilise regional hubs for market-specific product creation
8. Consider outsourcing the things you are not best equipped to do

### ASSESSING THE PRODUCT PACKAGING

There are many competing requirements to be considered when designing the product packaging. It must be easy to use, meet regulatory requirements, protect the product and be robust for shipping operations. It also must play its part in ensuring the most appropriate packaging solutions can be used.

Packaging techniques such as late stage customisation and postponement may have specific requirements for structural and artwork design, and these might require different solutions to those typically applied. Packaging engineers and artwork designers need to consider the overall packaging supply system when developing their designs to ensure they are fit for different solutions that may be applicable for different volume profiles.

These are the key steps to assessing the product packaging:

1. Control brand variation between markets
2. Define and maintain a standard set of platform sizes
3. Standardise global and regional artwork templates and layouts
4. Minimise and centralise fonts, illustrations and graphics
5. Revisit structural and artwork elements of existing packaging designs
6. Plan ahead for future legislation

### THERE ARE CONSEQUENCES FOR A COMPANY WHEN COMPLEXITY IS NOT MANAGED APPROPRIATELY

Packaging complexity creates some consequences for companies and their customers, including:

- Compliance issues: Correct products and components must be supplied to the correct markets with the latest approved product information. With ever-increasing portfolio complexity, exercising appropriate jurisdiction

control over what is supplied and to where, gets more difficult. Many companies have tried to overcome this complexity by supplying smaller markets with standard 'general export' type packs, only to find unexpected and uncontrolled local repacking. This practice obviously presents an unacceptable compliance risk if not managed effectively.

- Lost commercial opportunities and product unavailability: Sometimes the financial trade-off between supplying a unique pack variant to a market versus the cost of supply doesn't merit selling that product in that location. That may be considered a victory in minimising complexity, but it is a lost commercial opportunity leaving patients in that market unable to benefit from that product being made available to them. It is therefore a hollow victory that could be avoided if the company had more cost-effective capabilities to supply such variants.
- Packaging inefficiencies: Small volumes mean small pack runs and lots of changeovers. We have seen examples where the packaging line spends more time being changed over than packing product. Complexity can also create needs for specific additional tooling, equipment and hand finishing.
- Support function inefficiencies: There is a whole 'hidden factory' in the support functions supporting the product and component range e.g. additional regulatory staff maintaining licenses and product information or more purchasing activity. This is often invisible and not considered in the cost of supply.
- Obsolescence: There are two relevant types of obsolescence; packaging components and finished product. Economic order quantities result in purchased volumes of packaging components that have a disproportionate amount of forward cover, causing high amounts of write-off when components change. Similarly, high inventories of low volume finished pack stock, caused by minimum packaging order quantities, risks either product write-off or repacking due to shelf life expiry.

In conclusion, complexity is an underlying cause of inefficiency in packaging operations. Some complexity may be considered 'good' because it presents value as financial return from sale of the product. The key is to learn how to cope efficiently with this 'good complexity' whilst developing methods to control the other type of complexity – the 'bad complexity'. Unfortunately, there does not seem to be any 'golden bullet' that will help you to do this easily. Rather, there are a series of techniques that can be applied across the operation to manage the complexity and optimise your operations. ■

### ABOUT THE AUTHOR

**Andrew Love** is a multi-award-winning packaging and artwork management strategist, leader and author. He spent 10 years as head of global packaging design operations at GlaxoSmithKline, transforming their global artwork management activities into a world-class, award-winning capability. He is



one of the founders of Be4ward which helps pharmaceutical, biotech and other healthcare companies and their supply base to improve patient safety and drive additional value from their product range. Andrew, a professional engineer and MBA with over 20 years of experience working with many of the world's largest life-sciences companies.