

Unwrapping the packaging industry

Seven factors for success



Building a better
working world



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Introduction

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The global consumer packaging market is valued at approximately US\$400b and an estimated US\$500b if industrial end-markets are included.

The Brazil, Russia, India and China (BRIC) markets comprise approximately 30% of global demand, increasing as their economies further develop. Packaging sales in the emerging markets are expected to continue to show strong growth as both increased consumption and demand for consumer goods drives the need for more sophisticated packaging, due to a growing middle class.

The sector includes five main types of packaging. Paper and board (including paper bags and cartons) is the largest consumer packaging category with a ~34% share of the total packaging market. Rigid plastics (tubs, pots and jars etc.) is the second-largest packaging category with a ~27% share and is one of the faster-growing categories, forecast to grow above real GDP (~4% per year) until 2015.

The macroeconomic environment has been challenging for the packaging industry in recent years, given pressures on consumer spending and their exposure to fast moving consumer good (FMCG) producers.

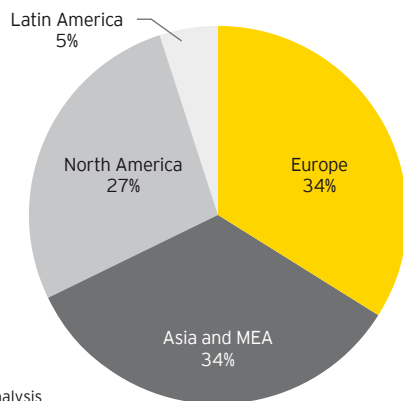
The combination of Eurozone economic uncertainty and raw material and energy price inflation has also had a negative impact on packaging producers. Growth in emerging markets has been both a threat and an opportunity.

These factors are some of the obstacles to being successful as a packaging producer. EY has had the opportunity to advise on a large number of private equity investments, strategic transactions and distressed situations over the past several years. In the course of this work, we have identified seven key operational capabilities that successful packaging companies have in common. We think that an understanding of these will be helpful to both strategic and financial investors, as well as packaging management teams, in challenging or validating current practices and performance.

The seven success factors are the management of raw material inflation, the reduction of waste, effective capital expenditure, operational performance measurement, product and customer profitability management, innovation and global supply chain management.

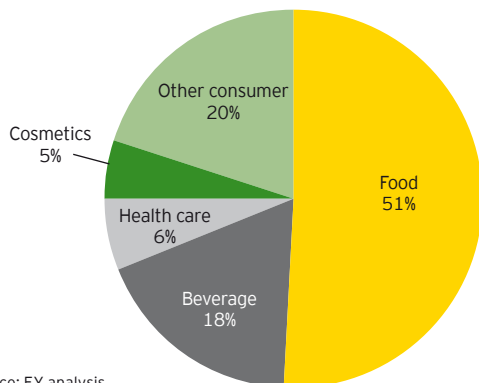


Chart 1: Global packaging, by geography – 2012
Total market size = US\$400b



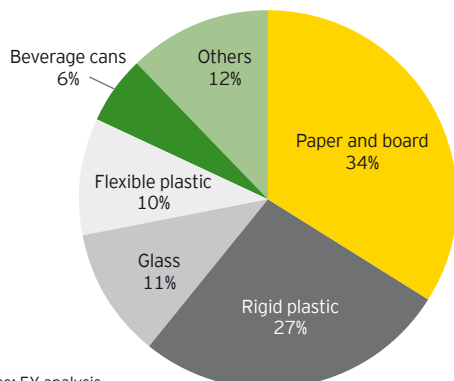
Source: EY analysis

Chart 2: Global packaging, by end market – 2012
Total market size = US\$400b



Source: EY analysis

Chart 3: Global packaging, by type – 2012
Total market size = US\$400b



Source: EY analysis

01

Raw material prices: “between a rock and a hard place”

It is crucial for packaging businesses to manage the stability of their input raw material costs and pass through as much of the raw material price inflation as possible to customers

Packaging companies (known in the materials industry as “converters”) are engaged in the conversion of commodity raw materials such as polymer, board or paper into value-added consumer or industrial packaging. This puts them in a potentially vulnerable position in the value chain (see Chart 4).

On the supply side, key feedstock suppliers are typically large global producers that have the power to pass on higher commodity costs and increase prices to their customers when supply is tight, which in turn increases input prices for the packaging producer. On the customer side, there are large and powerful consumer goods companies that may not wish to pass price increases to end consumers and use the threat of switching to keep suppliers in line.

Major raw materials usually comprise more than half of the total cost base of a packaging manufacturer, so getting caught between a “rock and a hard place” in the value chain can be dangerous to the company’s financial health. It is therefore crucial for packaging businesses to manage the stability of their input raw material costs and pass through as much of the raw material price inflation as possible to customers.

The procurement of globally traded raw materials is a mix of art and science. Commodity raw material prices are driven by global energy prices and supply capacity, which change every week. In such markets, supply can fluctuate with the global economy, regional weather conditions and many

other factors. As a result, striking the balance between security of supply and low pricing volatility is a crucial skill for packaging manufacturers.

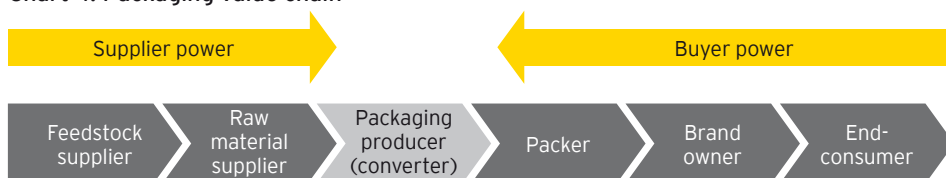
Significant price advantages can be achieved through market intelligence and skilful negotiating – Chart 5 illustrates the performance of one packaging company against the relevant raw material index.

On the procurement side, the best players tend to balance the security of contracts with opportunistic “spot purchases,” which may also require balance sheet flexibility. Here, it helps to have a deep understanding of the commodity markets and suppliers that may have excess capacity. Knowledge of a supplier’s business model and circumstances can also help when negotiating rebates. The negotiated rebate terms of key raw materials contracts are often a source of competitive advantage and closely guarded by senior management.

It goes without saying that management should negotiate group raw material purchases to best leverage their bargaining power with major suppliers. However, they should avoid single sourcing key raw materials and make contingency plans to maintain security of supply if supply markets become tight.

On the customer side, a good packaging management team will try to ensure that customer contracts have a raw material inflation pass-through mechanism. It can be important to minimize the lag period between raw material price increases

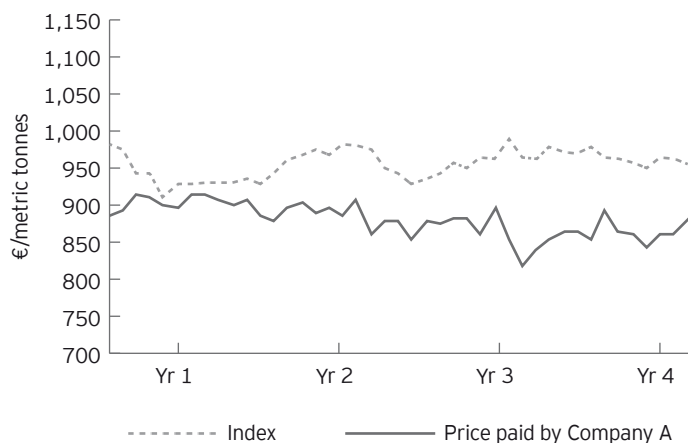
Chart 4: Packaging value chain



Source: EY analysis

and customer price adjustments, both from a profitability as well as a working capital perspective. If it is not possible to enforce contractual pass-through of raw material prices, it is important to keep track of the impact of raw material prices and use this data to argue for price increases when the opportunity arises.

Chart 5: Raw material purchasing effectiveness



Source: EY analysis

Questions to ask:

- ▶ How competitive are the input prices I am paying compared with the relevant index and my competitors?
- ▶ How well does the procurement manager know the market and am I taking economic advantage of this knowledge?
- ▶ What measures am I taking to ensure supply of raw material if supply tightens?
- ▶ Are we talking to multiple suppliers to ensure we have the best pricing?
- ▶ Do I know the impact of raw material inflation on my bottom line and am I getting the maximum possible percentage of price pass-through?

02

“Waste not, want not”

It has become extremely important, both to packaging producers and their customers, to reduce the amount of material used in the production of packaging

Given the increased volatility in raw material prices over the past few years (particularly in polymer raw materials), and the increasing concern over the environmental impact of packaging, it has become extremely important to reduce the amount of material used in the production of packaging both to packaging producers and their customers.

Packaging producers have come under pressure to reduce process scrap as the cost of lost material cannot be recovered from customers (although a degree of scrap is usually priced into print runs and unprinted film and trim can generally be reprocessed).

At the same time, customers have also put pressure on producers to reduce the material content of packaging (basis-weight) – a process commonly referred to as “down-gauging.”

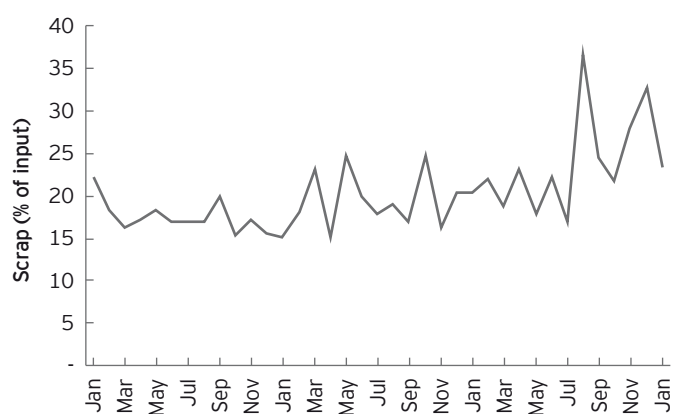
To remain competitive, manufacturers have had to make process improvements and invest in equipment designed to minimize scrap and deliver the required lower basis-weight materials in sufficient quality and quantity.

Simple process improvements can deliver significant results: for example, by altering the way changeovers are performed, significant amounts of start-up waste can be eliminated from printing or extrusion processes.

However, in most cases, improvements have required significant capital expenditure (capex) investment. Recycling equipment, wider machines and new printing and extrusion technologies can all have a significant impact on scrap and basis weight.

Those manufacturers that have not invested in a timely fashion – and have not decommissioned outdated equipment – have suffered the consequences of becoming uncompetitive on cost and inflexible in their supply capabilities.

Chart 6: Increasing scrap rate



Source: EY analysis

Questions to ask:

- ▶ Am I recycling as much process waste as possible?
- ▶ How can I re-engineer products and/or processes to reduce waste or raw material content?
- ▶ Am I practicing continuous improvement in my production process to minimize waste?
- ▶ Are there small capex investments I could make to increase material raw efficiency?
- ▶ Am I working with my strategic clients to reduce the raw material content of their packaging?



03

Capex: are you getting “bang for the buck”?

Management needs to be skilled at determining how much to spend on maintaining and adding to the capabilities of their machine park

The packaging industry relies on sophisticated printing and converting machinery to deliver the quality, efficiency and innovation that the market demands. This drives its relatively high capital intensiveness.

Management needs to be skilled at determining how much to spend on maintaining and adding to the capabilities of their machine park. Spend too little and your competitiveness (and EBITDA) erodes over time. Spend too much on the wrong projects and your cash flow suffers. Therefore, finding the quantum and mix of capex spend that sustains EBITDA and cash flow is key.

Because of this dynamic, we have found it useful to assess the performance of packaging companies by analyzing the “spread” between EBITDA and capex (EBITDA – capex).

Chart 7 shows that higher capex levels are generally associated with higher EBITDA and higher free cash flow (FCF). However, the outliers are suggestive of what can happen when companies get this wrong.

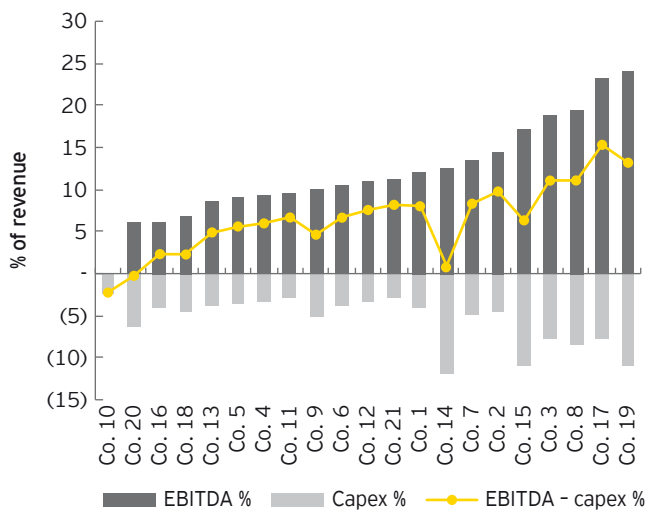
This is not to suggest that high spending on capex is always the right thing. It depends on the nature of the packaging subsector in question. As a general rule, we have found that companies exposed to large, sophisticated FMCG customers and fast-moving consumer markets have to spend more to sustain a higher EBITDA margin (this is linked to innovation – discussed in greater detail).

To explain this better, we define the concept of “sustaining” capex as the expenditure required to support the revenue and EBITDA margin of the business as it stands. This may include spending on machine replacement, maintenance, safety and efficiency. This is distinct from “expansion” capex – large, discrete projects that deliver incremental sales and EBITDA, such as new products, plants or lines.

Clearly, the level of “sustaining” capex has a bearing on future cash flows. Also, any significant period of below-target “sustaining” capex spend will result in a capex backlog, which has to be caught up to prevent EBITDA erosion. Since both of these have direct bearing on the value of the business, it is important for management to know what “sustaining” capex should be for their business and make sure that they maintain it. Benchmarking and historical project analysis can be helpful in quantifying these – see Chart 8 for an illustration of this.

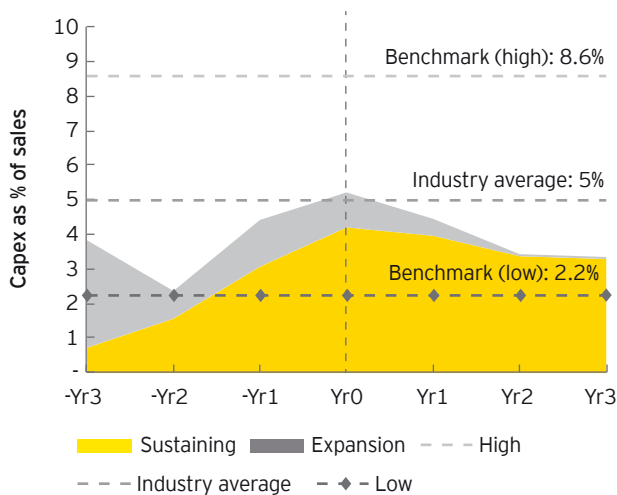
High-performing packaging companies tend to have straightforward yet rigorous capital approval processes that apply the above principles. Best practice requires not just a business case with clear Return on Investment (ROI) requirements and projections, but also post-investment reviews to verify whether investments delivered their budgeted payback. It is more difficult to assess the payback of “sustaining” investments, but this should still be attempted.

Chart 7: EBITDA – capex spread



Source: EY analysis
 Note: European packaging companies with revenues above £500m for whom data is available. Represents average of last three full financial years.

Chart 8: Sustaining capex analysis



Source: EY analysis

Questions to ask:

- ▶ What is the true “sustaining” capex requirement of my business and what drives this?
- ▶ Am I investing in new technologies to improve process efficiency?
- ▶ Am I assessing the payback of major capex projects effectively and what paybacks am I getting?

04

Operational performance: “What gets measured gets delivered”

A key success factor in delivering continuous improvement is accurate and consistent measurement of the right key performance indicators (KPIs)

With its exposure to increasing raw material prices and customer purchasing power, continuous operational performance improvement is vitally important in the packaging industry.

A key success factor in delivering continuous improvement is accurate and consistent measurement of the right key performance indicators (KPIs).

However, not all packaging businesses use the right metrics, have consistent measurement across production sites or even the means to collect and analyze the data. Some have the means, but don't do anything with the information.

Top performers use the overall equipment effectiveness (OEE) metric hierarchy. OEE is widely used in manufacturing, but is particularly applicable to packaging given that value creation is driven by the efficient conversion of a small number of costly raw materials into a product using expensive machines and a fairly fixed labor cost. OEE is expressed as a percentage, with 100% representing perfect conversion of the inputs into product without any losses. There are three sources of losses, namely availability, performance and quality. OEE is the product of the percentages of these three quantities.

In packaging, these losses come from characteristic areas:

1. Availability losses come from machine downtime (changeovers, maintenance or repair).
2. Performance losses come from operating machinery slower than its rated speed (inexperienced crews or product mix and formulation changes).
3. Quality losses come from scrap – which is the percentage of material produced that is not good for sale (depending on the process, some of this may be recycled or re-introduced into the process as mentioned above).

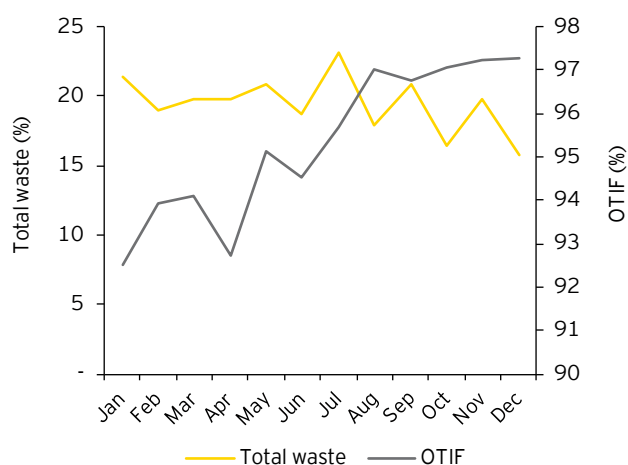
Utilization of total available (unattended) machine time on a 24/7 basis is not included in the OEE calculation as it is not an indicator of operational performance. For example, a machine may only be crewed and operated very efficiently five days a week. Overall 24/7 utilization is nevertheless important in assessing the effective use of productive assets and capacity for expansion or consolidation. Other metrics, such as order size and on time in full delivery (OTIF) can be important too.

The best performers have automated systems that collect OEE and its component sub-metrics automatically from shop-floor systems and feed them into enterprise resource planning (ERP) systems for analysis. They also have regular review sessions where drivers of underperformance and improvement are discussed and best practices shared. Chart 9 illustrates how an increase in scrap was explained by the decrease in order sizes and a relative increase in setup time per order.

It is also important to record and review working capital metrics, the most notable of which include days sales outstanding (DSO), days payable outstanding (DPO) and days inventory outstanding (DIO). Companies within the industry are actively monitoring these metrics and striving to improve them as part of a continuous focus on working capital management.

Pivotal to the success of working capital initiatives is the implementation of a culture whereby all staff, including those on the factory floor, are aware of the initiatives (particularly those relating to stock management) to ensure that the workforce collectively works toward the same objectives.

Chart 9: KPI analysis



Source: EY analysis

Questions to ask:

- ▶ Are OEE and other key metrics consistently measured and applied across my business?
- ▶ Are these being used to monitor and drive performance improvements and diagnose issues?
- ▶ Are we utilizing the potential of installed shop-floor systems to simplify and harmonize the collection of KPI information?



05

Product and customer profitability: when to part company with your customers

It is important for management to have visibility of which end-markets, products and customer relationships are profitable and manage these actively

Given the relatively fixed nature of labor costs (at least in Europe) and the high cost of machinery, packaging companies are under pressure to keep their utilization levels high. Also, given the technical nature of the product and exposure to a variety of end-markets, the number of bespoke customer products or stock keeping units (SKUs) can proliferate, thereby increasing manufacturing complexity and the risk of obsolete inventory.

As a result, companies can end up with large numbers of low-margin products filling up available capacity and causing increased changeover times. It can be positive in the short term to receive some contribution to fixed costs if the alternative is idle lines. In the long run, this is not a sustainable situation as it is a blocker to profitable growth and to making necessary decisions about investment and capacity.

It is therefore important for management to have visibility of which end-markets, products and customer relationships are profitable with growth potential and manage these actively – requesting price increases, renegotiating payment terms and even being prepared to exit customer relationships if this is not possible.

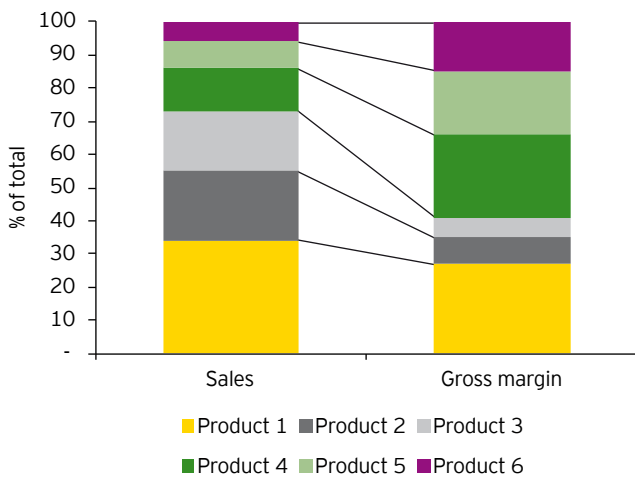
To do this, you need reliable, up-to-date information. Most companies at least have basic data on product line and customer profitability. But not all packaging companies have the systems to do this easily and regularly in “real time” on a SKU or customer basis. The difficulty arises in the correct allocation of costs of products that share production lines, labor and overheads and then capturing this production information in management accounting systems.

Charts 10-11 illustrate the differences in profitability between products and customers, which can drive commercial decision-making.

Questions to ask:

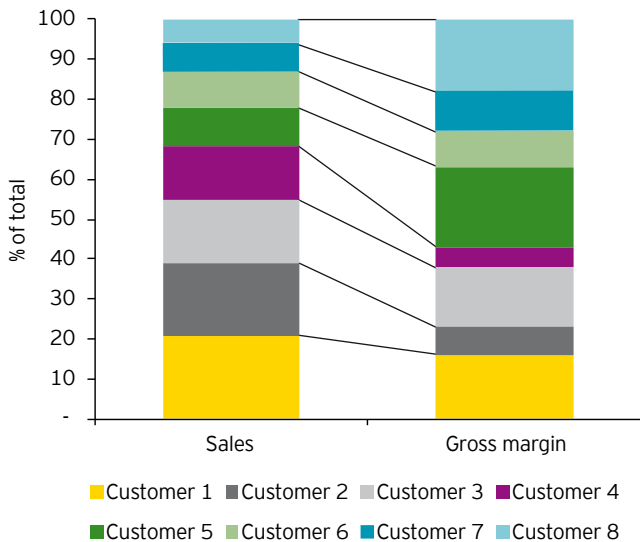
- ▶ Do I know which products are performing vs. underperforming and why?
- ▶ Which are my most profitable customer relationships and what drives this?
- ▶ Do my systems support the right level of detail for product and customer profitability?
- ▶ Are there too many SKUs in my product portfolio, impacting manufacturing efficiency?

Chart 10: Product profitability analysis



Source: EY analysis

Chart 11: Customer profitability analysis



Source: EY analysis

06

Innovation: what distinguishes the stars from the dogs

Packaging producers have to be able to deliver new shapes, use new materials, print more colors in greater definition and deliver short-run lengths economically

In the developed world, overall demand for consumer goods has been relatively static. However, demographic changes (e.g., decline of the nuclear family, increase in average age) and increased market share competition between established FMCG producers has required innovation on the packaging side.

This has seen the introduction of a number of new developments in recent years, for example:

1. Convenience features such as resealable packs, easy-opening and stand-up pouches.
2. Smaller pack sizes for single-serving and on-the-go use.
3. More promotional packs and brand extensions to maintain customer loyalty.
4. More eye-catching and colorful designs to enhance brand awareness and to stand out on the shelf.
5. The development of the mass luxury or "masstige" category of cosmetics and other consumer goods.

From an operational perspective, this means packaging producers have to be able to deliver new shapes, use

new materials, print more colors in greater definition and deliver short-run lengths economically. These capabilities require investment both in new capital equipment and training. Packaging companies that don't invest in the right technologies and capabilities are at a competitive disadvantage.

But this alone is insufficient. The real driver of innovation is the ultimate end-market consumer, which means that packaging producers have to have well-developed and collaborative relationships with their customers, who are closer to the end consumer.

Thus it is the relationships with the product development teams of end-market-facing firms and how this is fed into the manufacturer's own R&D programs that are a key indicator of future profitable growth. For example, the best consumer packaging businesses will have multi-year visibility of FMCG product programs, what role they will play and what investment is required. They will also probably be active collaborators in the development of new consumer products, rather than just a supplier asked to quote on a final packaging design.

Questions to ask:

- ▶ What are the end-consumer trends driving innovation in the end-market I supply and what does this mean for my present business?
- ▶ Am I talking to my customers about future trends to ensure we proactively meet future needs?
- ▶ What are the technical and operational requirements needed to address this and have I invested adequately in the right technologies?
- ▶ Do I have visibility of the long-term plans for my customers' product programs and what part I will play?



07

The supply chain “balancing act” and effective offshoring

Packaging is a relatively low-value good, which has a limited radius up to which it can be profitably transported to customers

Maintaining an effective supply chain and operations network for a packaging business is complex. As a general rule, the location of the plant is a key driver of the economics. Packaging is a relatively low-value good, which has a limited radius up to which it can be profitably transported to customers.

But, practically, there will always be trade-offs between transport costs, plant capacity utilization, number of plants, inventory, customer service levels and good manufacturing practice (GMP) requirements. The right answer depends on the type of packaging (rigid, flexible, paper, metal etc.) and the end-market served (consumer food, industrial, cosmetics, health care etc.). For example, flexible packaging can be compacted for transport, which means it can travel further than other types of packaging.

Depending on the margins achieved and the premium placed on timely delivery, it may make sense to operate more plants at a lower level of utilization, but nearby key customers. In other circumstances, it may make more sense to centralize production and maximize utilization of fewer plants. The best operators will understand the dynamics of their business and explain why their operations strategy is optimal, yet be open to challenge the status quo.

As we have stated above, packaging has a limited distance over which it can be economically transported. In the past, this has shielded national and regional players in developed markets from low-cost overseas competition. However, two factors have upset this equilibrium.

Firstly, the relative increase in energy and raw material prices in the developed world, and the relative “transportability” of flexible packaging have made it feasible for low-cost country producers to export to developed markets.

Secondly, FMCG manufacturers have been responding to their own global competitive challenges by setting up production in low-cost countries. For example, European packaging customers have been shifting production of consumer goods Eastwards and also entering emerging markets as growth in developed markets slows.

To remain competitive, packaging producers have been offshoring their own production in three distinct ways:

1. In the first model, the low-cost country packaging operation is not aimed at selling into the local market, but aims to take advantage of lower input costs and transport finished or semi-finished goods back to the home market.
2. In the second model, the offshore packaging operation supplies a key consumer product account with a presence in that market. This can be either for export or to service a growing local market.
3. In the third model, a hybrid of the two others, the offshore packaging operation is set up for short-term exports and long-term domestic supply of the local offshore market. This requires production flexibility and long-term views on the local offshore market both from an input cost and output market growth perspective.

Each of these approaches has its pitfalls. The first scenario has the potential to introduce complexity and increases the length of the supply chain. This can result in unforeseen costs, supply continuity issues and additional inventory, which has negative implications for working capital.

The second scenario can introduce a large dependency on a single customer and can require significant capital investment. In such situations, it can be advisable to seek minimum volume guarantees and/or a contribution to capital costs.

The third scenario requires riskier long-term planning if the cost savings are not sustained and/or the growth of the local market does not materialize. However, its modular structure can allow the offshore packaging operation options in terms of future entrenchment or retraction.

In all cases, businesses can run the risk of start-up issues due to inexperienced local labor. Also, the speed of development of low-cost markets means that the economic rationale for a decision can be eroded very quickly by increasing operating costs and/or increased competition from local emergents and other offshoring competitors moving into the market.

For example, labor rates in Chinese cities have increased dramatically in the past few years, meaning that supposed low-cost offshoring no longer makes sense without significant investment in automation.

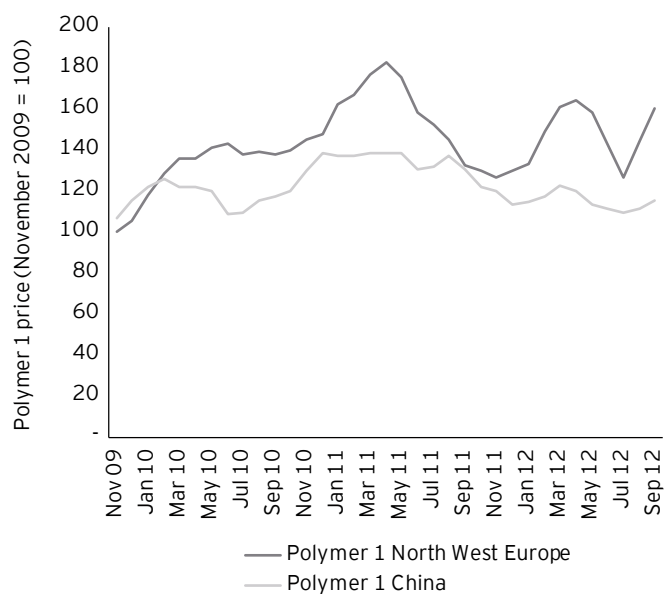
Furthermore, although raw material price differentials has made importing from the East an attractive option in the past for Europe (see Charts 12 and 13), increased low-cost volumes of material from the Middle East and the decline in the value of the euro has reduced its relative benefits.

In fact, certain European manufacturers believe that Asian players are considering investing in Europe as their technology and cost base has evolved sufficiently to allow them to compete.

In summary, the choice of manufacturing location is a complex decision, where economic drivers are constantly changing and strategy needs to be reviewed regularly.



Chart 12: Polymer 1 price – North West Europe vs. China



Source: EY analysis

Chart 14: Average Chinese wage rates (manufacturing)

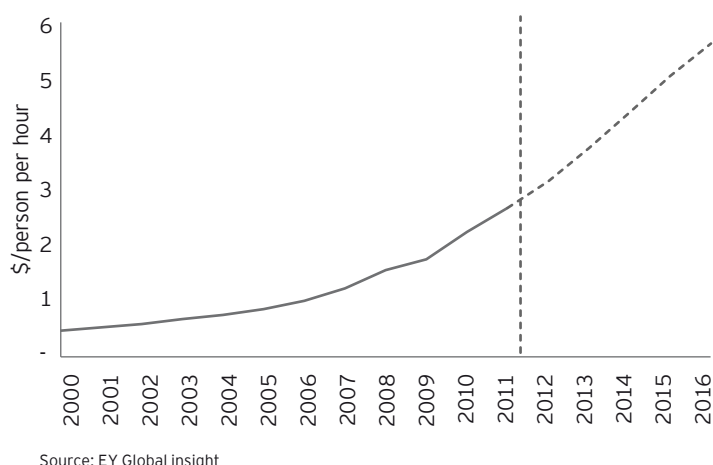
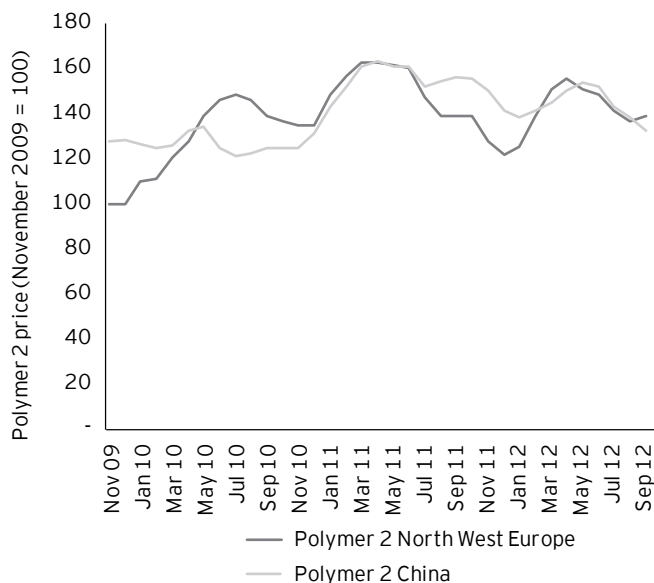


Chart 13: Polymer 2 price – North West Europe vs. China



Source: EY analysis

Questions to ask:

- ▶ What is the optimum plant network and capacity plan for the business?
- ▶ Is the commercial and operational rationale for offshore production clear and what are the sensitivities to the assumptions?
- ▶ Do cost differences between regions still make it cost-effective to outsource?
- ▶ How can I reduce the risks of offshore production – e.g., take-or-pay contracts, co-investment, joint venture?
- ▶ How is consumer behavior changing in traditional low-cost countries?



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