

Challenges to Packaging in a Global World

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Packaging is vital in today's world

The world needs packaging for two reasons

- to provide food for all people around the world and
- to facilitate a global free trade, a prerequisite for countries to develop and increase their standard of living.

Today we waste huge amounts of food due to improper packaging, transport and storage, especially in less developed countries where large groups of the populations move to the cities to find an income. We need only to compare the food waste figures between the Western world and the less developed countries: 2-3 % vs. 50%.

At the same time the globalisation of the world economy has made it natural for companies that previously focused their activities on national markets to move towards new markets around the world. In addition to extending its markets, a company acting in the global arena also strives for cost reductions through scale economies in marketing, production and purchasing as well as through focused manufacturing and/or assembly operations, logistics and product development (Björnemo et al, 2000). Packaging is one of the important facilitator to accomplish market growth along with modern information technology and a well designed and applied supply chain.

Who cares about packaging?

The general public has little understanding of packaging as it is the product that is of interest.

The consumer/customer package may influence the consumer/customer at point of purchase, but the transport package is only interesting to manufacturers and distributors. An example of the lack of concern for packaging in terms of its performance is the environmental legislation that was initiated in the 1980ies. It does not address product protection to avoid waste but instead deals with the minimisation of material and the support of reuse packaging ahead of recovery due to a general belief that packaging is waste.

This common environmental packaging view has subsequently influenced the selection of packaging materials and designs. The reduction of packaging weight has been significant; light packaging materials have been successfully developed. Recovery has been introduced and accepted by the public. The general Nordic view on renewable vs. non-renewable resources has not been accepted for packaging development in all market segments. I have only to mention the plastic bottle and its victorious development over the last ten to fifteen years to demonstrate this situation. It has gone so far that today environmental aspects have become one concern among others that need to be evaluated when selecting the package – but not a factor that gives an actor any advantages over other actors.

The free trade movement has meant that new importers and exporters have entered the world market and they have often been able to operate at lower costs than the Western world companies due different salary levels and social systems. And this development will continue in the future. One way to meet this competition has been for Western world companies to move manufacturing and supply to the low cost markets. Consequently, longer transport distances have come more into focus and it has become a major concern to design supply

chains to move products to Western markets. Efficiency and effectiveness have become central issues.

Packaging is not only a box or a bag

The retail industry is a driving force in packaging material selections and packaging designs used in supply chains. It pays much attention to the consumer package, as well as the transport package as they both are important to ensure product quality and low cost distribution.

Besides the retail industry the automotive industry is considered a driving force in packaging development. Here, the transport package is the main interest as it will facilitate the transport, handling and storage of components bought all over the world and brought to the car assembly line. The transport package must be effective and efficient in the supply chain but in addition aid in the assembly line. The personnel should not need to spend time opening packages and checking the product. They should be sure of grabbing the right product and installing it without worries about variations and malfunction.

It is obvious in both the retail environment and automotive environment that excellence cannot be achieved in packaging selection if the designer or design team does not know the following: what is required to effectively and efficiently distribute the products; what products require to survive the supply chain; what materials can be used in the package; the converting possibilities available to transform the materials into useful packages; the packing conditions available. The designer/the design team also needs to have knowledge of logistics, sales methods and consumer demands as well as manufacturing demands.

In addition legislative knowledge is necessary. Actors in the supply chain actually need to understand the system from product initiation to consumer/customer take over and final recovery and/or reuse (Saghir, 2004). He/she needs to understand how different parts work together to build the expected packaging performance.

The definition of packaging is “a coordinated system of preparing goods for safe, efficient and cost-effective transport, distribution, storage, retailing, consumption and recovery, reuse or disposal combined with maximising consumer value, sales and hence profit”, so there ought not to be any doubt of the importance of this system’s view when it comes to packaging design and use (Paine, 1990)

Still few companies, be it packaging material producers, packaging users or logisticians, are directed to look at packaging in this way. My research team has shown in study after study that the package often is an afterthought (Bramklev, 2005). The package is not seen as a critical component in building effectiveness and efficiency in the total system from product development to packaging recovery. I believe that especially the packaging material industry and the converters must learn the total role of packaging if the industry is going to develop into a more important partner in the value chain than it is today and consequently more economically successful.

Packaging interdependence with successful logistics

The damage rate of products is one way of describing the supply chain performance in different markets. The packaging materials and designs that are needed will be influenced by consumer/customer demands and handling, storage and transport conditions. The hazards and loads in a logistic system/supply chain will in turn be influenced by packaging design and

handling methods as well as products. Let me give an example: A sack holding 50 kilos will be handled differently from a sack holding 10 kilos. The heavy sack may be put on a man's shoulder, carried to the point of destination and there dropped there on the floor, while the 10-kilo sack will be thrown between the men handling the sack. If the product had been packed in a corrugated board box, the handling method would consequently have been selected differently probably some kind of tool, such as a trolley, would be used.

The consequence is that the product as well as the type of package chosen and the handling, storage and transport will influence the supply chain efficiency and effectiveness and subsequently the company profit. Thus there is interdependency between packaging design and supply chain design. It is my conviction that a packaging designer needs logistics knowledge and a logistician needs packaging knowledge. Today this is seldom the case beyond some shared common know-how as described above.

In a competitive market place, the consumer/customer views are important. More and more companies have the goal of making their organisations consumer/customer oriented to ensure that their businesses will be successful because they meet customer needs and expectations at the same time as they create customer values. But it is not only the final consumer/customer that counts but all the actors from "cradle to grave". I can illustrate the importance of considering all actors along the chain (sometimes called the total customer) by looking at the development of the retail business in the Western world. The competition has developed new retail structures in many countries and altered supply systems. It has often aided retailers to gain power and control over the supply from manufacturers, producers and wholesalers and made it possible to stipulate transport, handling and packaging. Just take Wal Mart and IKEA as examples. Some of their logistics changes have been driven by legal requirements on safe

handling as well as the producer's responsibility for used materials. Others have been influenced by new views on food products and their health aspects. Still other changes depend on volatile consumer/customer demands and requirements. New products are also developed by both manufacturers and retailers. The retailers are very sensitive to consumer/customer demands and make sure they have supply chains that can handle changes smoothly and easily (Gustafsson et al, 2006).

Many companies will, of course, continue to survive in the short term with outdated views and philosophies on packaging and supply chains in this world. But I believe that the companies that will be most successful in the long run are those that actually pay a great deal of attention to improving, enhancing and developing every aspect of the supply chain. Over time attention to details in the different phases or steps in the chain will provide a winning advantage on service and costs.

To become successful I believe it is necessary for product developers, manufacturers as well as distributors to pay attention to both the packaging needs, designs as well as supply chain design – to continuously improve the details to meet the different requirements in different steps. Continuous attention to details is often more important and successful in accomplishing cost saving than major changes carried out on just one occasion. I have participated in studies that show that an expansion into new formats and forms of retailing or deliveries to assembly lines only has been possible because the companies have developed detailed knowledge about the supply chain, logistics and packaging requirements. One example: Tesco in the UK has developed a very interesting fresh food products and sales expansion by paying attention to details to provide packaging that makes it possible to keep the required food product temperature on an even level through the whole supply chain (Gustafsson et al, 2006).

Another example is IKEA. The basic idea of flat packages was almost lost for a number of years. The designers forgot that the products had to be transported and handled from production to the customer homes. Today IKEA has people in several places in the organisation with the sole task of ensuring a product development, including the supply chain process that guarantees the utilisation of the flat packaging concept. They pay great attention to packaging and have shown in figures that it positively influences their business (Klevås, 2004, Gustafsson et al, 2005 a).

Why are so many companies overlooking this opportunity to improve effectiveness, efficiency and profit? Lack of knowledge is my understanding.

Packaging materials should be on the move

When packaging people talk about packaging materials, they often say that wood fibre materials will provide the stacking strength of the package needed for transportation. Other materials, like aluminium and plastics, provide the packaging barriers, for example shelf life and moisture resistance thus meeting product and consumer/customer requirements. Material manufacturers often present a similar view. My question is why it has to be this way? Take the stand-up plastic pouch as an example. The design and plastic material provides the stacking strength the consumer package needs together with the barrier properties the product requires to meet consumer requirements. However, it needs a transport package to provide the distribution strength. But that is no problem as the consumer and transport package will build a joint system that meets all requirements. The paper industry should have been able to do the same thing. But it did not. A consumer paper package with the correct barrier could have challenged the plastic pouch with something extra – sustainability to give an example.

Of course, as in the retail industry, I believe that material companies in the short term will continue to survive with outdated views and philosophies on packaging and supply chains in this world, but if the industry wants to develop and flourish, I am convinced that new concepts and new understandings must be developed.

The paper industry is important and vital for the packaging industry. I believe it is not enough to produce a “traditional” paper with paper strength so and so. Instead the industry needs to develop its business intelligence and identify development trends/consumer demands to understand what packaging material and design the future market is looking for. It needs to disseminate this information to be used in its own R&D. In addition it needs to cooperate with the universities where the latest know-how and research results are available, be it in microstructure know-how, nanotechnology etc, to develop the new fibre based material properties that are needed. To be really successful the paper industry needs to strive for a so-called time monopoly - to be ahead of the competition. That is not done in a daily industry environment, but in an environment where the minds of innovative people may join together to meet the challenges. Of course, the universities provide this information to industry through their graduates who are employed in industry, but that takes too long. In addition the numbers of graduates that actually are employed are often small. Time is money and direct cooperation is important to learn and understand before the results have an impact on business.

The great advantage with paper is that it utilises a sustainable resource. But that is not enough if the packages made of these materials do not meet the values the consumer is looking for. The result may be that the packages and the products loose the competition.

One company may be used as an example of the consequences of the application of new concepts and innovative knowledge developments, namely Sandvik. It has grown to become a major player in new steel based products meeting new demands that makes it possible to rely on special performance products and consequently higher profits than the original products. Another example from the paper industry itself is diaper development. I cannot for the life of me understand why the paper packaging industry cannot accomplish something similar.

Be sure to make use of the universities

Research came to the universities as late as in the middle of the 19th century. At that time the Humboldt University was defined meaning that university professors should be independent from influences other than the purely scientific. In the middle of the 20th century the true value of university research and education became evident to politicians and the public. The idea of employing university research in the development of national industries was conceived and industry sectors became driving forces in technical university research. In addition the universities were assigned the task of transferring their know-how to the society at large.

Packaging is applied science combining knowledge from several disciplines that together contribute to the solution of a supply chain need. But the packaging industry has never been a driving force in applied packaging research. Instead parts of the packaging system have been supported, i.e. one company influencing and cooperating with a logistics research department, another cooperating with a material research department etc, seldom recognising the interdependence between researches carried out, i.e. the interdependence between material, production, logistics and marketing.

As a matter of fact we separate technical education and economic education as well as marketing education in most universities. The result: the importance of packaging is not recognised to its full extent, but only in optional courses and co-operative efforts in a few programmes.

Research shows that a subject that is not present in the basic education programmes will never be recognised by the graduates during their working life. The way the paper industry today use their research resources with less attention to the value chain than to paper production (that in itself is generic through the machine manufacturers) will not benefit the industry as a whole. Generic technology can never give unique competitiveness.

My conclusion is that we need more presence of the packaging industry in the university settings to engage the interested elite. Packaging must not continue to be an afterthought and material scientific know-how must find its way to the packaging industry. Besides regular presence, use the internet and modern technology to attract the youth and show your potentials.

Conclusions and challenges

International trade will grow as the world gets smaller through more cooperation across borders, between countries, individuals as well as politicians. Industry and individuals must continue to strive for effectiveness and efficiency to make their businesses competitive.

Obviously packaging is a necessary facilitator in this global trade. It is a guarantee for proper distribution of food and other necessities to people and industries all over the world.

Therefore the packaging industry has a number of challenges to fill its role, namely

- to develop tools to demonstrate how to utilise packaging in product development, thus making products competitive in different markets.
- to gain understanding of the supply chains serving different industries and organisations in detail, analyse the consequences of new supply structures and changes that influence packaging

The paper industry needs to participate in handling the packaging industry challenges and in addition

- develop its own research to pay more attention to the values possible to develop through new fibre based paper products and services
- take advantage of new scientific know-how and develop functional packaging materials to provide the time monopoly so much needed.

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But what about the big challenges that are brewing for the future? In 30 years, what might be on the world's agenda to solve? It's impossible to predict, but we can get clues from how current trends in science and technology may play out. Here are just some of the potential big issues of tomorrow: Genetic modification of humans. You don't need to look very hard in a place like Miami to see how cities are changing in the 21st Century – rising sea levels are gradually making some of them disappear. Fuelled by climate change, not only are floods becoming more common in the streets, but the changing weather patterns have also influenced building design. Aside from more seawalls, the city is requiring all new buildings be built with their first floor built higher.

Tackling Global Challenges We will focus on urgent global challenges that must be addressed to reduce poverty, grow economies and protect natural systems: food, forests, water, energy, cities, climate and the ocean. Because these seven challenges are inextricably linked, our strategies often address more than one, cutting across programs. “The challenges we face are massive” How can the world feed nearly 10 billion people by 2050 in a manner that advances economic development while reducing pressure on the environment? This will require closing a 56 percent gap between the food available now and what is needed by 2050, supporting inclusive economic and social development and reducing agriculture's impact on the environment. This is a list of global issues. Informally, a global issue is any issue (problem, risk) that adversely affects the global community and environment, possibly in a catastrophic way, including environmental issues, political crisis, social issues and economic crisis. Solutions to global issues generally require cooperation among nations. In their book *Global Issues*, Hite and Seitz emphasize that global issues are qualitatively different from international affairs and that the former arise from growing