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PAPER AND PACKAGING: A Perspective & New Frontiers

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Abstract: *Packaging is the proverbial elephant that is seen and understood differently by different stakeholders. It uses a vast array of materials, for a variety of objectives, performs different functions in the supply chains across industries and beyond.*

Packaging must meet aesthetic needs of the brand, provide convenience to the consumer, perform well on operational parameters, protect the product thru the supply chain and while doing all the above should remain cost effective.

This article is a humble attempt to look at paper& paperboards, its place in packaging applications and its prospects in a world mauled by pandemic and concerns about sustainability.

Introduction

Packaging in its types or scope is limited only by human imagination and creativity. Before we discuss paper packaging in more details, given below are packaging types and materials used that are manufactured or used at industrial scale-

1. Rigid Packaging- Paper, plastics, metal, glass etc

2. Flexible Packaging- Plastics, paper, textiles (woven/ non-woven), metal etc

In rigid packaging formats, paper & boards are by far the largest used material but in flexible packaging, plastics are the dominant material. At aggregate level paper and boards maintain the leading position both in volume and value terms. Paper is used in multiple segments across industries and applications. Each of these segments has its unique dynamics. Some of these segments consume multiple grades of papers. Six different segments that use paper in significant volume are discussed below-

1. Flexible Packaging-

Flexible packaging is the fastest growing category (CAGR > 10%),for its versatility and cost effectiveness. In a total volume of over 3 million MT (includes label applications), paper constitutes about 0.5 million MT(Fig. 1). Bulk of the raw material comes from plastic based films like BOPET, BOPP, BON, PE etc. Due to pressure on plastics, there is increased interest in use of paper. Products of focus in this segment are writing & printing grades, kraft papers etc. The biggest challenge inhibiting use of paper in flexible packaging comes from inadequate barrier properties, a critical require mentfor food packaging which constitutes over 80% of this segment. This also is therefore a big product development opportunity.

Flexible packaging is an extremely competitive industry which makes its supply chain requirements rather demanding. For its staple raw materials, lead time of less than a week, joint less and length specific reels, special size servicing are standard expectations. Within paper industry, this is an opportunity to leverage wider deckle, trim optimization software and special size aggregation from the market to capture higher volume and market shares.

Paper is a material of interest more than ever before, both by the industry and consumer but the actual progress in this segment will depend upon meeting supply chain requirements and product development opportunities mentioned above.

2. Container Box-

As a “shipper”, container box provides a packaging solution that has no real alternatives globally. It is unrivalled in terms of cost, functionality and sustainability. Popularly known as corrugated box, at 7 million MT (Fig. 1) it is easily the largest single segment for the paper industry. Despite a large base it also is a high growth segment at about 9%. This generates an additional demand of over 0.5 million MT every year.

During last decade the downstream converting industry rapidly graduated to semi-automatic or automatic conversion process, bringing about major gains in productivity, quality and cost. This allowed large chunks of the industry to shift from 5 ply to 3 ply boxes but in many cases paper gsm was increased to partially offset the gain. The current phase of improvements is being driven by better and lower substance paper produced by bigger and better paper machines, optimization of box dimensions, use of better adhesives etc.

This segment will continue to gain momentum, primarily driven by government focus to promote manufacturing, global supply chain shift away from China and continued high growth in online business. Even though converting business in this segment will remain customer focused, large component of "market place business" within online sales presents a higher margin business based on channel and distribution.

3. Food Service Packaging-

This category uses a wide range of grades of paper and boards namely duplex boards, virgin boards, corrugated boxes, coated and uncoated woodfree, kraft paper, greaseproof papers and many more. The actual shift away in demand from plastic to paper is most visible in this segment and pressure on single use plastic has grown this category to almost one million MT(Fig. 1)of paper and board consumption across grades. Introduction of barrier coated and heat sealable products have further boosted the shift away from plastic containers. Many QSR chains and stand-alone outlets have shifted to paper packaging in last two years.

Despite its size and high growth, the segment does not get the required attention, not only because of fragmented basket of products it uses but also due to highly fragmented and largely unorganised nature of the market. Due to this very reason, conventional methods of tapping this market can deliver limited success only. Though online food aggregator apps are bringing about some order in the front end of its supply chain, the backend still remains mostly chaotic.

4. Carton Box-

This segment is the default recall when paper-based packaging is mentioned. But at about 4 million MT(Fig. 1), it constitutes only 30% of total paper and boards consumed in packaging applications. This remains the preferred option for premium applications in host of industries like food, cosmetics, liquor, pharma etc. But again, due to lack of barrier properties, it is almost always used as a secondary packaging in "bag in box" or "container in box" formats.

5. Single Use Disposables-

This is another segment severely impacted by plastics ban. The segment is about 1.5 million MT(Fig. 1) strong and expected to grow steadily. The most popular applications are shopping and carry bags. To enlarge the potential market, "bag in bag" format can be adopted to offer stronger bags for better functionality.

Market structure is similar to food service packaging at convertor level but more organized at user end. Therefore, required marketing mix is similarly complex and multi-dimensional.

6. Bulk, Industrial & Others-

This perhaps is the least exciting of all paper-based packaging segments both in terms of its volume and growth. Current base is estimated at 0.2 million MT (Fig. 1) and growth below 5% but supply chain shift into India may push it higher. "Bag in bag" format is used in cement, chemicals, milk powder, tea and other dry food products. Interleaving applications are relevant for flat and sheet products in glass, laminates and metal industries.

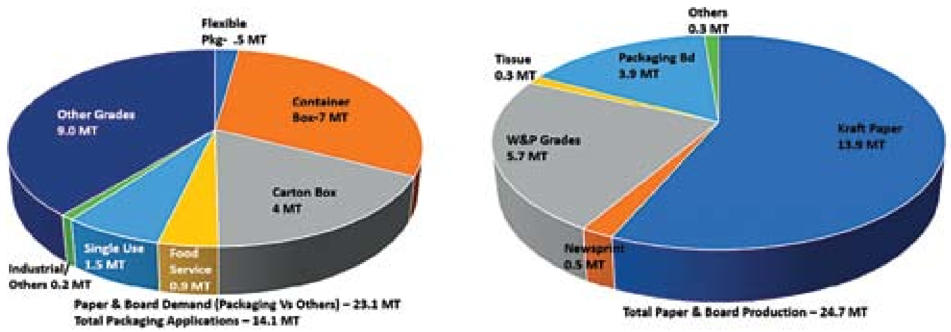

Figure 1: Paper & Board – Estimated Demand & Production in India (Fig. For FY 2019-20)
(Source – IPPTA, Care Rating & Industry Sources)

It is worth noting that 60% of all paper and paperboards consumed in India goes into a packaging application and this percentage will continue to rise in future (Figure 1). At the global level this share is likely to be higher. Also, this consumption is not confined to traditional packaging grades only, about 10% of total writing and printing grades consumed go into packaging. It is also pertinent for producers of W&P grades that demand growth in packaging segments will remain much higher than in traditional printing applications. For the perspective of the readers, Fig.1 gives details of paper and board demand as well as production in India for the year preceding the pandemic.

Since the release of "Plastic Waste Management Rule, 2016" by Govt. of India, there is a perception that plastic will eventually be banned leading to a bonanza for other competing materials. While this is mostly true in case of "food service packaging" and "single use disposables" segments, the largest consumer of plastics i.e., "flexible packaging" segment will remain largely unaffected by it. In case of the first two, significant reduction in use of plastic packaging has already happened in last few years. As for flexible packaging, the thrust is going to be towards post-consumer waste management thru collection, segregation, processing and recycling of the same. The SWOT analysis for paper as a packaging material puts the same in perspective (Figure 2).

Strengths: - biodegradable, sustainability - Highly recycled material - Printability, aesthetics - Productivity; high packaging speed - Convenience; tear ability, dead-fold	**Weakness:** - Poor barrier properties - Low mechanical strength - Supply chain; lead time, special sizes etc
Opportunities: - Barrier coatings for additional applications - Supply chain initiatives	**Threats:** - Development of bio-degradable plastics - Increased recycling of plastics - Higher cost

Figure 2: Paper & Board as packaging material - SWOT Analysis

Conclusion

Paper based packaging goes beyond the conventional paper grades like duplex boards and kraft papers. Industry must look at this business not only from grades but also from user segment perspective. However, depending upon the segment of interest and hunger for higher reward, the industry will need to work on and find solutions in the area of-

- New product development
- Better designed and calibrated marketing mix
- Honing the outbound supply chain to market needs

Currently the paper industry relies on traditional channel partners for the business but more evolved marketing mix of organised business development and customer management can bring better results from the market.

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References

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2. Secondary research and data banks