Paper a 'Threnody'?

Abstract: *The perception about pulp and paper industry in the eyes of the world is going through a turmoil. Advent of modern digital technologies, buyer behaviour, buyer characteristics and most importantly the fragmented brand of the paper industry has led to a thought that paper industry is nearing towards the end of its life cycle. The author uses the EERC model and also it clearly elucidates in the paper few possible means through which the industry can come out of this turmoil. A lot has been stressed on how the paper industry can be branded and how a blue ocean can be identified in the industry so that the industry as a whole rise like a phoenix and at the same time create a new benchmark for the profitability of the industry as a whole.*

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INDIAN PAPER INDUSTRY

Globally over 400 million tons of paper and paper products are consumed. The worlds three largest paper producing countries are China, the United States and Japan (contributing to nearly half of the world's paper production), while India accounts for the small but growing share of the global market (Madan,2018).

India's share in global paper demand is gradually growing as domestic demand is increasing at a steady pace while demand in western nations is contracting. The domestic demand in India grew from 9.3 million tons in FY-08 to 15.3 million tons in FY-16 (Madan,2018). As per IPMA (Indian Paper Mills Association) estimates, this industry contributes approximately 4500 crores to exchequer and provides employment to over 5 lakh people across approximately 750 paper mills. The global characteristics of the industry are that it is capital, energy and water intensive and highly fragmented (small units account to about 60% of the industry) (Madan,2018). On the other hand the per capita consumption of paper in India is about 13 Kg against a global average of 57 Kg and far below per capita consumption of North America which is about 200 Kg.

Increasing literacy rate, increasing government spending on education, Population growth, Changing demographics, Higher urbanization (2.5% growth), Increasing living standards, Lifestyle changes & media growth and increase in advertising are the major growth drivers (Doshi, 2011). However, computerization and the internet have replaced some of paper's purpose. But we are also, finally, entering a time that was previously the realm of sci-fi: actual, usable digital paper. If one does Porters' 5 force Analysis in Paper Industry, the outcomes are as below:

- Threat of new entrants: Low entry barrier, Government's delicensing of the industry in 1997, new players are entering in the market.

- Threat of suppliers: Environmental issues, Increased cost of raw materials

- Threat of substitute: Digitization, internet penetration, use of biodegradable plastics, switching cost is low

- Threat of customers: Low bargaining power, Increased demand for industrial paper (Doshi, 2011).

- Threat from competitors: Increased competition, too many players with practically minimal to no product differentiation – 'Perfect Competition'; Diversity of Competitors; Buyer's low switching cost BILT, ITC, JK.

REASON FOR THE CURRENT SITUATION

Xerox conducted a survey in association with, in about 1,021 companies based out of the US, UK, Germany, and France, it was understood that to improve the operational efficiency, working systems, efficiency, productivity and performance about 65% of businesses are already started to digitize paper (Xerox,2019). The main advantages included tracking inventory, managing invoices, increasing fill rates, reduction in errors, increased agility, unauthorized access to personal data, including names, social security/national insurance numbers, account information, misfiled and lost papers. The study was conducted across various sectors that included health care, legal, retail and distribution, Compared to other small and mid-size businesses, health care organizations pay the least for paper processes — 10% spend less than $500 and 30% spend $500 – $1,000 monthly (Xerox,2019). As more retailers become e-tailers, 46% of companies recognize the importance of prioritizing digitization in the Sales and IT Departments and 62% of companies protect themselves by incorporating printers/MFPs in their overall security strategies. In financial services, 72% of organizations are committed to mobile printing as an immediate goal and 84% of Financial Services companies plan to digitize paperwork and improve document work flows within the year. By digitizing their processes, 64% of the manufacturing industry will save between $1,000 – $5,000 monthly (Xerox,2019). In legal sector, only 56% of legal offices use digitized work flows. 28% plan to implement digital processes but are unaware of paper-free solutions. 70% of organizations currently include printing in their mobility strategies (Xerox,2019).

In the article, paper vs pixel, it is stated that in 1894, Scribner's Magazine published an essay by the French litterateur Octave Uzanne titled "The End of Books." Thomas Edison had just invented the phonograph, and Uzanne

thought it inevitable that portable "devices for registering sound"—he called them "pocket phono-operagraphs"—would soon replace books and periodicals (Nicholas,2013). Uzanne anticipated the arrival of the audiobook, the iPod, and even the smartphone. About the obsolescence of the printed page, however, he was entirely wrong. Books, magazines, and newspapers would go on being published and read in ever greater quantities (Nicholas,2013). Yet Uzanne's prophesy would enjoy continuing popularity. It would come to be repeated during the 20th century. Every time a new communication medium came along—radio, telephone, motion picture, television, CD-ROM—pundits would send out, usually in printed form, another death notice for the press (Nicholas,2013).

Wrong marketing and fake news also is another cause. A wrong news about disposable paper coffee cups was made as the most prominent in 2017. It was stated that there was incorrect disposal, inability to break down the cups at landfill which subsequently impacted the environment. It was recorded in Nature journal that the global tree count has fallen by 46 per cent since the dawn of human civilisation, putting extreme stress on our forestry sector (Bean Sean 2017). Around 25 billion hot coffees are served in paper cups each year according to the National Coffee Association of America. This equates to 10 million trees destroyed annually. For every tree destroyed to make paper cups, it's one less tree in the ecosystem, one less tree absorbing carbon dioxide, producing oxygen, and filtering groundwater in our universe. Research published in Nature suggests the world is home to more than 3 trillion trees, but currently people are cutting down and destroying 15 billion trees each year (Bean Sean 2017). "Trees occupy nearly every corner of the globe, but human activity is the greatest predictor of whether trees will survive in a given area," says Tony Chizzoniti, Principle of Tree Free Global. To help counteract its damaging environmental affects, Tree Free Global is manufacturing disposable cups made of plant-based plastics, not chemicals (Bean Sean 2017). They have developed a range of cups and products that change the way cups impact the environment. The cups which are food safe, inexpensive, certified internationally, and microwavable are made from bagasse, the waste fibre from

sugarcane after the juice has been extracted (BeanSean, 2017).

In another instance, it is being thought that Is the digital schooling or digital classrooms would cause reduction in the use of paper. In the article, In The Age Of Screen Time, Is Paper Dead?, (Steve,2017), it states that 96 percent of parents think that paper is "an essential part of children being able to achieve their educational goals." A test was conducted and it was seen that among junior high and high school students, 70 percent prepare for tests by taking handwritten class notes, 60 percent make and use flashcards, 50 percent of seventh- and eighth-graders agree they "learn information best if they write it down by hand (Steve,2017)." College students like paper, about 81 percent, for example, say they always or often use paper tools to prepare for exams (Steve,2017). In another article, paper vs pixel, the differences between page and screen go beyond the simple tactile pleasures of good paper stock were mentioned. It stated that to the human mind, a sequence of pages bound together into a physical object is very different from a flat screen that displays only a single "page" of information at a time (Nicholas, 2017). The physical presence of the printed pages, and the ability to flip back and forth through them, turns out to be important to the mind's ability to navigate written works, particularly lengthy and complicated ones. We quickly develop a mental map of the contents of a printed text, as if its argument or story were a voyage unfolding through space (Nicholas, 2017). If you've ever picked up a book that you read long ago and discovered that your hands were able to locate a passage quickly, you've experienced this phenomenon. When we hold a physical publication in our hands, we also hold its contents in our mind (Nicholas, 2017).

Is the kindle effect that is a cause? The e-book industry is stated to be a USD 1 billion market. The major growth has come due to the self-publishing phenomena. Earlier the publishing houses refused the authors and high fees stopped them from publishing content. With the growth of e-books and with the companies who handle the steps in the publishing such as editing, marketing, design, distribution and publicity has helped increase the market(Jennifer,2016). Social media also helps in promoting readership and instances have been found where few free pages of the

book are uploaded for the readers. This helps them to connect with the readers at a global level. Book Funnel was started in 2015 by fantasy novelist Damon Courtney, who became frustrated when he couldn't create links for free book promotions; it helps authors do giveaways and build readership (Jennifer,2016). Now BookFunnel delivers half a million e-book downloads each month on behalf of 3,000 indie authors, who pay $20 to $100 a year for the service(Jennifer,2016).

Is it the 'iPad' effect? Since its launch in 2010, the iPad has been on a rollercoaster. Sales numbers were quite high and with the launch of iPad Pro and Apple pencil in 2015, it has taken the technology use to another level. Everyone feels that they have got closer to paper as they can get through this promising technology. It's so good that some professional artists have turned evangelist, creating magazine covers, album art, and paintings with a Pencil, iPad, and apps like Procreate (Maclife, 2018).For the rest of us, the iPad and Apple Pencil are opening more day-to-day doors. They're enabling handwritten notes that are searchable, sketching ideas on-the-spot, and signing documents as fast as any pen and ink. With Apple's release of a non-Pro iPad that supports the Pencil at just $329 (and even better pricing for education customers), digital writing experiences are more affordable than ever (Maclife, 2018).In just the past couple years, the iPad and Apple Pencil have made waves across education, industry, art, and more. I've seen stories of how the interactivity and learning potential of this combination have largely replaced traditional white boards for a growing number of schools, with great results. A recent story out of the construction industry called the iPad a "gamechanger," as it replaces armfuls of outdated blueprints and documents with a single, canonical, more portable library (Maclife, 2018).

HOW DO WE SOLVE THIS PROBLEM?

One can look at this in more than one way. Either flow with the river or find new applications for the paper use. Blue ocean strategy can be employed here to take up this challenge.

Eliminate: The major factors that the industry has been long competing for can be eliminated. This includes obsolete technology, lack of trained man power, low level of internationalization in the industry.

Create: New products such as glue, supercapcitors, and so on which can be identified and ways to work on them economically could be seen

Raise: Expenditure on marketing about paper and it's uses, input in mill R&D, level of existing technology

Reduce: cost of financing, environmental pollution, delay in forest plantations

Some core areas can remain in the paper domain. In the recent papers, a clear and danger of present data being leaked or stolen is being recognised. The purported leak of personal details of 27 million members of the Employees' Provident Fund Organisation (EPFO) in India was confirmed by some stakeholders but denied by others has sharpened concerns around digital privacy all over again (Sonal 2018). We also read in the news that the revelation that all the information provided by individuals to get their biometric Aadhaar identification numbers was being accessed by unauthorised agents, had caused a furore, making government explain and take care of its safety at highest levels. These are only the most visible examples of the vulnerability of personal data that accumulate online IT industry insiders are convinced that many more leaks take place, but to save face, organisations do not report them (Sonal 2018). Global digital security firm Gemalto has estimated that 3.24 million records were stolen, exposed or lost in India in 2017, a 783 per cent increase over the previous year (Sonal 2018).
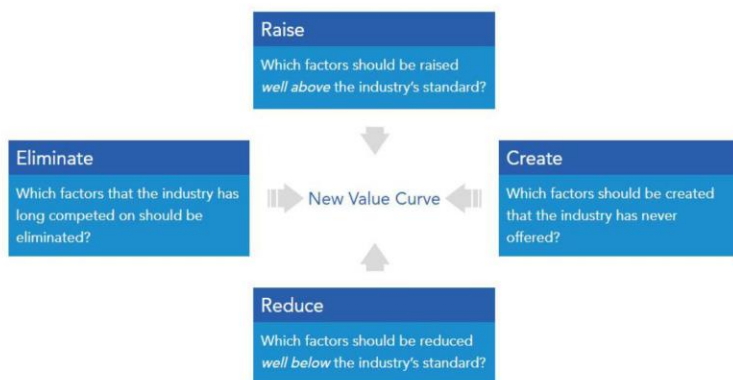
In the US in the earlier elections, as stated in the article, securing the vote : How 'paper' can protect US elections from foreign invaders,

Jacob Turcotte reported that when Logan Lamb visited the website of Georgia's Centre for Election Systems in August 2016, what he found though the cyber security researcher had no password or special authorization, he was able through a Google search to download the state's voter registration list, view files with Election Day passwords, and access what appeared to be databases used to prepare ballots, tabulate votes, and summarize vote totals (Jacob 2017).He also discovered a vulnerability that would allow anyone to take full control of a server used for Georgia's elections. It was everything a Russian hacker – or any malicious intruder – might need to disrupt the vote in Georgia. Even more alarming, say computer and election security experts, had a hacker exploited the website's vulnerabilities, it might have been impossible to detect. Voters in Georgia cast their ballots on electronic touchscreen voting machines that produce no paper record of each vote(Jacob 2017). Without such a record, there is no way to verify that a computer hacker didn't reprogram the vote-counting software to systematically assign more votes to one candidate or another. To a hacker such voting methods are an open invitation to mischief or worse, security experts say(Jacob 2017). To officials and experts concerned with securing the accuracy of the US election process, the methods represent a gaping vulnerability. By preserving and protecting every paper ballot cast in an election, officials are safeguarding evidence that can later be used in an audit to verify genuine votes cast by real people. (Jacob 2017)

Another way is to find alternative uses. New research published in the Journal of Applied

Polymer Science done by Michigan State University, Mississippi State University and the University of Toronto, Mojgan Nejad, an assistant professor of forestry at Michigan State University suggests that lignin, a by-product of paper and bioethanol production, can completely replace phenol in phenolic adhesive formulation, used in building materials. This research directly affects housing manufacturing by introducing bio-based adhesives made of lignin, a renewable resource, instead of petroleum-based phenol (Jenna 2017)."This will help the housing market to be less dependent on petroleum-based raw materials."The research is the first instance showing the 100 percent successful substitution of phenol with lignin(Jenna 2017). For the new research, the team was successful in testing plywood samples made of developed resin. When compared to commercial petroleum-based adhesives, the plywood made of lignin-based adhesives exhibited similar shear strength under both wet and dry conditions(Jenna 2017).

In another research, the researchers, Seung Woo Lee, an assistant professor in the Woodruff School of Mechanical Engineering at the Georgia Institute of Technology and his co-workers from Georgia Tech, report their work in the journal Nature Communications along with Korea University and the Photo electronic Hybrids Research Center at the Korea Institute of Science and Technology where they have made flexible super capacitor is made of paper (John 2017). It was first reported in Futurity magazine. "This type of flexible energy storage device could provide unique opportunities for connectivity among wearable and internet of things devices.", says Lee. The device uses metallic nano particles to coat cellulose fibres in the paper, creating super capacitor electrodes with high energy and power densities—and the best performance so far in a textile-based super capacitor (John 2017). Lee further states that "We could support an evolution of the most advanced portable electronics. We also have an opportunity to combine this super capacitor with energy-harvesting devices that could power biomedical sensors, consumer and military electronics, and similar applications." (John 2017).The next steps will include testing the technique on flexible fabrics and developing flexible batteries that could work with the super capacitors. The

Raise
Which factors should be raised *well above* the industry's standard?

Eliminate
Which factors that the industry has long competed on should be eliminated?

New Value Curve

Create
Which factors should be created that the industry has never offered?

Reduce
Which factors should be reduced *well below* the industry's standard?

researchers used gold nano particles because they are easy to work with, but plan to test less expensive metals such as silver and copper to reduce the cost(John 2017).

Conclusion

Thus looking at the current situation and the future growth in this segment, the major drivers of the paper industry are growth in education sector, increased demand of packaging,increased need for lighter materials and with the challenges such as old technology, lack of trained manpower and lack of communication to stop the spread of fake news, the paper industry can have a three-fold approach. One approach could be a short term approach which would solve the immediate crisis and steps can be taken to initiate towards the long term goal. In short actions such as increased spending in marketing and concrete steps to the reduction in fake news about the industry can be acted up. In the medium term, the industry could work with the technology providers and financers to raise the bar in the industry and also establish suitable training centres to attract manpower to the industry. In the long term, the industry can look for a blue ocean strategy which would enhance the profitability of the industry and Indian industry could make itself a stalwart and a global hallmark of innovation can begin from India.

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