



“QUALITATIVE EXAMINATION OF PAPER REUSE POTENTIAL IN SELECTED EDUCATIONAL INSTITUTIONS NEAR HOSPET- A PILOT STUDY”

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1.0 ABSTRACT

Examination paper wastage has been the biggest concern in the educational institutions of India as they form bulk and a very difficult task to process. However it is noted that many papers given for examination as answer sheets are either being left empty or crossed during evaluation.

In the present study unused papers of answer sheets were collected and analyzed quantitatively for deriving a valuable data to analyze the percentage of reusable paper waste created in educational institutions in one previous examination.

Keywords: Reuse , paper waste, Educational Institutions

2.0 INTRODUCTION

The Paper Industry plays a very impactful role in the world economy. The Industry is greatly based on a raw materials which is derived mainly from forest resources with harvest rotations that can approach 100 years in length. The sheer volume of timber required for the industry's production processes is confounding!

Since timber is their largest single production cost, paper firms historically have devoted enormous amounts of capital to the ownership and management of secure timber resources.

Specially, since the end of second World War , the Paper Industry has experienced a substantial technological advancements which has transformed its systems of operationality and production. Whereas in earlier times, production processes depend on on the craft knowledge mainly of skilled craftsmen etc .

New production processes revolutionised the paper production industry with incorporation of sophisticated , information systems sensory systems, and software-based controls. This major drift, began in the 1970s, and has reached the peak in the last decade.

The Industry's capital-intensive pulping and papermaking facilities, which can cost up to 1.5 billion dollars, are designed as high tech computer-based operating systems with paper machines that run at speeds exceeding 60 miles per hour with production outputs of up to 500,000 tons per year.

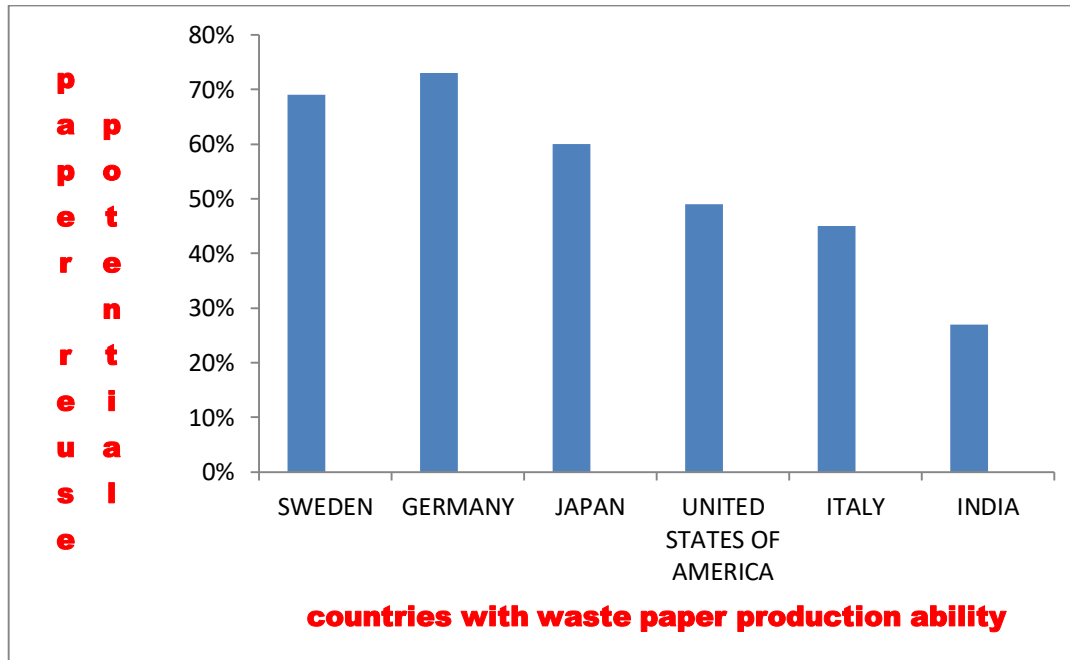
Educational institutions in India have been the epitomes of paper usage for conducting various examinations educational file management, records etc. although the paper usage is also significant in many other sectors yet the changes of reusing papers is not positive.

Due to the advancement in education sector and with large scale growth of middle class in India, need for paper is at its all-time high. This is creating a huge stress on the paper producing industries to produce enormous quantity of papers which is not only a burden for the economy yet, also shows a greater consequence on the environment. Today, India's packaging industry stands at the economic transactions at the value of 650 billion(Indian Rupees), which is expected to grow steeply at the rate of 825 billion by 2020. It is also recorded that the India's paper consumption rate has also significantly increased at an average of 8% in the last five 5 years. some of the initiatives taken by the government of india like conducting UGC Net exams online is of course a welcoming step but the population growth rate and possibility of taking exams online is still in a far distance.

Paper collection, reuse, recycle statistics in India is really a matter of great concern as india has still managed just to manage the waste of papers of just 3 million tons annually. Which is just 27% of the total paper and paper board consumed in India. In general only 27% of the paper produced is being utilised again back by the system. This rate is very low compared to many other developed nations like

Sl no	Nations	Percentage of papers waste bought back to the system for reuse
1.	SWEDEN	69%
2.	GERMANY	73%
3.	JAPAN	60%
4.	UNITED STATES OF AMERICA	49%
5.	ITALY	45%
6.	INDIA	27%

TABLE 1: Data Of Different Countries Of Their Domestic Paper Waste Recycling



Graph1: Graph Of Different Countries With Their Domestic Waste Paper Recycling Ability

As domestic waste paper collection and reuse systems is, roughly 60%.and most of it is being imported from developed countries yet is not used domestically. every year, nearly 4 million tons of waste paper is being imported to India in which united states holds the largest exporter with 34% of the market share. Following which is United kingdoms with 17% and third place by

European nations with 18%. Upon import papers are used for making valuable other products and majority of it is being recycled.

Since the 1970s, the trend of waste paper production is increased persistently to 47% in 2011.

As per the estimation the waste paper market has reached 1 billion US dollars in 2011.

3.0 MATERIALS AND METHODS:

Five different educational institutions were selected in and around Bellary and Koppal district of Karnataka state randomly in which two were high schools, one was pre-university college and one was first grade degree college.

With the prior request and authentication of the institution head, permission was taken to analyze the answer sheet bundles for sorting out of the unused papers. It is very common that two sheets were pinned and given as answer sheets (i.e., 8 writing pages). In many pre-university colleges, a booklet is being done with 50 pages for one whole year.

Samples were collected from one previous examination irrespective of the strata of whether it was school or pre-university college or degree college.

The papers collected were also of different sizes mainly long sheets and sometimes A4 size.

Before sorting the unused papers total weight of the bundles were calculated and recorded separately for each set of papers.

The answer sheets which were filled with answers were left untouched and were submitted back to the college authority with great care for their administrative records.

Different sized papers were sorted out separately and weighted in a digital weigh. Total weight of all papers were recorded as **X**.

And weight of each sheet of paper was weighted and noted as **Y**.

Total number of papers were calculated using the formula

$$\text{Total number of papers} = \frac{\text{total weight of given set of papers}}{\text{weight of individual paper}} \text{ in grams}$$

4.0 RESULTS AND DISCUSSIONS

Three different sets of papers were being identified and recorded separately.

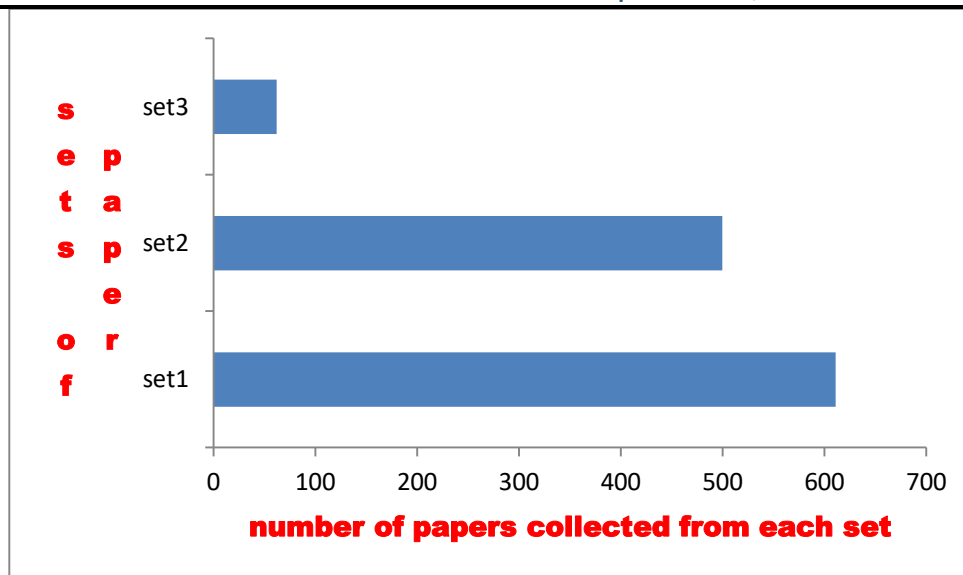
Set 1: Total weight of papers collected in set 1 papers were 22 Kgs and each papers weight was found to be 3.6 gms.

Set 2: Total weight of papers collected in set 2 were 16Kgs and each papers weight was found to be 3.2gms.

Set 3 Total weight of papers collected in set 3 were 18 kgs and each papers weight was found to be 2.8 kgs.

Sl no	Papers sets	Gross weight of papers with used and unused papers	Total weight of papers collected	Weight of each paper	Total no of papers
1.	Set 1	38 kgs	22 kgs	3.6gms	611 papers
2.	Set2	24kgs	16 kgs	3.2gms	500 papers
3.	Set3	23kgs	18kgs	2.8 gms	642papers
				Total papers collected of all sets	1753 papers

Table 2: papers collected from different institutions and weight of papers



Graph 2: number of papers collected from each set of papers

Sl no	Sets of paper	Gross weight of papers	Total weight of papers collected	Percentage of papers unused
1.	Set 1	38 kgs	22 kgs	57.89%
2.	Set2	24kgs	16 kgs	66.66%
3.	Set3	23kgs	18kgs	78.26%

Table 3: percentage of waste papers which could be reused



Graph3: percentage calculation of un-used papers from each set

Average percentage of papers which could be reused

$$\frac{57.89 + 66.66 + 78.26}{3} = 67.60\%$$

Therefore, 67.60% percent of total papers used for the examinations could be reused if planned in the right way.

It is to be noted that the total national average of paper reuse and recycling is just 27% (*al-biruni and kitabul hind*) and the results divulged from the present study shows that nearly 67% of the total papers could be reused even without any special efforts.

The increase in the percentage which could be reused without any investment and nor the ecological efforts was almost 40% than its being reused now.

The present study also makes a fuss on the ecological impact due to paper industry can also be reduced efficiently by taking initiatives by the educational institutions in a planned manner.

The study was just for a short period of time which was for just 15 days and was restricted to only 4 educational institutions.

5.0 PROPOSALS FROM THE STUDY

1. Educational institutions must take proper actions to reuse the papers being used for tests and examinations.
2. Proper protocols must be framed by the concerned authorities to ensure that least number of papers must be provided by the institutions for examinations.
3. Instead of giving papers containing 4 pages papers with two sheets must be given. And if more is needed additional sheets must be given.
4. It was also noted that using examination booklets were the biggest source of unused papers therefore examination must be conducted with paper sheets instead of booklets.
5. Government must try to conduct online examinations wherever necessary.
6. Even in educational institutions, concerned authorities must make this reuse technique as movement and two hours in one day out of one month must be dedicated for sorting out the unused papers for recycling and reusing.

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