

PERMUTATION AND THE 15 PUZZLE

*Project submitted for the B.SC Degree, 6th semester
examination in Mathematics 2022*

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ACKNOWLEDGEMENT

I am grateful to DR. BIDYUT SANTRA, Assistant Professor, Department of Mathematics and SARAT CENTENARY COLLEGE, and to Ms. Sampa Dutta, State Aided College Teacher, SARAT CENTENARY COLLEGE under whose supervision the project work has been carried out. I am grateful to all the teachers including the Head, Department of Mathematics, SARAT CENTENARY COLLEGE for their constant support throughout the work. I am thankful to the authors of various books, Articles and Webpages which have been consulted during the preparation of this project work. Finally, I express my sincere thanks to the staff members of the office, library of our college and infrastructural support provided by the department.

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CERTIFICATE

This is to certify that Subhankar Mukherjee has worked out the project work entitled "Permutation and the 15 puzzle" under my supervision. In my opinion the work is worthy of consideration for partial fulfilment of his B.Sc. degree in Mathematics.

Date: -

Signature of the teacher

PERMUTATION AND THE 15 PUZZLE



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1. Introduction: the 15-puzzle

The puzzle consists of a 4-by-4 grid together with 15 tiles numbered 1, 2, . . . , 15, and a single vacant location on the grid.

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	

A legal move comprised of sliding a numbered tile into the vacant location. From the initial configuration above, for instance, there are two legal moves: sliding the 12 down or the 15 to the right. The object of the puzzle is to use a sequence of legal moves to interchange the position of the tiles labelled 14 and 15 while leaving all other tiles unchanged.

The puzzle was "invented" by Noyes Palmer Chapman, a postmaster in Canastota, New York. Copies of the improved Fifteen Puzzle made their way to Syracuse, New York, by way of Noyes' son, Frank, and from there, via sundry connections, to Watch Hill, Rhode Island, and finally to Hartford (Connecticut), where students in the American School for the Deaf started manufacturing the puzzle and, by December 1879, selling them both locally and in Boston, Massachusetts. Shown one of these, Matthias Rice, who ran a fancy woodworking business in Boston, started manufacturing the puzzle

sometime in December 1879 and convinced a "Yankee Notions" fancy goods dealer to sell them under the name of "Gem Puzzle". In late January 1880, Charles Pevey, a dentist in Worcester, Massachusetts, garnered some attention by offering a cash reward for a solution to the Fifteen Puzzle.

The game became a craze in the U.S. in 1880.

Noyes Chapman had applied for a patent on his "Block Solitaire Puzzle" on February 21, 1880. However, that patent was rejected, likely because it was not sufficiently different from the August 20, 1878 "Puzzle-Blocks" patent (US 207124) granted to Ernest U. Kinsey.

Sam Lloyd claimed from 1891 until his death in 1911 that he had invented the puzzle, for example writing in the *Cyclopedia of Puzzles* (published 1914): "The older inhabitants of Puzzleland will remember how in the early seventies I drove the entire world crazy over a little box of movable pieces which became known as the '14-15 Puzzle'. However, Lloyd had nothing to do with the invention or initial popularity of the puzzle, and in any case, the craze was in 1880, not the early 1870s. Lloyd's first article about the puzzle was published in 1886, and it was not until 1891 that he first claimed to be the inventor.

Some later interest was fuelled by Lloyd's offer of a \$1,000 prize to anyone who could provide a solution for achieving a particular combination specified by Lloyd, namely reversing the 14 and 15, which Lloyd called the **14-15 puzzle**.

The 14-15 puzzle attracted a worldwide attention that can only be compared with the Rubik's Cube that conquered the world 100 years later. Ernő Rubik was in fact inspired by the slide puzzle when he designed his famous cube which can be seen as a 3-dimensional version of a slide puzzle.

Lloyd offered a prize of \$1000 (a princely sum in 1870) for the first correct solution. The puzzle swept quickly across America, then Europe, and in Lloyd's own words eventually "drove the world crazy."

The hype around the 15 puzzle was so significant starting in January 1880 that the inventor of the puzzle, Noyes Chapman, applied for a patent on the puzzle in March 1880. Nearly a century later, the inventor of the Rubik's Cube, Erno Rubik, claimed to have been inspired by the success of Lloyd's 14-15 puzzle to make another sensational puzzle .

Since Sam Lloyd's capitalization on the popularity of the puzzle, many other variations of the puzzle have arisen. Many of them form an image when completed or spell out a message.

Exactly half of all permutations of the 15 puzzle can be solved. Only those configurations that require an even number of transpositions between the empty space and numbered tiles may be created.

In this project work we shall present the modern Algebra approach to unravel the 15-puzzle problem using permutations and group theory. Another way of thinking about the 15 puzzle is through graph theory. But in this project, we have analysed the problem using Abstract algebra approach only.

2. Basics of permutation:

Permutation

Let S be a non-empty finite set. A bijective mapping $f : S \rightarrow S$ is said to be a permutation on S .

Let $S = \{a_1, a_2, a_3, \dots, a_n\}$. Then the number of bijections from S onto S is $n!$ Let one such bijection be f that maps a_i to $f(a_i)$. This permutation f is denoted by the symbol

$$\begin{pmatrix} a_1 & a_2 & \dots & a_n \\ f(a_1) & f(a_2) & \dots & f(a_n) \end{pmatrix}$$

The identity mapping i_S is also a bijective mapping. i_S is said to be the identity permutation on S and it is denoted by i .

$$i = \begin{pmatrix} a_1 & a_2 & \dots & a_n \\ a_1 & a_2 & \dots & a_n \end{pmatrix}$$

Let $S = \{1, 2, 3, 4\}$ and a permutation f on S be defined by $f(1) = 2$, $f(2) = 4$, $f(3) = 1$, $f(4) = 3$. Then f is expressed as

$$\begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 4 & 1 & 3 \end{pmatrix}, \text{ or as } \begin{pmatrix} 1 & 3 & 4 & 2 \\ 2 & 1 & 3 & 4 \end{pmatrix}, \text{ or as } \begin{pmatrix} 2 & 3 & 1 & 4 \\ 4 & 1 & 2 & 3 \end{pmatrix},$$

or in many other ways by interchanging the columns. But the standard form for f is $\begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 4 & 1 & 3 \end{pmatrix}$, where the elements in the top row are in natural order.

Now we will discuss about Cycle.

Cycle

Let $S = \{a_1, a_2, a_3, \dots, a_n\}$. A permutation $f: S \rightarrow S$ is said to be a cycle of length r , or an r -cycle if there are r elements $a_{i_1}, a_{i_2}, \dots, a_{i_r}$, in S such that $f(a_{i_1}) = a_{i_2}$, $f(a_{i_2}) = a_{i_3}$, \dots , $f(a_{i_{r-1}}) = a_{i_r}$, $f(a_{i_r}) = a_{i_1}$ and $f(a_j) = a_j$, $j \neq i_1, i_2, \dots, i_r$.

The cycle is denoted by $(a_{i_1}, a_{i_2}, \dots, a_{i_r})$, or by $(a_{i_2} a_{i_3}, \dots, a_{i_r}, a_{i_1})$, or in any other form provided the elements appear in a fixed cyclic order.

The cycle $(a_{i_1}, a_{i_2}, \dots, a_{i_r})$ is also denoted by the symbol $(a_{i_2} a_{i_3} \dots, a_{i_1})$.

$a_{i_1}, a_{i_2}, \dots, a_{i_r}$ are said to be the elements of the cycle. Two cycles f and g on the same set S are said to be disjoint if they have no common elements.

Multiplication of two disjoint cycles on the same set is commutative.

As for example, Let $S = \{1, 2, 3, 4\}$ and $f = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 1 & 3 & 4 & 2 \end{pmatrix}$,
 $g = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 1 & 4 & 3 & 2 \end{pmatrix}$, $h = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 3 & 2 & 1 & 4 \end{pmatrix}$

Here f is a 3-cycle. $f = (2, 3, 4)$. f can also be expressed as $(3, 4, 2)$, or as $(4, 2, 3)$. g is a 2-cycle. $g = (2, 4)$. h is a 2-cycle. $h = (1, 3)$.

It can be shown that every permutation on a finite set is either a cycle or it can be expressed as a product of disjoint cycles.

Now we will discuss about transposition.

Transposition

A 2-cycle is called a transposition.

A 1-cycle is the identity and it can be expressed as the product of the transpositions (a_r, a_s) and (a_r, a_s) .

A 3-cycle (a_1, a_2, a_3) can be expressed as the product $(a_1, a_3)(a_1, a_2)$ or as the product $(a_1, a_2)(a_2, a_3)$. [2 transpositions]

An r -cycle (a_1, a_2, \dots, a_r) can be expressed as the product $(a_1, a_r)(a_1, a_{r-1}) \dots (a_1, a_3)(a_1, a_2)$ [$r-1$ transpositions]

Now we will use the transposition to define odd and even permutation.

Even Permutation & Odd Permutation-

A permutation is said to be even if it can be expressed as the product of an even number of transpositions, and odd if it can be expressed as the product of an odd number of transpositions.

Since an r -cycle can be expressed as the product of $r-1$ transpositions, it is an odd or even permutation according as r is even or odd.

The identity permutation i can be expressed as the product of two transpositions $(a_r, a_s)(a_r, a_s)$. So, i is even.

As for example, Let $S = \{1, 2, 3\}$

Then there are six permutations on the set. They are

$$\begin{pmatrix} 1 & 2 & 3 \\ 1 & 2 & 3 \end{pmatrix} = i, \begin{pmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \end{pmatrix} = (1, 2, 3) = (1, 3)(1, 2), \\ \begin{pmatrix} 1 & 2 & 3 \\ 3 & 1 & 2 \end{pmatrix} = (1, 3, 2) = (1, 2)(1, 3) \\ \begin{pmatrix} 1 & 2 & 3 \\ 1 & 3 & 2 \end{pmatrix} = (2, 3), \begin{pmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{pmatrix} = (1, 3), \begin{pmatrix} 1 & 2 & 3 \\ 2 & 1 & 3 \end{pmatrix} = (1, 2).$$

The even permutations are $i, (1, 2, 3), (1, 3, 2)$.

The odd permutations are $(2, 3), (1, 3), (1, 2)$.

The product of two permutations of the same parity (i.e., either both of them are even or both of them are odd) is even; the product of two permutations of different parity is odd.

The inverse of an odd permutation is odd and the inverse of an even permutation is even.

We now describe an important theorem on Permutation.

Theorem: If $\sigma \in S_n$ then σ may be written as the product of an even number of transpositions if and only if σ cannot be written as the product of an odd number of transpositions.

Proof. Suppose σ can be written as a product of transpositions in two ways. Then we may write:

$$\sigma = \tau_1 \tau_2 \cdots \tau_s = q_1 q_2 \cdots q_t$$

Multiply both sides by the inverse of the right hand side,

$$\tau_1 \tau_2 \cdots \tau_s (q_1 q_2 \cdots q_t)^{-1} = q_1 q_2 \cdots q_t (q_1 q_2 \cdots q_t)^{-1}$$

$$\tau_1 \tau_2 \cdots \tau_s (q_1 q_2 \cdots q_t)^{-1} = I$$

$$\tau_1 \tau_2 \cdots \tau_s q_t^{-1} q_{t-1}^{-1} \cdots q_1^{-1} = I$$

$$\tau_1 \tau_2 \cdots \tau_s q_t q_{t-1} \cdots q_1 = I$$

The left hand side is a product of $s + t$ transpositions. Since the identity on the right hand side is even, s and t must have the same parity.

Now we define a Group.

Groups-

A non-empty set G is said to form a group with respect to a binary composition $*$, if

- i. G is closed under the composition $*$,
- ii. $*$ is associative,
- iii. there exists an element e in G such that $e*a = a*e = a$ for all a in G ,
- iv. for each element a in G , there exists an element a' in G such that $a'*a = a*a' = e$.

The group is denoted by the symbol $(G, *)$.

The element e is said to be the identity element in the group.

The element a' is said to be the inverse of a .

Symmetric Group S_n :

Let S be the set of all permutations on the set $\{1, 2, \dots, n\}$.

Let us examine if S forms a group with respect to 'multiplication of permutations'.

- i. Let f, g be two permutations on the set $\{1, 2, \dots, n\}$. Then $f.g$ is also a permutation on the set $\{1, 2, \dots, n\}$.

Therefore $f \in S, g \in S \Rightarrow f.g \in S$

- ii. A permutation on S is a bijective mapping from the set $\{1, 2, \dots, n\}$ onto itself and multiplication of two permutations is the composition of two bijective mappings. Since composition of mappings is associative, multiplication of permutation is also associative.

- iii. The identity permutation $i = \begin{pmatrix} 1 & 2 & \dots & n \\ 1 & 2 & \dots & n \end{pmatrix} \in S$ and it is the identity element because $i.f = f.i = f$ for all in S .

- iv. Let $f = \begin{pmatrix} 1 & 2 & \dots & n \\ f(1) & f(2) & \dots & f(n) \end{pmatrix} \in S$. Then the permutation $g = \begin{pmatrix} f(1) & f(2) & \dots & f(n) \\ 1 & 2 & \dots & n \end{pmatrix} \in S$ and g is the inverse of f , since $g.f = f.g = i$. Therefore the inverse of each element exist in S .

This group is called is Symmetric group S_n . This group contains $n!$ elements.

Alternating Group A_n :

The set of all even permutations on the set $\{1, 2, \dots, n\}$ forms a group with respect to multiplication of permutations.

The group is called the Alternating group of degree n and is denoted by A_n . A_n contains $\frac{1}{2}n!$ elements.

3. 15 puzzle and permutation:

The following grid position

11	14	10	6
9	4	12	5
15	8	3	13
2	1	7	

can be represented as

$$\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 & 11 & 12 & 13 & 14 & 15 \\ 11 & 14 & 10 & 6 & 9 & 4 & 12 & 5 & 15 & 8 & 3 & 13 & 2 & 1 & 7 \end{pmatrix}.$$

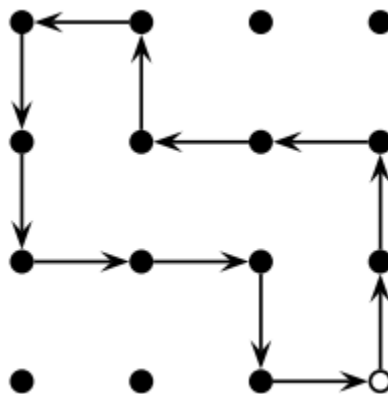
It may be noted that, when moving the tiles around the board, we were working in S_{16} since there are 16 total squares whose contents we were changing. However, because we only considered configurations where the blank was in 16, we never changed the contents of 16 in going from one configuration to another; since we effectively fixed 16, we were really working in S_{15} .

Next grid position



is basically the transposition (14, 15). Hence, if we can show that the group of permutations on the tiles of the Fifteen Puzzle is a subgroup of the Alternating group, then swapping those tiles as Lloyd described is impossible.

Consider the set of permutations in which the blank tile is returned to its original position. In particular, look at paths that start and end with the blank tile in the bottom right corner. One such circuitous path is as follows:



One can observe that in this circuit:

- i. For every up, there is a down
- ii. For every left, there is a right.

Thus, we must have an even number of transpositions. Thus the next proposition follows immediately.

Proposition 1: The set of permutations on the tiles of the Fifteen Puzzle that return the blank tile to the bottom right corner is a subgroup of the Alternating group, A_{15} .

Hence, swapping tiles 14 and 15 while returning all other tiles to their original position is impossible!

A natural question is whether every even permutation is obtainable as a permutation of the tiles of the Fifteen Puzzle. In other words, is the set of permutations on the tiles of the Fifteen Puzzle in which the blank tile is returned to the bottom right corner isomorphic to A_{15} ? In order to answer this question, we will need some more facts about the Alternating group.

Theorem 1. Every permutation in A_n is a product of 3-cycles ($n \geq 3$)

Proof. We will first show that every permutation of A_n can be written as a product of 3-cycles. First, suppose that $\alpha \in A_n$. We note that we can write every permutation as a product of 2-cycles (transpositions). Let α be written as a product of 2-cycles $(x_1, y_1)(x_2, y_2)\dots(x_k, y_k)$. k must be an even number since it is expressing an even permutation as a product of odd cycles. Therefore, it is possible to group the transpositions into pairs and consider any potential pairs of 2-cycles. There are three possible cases that arise in each pair.

Case 1: The two 2-cycles in the pair share the same elements- If this is the case, then the pair of 2-cycles may be removed from the product since $(a, b) * (a, b) = e$.

Case 2: The two 2-cycles in the pair share one element, but each 2-cycle has a distinct element- In this instance, the pair of 2-cycles can be written as a 3-cycle like so: $(a, b) * (b, c) = (a, c, b)$.

Case 3: The two 2-cycles in the pair do not share a common element-If the two 2-cycles are of the form
 $(a, b) * (c, d) = (b, d, c)(a, c, b)$.

Thus, every permutation $\alpha \in A_n$ can be written as a product of 3-cycles. Now, let us turn our attention to proving that the set of consecutive 3-cycles of A_n can generate all others.

Theorem 2. The set of consecutive 3-cycles of A_n can form all other 3-cycles of A_n .

Proof. We will prove that the set of consecutive 3-cycles of A_n generates all other 3-cycles of A_n by induction. Let us consider the base case A_3 . We begin with A_3 because this is the smallest group of even permutations with a 3-cycle. Looking at the 3-cycle $(1\ 2\ 3)$, we observe that we may obtain the other 3-cycle in A_3 : $(1\ 2\ 3)^2 = (1\ 3\ 2)$. We have obtained all 3-cycles in A_3 .

Let us prove another base case, A_4 , for good measure. The consecutive 3-cycles in A_4 are $(1\ 2\ 3)$ and $(2\ 3\ 4)$. We may obtain all other 3-cycles in A_4 via the following operations:

- $(1; 2; 3) = (1; 2; 3)$
- $(1; 3; 2) = (1; 2; 3)^2$
- $(1; 2; 4) = (1; 2; 3)(2; 3; 4)^2$
- $(1; 4; 2) = (2; 3; 4)(1; 2; 3)^2$
- $(1; 4; 3) = (2; 3; 4)^2(1; 2; 3)$
- $(1; 3; 4) = (1; 2; 3)^2(2; 3; 4)$
- $(2; 3; 4) = (2; 3; 4)$
- $(2; 4; 3) = (2; 3; 4)^2$

Let us now assume that the theorem holds true for some positive integer k where $k \geq 3$. Let us then consider the $k + 1$ case: We have the set of consecutive 3-cycles

$$(1, 2, 3), (2, 3, 4), \dots, (k-3, k-2, k-1), (k-2, k-1, k), (k-1, k, k+1)$$

Our mission is to show that we may create any 3-cycle with $k+1$ in it from this list. Note that our inductive hypothesis allows us to assume that the 3-cycles, excluding $(k-2, k-1, k)$ generate all 3-cycles in A_k . Let us consider three cases to prove that any 3-cycle containing $k+1$ is obtainable.

Case 1: Generate the 3-cycle with the form $(a, k+1, k)$:

$$(a, k, k-1) * (k-1, k, k+1) = (a, k, k+1)$$

Where $a < k-1$. Note that our obtained 3-cycle may be squared to give us $(a, k+1, k)$.

Case 2: Generate the 3-cycle with the form $(a, k+1, k-1)$:

$$(a, k-1, k) * (k, k-1, k+1) = (a, k-1, k+1)$$

Where $a < k-1$. note that our obtained 3-cycle may be squared to give us $(a, k+1, k-1)$.

Case 3: Generate the 3-cycle with the form $(b, a, k+1)$:

$$(b, a, k) * (a, k+1, k) = (a, k+1, b)$$

Where $a, b < k-1$. We borrowed our 3-cycle $(a; k+1; k)$ from the result of case

1. Also observe that our obtained 3-cycle may be squared to give us $(a, b, k+1)$.

We have now proved that for any A_n where $n \geq 3$, the set of consecutive 3-cycles generates every 3-cycle of A_n .

The results above indicate that the set of permutations obtained by moving the blank space between rows in the puzzle yield all possible permutations of A_{15} . Thus, all even permutations of the 15 puzzle are possible to obtain. However, none of the odd permutations may be obtained.

Lemma1-The set of permutations of the Fifteen Puzzle contains the 3-cycle = (11, 12, 15).

Proof. In its natural state, tiles in the bottom right corner are:

11	12
15	

Shift tile 15 to the right. This gives the following configuration:

11	12
	15

Shift tile 11 down. This gives the following configuration:

	12
11	15

Shift tile 12 left. This gives the following configuration:

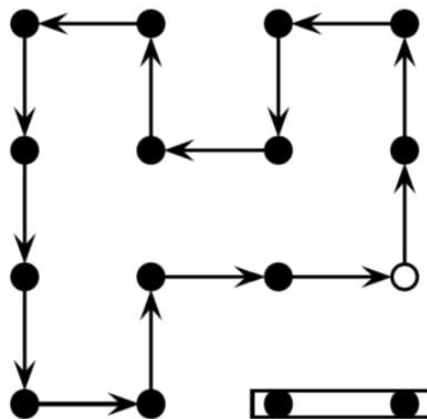
12	
11	15

Shift tile 15 up. This gives the following configuration:

12	15
11	

Hence, we have obtained the permutation (11, 12, 15).

For the remaining 3-cycles, we will construct a “long cycle” that leaves two elements (say 11 and 12) and passes through the remaining elements. Such a cycle would look like:



Our next lemma explicitly describes how to achieve this “long cycle.”

Lemma 2- The cycle $\rho = (1, 2, 6, 7, 3, 4, 8, 15, 10, 14, 13, 9, 5)$ is a permutation of the tiles of the Fifteen Puzzle.

Proof. Begin by moving 12 down, 11 right, 15 up, 12 left, and 11 down. The bottom right corner now has the following configuration:

15	
12	11

Note that at this point, all other tiles are still in their original positions. We now perform the “long cycle” described above as follows: move 15 right, 10 right, 14 up, 13 right, 9 down, 5 down, 1 down, 2 left, 6 up, 7 left, 3 down, 4 left, 8 up, and 15 up. Currently, the tiles are in the following configuration:

2	6	4	8
1	7	3	15
5	14	10	
9	13	12	11

Finally, we move 11 up, 12 right, 10 down, 11 left, and 12 up. This results in the following configuration:

2	6	4	8
1	7	3	15
5	14	11	12
9	13	10	

This is the permutation (1, 2, 6, 7, 3, 4, 8, 15, 10, 14, 13, 9, 5).

Notice that if we apply ρ once, then tile 10 is in slot 15. If we apply ρ enough times, we can move any of the tiles in the set $[15] - \{11, 12\}$ into the slot 15. For instance, if we wished to have tile 3 in slot 15, then we would apply ρ ten times. This action is typically represented by ρ^{10} .

Our goal is to show that every permutation in A_{15} is a permutation on the tiles of the Fifteen Puzzle. To do this, we let 11 and 12 fulfil the roles of a and b, respectively, in Proposition.

Thus, for $k \in [15] - \{11, 12\}$, we need only show that the permutation $(11, 12, k)$ is a permutation of the tiles of the Fifteen Puzzle.

To do this, we take advantage of the concept of conjugacy. Recall that elements a and b are conjugate elements in the group G if there is an element $g \in G$ such that $g^{-1}ag = b$. Our strategy will be to show that any 3-cycle of the form $(11, 12, k)$ is conjugate with the 3-cycle $(11, 12, 15)$ (recall that we showed $(11, 12, 15)$ is possible in Lemma 1). To do this, we will use ρ^m (where ρ is defined in Lemma-2) to position our target tile k in slot 15. We then apply the permutation $(11, 12, 15)$ to rotate tiles 11, 12, and the target. Finally, we apply the permutation ρ^{-m} to return all tiles except 11, 12, and k to their original positions.

For example, to obtain the permutation $(11, 12, 8) = (8, 11, 12)$, we will apply ρ , then τ , and finally ρ^{-1} . This can be represented symbolically as

$$\rho^{-1}\tau\rho =$$

$$\begin{aligned} (1, 2, 6, 7, 3, 4, 8, 15, 10, 14, 13, 9, 5)^{-1}(11, 12, 15)(1, 2, 6, 7, 3, 4, 8, \\ 15, 10, 14, 13, 9, 5) &= (1, 5, 9, 13, 14, 10, 15, 8, 4, 3, 7, 6, 2)(11, 12, \\ 15)(1, 2, 6, 7, 3, 4, 8, 15, 10, 14, 13, 9, 5) \\ &= (8, 11, 12). \end{aligned}$$

Theorem 3. The set of permutations on the tiles of the Fifteen Puzzle is isomorphic to A_{15} , the Alternating group on 15 symbols.

Proof. By Lemma 1 and Lemma 2, the permutations $\tau = (11, 12, 15)$ and $\rho = (1, 2, 6, 7, 3, 4, 8, 15, 10, 14, 13, 9, 5)$ are permutations of the tiles of the Fifteen Puzzle. Suppose that m is the smallest positive integer such that ρ^m maps tile k to slot 15. We first apply ρ^m in order

to position tile k in slot 15. We then apply τ to rotate tiles 11, 12, and 15. We then apply ρ^{-m} to return all tiles (except 11, 12, and k to their original positions). This results in the permutation $(11, 12, k)$. Since k is arbitrary, we can generate A_{15} .

4. Generalizations of the Fifteen Puzzle

The theory relating to 4×4 grid problem can be generalised to apply it in a n by m rectangular grid. Again, there is one empty slot and the tiles can move horizontally or vertically. Let $P_{n,m}$ denote the group of permutations on the tiles of this puzzle. In a similar way we can prove that the puzzle group $P_{n,m}$ is isomorphic to the Alternating group, A_{nm-1} .

5. Concluding Remarks

From permutation theory we know that initial configuration (where the numbers 1 to 15 are arranged and 16th place is empty) for 15 puzzle problem is an even permutation. Any valid movement on the tiles of 15 puzzle that return the blank tile to the bottom right corner is an even permutation. So from the initial configuration we can reach to those configurations which are even permutations and vice versa. But from the initial configuration we can never reach to a configuration that represents an odd permutation. Converse is also true i.e. from a configuration that represents an odd permutation (such as mentioned in Sam Loyd's problem that represents single transposition (14,15)) we never reach to the initial configuration which is basically an even permutation.

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FRACTAL AND ITS APPLICATION

*Project submitted for the B.SC Degree, 6th semester
examination in Mathematics 2022*

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FRACTAL AND ITS APPLICATION



ACKNOWLEDGEMENT

I am grateful to Dr. Ujjal Kumar Mukherjee, Head Of The Department of Mathematics & to Ms. Shampa Dutta, State Aided College Teacher, Dept. of Mathematics, Sarat Centenary College, University of Burdwan under whose supervision the project work have been carried out. I am also grateful to all the professors of department of Mathematics, Burdwan University for their constant support throughout the work. I am thankful to the authors of various books which have been consulted during the preparation of this project work. Finally I express my sincere thanks to the staff members of the office, library of our department and also the department for infrastructural support.

Date:

.....
Signature of the student

CERTIFICATE

*This is to certify that Sneha Chatterjee has worked out the project work entitled “**FRACTALS AND ITS APPLICATIONS**” under my supervision. In my opinion the work is worthy of consideration for partial fulfilment of his B.Sc. degree in Mathematics`*

Date:

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Signature of the teacher

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1. ETYMOLOGY

The term 'FRACTAL' was coined by the mathematician **Benoit Mandelbrot** in 1975. Mandelbrot based it on the Latin **FRACTUS**, meaning 'broken' or 'fractured' and used it to extend the concept of theoretical fractional dimensions to geometric patterns in nature.

2. FRACTALS

Fractal is nothing but a curve of the geometrical figure and each part of which has the same statistical character as the whole.

3. INTRODUCTION

Fractals are objects that are self similar at different scales.

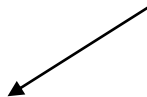
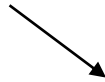
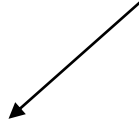
Think of a tree- it has a trunk that has branches and those branches self have branches coming off of them and those have sub-branches and so on. So that is a fractal. Fractals turn out to be a good way to describe many objects in nature.

In this unit we will explore fractals, both visually and mathematically.

It is striking how many natural objects there are with this kind of property. Let's look at a simple example,

Trees- Trees are fractal and let us explain the notion of self similarity.

Let's take a picture of a tree. Now we will take part of that picture and crop it out and blow it up. We can see that the structure of this blown up part of this picture is very similar to the structure of the whole picture itself. Let's do it again. Let's take a part of this picture within the red box and let's blow it up. Again, the structure that you see inside the blown up part of this picture looks very similar to the previous two pictures and notice that this third picture is a very tiny part of this original picture. Now we can do the same thing again. Take a part of the third picture, blow it up again we have structures that look very tree-like. So, no matter how far down you go up to a certain point in these pictures you can keep taking little crops, blowing them up and seeing that they have very similar kinds of structure. That's the crux of the notion of self-similarity at different scales.



Source: Internet

Picture: Fractal In Trees

The actual definition of fractal means that the object is perfectly self similar at all possible scales.

So the objects that we are going to talk about in nature are only fractal-like. They are not real fractals from the mathematical sense, but I am going to use the term '**fractal**' to describe them anyway. So here is a picture of a special kind of broccoli that has fractal properties. We can see that each of these little broccoli mounds consist of other little mounds that themselves have the same structure and so on.

Leaf veins are fractal in the same way that trees are fractal.



Broccoli



Broccoli Mounds



Leaf

Source: Internet

4.HISTORY

The history of fractals traces a path from chiefly theoretical studies to modern applications in computer graphics, with several notable people contributing canonical fractal forms along the way. A common theme in traditional African architecture is the use of fractal scaling, whereby small parts of the structure tend to look similar to larger parts, such as a circular village made of circular houses. According to Pickover, the mathematics behind fractals began to take shape in the 17th century when the mathematician and philosopher Gottfried Leibniz pondered recursive self-similarity (although he made the mistake of thinking that only the straight line was self-similar in this sense).

In his writings, Leibniz used the term "fractional exponents", but lamented that "Geometry" did not yet know of them. Indeed, according to various historical accounts, after that point few mathematicians tackled the issues and the work of those who did remained obscured largely because of resistance to such unfamiliar emerging concepts, which were sometimes referred to as mathematical "monsters". Thus, it was not until two centuries had passed that on July 18, 1872 Karl Weierstrass presented the first definition of a function with a graph that would today be considered a fractal, having the non-intuitive property of being everywhere continuous but nowhere differentiable at the Royal Prussian Academy of Sciences.

In addition, the quotient difference becomes arbitrarily large as the summation index increases. Not long after that, in 1883, Georg Cantor, who attended lectures by Weierstrass, published examples of subsets of the real line known as Cantor sets, which had unusual properties and are now recognized as

fractals. Also in the last part of that century, Felix Klein and Henri Poincaré introduced a category of fractal that has come to be called "self-inverse" fractals.

One of the next milestones came in 1904, when Helge von Koch, extending ideas of Poincaré and dissatisfied with Weierstrass's abstract and analytic definition, gave a more geometric definition including hand-drawn images of a similar function, which is now called the Koch snowflake. Another milestone came a decade later in

1915, when Waclaw Sierpiński constructed his famous triangle then, one year later, his carpet. By 1918, two French mathematicians, Pierre Fatou and Gaston Julia, though working independently, arrived essentially simultaneously at results describing what is now seen as fractal behaviour associated with mapping complex numbers and iterative functions and leading to further ideas about attractors and repellers (i.e., points that attract or repel other points), which have become very important in the study of fractals.

Very shortly after that work was submitted, by March 1918, Felix Hausdorff expanded the definition of "dimension", significantly for the evolution of the definition of fractals, to allow for sets to have non-integer dimensions. The idea of self-similar curves was taken further by Paul Lévy.

5. FRACTAL DIMENSION

An important part of understanding fractals is the notion of fractal dimension. We all learn back in grade school math that lines are one dimensional, squares and circles are two dimensional and cubes and spheres are three dimensional.

These perfect geometric objects are often what mathematicians and scientists use to model the attributes of the natural world.

However, as **Benoit Mandelbrot** famously said,

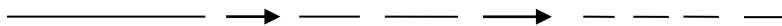
**“Clouds are not spheres,
mountains are not cones,
coastlines are not circles,
and bark is not smooth, nor
does lightning travel in a
straight line.”**

— **Benoit Mandelbrot, 1973**

Benoit Mandelbrot proposed that fractals are much better model of the natural world than our more conventional geometric notions and he sought to develop a new, fractal geometry to describe nature. To develop this new geometry, we need to examine our concept of dimensionality.

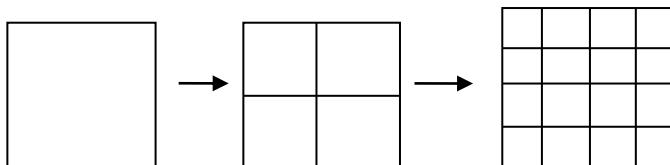
Dimension:1

Each level is made up of two $\frac{1}{2}$ sized copies.



Dimension:2

Each level is made up of four $\frac{1}{4}$ sized copies.



Similarly for dimension 3 each level is made up of eight $\frac{1}{8}$ sized copies and for dimension 4 each level is made up of sixteen $\frac{1}{16}$ sized copies.

In those previous pictures we created this pattern by **bisecting** each side but if we **trisect** each side,

Dimension:1

Each level is made up of three $\frac{1}{3}$ sized copies.

**M-Secting****Dimension:1**

Each level is made up of $M \frac{1}{M}$ sized copies.

Dimension:2

Each level is made up of $M^2 \frac{1}{M}$ sized copies.

Dimension:3

Each level is made up of $M^3 \frac{1}{M}$ sized copies.

Let's create a geometric structure from a given D-dimensional object (e.g. line, square, cube etc.) repeatedly dividing the length of its side by a number M.

Then each level is made up of M^D copies of previous level.

Call the number of copies N.

Then $N = M^D$

Taking log of both sides,

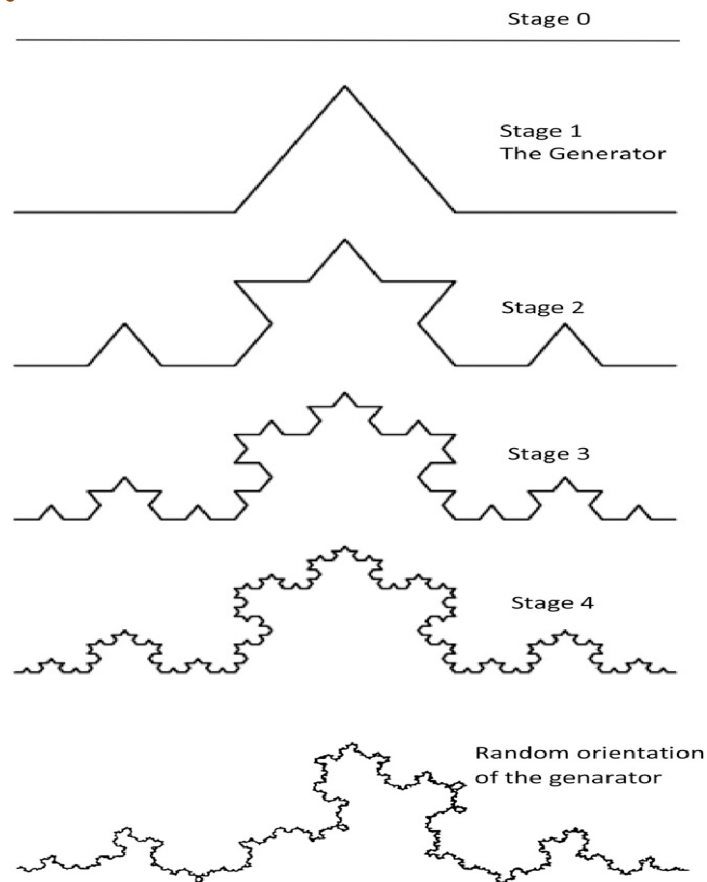
$\log N = \log M^D$

$\Rightarrow \log N = D \log M$

$\Rightarrow \mathbf{D} = \frac{\log N}{\log M}$

6. IT'S DIMENSION FOR SOME SHAPES

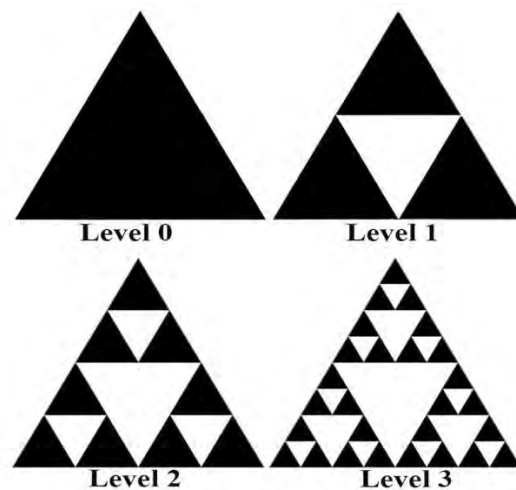
Koch Curve:



According to the definition the dimension of **Koch Curve** is,

$$D = \frac{\log 4}{\log 3} = 1.26, N = 4 \text{ and } M = 3$$

Sierpinski's Triangle:

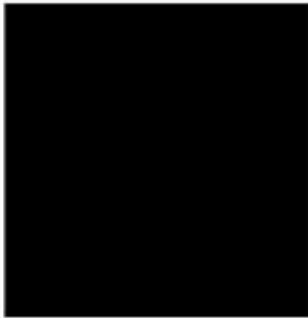


According to the definition the dimension of **Sierpinski's Triangle** is,

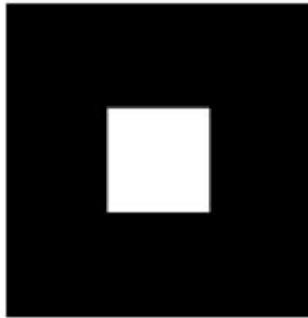
$$D = \frac{\log 3}{\log 2} = 1.53, N = 3 \text{ and } M = 2$$

Sierpinski's Carpet:

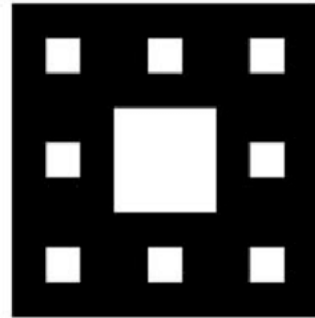
Step 0: Initiator



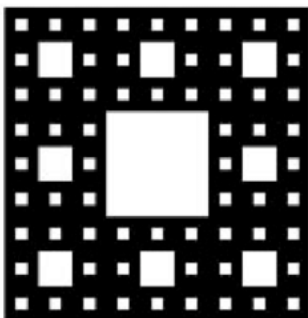
Step 1: Generator



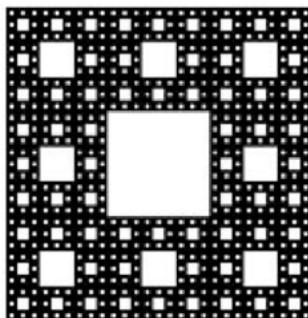
Step 2



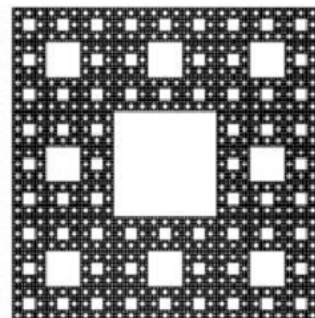
Step 3



Step 4



Step 5



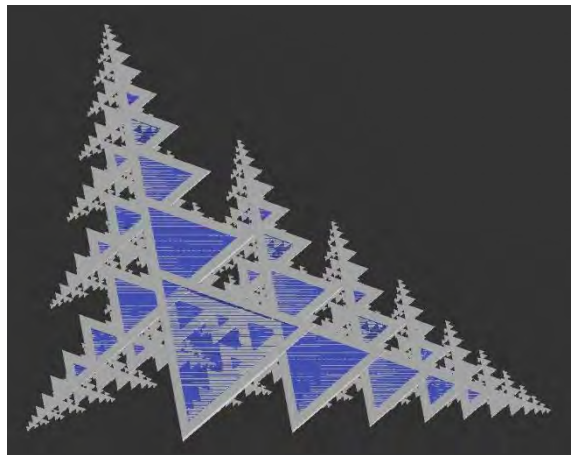
According to the definition the dimension of **Sierpinski's Carpet** is,

$$D = \frac{\log 8}{\log 3} = 1.89, N = 8 \text{ and } M = 3$$

7.CHARACTERISTICS OF FRACTAL

A fractal often has the following features:-

- ❖ Fractal is too irregular to be easily described in traditional euclidean geometric language.
- ❖ **Exact self similarity**-Fractal is identical at all scales such as the Koch snowflake.
- ❖ **Quasi self similarity**- Fractal approximates the same pattern at different scales. It may contain small copies of the entire fractal in distorted and degenerated forms ; e.g. the Mandelbrot Set's satellites are approximations of the entire set but not exact copies.
- ❖ **Statistical self similarity**- Fractal repeats a pattern Stochastically so numerical or statistical measures preserved across scales; e.g., randomly generated fractals like the well-known example of the Coastline of Britain for which one would not expect to find a segment scaled and repeated as neatly as the repeated unit that defines fractals like the Koch snowflake.



2×120 degrees recursive IFS

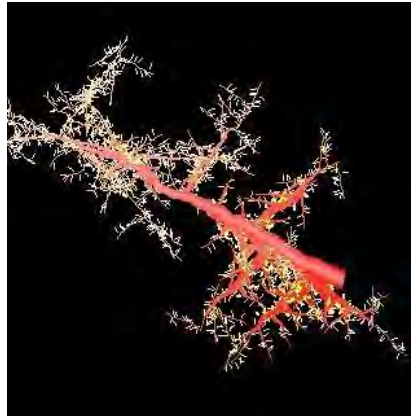
- ❖ It has a Hausdroff dimension which is Greater than its topological Dimension(although this requirement is not met by space filling Curves such as the Hilbert Curve).
- ❖ It has a simple and recursive definition.

8. COMMON TECHNIQUES FOR GENERATING FRACTALS

Images of fractals can be created by fractal generating programs.

Because of the butterfly effect, a small change in a single variable can have an unpredictable outcome.

- ❖ **Iterated function systems (IFS)** – Fixed geometric replacement rules; may be stochastic or deterministic e.g., Koch snowflake, Cantor set, H rner carpet, Sierpinski carpet, Sierpinski gasket, Peano curve, Harter-Heighway dragon curve, T-square, Menger sponge.
- ❖ **Strange attractors**– Use iterations of a map or solutions of a system of initial-value differential or difference equations that exhibit chaos (e.g., multifractal image, or the logistic map)

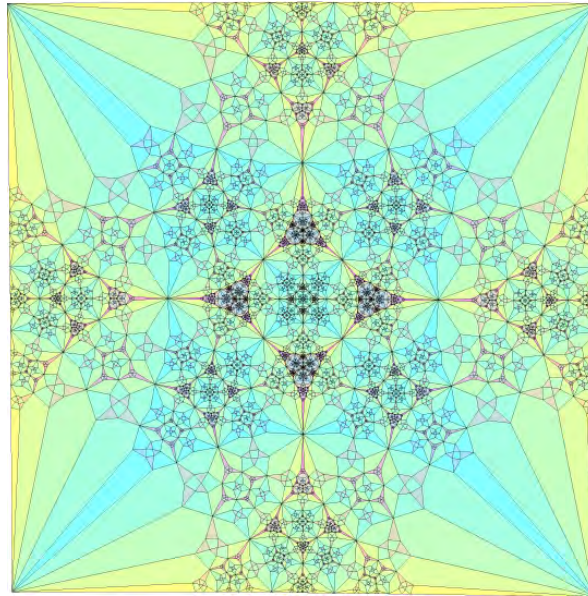


Self-similar branching pattern modeled in silico using L-systems principles

- ❖ **L-systems**– Use string rewriting; may resemble branching patterns, such as in plants, biological cells (e.g., neurons and immune system cells, blood vessels, pulmonary structure, etc. or turtle graphics patterns such as space-filling curves and tilings
- ❖ **Escape-time fractals**– Use a formula or recurrence relation at each point in a space (such as the complex plane); usually quasi-self-similar; also known as "orbit" fractals; e.g., the Mandelbrot set, Julia set, Burning Ship fractal, Nova fractal and Lyapunov fractal. The 2D vector fields that are generated by one or two iterations of escape-time formulae also give rise to a fractal form when points (or pixel data) are passed through this field repeatedly.
- ❖ **Random fractals**– Use stochastic rules; e.g., L vy flight, percolation clusters, self avoiding walks, fractal landscapes, trajectories of Brownian motion and the Brownian tree (i.e., dendritic fractals generated by modelling

diffusion-limited aggregation or reaction-limit aggregation clusters).

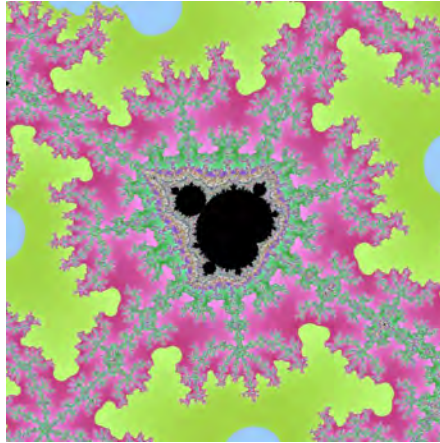
- ❖ **Finite subdivision rules**– Use a recursive topological algorithm for refining tilings and they are similar to the process of cell division. The iterative processes used in creating the Cantor set and the Sierpinski carpet are examples of finite subdivision rules, as is barycentric subdivision.



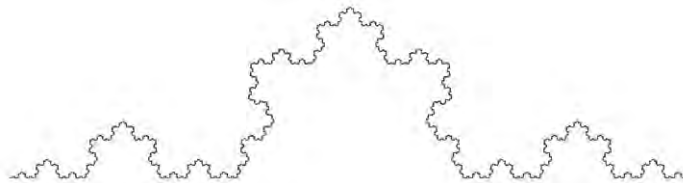
A fractal generated by a finite subdivision rule for an alternating rule

9. FRACTAL SIMULATION

- ❖ This simulation supports both pinch zoom and mouse scrolling. We recommend using the Chrome browser. (to get more processing speed)
Imaginary number An imaginary number consists of a number that becomes negative.



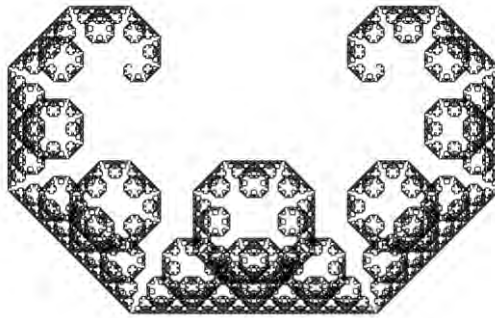
- ❖ Koch curve Koch curve is a kind of fractal curve. It appeared in a 1904 paper titled 'On a Continuous Curve Without Tangents, Constructible from Elementary Geometry' by the Swedish mathematician Helge.



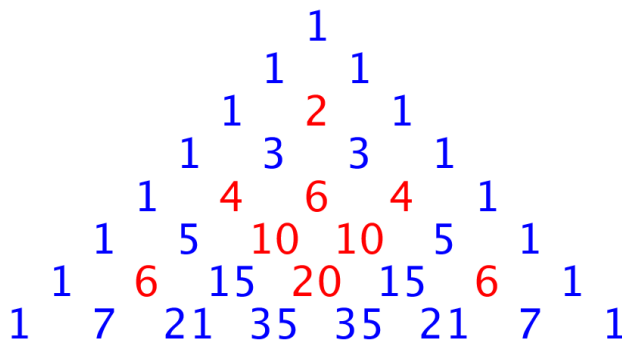
- ❖ The Pythagoras tree is a plane fractal constructed from squares. Invented by the Dutch mathematics teacher Albert E. Bosman in 1942. It is named after the ancient Greek mathematician Pythagoras. Fractal's self-similarity...



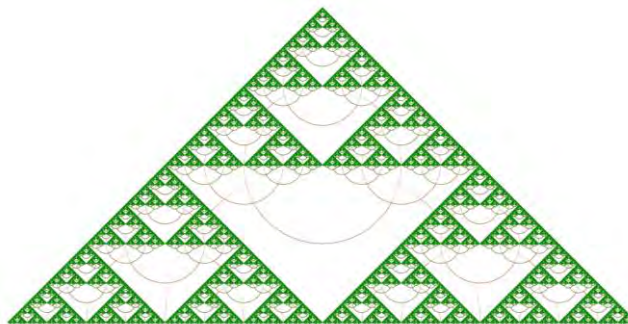
- ❖ The C curve is a kind of fractal geometry. Bend each side 90 degrees. Bend this side again 90 degrees. Repeating this operation infinitely can get a C curve. Fractal's self-similarity Fractal.



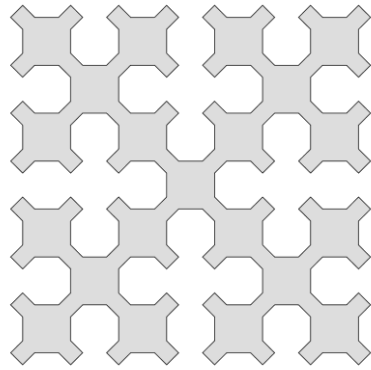
- ❖ Pascal's triangle is a triangular array of the binomial coefficients. Each number is the sum of the two numbers directly above it. Pascal's triangle has many properties and contains many patterns of.



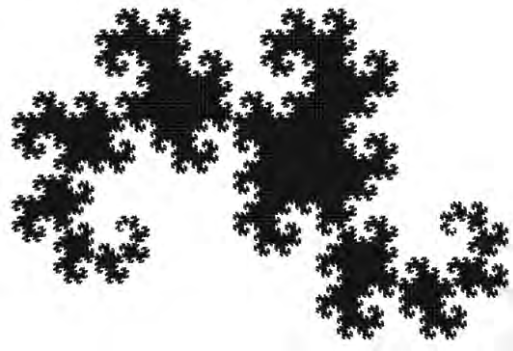
- ❖ Sierpinski triangle is a fractal and attractive fixed set with the overall shape of an equilateral triangle. In this simulation, Create a Sierpinski triangle by endlessly drawing circles.



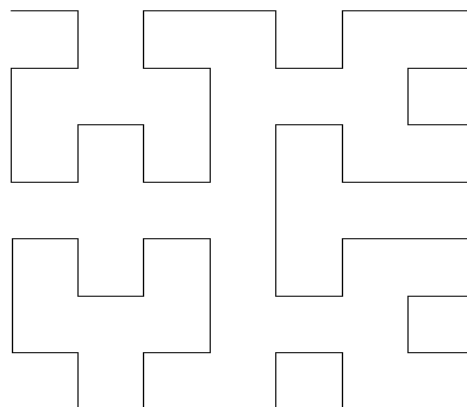
Sierpiński curves are a recursively defined sequence of continuous closed plane fractal curves discovered by Waław Sierpiński. Fractal's self-similarity Fractal curves retain their original shape even if they are greatly enlarged most.



- ❖ A dragon curve is a piece of paper folded several times in the same direction as the picture and then bent vertically. This curve does not intersect even though it may touch.



- ❖ A Hilbert curve is a continuous fractal space-filling curve first described by the German mathematician David Hilbert in 1891. Fractal's self-similarity Fractal curves retain their original shape even if they are greatly.



10. FRACTAL IN NATURE AND IT'S APPLICATION

Fractals are not just complex shapes and pretty pictures generated by computers. Anything that appears random and irregular can be a fractal. Fractals permeate our lives, appearing in places as tiny as the membrane of a cell and as majestic as the solar system. Fractals are the unique, irregular patterns left behind by the unpredictable movements of the chaotic world at work.

In theory, one can argue that everything existent on this world is a fractal:

- the branching of tracheal tubes,
- the leaves in trees,
- the veins in a hand,
- water swirling and twisting out of a tap,
- a puffy cumulus cloud,
- tiny oxygen molecule, or the DNA molecule,
- the stock market

All of these are fractals. From people of ancient civilizations to the makers of Star Trek II: The Wrath of Khan, scientists, mathematicians and artists alike have been captivated by fractals and have utilized them in their work.

Fractals have always been associated with the term chaos. One author elegantly describes fractals as "the patterns of chaos." Fractals depict chaotic behaviour, yet if one looks closely enough, it is always possible to spot glimpses of self-similarity within a fractal.

To many chaologists, the study of chaos and fractals is more than just a new field in science that unifies mathematics, theoretical physics, art, and computer science - it is a revolution. It is the discovery of a new geometry, one that describes the boundless universe we live in; one that is in constant motion, not as static images in textbooks. Today, many scientists are trying to find applications for fractal geometry, from predicting stock market prices to making new discoveries in theoretical physics.

Fractals have more and more applications in science. The main reason is that they very often describe the real world better than traditional mathematics and physics.

Astronomy

Fractals will maybe revolutionize the way that the universe is seen.

Cosmologists usually assume that matter is spread uniformly across space. But observation shows that this is not true. Astronomers agree with that assumption on "small" scales, but most of them think that the universe is smooth at very large scales. However, a dissident group of scientists claims that the structure of the universe is fractal at all scales. If this new theory is proved to be correct, even the big bang models should be adapted. Some years ago we proposed a new approach for the analysis of galaxy and cluster correlations based on the concepts and methods of modern Statistical Physics. This led to the surprising result that galaxy correlations are fractal and not homogeneous up to the limits of the available catalogues. In the meantime many more redshifts have been measured and we have extended our methods also to the analysis of number counts and angular catalogues. The result is that galaxy structures are highly irregular and self-similar. The usual statistical methods, based on the assumption of homogeneity, are therefore inconsistent for all the length scales probed until now. A new, more general, conceptual framework is necessary to identify the real physical properties of these structures. But at present, cosmologists need more data about the matter distribution in the universe to prove (or not) that we are living in a fractal universe.

Nature

Take a tree, for example. Pick a particular branch and study it closely. Choose a bundle of leaves on that branch. To chaologists, all three of the objects described - the tree, the branch, and the leaves - are identical. To many, the word chaos suggests randomness, unpredictability and perhaps even messiness. Chaos is actually very organized and follows certain patterns. The problem arises in finding these elusive and intricate patterns. One purpose of studying chaos through fractals is to predict patterns in dynamical systems that on the surface seem unpredictable. A system is a set of things,- an area of study -A set of equations is a system, as well as more tangible things such as cloud formations, the changing weather, the movement of water currents, or animal migration patterns. Weather is a favourite example for many people. Forecasts are never totally accurate, and long-term forecasts, even for one week, can be totally wrong. This is due to minor disturbances in airflow, solar heating, etc. Each disturbance may be minor, but the change it create will increase geometrically with time. Soon, the weather will be far different than what was expected. With fractal geometry we can visually model much of what we witness in nature, the most recognized being coastlines and mountains. Fractals are used to model soil erosion and to analyse seismic patterns as well.

Seeing that so many facets of mother nature exhibit fractal properties, maybe the whole world around us is a fractal after all!

Computer science

Actually, the most useful use of fractals in computer science is the fractal image compression. This kind of compression uses the fact that the real world is well described by fractal geometry. By this way, images are compressed much more than by usual ways (eg: JPEG or GIF file formats). Another advantage of fractal compression is that when the picture is enlarged, there is no pixelisation. The picture seems very often better when its size is increased.

Fluid mechanics

The study of turbulence in flows is very adapted to fractals. Turbulent flows are chaotic and very difficult to model correctly. A fractal representation of them helps engineers and physicists to better understand complex flows. Flames can also be simulated. Porous media have a very complex geometry and are well represented by fractal. This is actually used in petroleum science.

Telecommunications

A new application is fractal-shaped antennae that reduce greatly the size and the weight of the antennas. Fractenna is the company which sells these antennae. The benefits depend on the fractal applied, frequency of interest, and so on. In general the fractal parts produces 'fractal loading' and makes the antenna smaller for a given frequency of use. Practical shrinkage of 2-4 times are realizable for acceptable performance. Surprisingly high performance is attained.

Surface physics

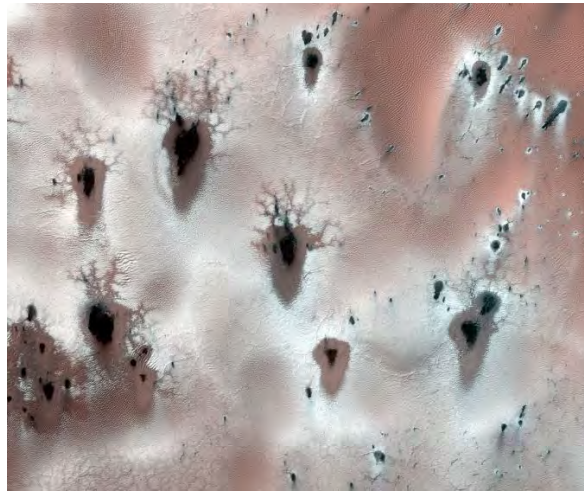
Fractals are used to describe the roughness of surfaces. A rough surface is characterized by a combination of two different fractals.

Medicine

Biosensor interactions can be studied by using fractals.



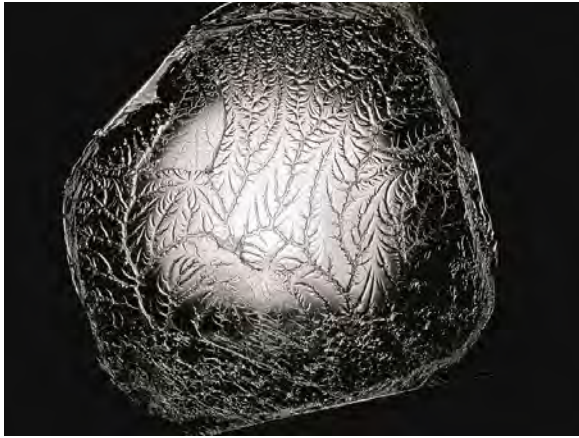
Slime mold *Brefeldia maxima* growing fractally on wood



Fractal defrosting patterns, polar Mars. The patterns are formed by sublimation of frozen CO₂.



High-voltage breakdown within a 4 in (100 mm) block of acrylic glass creates a fractal Lichtenberg figure



A fractal is formed when pulling apart two gluecovered acrylic sheets



Fractal basin boundary in a geometrical optical System



Frost crystals occurring naturally on cold glass form fractal patterns

Fractals in cell biology

Fractals often appear in the realm of living organisms where they arise through branching processes and other complex pattern formation. Ian Wong and co-workers have shown that migrating cells can form

fractals by clustering and branching. Nerve cells function through processes at the cell surface, with phenomena that are enhanced by largely increasing the surface to volume ratio. As a consequence nerve cells often are found to form into fractal patterns. These processes are crucial in cell physiology and different pathologies. Multiple subcellular structures also are found to assemble into fractals. Diego Krapf has shown the branching processes the actin filaments in human cells assemble into fractal patterns. Similarly Matthias Weiss showed that the endoplasmic reticulum displays fractal features. The current understanding is that fractals are ubiquitous in cell biology, from proteins, to organelles, to whole cells.

11. Physiological Responses

Humans appear to be especially well-adapted to processing fractal patterns with D values between 1.3 and 1.5. When humans view fractal patterns with D values between 1.3 and 1.5, this tends to reduce physiological stress.

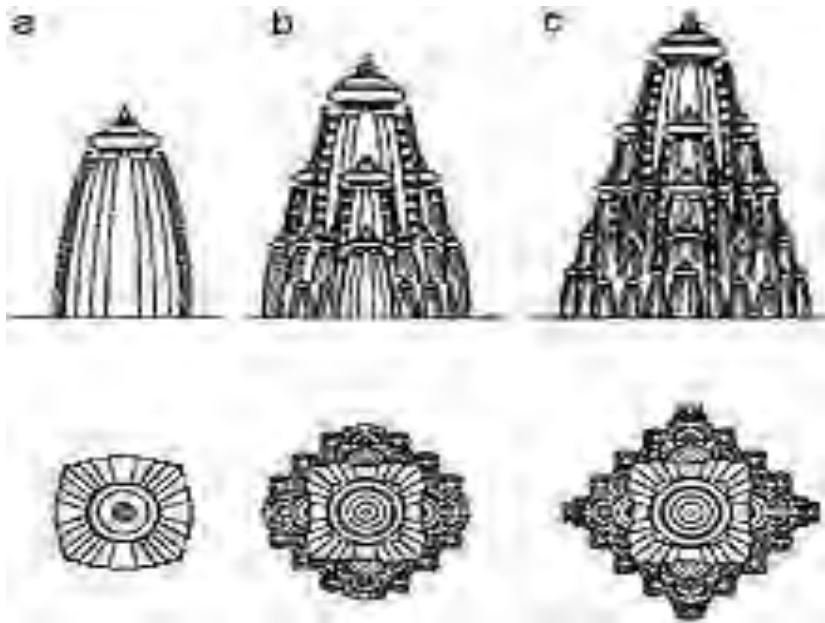
12. FRACTAL ART

Fractal art is a form of algorithmic art created by calculating fractal objects and representing the calculation results as still digital images, animations, and media. Fractal art developed from the mid-1980s onwards. It is a genre of computer art and digital art which are part of new media art. The mathematical beauty of fractals lies at the intersection of generative art and computer art. They combine to produce a type of abstract art.

Fractal art (especially in the western world) is rarely drawn or painted by hand. It is usually created indirectly with the assistance of fractal-generating software, iterating through three phases: setting parameters of appropriate fractal software; executing the possibly lengthy calculation; and evaluating the product. In some cases, other graphics programs are used to further modify the images produced. This is called post-processing. Non-fractal imagery may also be integrated into the artwork. The Julia set and Mandelbrot sets can be considered as icons of fractal art.

It was assumed that fractal art could not have developed without computers because of the calculative capabilities they provide. Fractals are generated by applying iterative methods to solving non-linear equations or polynomial equations.

Fractals are any of various extremely irregular curves or shapes for which any suitably chosen part is similar in shape to a given larger or smaller part when magnified or reduced to the same size.



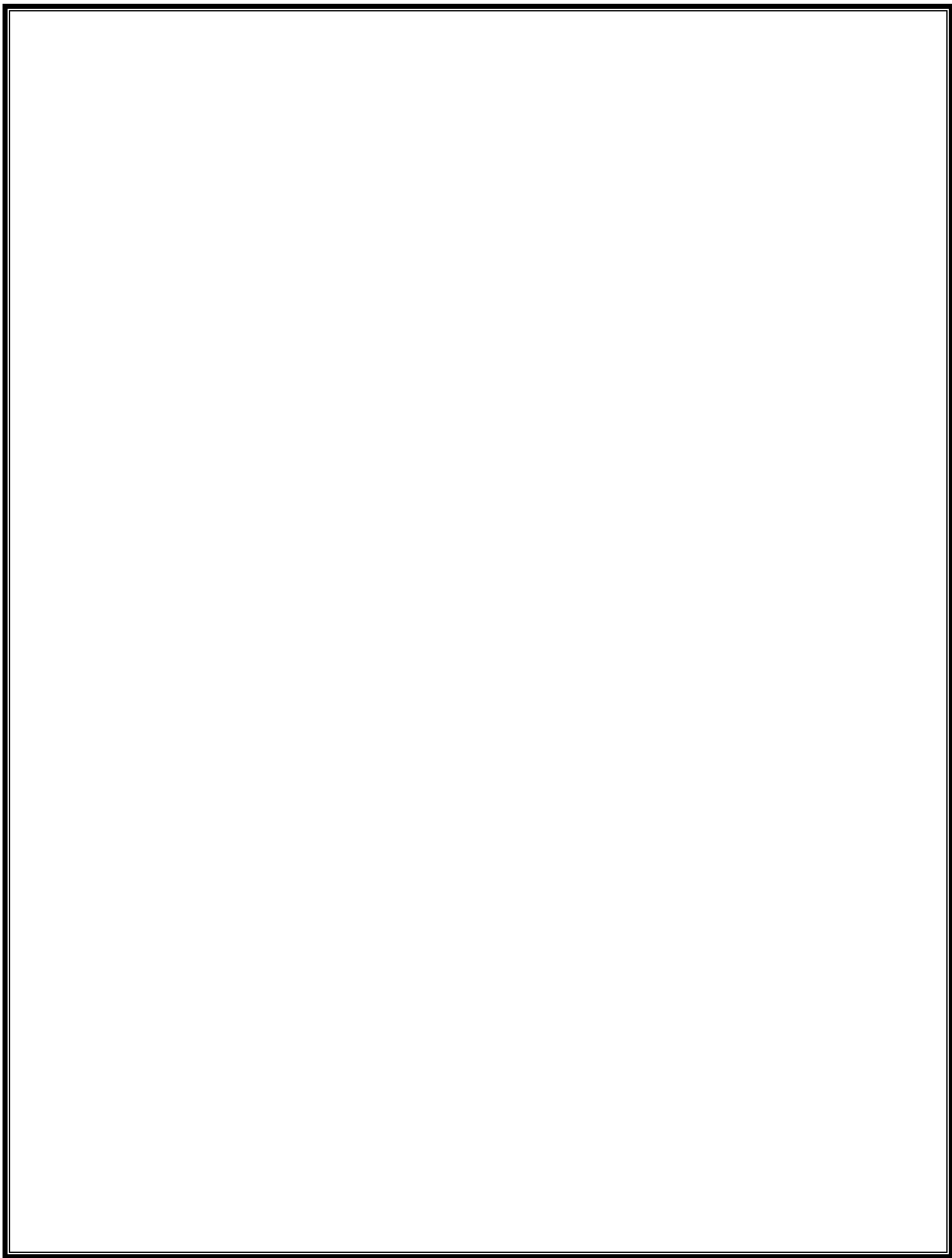
13.APPLICATIONS IN TECHNOLOGY

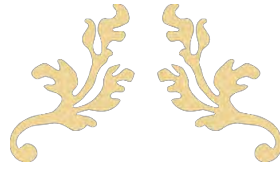
- Detecting 'life as we don't know it' by fractal analysis
- Enzymes (Michaelis-Menten kinetics)
- Generation of new music
- Signal and image compression
- Creation of digital photographic enlargements
- Fractal in soil mechanics
- Computer and video game design
- Computer Graphics
- Organic environments
- Procedural generation
- Fractography and fracture mechanics
- Small angle scattering theory of fractally rough systems

- Generation of patterns for camouflage, such as MARPAT
- Digital sundial
- Technical analysis of price series
- Fractals in networks
- Medicine
- Neuroscience
- Diagnostic Imaging
- Pathology
- Geology
- Geography
- Archaeology
- Soil mechanics
- Seismology
- Search and rescue
- Technical analysis

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DISCUSSION ON

GOLDEN RATIO



The University of Burdwan



***Project work submitted for the
B.Sc. Semester-VI (Honours)
Examination in Mathematics
2022***

Under the supervision of:
Shampa Dutta

By:

Rima Dhara

ROLL NO: 190341200008

Registration no: 201901049527 of 2019-2020

Department of Mathematics

Signature of the Student

Signature of the teacher

Signature of the H.O.D

Acknowledgement

I am grateful to Mrs.Shampa Dutta,State Aided College Teacher, Department of Mathematics, Sarat Centenary College,The University of Burdwan under whose supervision the project work have been carried out. I am grateful to all the teachers including the HoD of Mathematics, Sarat Centenary College for their constant support throughout the work. I am thankful to the authors of various reference books which have been consulted during the preparation of this project work. Finally I express my sincere gratitude to all staff members of the office, library of our college and infrastructural support provided by the department.

Date:

Name of the student

CERTIFICATE

This is to certify that Rima Dhara has worked out the project work entitled “Golden Ratio” under my supervision. In my opinion the work is worthy of consideration for partial fulfilment of his B.Sc. degree in Mathematics.

Date:

Signature of the teacher

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□ LITERATURE REVIEW

□ CALCULATION OF THE GOLDEN RATIO

□ APPLICATION OF THE GOLDEN RATIO

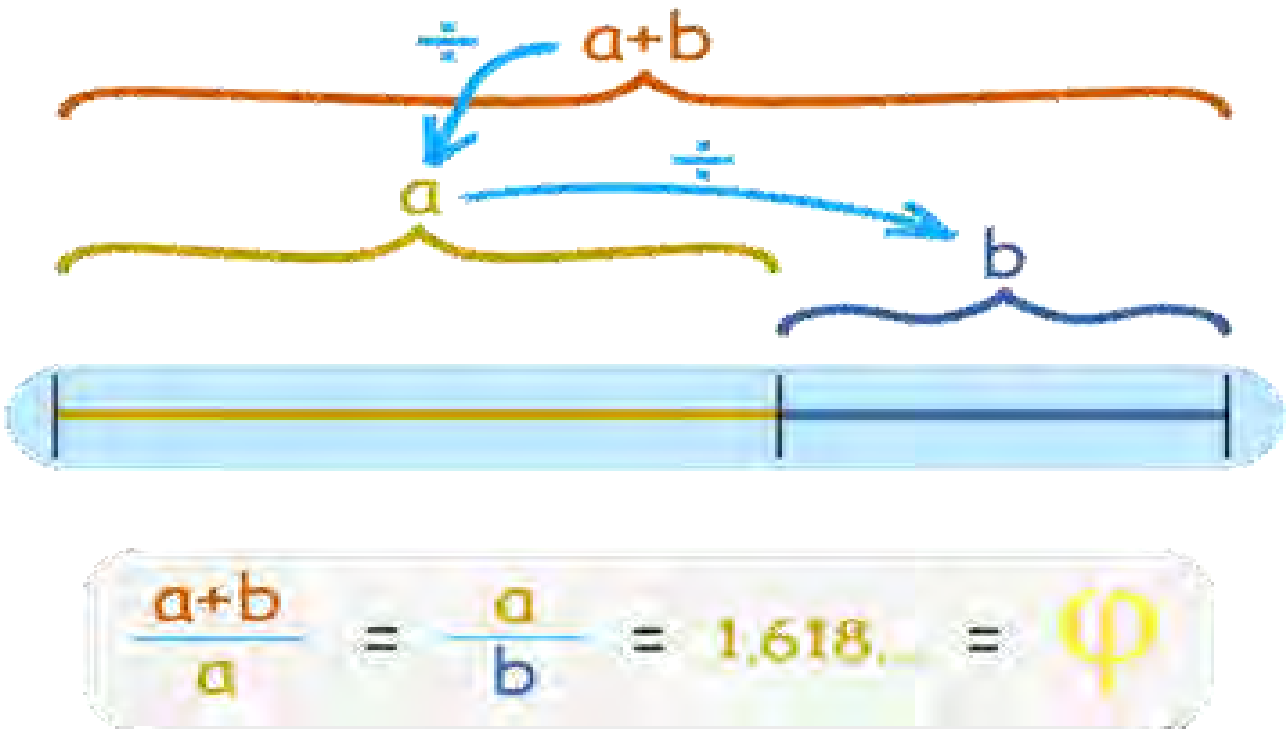
□ CONCLUSION

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THE GOLDEN RATIO

WHAT IS THE GOLDEN RATIO?

"The golden ratio is a special number found by dividing a line into two parts so that the whole length divided by the long part is also equal to the long part divided by the short part."



It has many other names, Phi, Golden mean, Golden section, Divine portion, and the Divine section.

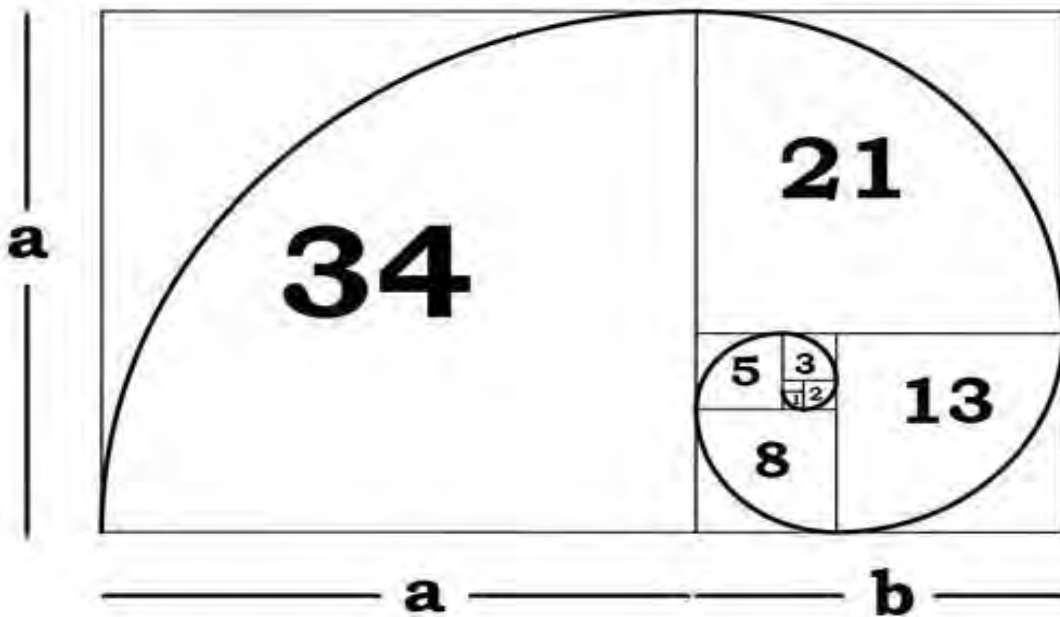
In mathematics it is most often referred to as the Greek letter Phi or represented by its symbol "Φ"

It is an irrational number with an infinite number of digits after the decimal point, but is most often it is recognized by just 1.61803398...

In an equation form, it looks like:

$$a/b = (a+b)/a = 1.6180339887498948420$$

The Golden Ratio is often visually represented as the Golden Rectangle



It is thought to be the most appealing to the eye rectangle.

In western philosophy the Golden mean is also thought as “dividing line”, or the “middle way”. It is the separation, or the middle between two extremes, one of excess and the other of deficiency.

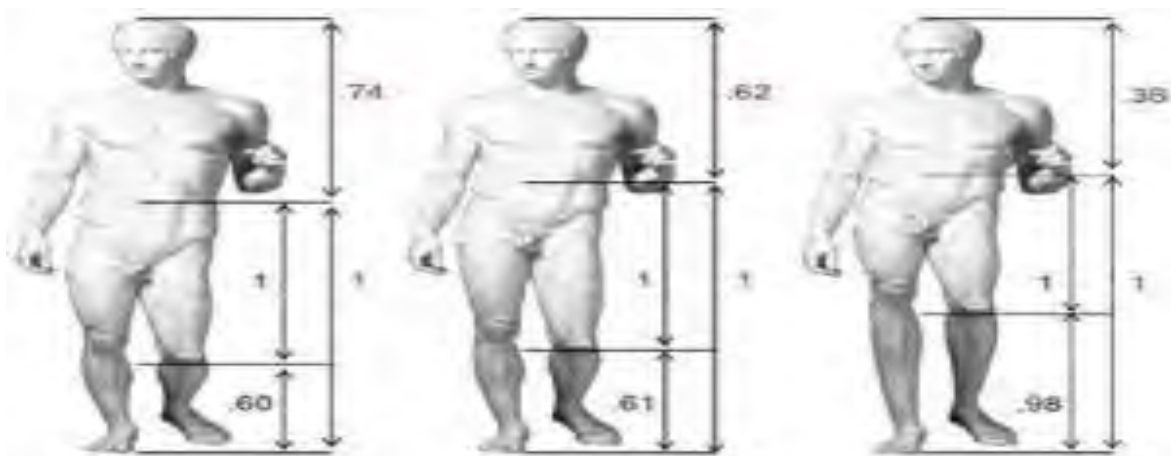
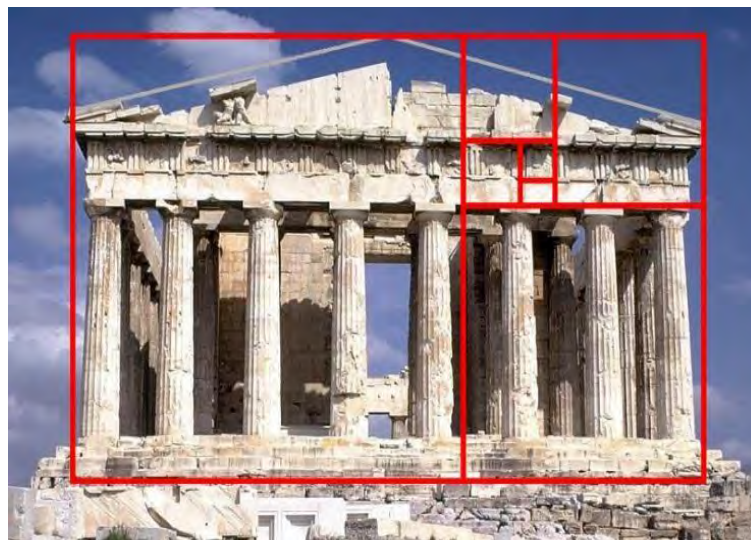
LITERATURE REVIEW:

The golden has always existed and it is actually unknown when it was first discovered, but we know that it may have been used in Egyptian and Greek architecture. Also, it is believed to have been applied to the design of the Parthenon. The golden ratio has held people's attention for over 2,000 years (Mario Livio).

“Some of the greatest mathematical minds of all ages, from Pythagoras and Euclid in ancient Greece, through the medieval Italian mathematician Leonardo of Pisa and the Renaissance astronomer Johannes Kepler, to present-day scientific figures such as Oxford physicist Roger Penrose, have spent endless hours over this simple ratio and its properties. But the fascination with the Golden Ratio is not confined just to mathematicians. Biologists, artists, musicians, historians, architects, psychologists, and even mystics have pondered and debated the basis of its ubiquity and appeal. In fact, it is probably fair to say that the Golden Ratio has inspired thinkers of all disciplines like no other

number in the history of mathematics” - Mario Livio

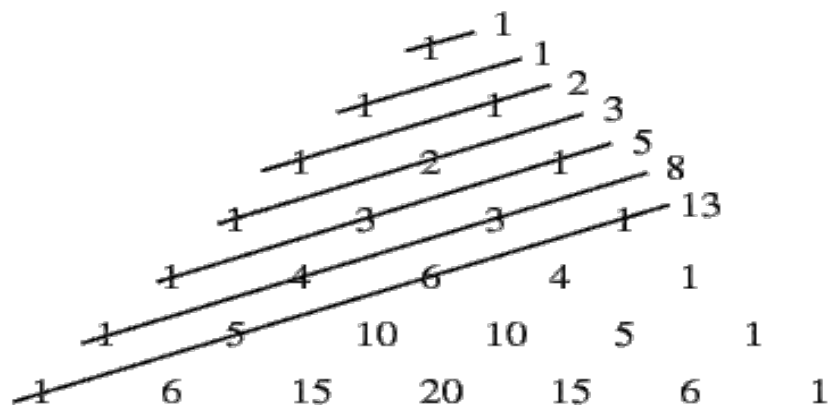
Many mathematicians, artist, and philosophers have used the golden ratio throughout history. One of the earliest records of its use was from Phidias. Phidias was a mathematician and the greatest sculptor of his time. He studied and applied the golden ratio to the design of the sculptures for the Parthenon. The golden ratio was also named Phi after Phidias (500 BC- 432 BC).



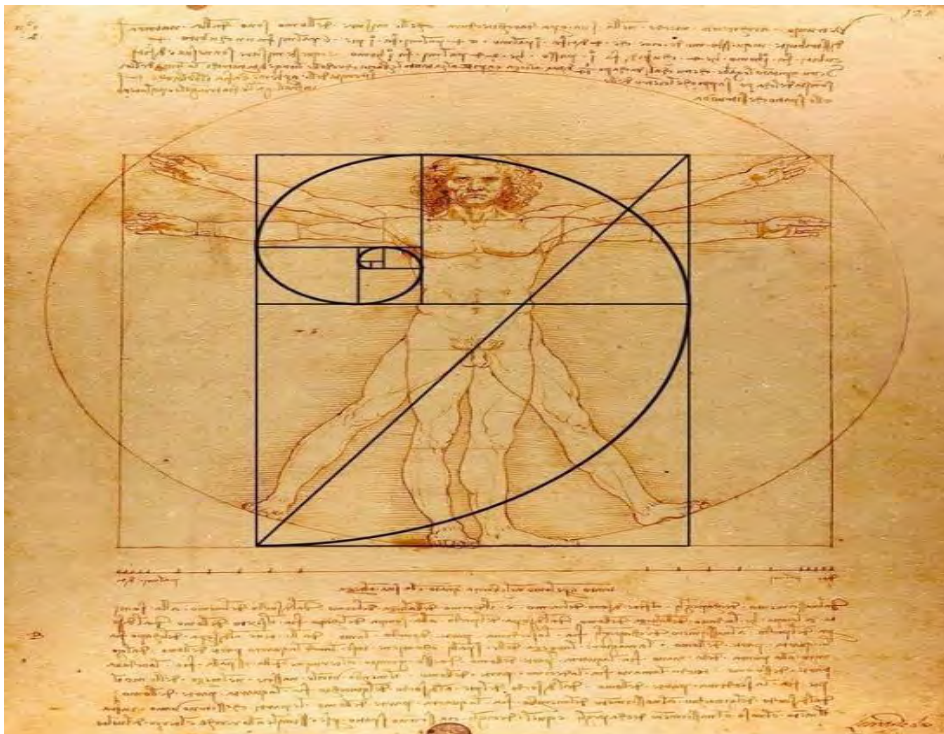
Another important historical figure that mentioned his use of the golden ratio in his studies was Plato (428 BC- 347 BC). In "Timaeus" Plato describes five possible regular solids that relate to the golden ratio. He also considers the golden ratio to be the most binging of all mathematic relationships.

Euclid (323 BC- 265 BC) was the first to give a recorded definition of the golden ratio as "a dividing line in the extreme and mean ratio" in his book named *Elements*. He was also the one to link the number to the construction of the pentagram.

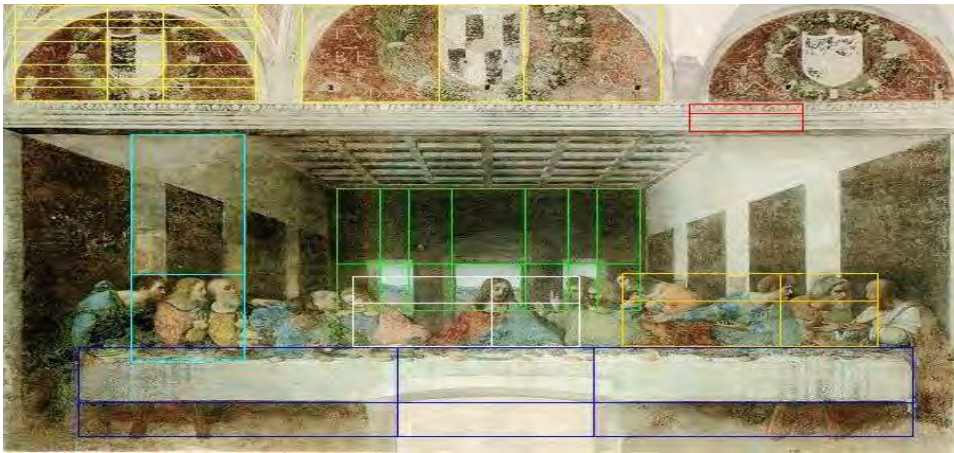
Fibonacci (1170- 1250) discovered a sequence now known as the Fibonacci sequence which happened to approach the ratio asymptotically. The Fibonacci sequence is a "series of numbers in which each number (*Fibonacci number*) is the sum of the two preceding numbers. The simplest is the series 1, 1, 2, 3, 5, 8, etc." ([Fibonacci sequence](#))



Most commonly the Golden Ratio is allied to **Leonardo da Vinci** for his use of it in his painting of *The Last Supper*. In this painting **Leonardo da Vinci** used the golden ratio to define the fundamental portions of the painting, rationalizing the body proportions as well as the wall proportions. In 1509, Luca Pacioli published a dissertation titled *De Divina Proportione* which had illustrations created by Leonardo da Vinci. It was probably da Vinci who first called it the “section aurea” which is Latin for Golden Section. Many renaissance artist used the golden mean in paintings and sculptures to achieve balance.



The Vitruvian Man by Leonardo da Vinci and a Golden Mean drawing.



The Last Supper by Leonardo da Vinci

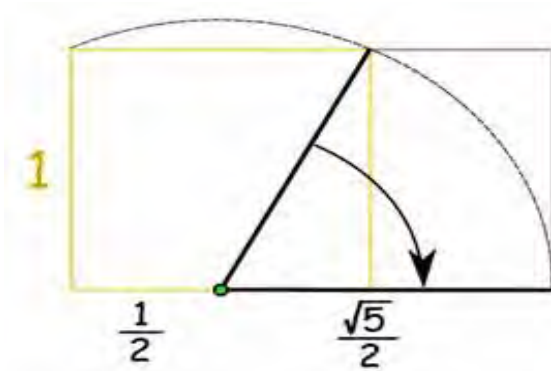
The term Phi was not used until the 1900's when Mark Barr an American mathematician used the Greek letter Φ , after the late mathematician and sculptor Phidias.

More recently, the 1970's, Phi was used to help discover a pattern now known as Penrose Tiles. A **Penrose tiling** is a non-periodic **tiling** generated by an aperiodic set of prototiles ([Penrose Tiles](#)).

Today the Golden ratio is usually a concept that is applied in art, design and architecture.

CALCULATION OF THE GOLDEN RATIO:

One of the easiest ways to derive the Golden Ratio is by:



Dividing 1 by a number (for example the number 2):

$$1/2 = 0.5$$

Then adding 1: $0.5 + 1 = 1.5$

Giving you a new number, then you repeat dividing 1 by the new number till you get to the Golden Ratio.

Another way of deriving the Golden Ratio is by drawing it.

To draw it you start by drawing a 1" square. Then place a dot half way along one side and draw a line from the point to the opposite corner (the length will be $\sqrt{5}/2$) then turn the line so that it runs along the side of the square.

You can also use the measurements to create a formula for Phi:

$$\phi = \frac{1}{2} + \frac{\sqrt{5}}{2} = \frac{1 + \sqrt{5}}{2}$$

The square root of 5 is ≈ 2.236068

Therefore the Golden Ratio is $\approx \frac{1+2.236068}{2} = \frac{3.236068}{2} = 1.618034$.

Like Pi ($\pi=3.14159\dots$), Phi is also an irrational number, but Phi is the solution to a quadratic equation.

Deriving the value of the Golden Ratio
from the Quadratic Equation:

$A=1, b=1,$ and $c=-1$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(-1) \pm \sqrt{-1^2 - 4(1)(-1)}}{2(1)} \\ = \frac{1 \pm \sqrt{1+4}}{2} = \frac{1 \pm \sqrt{5}}{2}$$

Then again, the square root of five is ≈ 2.236068

Therefore the Golden Ratio is $\approx \frac{1+2.236068}{2} = \frac{3.236068}{2} = 1.618034 \dots$

The Golden Ratio is also a number that is equal to its own reciprocal plus one:

$$\phi = \frac{1}{\phi} + 1$$

Phi can also be derived using the Fibonacci sequence. The Fibonacci sequence begins with 0 and 1, and each new number in the sequence is the sum of the two before it.

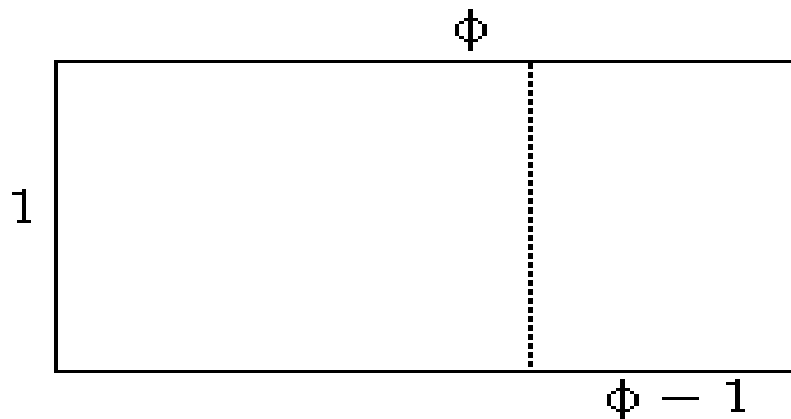
Example of the sequence:

$$1 + 1 = 2 \quad 2 + 3 = 5$$

$$1 + 2 = 3 \quad 3 + 5 = 8$$

GEOMETRY AND THE GOLDEN RATIO:

The Golden Ratio is the classic shape of Phi. Phi appears alongside the perfect (unit) square:



The Golden Rectangle has dimensions $1 \times \phi$ such that removing the unit square is left with the rectangle $(\phi - 1) \times 1$ similar to the original rectangle the most fundamental property of the golden ratio is:

1. $\phi : 1 = 1 : (\phi - 1)$

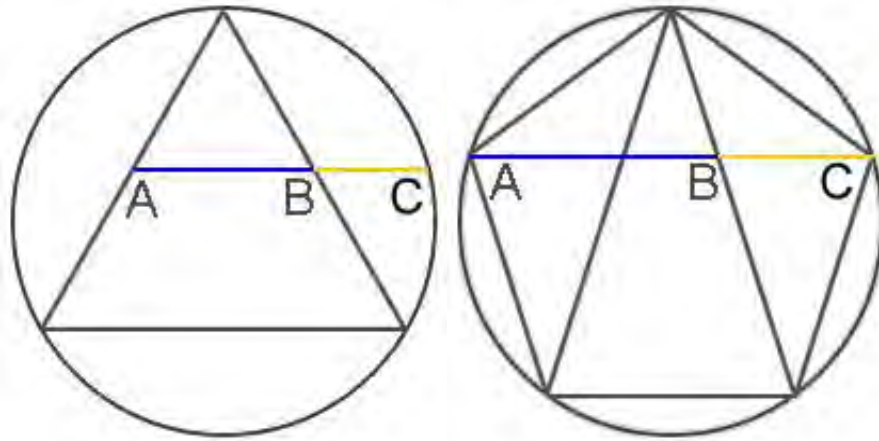
To see this, we reduce 1 to

2. $\phi^2 - \phi - 1 = 0$

With two solutions $(1 \pm \sqrt{5})/2$ one being positive or negative.

The negative solution would actually be the conjugate of Phi ϕ' .

The Golden Ratio in geometry it appears in basic construction of an equilateral triangle, square and pentagon placed inside of a circle, and in more complex three-dimensional solids.



In triangles, quadrilaterals, and pyramids

Odom's construction

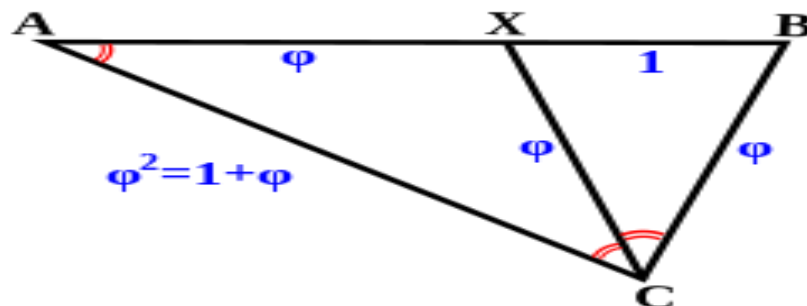
George Odom has given a remarkably simple construction for φ involving an equilateral triangle: if an equilateral triangle is inscribed in a circle and the line segment joining the midpoints of two sides is produced to intersect the circle in either of two points, then these three points are in golden proportion. This result is a straightforward consequence of the intersecting chords theorem and can be used to construct a regular pentagon, a construction that attracted the attention of

the noted Canadian geometer H. S. M. Coxeter who published it in Odom's name as a diagram in the American Mathematical Monthly accompanied by the single word "Behold!"

GOLDEN TRIANGLE:

The golden triangle can be characterized as an isosceles triangle ABC with the property that bisecting the angle C produces a new triangle CXB which is a similar triangle to the original.

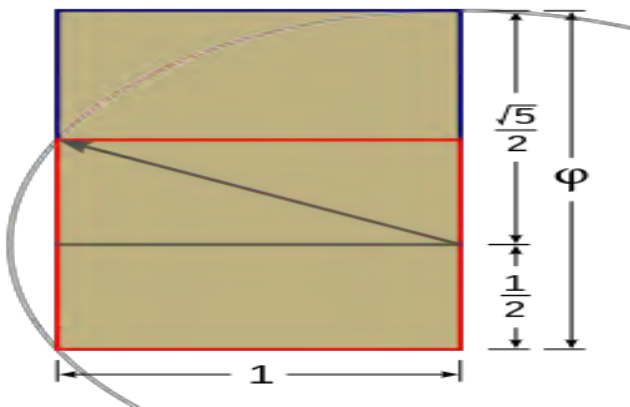
If angle $\angle BCX = \alpha$ then $\angle XCA = \alpha$ $\angle XCA = \alpha$ because of the bisection, and $\angle CAB = \alpha$ because of the similar triangles; $\angle ABC = 2\alpha$ from the original isosceles symmetry, and $\angle BXC = 2\alpha$ by similarity. The angles in a triangle add up to 180° , so $5\alpha = 180^\circ$, giving $\alpha = 36^\circ$, so the angles of the golden triangle are thus $36^\circ - 72^\circ - 72^\circ$. The angles of the remaining obtuse isosceles triangle AXC, called the golden gnomon, are $36^\circ - 36^\circ - 108^\circ$.



Golden triangles that are decomposed further into pairs of isosceles and obtuse golden triangles are known as Robinson triangles.

GOLDEN RECTANGLE:

The golden ratio proportions the adjacent side lengths of a golden rectangle in $1:\varphi$ ratio. They are special in that stacking them produces golden rectangles as well. Pairs of opposing vertices in an icosahedron form a golden rectangle. Three golden rectangles inside an icosahedron intersect each other at 90° degree angles, and collectively contain 12 of its vertices.



Golden rectangle: the diagonal of half of a square equals the radius of a circle whose radius contains the point that belongs to the corner of a golden rectangle added to the square.

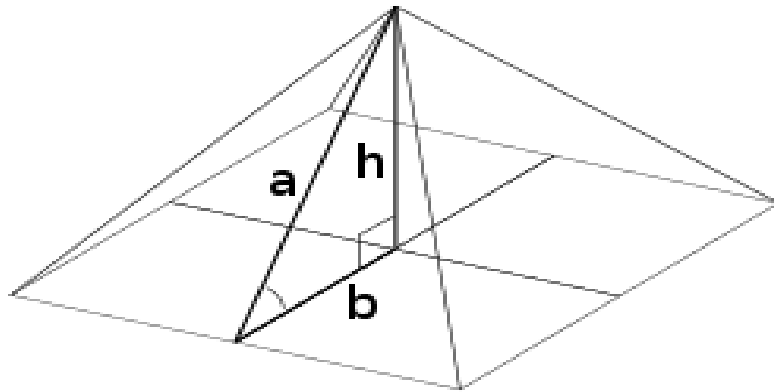
A golden rhombus is a rhombus whose diagonals are in proportion to the golden ratio. The rhombic triacontahedron is a Catalan solid with golden rhombi as faces that contain diagonals in $1:\varphi$ ratio. The

dihedral angle between any two adjacent rhombi in a rhombic triacontahedron is 144° which is twice the isosceles angle of a golden triangle and four times its most acute angle. Golden rhombi whose diagonals are in ratio of $1:\varphi^2$ are present in the rhombic enneacontahedron, a zonohedron with resemblance to the rhombic triacontahedron. These rhombi have angles 70.528° and 109.471° degrees, and make up 30 of 90 rhombic faces in the polyhedron.

GOLDEN PYRAMID:

A pyramid in which the apothem (slant height along the bisector of a face) is equal to φ times the semi-base (half the base width) is sometimes called a golden pyramid. The isosceles triangle that is the face of such a pyramid can be constructed from the two halves of a diagonally split golden rectangle (of size semi-base by apothem), joining the medium-length edges to make the apothem. The height of this pyramid is $\sqrt{\varphi}$ times the semi-base (that is, the slope of the face is $\sqrt{\varphi}$; the square of the height is equal to the area of a face, $\sqrt{\varphi}$ times the square of the semi-base. The medial right triangle of this "golden" pyramid (see diagram), with sides $1:\sqrt{\varphi}:\varphi$ is interesting in its own right,

demonstrating via the Pythagorean theorem the relationship $\sqrt{\varphi} = \sqrt{\varphi^2 - 1}$ or $\varphi = \sqrt{1 + \varphi}$. This Kepler triangle is the only right triangle proportion with edge lengths in geometric progression, just as the 3:4:5 triangle is the only right triangle proportion with edge lengths in arithmetic progression. The angle with tangent $\sqrt{\varphi}$ corresponds to the angle that the side of the pyramid makes with respect to the ground, 51.827° ($51^\circ 49' 38''$)



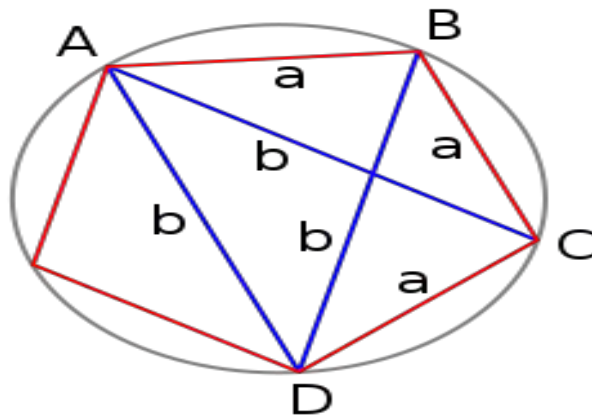
PENTAGON:

In a regular pentagon the ratio of a diagonal to a side is the golden ratio, while intersecting diagonals section each other in the golden ratio. The golden ratio properties of a regular pentagon can be confirmed by applying Ptolemy's theorem to the quadrilateral formed by removing one of its vertices. If the

quadrilateral's long edge and diagonals are b , and short edges are a , then Ptolemy's theorem gives

$b^2 = a^2 + ab$ which yields

$$\frac{b}{a} = \frac{1+\sqrt{5}}{2}$$



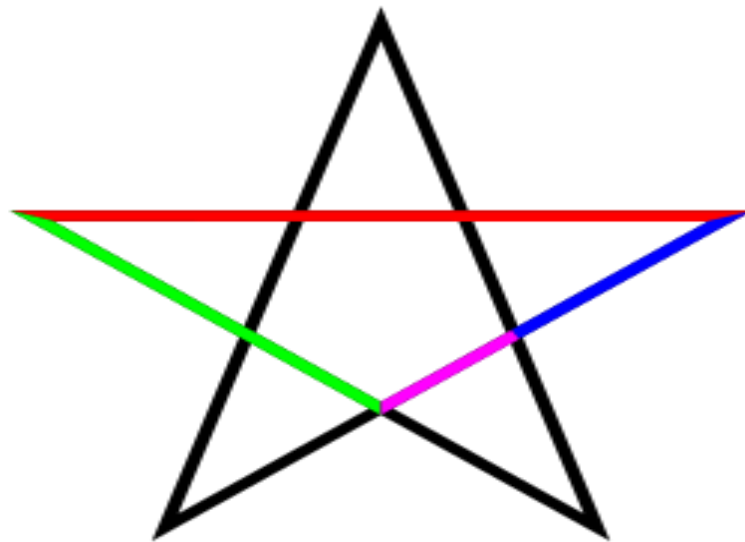
The golden ratio in a regular pentagon can be computed using Ptolemy's theorem.

PENTAGRAM:

The golden ratio plays an important role in the geometry of pentagrams. Each intersection of edges sections other edges in the golden ratio. Also, the ratio of the length of the shorter segment to the segment bounded by the two intersecting edges (a side of the pentagon in the

pentagram's center) is φ , as the four-color illustration shows.

The pentagram includes ten isosceles triangles: five acute and five obtuse isosceles triangles. In all of them, the ratio of the longer side to the shorter side is φ . The acute triangles are golden triangles. The obtuse isosceles triangles are golden gnomons.



A pentagram coloured to distinguish its line segments of different lengths. The four lengths are in golden ratio to one another.

APPLICATION OF GOLDEN RATIO:

ART:

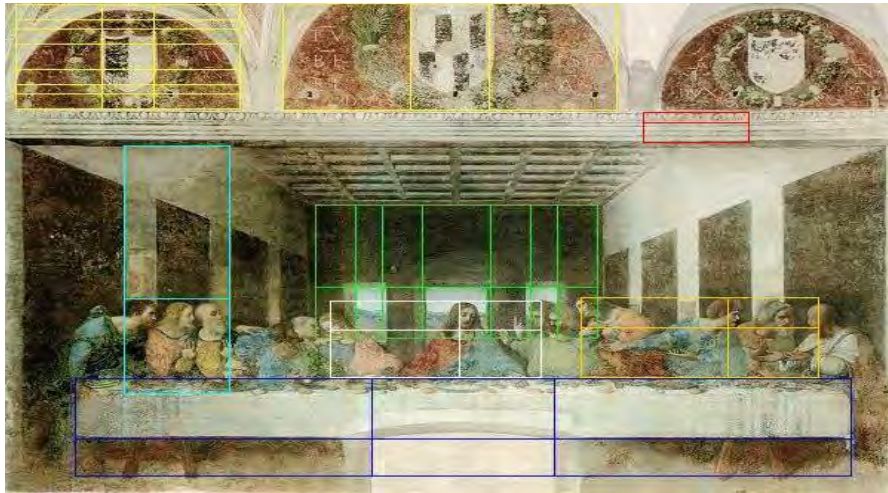
(Invention, Painting, Sculpting, Architecture)

The Golden Ratio can be used to achieve beauty, balance and harmony in art, architecture and design. It can be used as a tool in art and design to achieve balance in the composition.

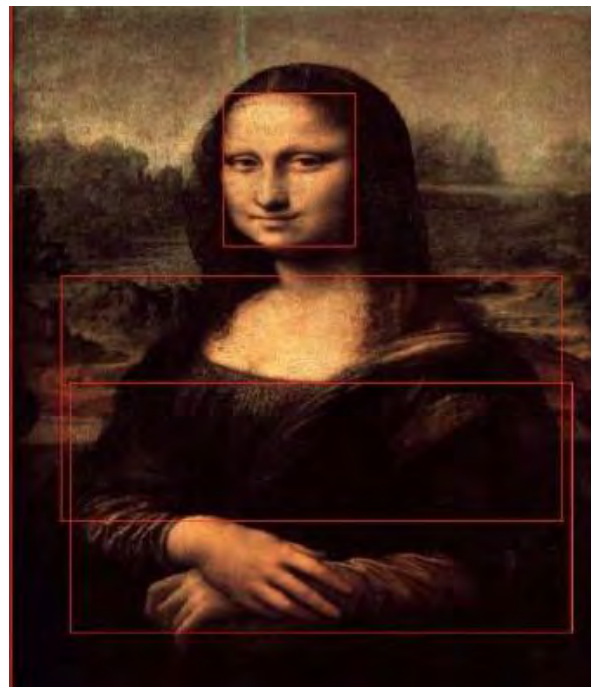
The best examples of use of the Golden Ratio in art are by renaissance artist Leonardo da Vinci, Michelangelo, and Raphael.

Leonardo di ser Piero da Vinci was a man of many interest. Those interest being invention, painting, sculpting, architecture, science, music, mathematics, engineering, literature, anatomy, geology, astronomy, botany, writing, history, and cartography. Leonardo used the Golden section in many of his paintings, and drawings. During the Renaissance it was known

as The Divine Proportion. In his famous painting *The Last Supper*, *The Monalisha* all of the proportions are balanced because he used the Golden Portion.



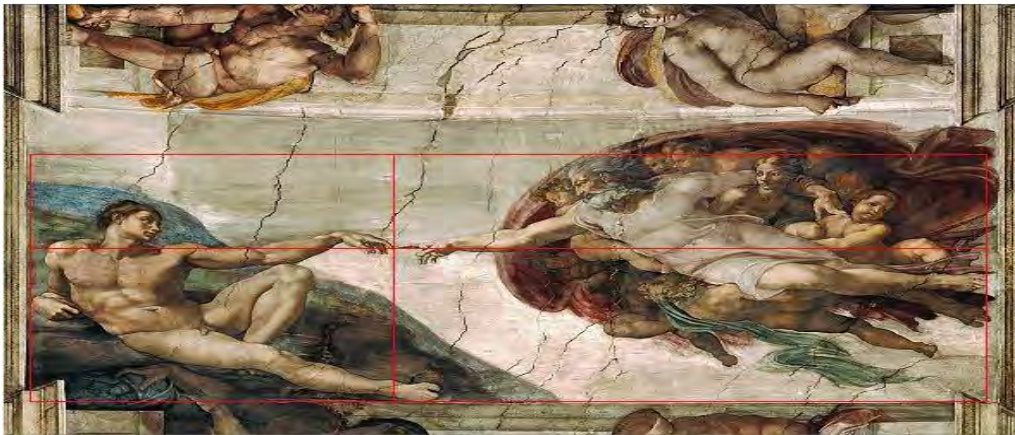
The Last Supper



The Monalisha

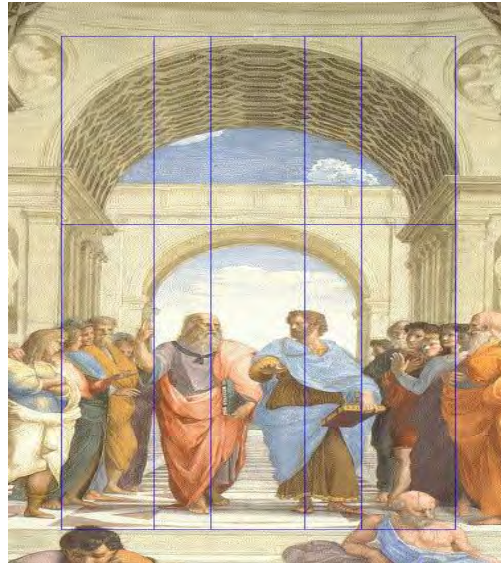
Michelangelo di Lodovico Buonarroti Simon, was a painter, architect, poet, and engineer from the Renaissance. He was considered the greatest living artist of his time. Most commonly Michelangelo is remembered by his painting *The Creation of Adam* that is on the ceiling of the *Sistine Chapel*. It is in this painting that one can see how Michelangelo used the Golden ratio.

God's finger and Adam's finger meet at the Golden ratio point of the area that contains them.



Raffaello Sanzio da Urbino, was also a painter and architect from the Renaissance. In his painting *The School of Athens* the division

between the figures in the painting and their proportions are distributed using the Golden ratio.



The best example of the golden ratio being used today is in logos. The design of logos usually consist of creating an appealing, well balanced and memorable symbol. Google's logo is one of the best examples of the use of the Golden ratio.



Top to bottom of lower case letters:



Top to bottom of lower case g



www.goldennumber.net

Throughout their logo we can see how they evenly distribute the letters and colors using the golden ratio.

NATURE:

Johannes Kepler wrote that "the image of man and woman stems from the divine proportion. In my opinion, the propagation of plants and the progenitive acts of animals are in the same ratio"

The psychologist Adolf Zeising noted that the golden ratio appeared in phyllotaxis and argued from these patterns in nature that the golden ratio was a universal law. Zeising wrote in 1854 of a universal orthogenetic law of "striving for beauty and completeness in the realms of both nature and art".

However, some have argued that many apparent manifestations of the golden ratio in

nature, especially in regard to animal dimensions, are fictitious.



MUSIC:

Ernő Lendvai analyzes Béla Bartók's works as being based on two opposing systems, that of the golden ratio and the acoustic scale though other music scholars reject that analysis.

French composer Erik Satie used the golden ratio in several of his pieces, including *Sonneries de la Rose+Croix*. The golden ratio is also apparent in the organization of the

sections in the music of Debussy's *Reflets dans l'eau* (Reflections in Water), from *Images* (1st series, 1905), in which "the sequence of keys is marked out by the intervals 34, 21, 13 and 8, and the main climax sits at the phi position".

The musicologist Roy Howat has observed that the formal boundaries of Debussy's *La Mer* correspond exactly to the golden section. Trezise finds the intrinsic evidence "remarkable", but cautions that no written or reported evidence suggests that Debussy consciously sought such proportions.

Though Heinz Bohlen proposed the non-octave-repeating 833 cents scale based on combination tones, the tuning features relations based on the golden ratio. As a musical interval the ratio 1.618... is 833.090... cents

PHYSICS:

The quasi-one-dimensional Ising ferromagnet CoNb_2O_6 (cobalt niobate) has 8 predicted excitation states (with E_8 symmetry), that when probed with neutron scattering, showed its lowest two were in golden ratio.

Specifically, these quantum phase transitions during spin excitation, which occur at near absolute zero temperature, showed pairs of kinks in its ordered-phase to spin-flips in its paramagnetic phase; revealing, just below its critical field, a spin dynamics with sharp modes at low energies approaching the golden mean.

CONCLUSION:

Advanced mathematical concepts paradoxically lose some relations to the physical world from which they are derived. The intensely scrutinized complex numbers are drawn from the real numbers; yet do not conform to the experience of real numbers to

the real world. Mathematics, like art stands alone as an object of free perception. Since art is not obliged to make reference to outside world, mathematics is also motivated by wonder and imagination. "The great questions of mathematics- the kind that draw people to math in the first place are called great not because they may lead to applications, but because they captivate the imagination. They inspire wonder and delight. One could say they are beautiful". The closer the dimensions of the face fit to the Golden ratio, the more beautiful the person is perceived by others. The architects explored connection between geometrical design and artistic beauty when incorporating the Golden ratio into their construction. In modern times, buildings such as the United Nations Headquarters in New York City (having three Golden rectangles) and the CN Tower in Toronto have Golden ratios in their design. Golden ratio is not just lofty mathematical theory; it shows up all the time

in the real world. Likewise, graphic designer can use Fibonacci sequence as a general guideline and creative tool to make the design perfect. Designers can incorporate Golden ratio to crop photos or images into Golden rectangle or Golden spiral for the shot's composition, logo design, layout etc. These days' designers are privileged with modern technical apps to employ as the best tools to help them incorporate Golden ratio in their work, such as Atrise Golden section, Golden calipers, Golden ratio app, Golden ratio typography app, Phi calculator etc. People may argue that the Golden ratio probably does not have any mystical powers of beauty drawn from archetypal fabric of the transcendental world. But it is more likely that this ubiquitous pattern has some aesthetically appealing properties suggesting a sense of natural balance and visual harmony.

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[9]<http://jwilson.coe.uga.edu/EMAT6680/EMAT6680.2000/Obara/Emat6690/Golden%20Ratio/golden.html> (accessed October 4, 2010).

PROJECT REPORT

Submitted for the Degree of B.Com Honours in
Accounting & Finance under the University of Burdwan.

TITLE OF THE PROJECT

**E-COMMERCE-A CASE STUDY ON
CONSUMER PREFERENCES: FLIPKART V/S
AMAZON**

Submitted by

Name: Ritay Begun
College: Sarai Centenary College
Coll. Roll No: DA
Reg. no: 2019210143520
University Roll no: TP214/200001

Supervised By

Name of the Supervisor: Rita Bhat

MONTH & YEAR OF SUBMISSION

Supervisor's Certificate

This is to certify that Mr Binay Bagchi a student of B.Com Honours in Accounting & Finance of Saral Centenary College under the University of Burdwan University has worked under my supervisor and guidance for his project work and prepared a project Report with title "E-COMMERCE-A CASE STUDY ON CONSUMER FLIPKART" to the best of my knowledge.

Signature:

Name:

Name of the College:

Place:

Date:

Student's Declaration

I hereby declare that the project work with the title 'E-COMMERCE-A CASE STUDY ON CONSUMER PREFERENCES FLIPKART VS AMAZON' submitted by me for the partial fulfillment of the degree of B.Com Hons ours in Accountint and Finance under the university of Burdwan is my original work and has not been submitted earlier to any university for the fulfillment of requirement for any course of study.

I also declare that no chapter of this manuscript in whole or in part has been incorporated in this report from any earlier work done by others or by me. However, extract of any literature which has been used for this report has been duly acknowledged providing details of such literature in the references.

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Place: Burdwan

Date:

Acknowledgement

At the completion of my project, I would like to express my sincere gratitude to all the people without whose support this project could not be completed.

At the honest, I would like to thank "Sarat Centenary College" for having provided me with a great opportunity to pursue my bachelor's degree in this institution.

I would like to acknowledge the constant help of my project guide ~~dear sir~~, Binita Nath who has given necessary suggestion, expert guidance and support for completion of the project.

Finally, I am gratefully acknowledging the support of my family and friends during the completion of this project.

1. INTRODUCTION

1.1 Background of the topic

"Consumer is the sole end and purpose of all production; and the interest of the producer ought to be attended to only so far as it may be necessary for promoting that of the consumer."

- Adam Smith

The growing interdependence of the world economy and international character of many business practices have contributed to the development of universal emphasis on consumer. Modern technological developments have no doubt made a great impact on the quality, availability and safety of goods and services. A consumer person who purchases or ultimately consumes goods and services. Growing practice of electronic transactions includes both e-commerce and e-consumers.

Internet is changing the way consumers shop and buys goods and services and has rapidly evolved into a global phenomenon. Many companies have started using the Internet with the aim of cutting marketing costs, thereby reducing the price of their products and services in order to stay ahead in highly competitive markets. Even Government institutions have started replacing their paperwork. Companies also use the Internet to survey, communicate and disseminate information, to sell the product, to take feedback and also to conduct satisfaction surveys with customers.

Customers use the Internet not only to buy the product online, but also to compare prices, product features and after sale service facilities they will receive if they purchase the product from a particular store. Many experts are optimistic about the prospect of online business.

1.1 REVIEW OF LITERATURE

The online consumer market place is growing at an exponential rate. At the same time, technology has enhanced the capacity of online companies to collect, store, maintain, transfer and analyze vast amount of data from and about the consumer who visit their web sites. This increase in the collection and use of data has raised public awareness and consumer concern about online privacy. Number of studies has been done in this field some of which are discussed below:

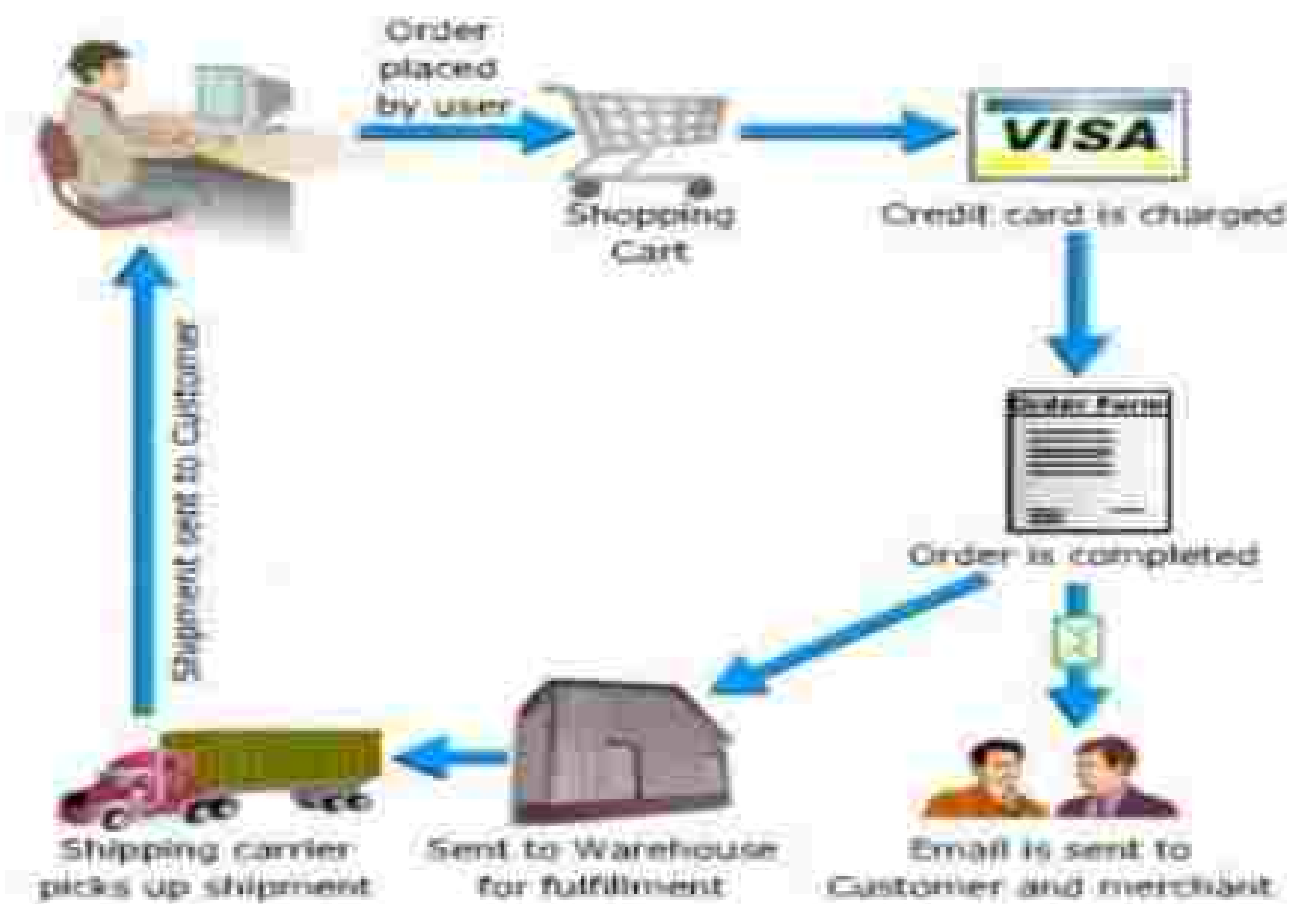
Sohbu Rao, Truong, Senecal and Le, (2007) conducted the study on —How Buyers' Expected Benefits, Perceived Risks, and E-Business Readiness Influence their Marketplace Usage and claims that buyer's E-business readiness mediated the relationship between expected benefits and usage of electronic marketplace.

Prasad and Aryasri (2009) have explored the determinants of shopping behaviour such as convenience, customer service, trust, web store environment and web shopping enjoyment and examine the effect of these factors towards online buying behaviour.

Dr. Durmaz(2011) in the study entitled — impact of cultural factors on online shopping behaviour and the study found that while buying goods and services, culture, beliefs and traditions take an important position, while the environment, friends and social groups stated 45.4%. In this case the impact of cultural factors seems a lot.

Wells et al. (2011) in his study entitled — online impulse buying: understanding the interplay between consumer impulsiveness and website quality focused on the direct relationships between the website and online impulsive buying. The study found and proposed the model considered the direct influence of website quality on the urge to buy impulsively.

Process of shopping at an online store



Dahiya Richa (2012) in the study entitled — *Impact of demographic factors of consumers on online shopping behaviour: a study of consumers in India* and the study found that On-line shopping is a recent phenomenon in the field of E-Business and is definitely going to be the future of shopping in the world. Most of the companies are running their on-line portals to sell their products/services on-line.

1.3 Objectives of the Study

- To understand the consumer's preference of online shopping for Flipkart & Amazon
- To know how consumer's preference shape towards online stores.
- To find out the key concerns of consumers while online shopping.

1.4 Research Methodology

DATA COLLECTION METHOD

Primary Data

It is original primary data, for specific purpose of research project. For this project, I have to use the common research instrument or tool: Questionnaire.

Secondary Data

It will be collected to add the value to the primary data. This may be used to collect necessary data and records by different websites, magazines, annual reports, journals, reference books, and newspapers, etc.

SAMPLE DESIGN

Sample Unit

For studying consumer preference towards on-line shopping platforms, samples were randomly selected from Kolkata.

Sample Media

Questionnaire in the form of google forms. Sampling Methods :-

- Random sampling
- Convenient sampling

Sample size - 100

Research place - Chandra Chowk Area of Kolkata which is the hub of electronic goods in the city.

Period of Study-

For Primary Data: 01.04.2020 to 15.04.2020

For Secondary Data: 15.04.2020 to 20.04.2020

1.5 Limitations of the Study

- Sample Size:** A larger sample size would have ensured a significant representative distribution of people.
- Lack of prior research studies on the topic:** Depending on the scope of my research topic there was little prior research on the same.
- Longitudinal Effect:** The time available to investigate was constrained by due date of the assignment.
- Cultural Bias:** Culturally biased research can have significant real-world effects. One way to deal with cultural bias is to recognize it when it occurs which I have certainly kept in mind.

1.6 Chapter Planning

PLAN FOR CHAPTER-1: Chapter one gave details about the study area and the concept note about the research problem under study. It included background and need of the study, title, problem statement, objectives, operational definitions, assumptions, statement of the hypotheses, scope of the study and the conceptual frame work.

PLAN FOR CHAPTER-2: Chapter two will give a professional introduction aiming to inform people (primarily prospective buyers and stakeholders) about its products, services, and current status along with the National and International Scenario of E-Commerce

PLAN FOR CHAPTER-3: PRESENTATION OF DATA ANALYSIS AND FINIDNGS:

Data analysis is the phase of a study that includes tabulation, coding and classification of the data gathered in accordance with the research design, to perform quantitative and qualitative analysis. The details about the analysis and interpretation of the findings, resulting from the data gathered during the present study are covered in this chapter.

PLAN FOR CHAPTER-4: CONCLUSION AND RECOMMENDATIONS:

This chapter presents findings of the study and the concluding discussion regarding the implication, limitations, personal experiences and recommendations that can be taken for the further study in the same domain.

2. CONCEPTUAL FRAMEWORK

2.1 COMPANY PROFILE



Flipkart is an electronic commerce company headquartered in Bangalore, Karnataka. Flipkart was founded in 2007 by Sachin Bansal and Binay Bansal, both alumni of the Indian Institute of Technology Delhi. They worked for Amazon.com, and left to create their new company incorporated in October 2007 as Flipkart Online Services Pvt. Ltd. The first product they sold was the book *Leaving Microsoft To Change the World* to a customer from Hyderabad. Flipkart now employs more than 35,000 people.

After the failure of its 2014 Big Billion Sale, Flipkart carried out a second Big Billion Sale [17] where it is reported that they saw a business turnover of \$300 million in gross merchandise volume. Flipkart.com ranks #502 in world according to Alexa traffic rankings. In Google page it ranks 9th. It receives 2.2 million page views in a day and generates \$6,574 in advertising revenue every day. Moreover, it has a conversion of 0.60% in traffic ranking. Loading time of an average page is 2.1 sec as it is much faster than 29% of sites around the world. The mode of payments includes Credit card, Debit card, Net-banking, e-gift vouchers, cash on delivery.

Market Trend Analysis

- Current size of e-commerce market in India is \$11.2 billion.
- 360 e-commerce portal offering services in India tripled since 2010.
- Internet users in India is expected to grow to 376 million by 2015.

SWOT Analysis of Flipkart



AMAZON

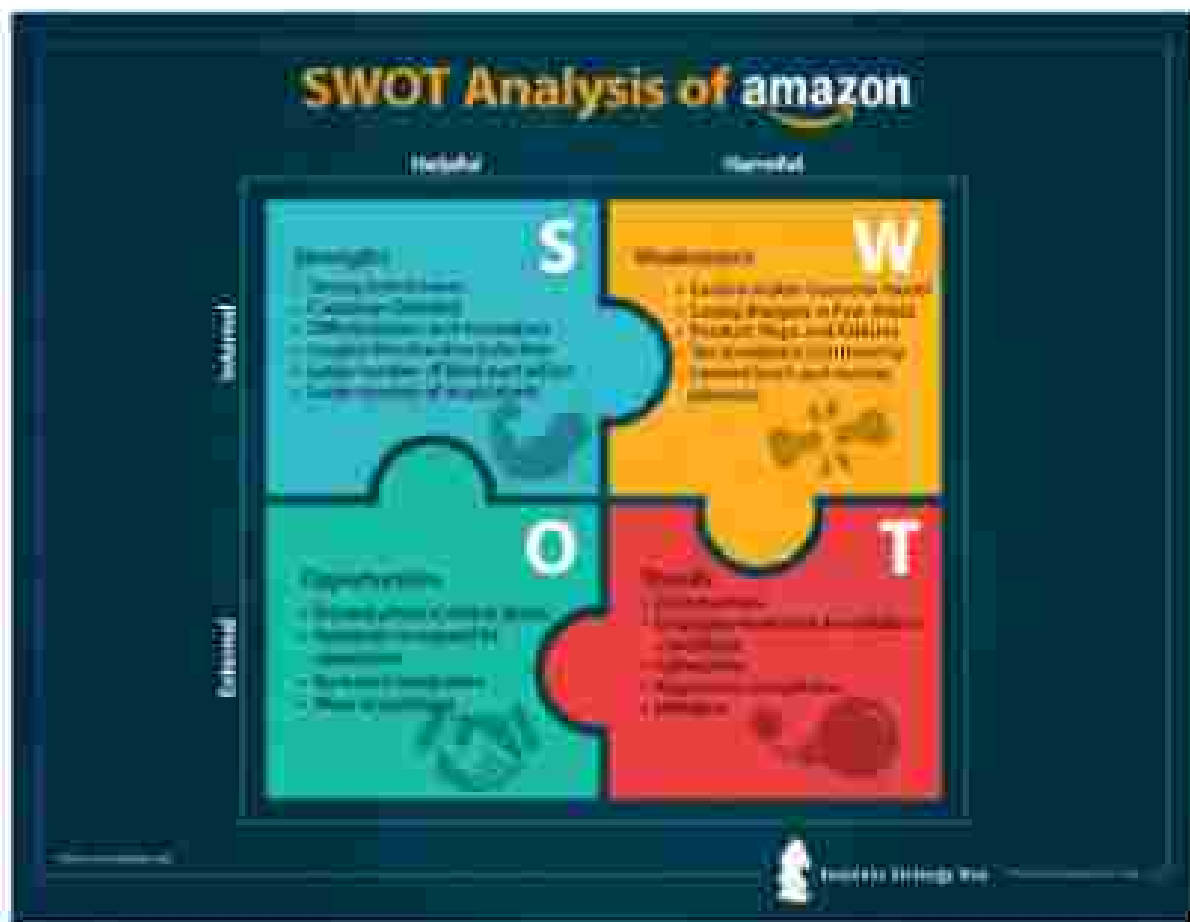
The International giant e-commerce retailer recently stepped into India with an Indian version site www.amazon.in. Since the launch, amazon.in has seen a nice growth in the number of customers. Amazon.com too had a large number of Indian customers even before it launched here in India. The store hosts wide range of products like Electronics, Mobiles, Laptops, Books, Fashion, Jewelry, Kitchenware and more.

It is an American electronic commerce company with headquarters in Seattle, Washington. It is the largest internet-based retailer in the United States. It started as an online bookstore, but soon diversified selling DVD's, Blue-rays, CD's, Videos, downloading, MP3 downloading, Software, videogames, electronics, apparel, furniture, food, toys and jewelry. It runs separate retail websites for the United States, United Kingdom and Ireland, France, Canada, Germany, Italy, Spain, Netherlands, Australia, Brazil, Japan, China, India, Mexico. Amazon also offers international shipping to certain countries for some of its products. In 2011 it had professed an intention to launch its website in Poland and Sweden.

Amazon's Business Strategy

Amazon is basing its business strategy on 3 pillars:

- Fast selection
- Low cost
- Fast delivery



SWOT Analysis of Amazon

2.2 NATIONAL SCENARIO

India in the recent years has been experiencing an exponential growth in e-commerce and there are new companies springing up at a rapid rate. E-commerce had a standout year in 2015, when it grew in size from \$7 Billion to \$8 Billion and pervaded every aspect of our lives. In 2016, it grew further. The industry is set to become more 'm', or mobile, than 'e' commerce. M-commerce has been and will be the inevitable trend of modern times. That means more users. No doubt, more users will help companies build scale, but they will embrace a few changes themselves.

Companies will go after profitable growth rather than wooing customers with deep discounts (in other words, running on losses). A bigger user base will just be the cue for companies to reduce discounts and focus on profitable growth.

"Building scale won't be a challenge for the large players," says Sandeep Aggarwal, founder, Snapdeal. Six of the largest e-commerce players- Flipkart, Amazon India, Snapdeal, eBay.in and Shopclues- together have about 85-90% of the e-commerce business in India.

Cash on Delivery (COD), a preferred mode of payment for many customers, will decline as more and more people familiarize themselves with using payment wallets to shop and pay bills.

Companies will have their hands full as more users come on board, but they will be up to the task of serving the needs of customers. That will lead to the emergence of new categories of services like delivering even milk and water - which Paytm founder Vijay Shikhar Sinha believes "will replace the neighborhood store." "You won't need to step out to shop."

Brick-and-mortar will not disappear, but "there'll be more fusion between online and offline services," he adds. Here is a tantalizing possibility of how this and then walk down to the store to pick up the product selected.

"Self-logistics will be an option," says Shama. Shopclues' Aggarwal says the ecosystem is healthier and is maturing. "There will be higher adoption of m-commerce and mobile wallets."

E-commerce will make inroads into rural areas. Traditional business houses such as Reliance Industries and Tata Group will enter the business more aggressively. One key challenge will be logistics as there is no large-scale player that covers the whole country cost effectively.

GOVERNMENT LAWS & REGULATIONS ON ONLINE RETAIL

In a boost to retailers and grocery start-ups such as BigBasket and Grofers, the government on Monday allowed 100% FDI in food retail, including through e-commerce, provided such items are produced, processed or manufactured in the country.

This will allow multi-brand retail giants such as Walmart to look at their food business here closely and perhaps even foray into B2C food retail. Currently, the US giant operates a B2B

business here since FDI in multi-brand retail is not allowed. The US retailer has built a strong backend infrastructure in food. Similarly, the move will help Indian hyper-local grocery start-ups raise funds more easily.

"The decision by the government to allow up to 100% foreign direct investment (FDI) through FIPB in marketing of food products produced or manufactured in India, including through e-commerce, is very progressive and will help in reducing wastage, helping farm diversification and encourage industry to produce locally within the country. This far-reaching reform will benefit farmers, give impetus to food processing industry and create vast employment opportunities. We will study the policy document when government finalises and issues it," said a Walmart India spokesperson.

The decision comes without any riders. Department of industrial policy and promotion secretary Ramesh Abhishek said. The food processing ministry asked the food retailers to immediately invest in back-end infrastructure besides being allowed to sell some non-food goods.

DIPP said that the e-commerce marketplace may provide support services to sellers in warehousing and logistics.

However, such entities will not exercise ownership over the inventory. "Such an ownership over the inventory will render the business into inventory-based model," it said in a press note.

As per the norms, an e-commerce firm will not be permitted to sell more than 25 per cent of total sales from one vendor or its group companies. "E-commerce entities providing marketplace will not directly or indirectly influence the sale price of goods or services and shall maintain level playing field," it added.

This may require some of the existing players to alter their structures. "The cap of 25% on sales by a vendor on marketplace will ensure a broad listing of vendors for a true marketplace. This may require some of the operators to go back to the drawing board to ensure compliance," Mr. Gupta added.

2.3 INTERNATIONAL SCENARIO

Consumers worldwide spent nearly \$3.46 trillion online in 2019, up from \$2.93 trillion in 2018, according to the forecast from Internet Retailer, a Digital Commerce 360 brand. The expected 17.9% year-over-year growth in global web sales would be a slowdown from the 20.7% jump last year. However, global web sales are still growing faster than the more saturated U.S. e-commerce market, which Internet Retailer projects increased to 14.0% in 2019.

Global retail sales through all channels are likely to hit \$21.00 trillion by the end of the year, a 3.4% uptick from \$20.31 trillion in 2018, according to Internet Retailer estimates. This would increase online's share of total retail sales to 16.4%, and e-commerce would account for more than three-quarters of overall retail gains.

As online revenue continues to grow each year, larger gains are necessary to achieve the same level of growth, so some deceleration makes sense. E-commerce penetration has steadily risen on the rise—with online's share of retail spend registering 10.5% in 2016, rising to 12.3% in 2017

and closing out 2018 at 14.4%, Internet Retailer estimates. The momentum continued into 2019, with penetration north of 16.9%, according to Internet Retailer's analysis.

The largest online retailers are powering this growth. In 2018, three of the top 10 global online retailers ranked by 2018 e-commerce sales (excluding sites operating exclusively as marketplace platforms) were web-only merchants. Their online revenue also significantly contributed to bumping up 2018's e-commerce penetration. As web sales rise without an accompanying uptick in offline sales, online's share of total retail sales grows.

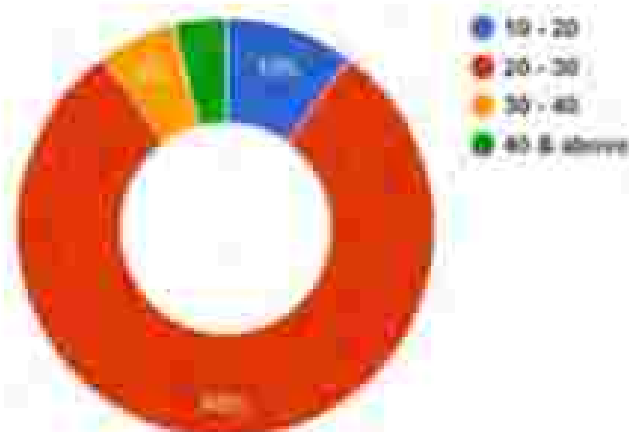
As a whole, the top 10 hit \$427.28 billion in e-commerce sales in 2018, up 22.5% from \$348.91 billion in 2017. These retailers accounted for 14.6% of all global e-commerce sales in 2018.

3.1 DATA ANALYSIS

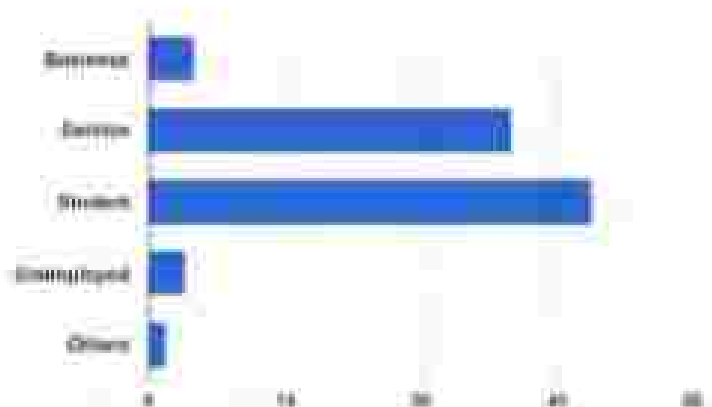
The objectives of the research were studied with respect to a regular online shopper who shopped more than once because they would be the right respondent to give an insight about the online shopping. Therefore it is fairly important to understand who is a regular online shopper.

In the survey the respondents were asked the following questions which helped to know about a regular shopper.

What age-group do you fall into?



What do you do currently?



Interpretation: As per the survey, majority of the respondents are students & servicemen who fall in the above mentioned age groups who are the powerful internet users in the country.

4.1 CONCLUSION

This research shows that online shopping is having very bright future in India. With the use of internet, consumers can shop anywhere, anything and anytime with easy and safe payment options. Consumers can do comparison shopping between products as well as, online stores. Online shopping even after gaining popularity won't completely eliminate traditional shopping. There are still areas where we prefer to go into a shop and select items. The advent of plastic money and the tremendous surge of debit and credit cards have brought shops from around the world to the tip of customers' finger or to the website. But there's no going back, and online shopping will become an even more crucial part of our lives, growing more sophisticated with each passing year. Over all the factors from the internet that influenced or prevented online consumer behaviour and attitude need to be carefully concerned by the online retailers, who can utilize the appropriate marketing communications to support the customers purchase decision making process and improve their performance.

4.2 RECOMMENDATIONS

- Amazon needs to improve its mobile application for improving the shopping experience of their customers & to attract more customers.
- EMI facility can be implemented at the time 'sale' to increase the tendency of shopping.
- Amazon has wide range of products but it should work on improving its after-sales service by tweaking some of its customer relations policies & by better training of their customer agents.
- Amazon should improve the product visibility, description & display to make the shopping experience more intuitive.
- Flipkart has good service quality but should work on lowering its product cost to be more competitive.
- Flipkart should focus on increasing the variety of products available for all social & demographic groups.



Project Report

Submitted for the Degree of B.Com.Honours in Accounting & Finance under the University of Burdwan



"Working Capital Management"- A Case Study of CEAT Company Ltd.

:Submitted by:

Name of Candidate: Gopal Baidya

Registration no: 201901049571 OF 2019-2020

Roll no: 190241200002

Name of College: Sarat Centenary college

:Supervised by:

Name of the Supervisor: Dr.Rintu Nath

Name of the College: Sarat Centenary college

Submitted in the year: 2022

ACKNOWLEDGEMENT

It is a matter of great pleasure to present this project on "Working Capital Management" -
A Case Study of CEAT Company Ltd.

I take this opportunity to thank our respected principal for giving me an opportunity to work on this field.

I am very thankful to my supervisor Prof. **Dr. Rintu Nath** for her full support in completing this project work.

Finally, I am grateful for the support of my family / friends / others and would also like to thank them for co-operating with me to carry out these research work and help me with the project work by filling up the questionnaire / report.

Gopal Baidya

Student's Name

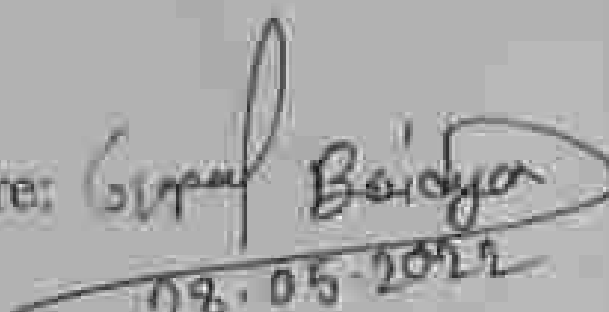
Student's Declaration

I hereby declare that the project work with the title, "Working Capital Management"- A Case Study of CEAT Company Ltd. submitted by me for the partial fulfillment of the degree of B.Com Honours in Accounting & Finance under the University of Burdwan is my Original work and has not been submitted earlier to any other University/institution for the fulfillment of the requirement for any course of study.

I also declare that no chapter if this manuscript in whole or in part has been incorporated in this report from any earlier work done by others of by me. However, extracts of any literature which has been used for this report has been duly acknowledged providing details of such literature in the references.

Place:

Date: 28.05.2022

Signature: 
28.05.2022

Name: Gopal Baidya

Reg.No:-201901049571 of 2019-20

Roll.No : 190241200002

Supervisor's Certificate

This is to certify that Mr. Gopal Baidya a student of B.Com Honours in Accounting & Finance of Sarat Centenary college College under the University of Burdwan has worked under my supervision and guidance for his Project Work and prepared a Project Report with the title "**Working Capital Management**"- A Case Study of CEAT Company Ltd.

The Project Report, which he is submitted, is his genuine and original work to the best of my knowledge.

Place:

Date:

Signature:

Prof. Dr.Rintu Nath
(Professor in commerce)
College

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CHAPTER 1: INTRODUCTION

1.1 Background of Study

In this project we have studied the performance of Working Capital Management of CEAT Company Ltd. We find that performance of Working Capital may be measured from two view point, such as: (i) Measurement of efficiency of overall management and (ii) Measurement of efficiency of management of each component of working capital.

For that, we have prepared different ratios and analysis them to check how efficiently working capital has been used in the business.

1.2 Literature review

Working capital management plays an important role in financial management of the industry. Numbers of researcher has been done the research on different components of working capital and subjects on. Here, I have included the relevant articles as well research work on the same topic. And this is a part of my research work on the same title the working capital management of selected tyre companies of India. The main aim of this paper is to identify the gaps in current body of my research work which gives the direction towards forward attention to be given.

(a)NCEAR (1966):-

The National Council of applied Economic Research (NCEAR) in 1966 first time formal study was conducted on working capital management in India. The council published a structure of working capital" which was limited analysis of the creation of working capital with special attention to the fertilizers, and cement and sugar industries the main objective of this study was emphasized on come out with findings that working capital management practices were extremely unplanned and hence need to develop proper accounting policies like inventory management, debtors management as above. And the study suggested developing suitable working capital policies required in the success of business.

(b)Kushwah, Mathur&Ball(2009):-

The study undergone to evaluate the working capital management and direction in selected five major cement companies i.e. ACC, Grasim, Ambuja, Prism and Ultra- Tech. For the research purpose secondary data are used like authors collected the financial statement of selected cements companies for the years from 2007 to 2009. There is liquidity ratios and activities ratios are used to analyse the condition of working capital of the companies. The study revealed the truth of study is that, most companies not maintain their working capital in a systematic way while overall ACC shows appropriate management of working capital.

(c)Madhavi K. (2014):-

She has done research based on empirical study of co relation among liquidity position an profitability of the paper mills in Andhra Pradesh. That has been evaluated ineffective working capital negatively effect on profitability of the paper mills.

1.3 Research Gap

From the above it is seen that previously no one has reviewed on this topic "Working Capital Management" of my selected company "CEAT Company Ltd." since last five years(March 2017 to March 2021).

So, I have choose this above mentioned topic and Company with last five years data to done my project work.

1.4 Objective of Study

The researcher has prepared this project to analyse some positions of the company, so the purposes are-

- (a) To study the changes in the different components in the working capital of the company over the study period.
- (b) To analyse the liquidity position of the company.
- (c) To study the activity ratios in order to analyse the movement of stock, pattern of collection from debtors & the pattern of payment to the creditors.

1.5 Research Methodology

- (a) Nature of the study- It is an empirical study.
- (b) Sample- We have used CEAT Company for this analysis and we use last 5 years data(i.e. from March 2017 to March 2021).
- (c) Data source- It is secondary data based analysis.
- (d) Tools used- The different tools used for analysis are tables charts & diagrams.

1.6 Limitations of Study

Following limitations were faced during preparing this project-

- (a) Limited Data- This project depends on only secondary data. Due to lack of time it is impossible to collect the primary data.
- (b) Limited Period- This project is based on five year annual reports. Conclusions are based on such limited data.
- (c) Cost Involved- Due to cost involved in carrying out a project we could not carry out intensive analysis as well as collection for data this might restrict our study to some extent.

1.7 Chapter Planning

This project report has been divided in four logical parts-

1. Chapter 1: Introduction

This chapter includes Background of Study, Literature review, Research gap, Objective of Study, Research Methodology, Limitations of Study, Chapter Planning.

2. Chapter 2: Conceptual Framework

This chapter includes Concept, Company Profile, Industry Profile, National Scenario, International Scenario.

3. Chapter 3: Presentation & Analysis of Data

This chapter shows the analysis of financial data using the following ratios

Current Ratio, Quick/Liquid/Acid Test Ratio, Inventory Turnover Ratio, Debtors/Receivables Turnover Ratio, Creditors/Payables Turnover Ratio, Cash/Super Quick Ratio, Working Capital Turnover Ratio.

4. Chapter 4: Findings & Conclusion

This chapter is divide into two parts. The first part shows the findings of the study & the second part shows the concluding portion of the study.

CHAPTER 2: CONCEPTUAL FRAMEWORK

2.1 Concept

❖ What is Working Capital?

- Working capital, also known as net working capital (NWC), is the difference between a company's current assets, such as cash, accounts receivable (customers' unpaid bills), and inventories of raw materials and finished goods, and its current liabilities, such as accounts payable. NWC is a measure of a company's liquidity and refers to the difference between operating current assets and operating current liabilities. In many cases, these calculations are the same and are derived from company cash plus accounts receivable plus inventories, less accounts payable, and less accrued expenses.

❖ What is Working Capital Management?

- Working capital management is a business tool that helps companies effectively make use of current assets, helping companies to maintain sufficient cash flow to meet short term goals and obligations. By effectively managing working capital, companies can free up cash that would otherwise be trapped on their balance sheets. As a result, they may be able to reduce the need for external borrowing, expand their businesses, fund mergers or acquisitions, or invest in R&D.

❖ Objectives of Working Capital Management :-

- To review the working capital continuously to maintain uninterrupted flow of production and sales.
- To review current assets or current liabilities regularly in order to verify whether the liquidity position of the firm is at optimum level or not.
- To forecast working capital for new project.

- To forecast additional working capital for satisfying the increased demand.
- To maintain proper control on inventories, trade receivables and cash balance.

❖ Importance of Working Capital Management :-

- Helps in maintaining optimum level of working capital.
- Helps in maintaining optimum level of liquidity.
- Helps in proper management of current assets.
- Co-ordination between fixed capital and working capital.

2.2 Company Profile

CEAT Limited (formerly, **Cavi Elettrici e Affini Torino**) is an Indian multinational tyre manufacturing company owned by the RPG Group. It was established in 1924 in Turin, Italy. As of date, CEAT is one of India's leading tyre manufacturers and has a presence in global markets. CEAT produces over 165 million tyres a year and manufactures tyres for passenger cars, two-wheelers, trucks and buses, light commercial vehicles, earth-movers, forklifts, tractors, trailers, and auto-rickshaws. The current capacity of CEAT tyres' plants is over 800 tonnes per day.

■ History

The Company was founded as Cavi Elettrici e Affini Torino (Electrical Cables and Allied Products of Turin) by Virginio Bruni Tedeschi in 1924, in Turin, Italy. On 10 March 1958, the company was incorporated as CEAT Tyres of India, in Mumbai. Initially, the company collaborated with the Tata Group. In 1972, the company set up a research and development unit at Bhandup. In 1981, Deccan Fibre Glass Limited was merged with the company. In 1982, RPG Group acquired the company, and in 1990, the company was renamed as CEAT. In 1993, the company collaborated with Yokohama Rubber Company, to manufacture radial tyres at their Nashik unit. In 1999, CEAT formed a joint venture, named as CEAT Kelani, with Asia Motor Works (AMW) and Kelani Tyres, to manufacture and market CEAT tyres in Sri Lanka. In 2006, CEAT Kelani commissioned their first Sri Lanka-based radial-tyre manufacturing unit in Kalitara.[13] In 2009, AMW exited the joint-venture.

■ Products

CEAT manufactures tyres for various types of vehicles like heavy commercial vehicle, light commercial vehicle, off-highway tyres, passenger cars, tractors, motorcycles and scooters, cycles and SUVs. It exports to countries across the Africa, Americas, Australia, and Asia.

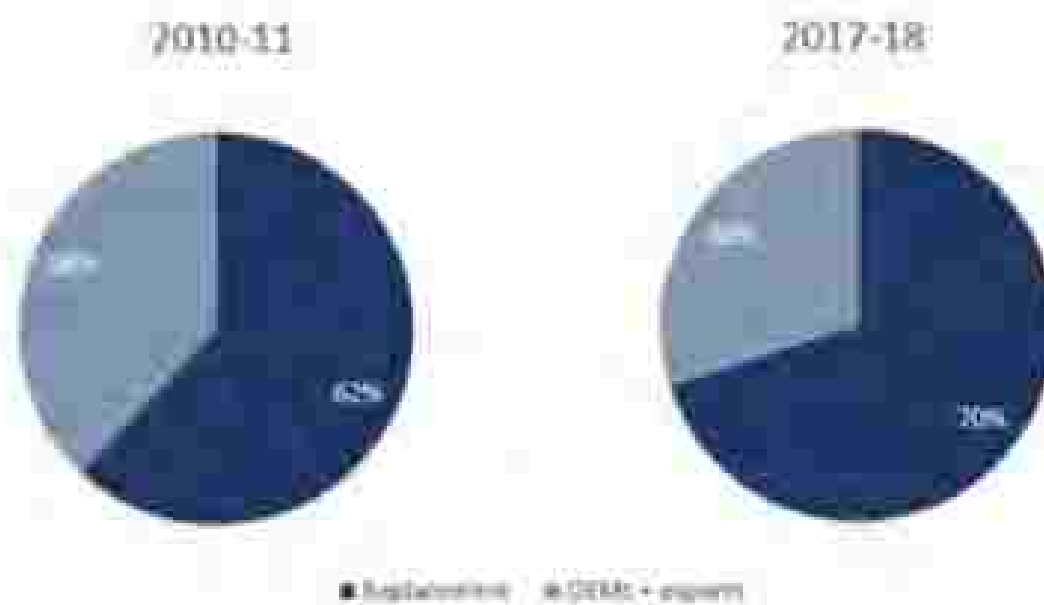
2.3 Industry Profile

The Indian Tyre Industry is an integral part of the Auto Sector – It contributes to ~3% of the manufacturing GDP of India and ~0.5% of the total GDP directly. So, let's understand the dynamics of the Tyre Industry in India.

Indian tyre industry has almost doubled from ~Rs 30,000 crores in 2010-11 to ~Rs 59,500 crores in 2017-18 of which 90-95% came from the domestic markets. The top three companies – MRF, Apollo Tyres and JK Tyres have ~60% of the market share in terms of revenue. In terms of segmentation tyres can be divided in two ways – based on end market and based on product.

Based On End Market

Replacement, OEMs & Exports

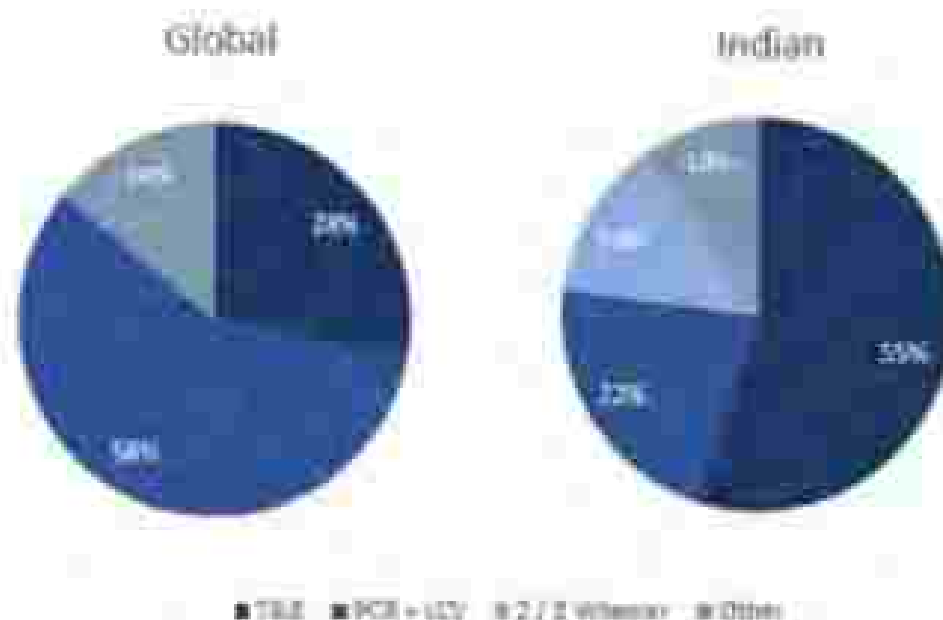


Indian tyre market is clearly skewed towards the replacement segment which contributes ~70% of total revenues. Whereas in volume (tonnage) terms the replacement segment contributes ~60%

indicating realizations in the after-market are clearly higher than OEMs (Original Equipment Manufacturers) market.

Based On Products

Truck & Bus (T&B), Passenger Vehicle (PV), 2/3-Wheeler, Off-Highway Tyres (OHT) & Others



T&B tyres in India generates the major revenue i.e. 55% of total revenue whereas globally it's the PCR (Passenger Car Radials) contribute the largest portion of the revenue. This is mainly because of very low penetration of passenger vehicles in India – below 20 per 1,000 people whereas in China the number is ~69 per 1,000 people and 786 per 1,000 people in US. In terms of volume (tonnage) T&B contributes around ~50% of the total volume.

The demand from OEM's is widely spread across the segment where T&B contributed ~35% and PVs & 2/3 Wheeler's contributed ~25% & ~22% respectively. In term of the replacement segment the demand was more skewed towards the T&B tyres which contributed ~61% and PVs & 2/3 Wheeler's contributed ~14% & ~9% respectively.

2.4 National Scenario

CEAT is one of the most respected and widely renowned brands in the Indian tyre market. In FY 20, it reported a consolidated net revenue from operations of Rs. 6,77,883 Lacs, degrowth

by 2.94% Y-o-Y. Revenue contribution from 2-Wheeler, Passenger Vehicles and Off-Highway tyre has increased significantly over the years, from 20% in FY 10 to 52% in FY 20. The Government announced allocation of Rs. 1,70,000 Crores for investments in transportation infrastructure in FY 21. This move is expected to improve road network, eventually benefitting automobile manufacturers and tyre suppliers.

Indian Tyre Demand is expected to grow by 6-8% between FY 20 and FY 24. On the volume growth front, the tyre industry is expected to witness a CAGR of 4.8% between 2020 and 2025, to attain the level of 245 Million units in 2025. One of the factors backing this growth would be the countervailing duty imposed in June 2019 on the import of new pneumatic radial tyres above 16 inches from China, for a period of five years.

2.5 International Scenario

CEAT is one of the major exporters among India's tyre manufacturers with sales to 100+ countries worldwide. The revenues from exports have increased steadily over the past few years. CEAT has a stratified export market divided in seven clusters. This identification of clusters has helped CEAT better understand customer requirements and accordingly invest in R&D to develop market-specific products. CEAT continues to consolidate its position in Bangladesh and Sri Lanka through Joint Ventures (JVs) with strategic partners. CEAT's core focus areas and growth drivers are the Two-wheeler, Passenger Car Radial and TBR tyre segments. CEAT continues to focus on European markets to expand its footprint.

Currency fluctuation destabilising International business existing markets in FY 20, CEAT has entered the markets of Australia, UK, Belgium, Brazil, Chile and Nicaragua with its passenger car products. CEAT has also entered the US market with the products in Truck Radial segment. CEAT launched its 2-Wheeler products in Nigeria which is the world's largest consumption market for 2-Wheeler.

CEAT's product series in the Passenger Car, Winter, Summer, All-Season, Ultra High Performance (UHP) and Van categories launched in Europe have met the stringent performance requirements of European markets. CEAT is well-placed to maximise available opportunities to become one of the leading players in the global market with its high-range of premium products.

CHAPTER 3:PRESENTATION& ANALYSIS OF DATA

3.1 Current Ratio

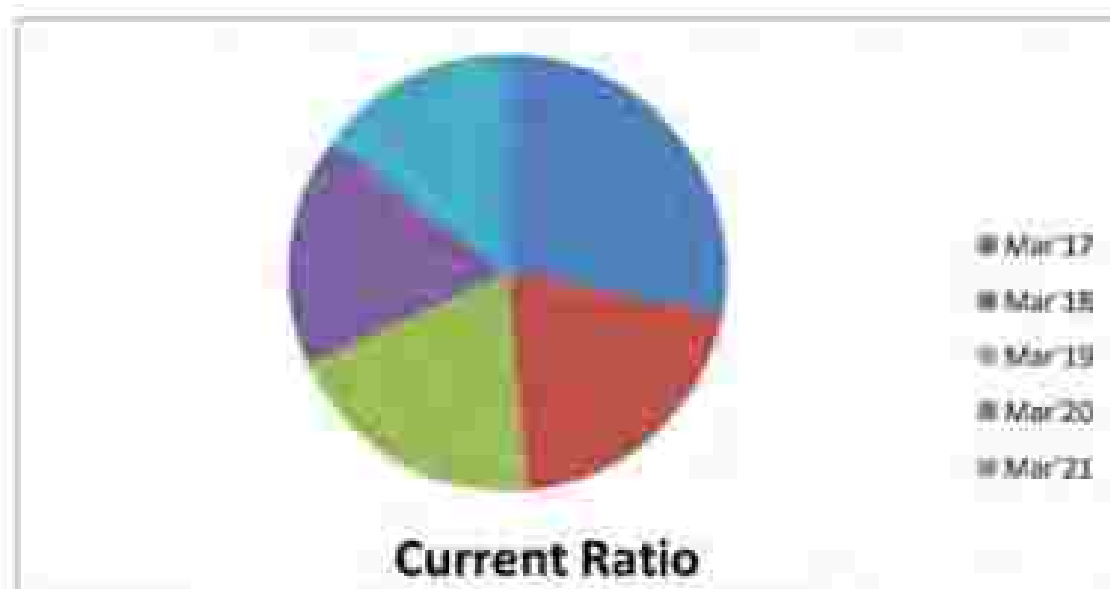
The current ratio is a liquidity ratio that measures a company's ability to pay short-term obligations or those due within one year. It tells investors and analysts how a company can maximize the current assets on its balance sheet to satisfy its current debt and other payables.

❖ Formula of Current Ratio:-

$$\text{Current Ratio} = \frac{\text{Total Current Assets}}{\text{Total Current Liabilities}}$$

- Total Current Assets= (Current Investments + Inventories + Trade Receivables + Cash & Cash Equivalent + Short Term Loans And Advances + Other Current Assets)
- Total Current Liabilities= (Short Term Borrowings + Trade Payables + Other Current Liabilities + Short Term Provisions)

Year		Mar'2017	Mar'2018	Mar'2019	Mar'2020	Mar'2021
Current Assets(Rs. in crore)	(A)	1823.57	1748.08	1564.68	1795.42	2184.08
Current Liabilities(Rs. in crore)	(B)	1337.61	1736.51	2058.95	2151.86	3009.13
Current Ratio	(A/B=C)	1.36	1.01	0.95	0.83	0.73



Interpretation:-

Current Ratio indicates Company's ability to payment short term liability. The Standard Current Ratio is 2:1. On the basis of company's current ratio from March 2017 to 2021, we see it does not satisfy the ideal ratio (2:1). We also see it continuously decreasing from 2018 – 2021 compared to 2017. It indicates company is unable to pay its short-term liability & day to day expenses in future.

3.2 Quick/Liquid /Acid-Test Ratio

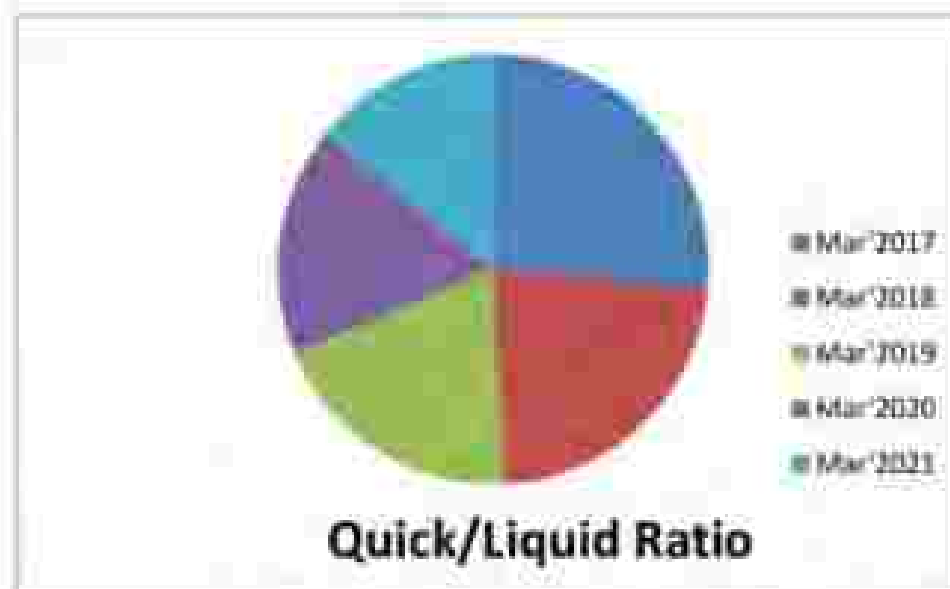
The quick ratio also known as liquid ratio is an indicator of a company's short-term liquidity position and measures a company's ability to meet its short-term obligations with its most liquid assets. Since it indicates the company's ability to instantly use its near-cash assets (assets that can be converted quickly to cash) to pay down its current liabilities, it is also called the acid test ratio. An "acid test" is a slang term for a quick test designed to produce instant results. The ideal Quick ratio is 1:1.

❖ Formula of Quick Ratio:-

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}}$$

- Quick Assets= Total Current Assets – Inventories – Prepaid Expenses
- Quick Liabilities= Total Current Liabilities – Bank Overdraft

Year	Mar 2017	Mar 2018	Mar 2019	Mar 2020	Mar 2021
Current Assets(Rs. in crore) (A)	1823.57	1748.08	1964.68	1795.42	2184.08
Inventories(Rs. in crore) (B)	923.44	754.96	965.15	879.5	1112.5
Prepaid Expenses(Rs. in crore) (C)	0	0	0	0	0
Quick Assets(Rs. in crore) (A-B-C=D)	900.13	993.12	999.53	915.92	1071.58
Current Liabilities(Rs. in crore) (E)	1337.61	1736.51	2058.95	2151.86	3009.13
Bank Overdraft(Rs. in crore) (F)	0	0	0	0	0
Quick Liabilities(Rs. in crore) (E-F=G)	1337.61	1736.51	2058.95	2151.86	3009.13
Liquid Ratio (D/G=H)	0.67	0.57	0.48	0.43	0.36



Interpretation:-

Quick ratio indicates company's ability to pay immediate short term due & capacity for day to day expenses. Here we see that on the basis of company's quick ratio from March 2017 to March 2021, it does not satisfy the ideal ratio (1:1). We also see it continuously decreasing from 2018 – 2021 compared to 2017. It indicates company is unable to pay its short term liability & day to day expenses in future.

3.3 Inventory Turnover Ratio

Inventory turnover is the rate at which a company replaces inventory in a given period due to sales. Calculating inventory turnover helps businesses make better pricing, manufacturing, marketing, and purchasing decisions. Well-managed inventory levels show that a company's sales are at the desired level, and costs are controlled. The inventory turnover ratio is a measure of how well a company generates sales from its inventory.

❖ Formula of Inventory Turnover Ratio:-

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

- Cost of Goods Sold= Revenue From Operations (Net) – Gross Profit

- Gross Profit = Revenue From Operations (Net) – Cost of Materials Consumed – Purchase of Stock-In-Trade – Changes In Inventories of FG, WIP and Stock-In-Trade.

- Average Inventory = $\frac{\text{Opening Inventory} + \text{Closing Inventory}}{2}$

Year		Mar'2017	Mar'2018	Mar'2019	Mar'2020	Mar'2021
Rs. in crore	Revenue From Operations (Net) (A)	5658.25	6075.37	6800.06	6518.57	7572.79
	Cost Of Materials Consumed (B)	3308.88	3650.33	4273.64	3815.97	4173.76
	Purchase Of Stock-In-Trade (C)	142.55	59.88	60.92	21.2	10.09
	Changes In Inventories Of FG,WIP And Stock-In-Trade (D)	-76.15	93.32	-194.25	14.58	67.43
	Gross Profit (A-B-C-D=E)	2282.97	2271.84	2659.75	2666.82	3321.51
	Cost Of Goods Sold (A-E=F)	3375.28	3803.53	4140.31	3851.75	4251.28
	Opening Inventory (G)	619.25	923.44	754.96	965.15	879.5
	Closing Inventory (H)	923.44	754.96	965.15	879.5	1112.5
	Average Inventory (G+H/2=I)	771.345	839.2	860.055	922.325	996
	Inventory Turnover Ratio (Times) (F/I=J)	4.38	4.53	4.81	4.18	4.27



Interpretation:-

Inventory turnover ratio indicates inventory holding period. It also indicate efficiency in inventory management. If inventory turnover ratio is high, it means inventory holding period is very low which is good for a company and vice versa. Here we see that the Inventory Turnover Ratio of the company is an increasing trend from the year March 2017 to March 2019. But in the year March 2020 there is a decreasing trend and finally in the year March 2021 there is an increasing trend.

It indicates company's movement of the stock is quite satisfying.

3.4 Debtors/Receivables Turnover Ratio:-

The debtors turnover ratio also known as receivables turnover ratio is an accounting measure used to quantify a company's effectiveness in collecting its accounts receivable, or the money owed by customers or clients. This ratio measures how well a company uses and manages the credit it extends to customers and how quickly that short-term debt is collected or is paid. A firm that is efficient at collecting on its payments due will have a higher accounts receivable turnover ratio. It is useful to compare a firm's ratio with that of its peers in the same industry to gauge whether it is on par with its competitors. A high debtors turnover ratio may indicate an improvement in business conditions, a tightening of credit policies, or improved collection procedures. A low ratio may be an indication of long credit period or slow realisation from debtors.

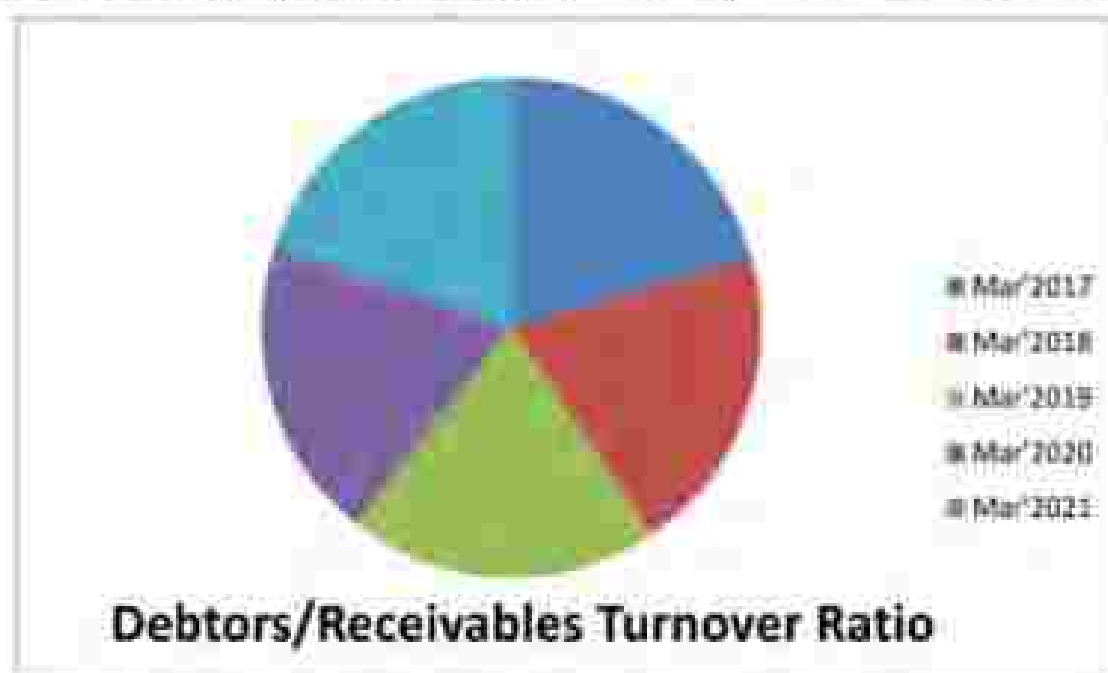
❖ Formula of Debtors/Receivables Turnover Ratio:-

$$\text{Debtors/Receivables Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Trade Receivables}}$$

- It is assume that all sales are made on credit basis.

$$\bullet \text{ Average Trade Receivables} = \frac{\text{Opening Trade Receivables} + \text{Closing Trade Receivables}}{2}$$

Year		Mar'2017	Mar'2018	Mar'2019	Mar'2020	Mar'2021
Rs. in crore	Revenue From Operations (Net) (A)	5658.25	6075.37	6800.06	6518.57	7572.79
	Opening Trade Receivables (B)	577.94	592.05	712.15	726.46	704.66
	Closing Trade Receivables (C)	592.05	712.15	726.46	704.66	922.26
	Average Trade Receivables (B+C/2=D)	585.00	652.10	719.31	715.56	813.46
	Debtors/Receivables Turnover Ratio (Times) (A/D=E)	9.67	9.32	9.45	9.11	9.31



Interpretation:-

Debtors Turnover Ratio indicates the number of times per year that the average balance of debtors are collected. Here we see that the Debtors/Receivables Turnover Ratio of the company is a decreasing trend in the year March 2018 compared to the year March 2017 and after that a very low increasing trend in the year March 2019 compared to the year March 2018 and again it decreased in the next year and finally it again increasing trend in the year March 2021 compared to the year March 2020. It indicates company's collection period from debtors are quite satisfying.

3.5 Creditors/Payables Turnover Ratio:-

The Creditors Turnover Ratio also known as accounts payable turnover ratio is a short-term liquidity measure used to quantify the rate at which a company pays off its suppliers. Accounts payable turnover shows how many times a company pays off its accounts payable during a period. Accounts payable are short-term debt that a company owes to its suppliers and creditors. The accounts payable turnover ratio shows how efficient a company is at paying its suppliers and short-term debts. A high creditors turnover ratio may indicate strict credit terms granted by the suppliers. A low ratio may be an indication of liberal credit terms granted by the suppliers.

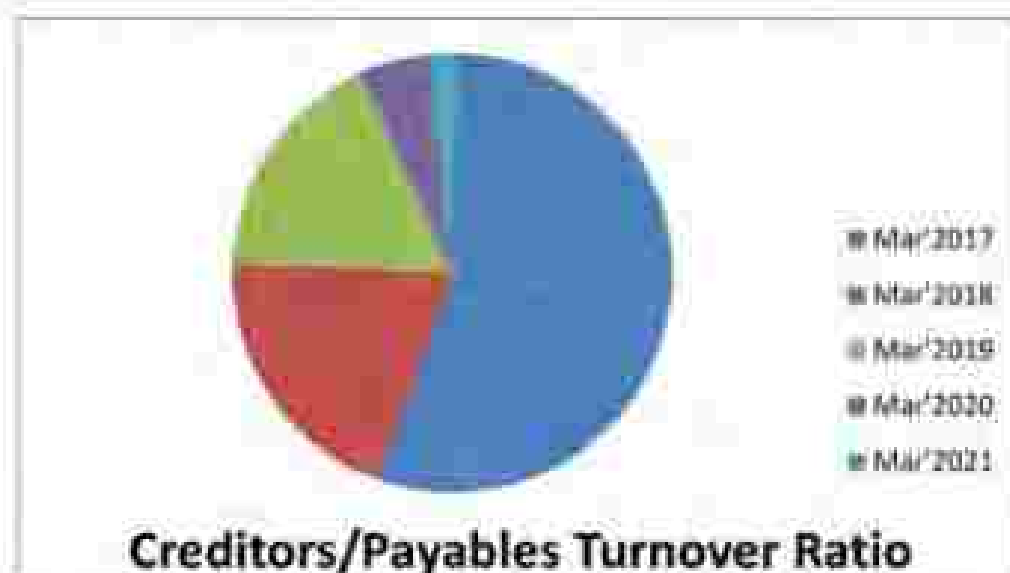
❖ Formula of Creditors/Payables Turnover Ratio:-

$$\text{Creditors/Payables Turnover Ratio} = \frac{\text{Net Credit Purchase}}{\text{Average Trade Payables}}$$

- It is assume that all purchase are made on credit basis.

$$\text{Average Trade Payables} = \frac{\text{Opening Trade Payables} + \text{Closing Trade Payables}}{2}$$

Year		Mar'2017	Mar'2018	Mar'2019	Mar'2020	Mar'2021
Rs. in crore	Purchase Of Stock In Trade (A)	142.55	59.88	60.92	21.2	10.09
	Opening Trade Payables (B)	630.04	749.58	848.54	1033.93	1171.37
	Closing Trade Payables (C)	749.58	848.54	1033.93	1171.37	1943.6
	Average Trade Payables (B+C/2=D)	689.81	799.06	941.24	1102.65	1557.49
	Creditors/Payables Turnover Ratio(Times) [A/D=E]	0.21	0.07	0.06	0.02	0.01



Interpretation:-

This ratio indicates the number of times per year that the average balance of creditors are paid. Here we see that the Creditors Turnover ratio of five consecutive year is very low (i.e., below 1). Not only that we also see that it continuously decreasing trend in every year. As the ratio is very low, so it is clear that liberal credit terms granted by the suppliers to the company.

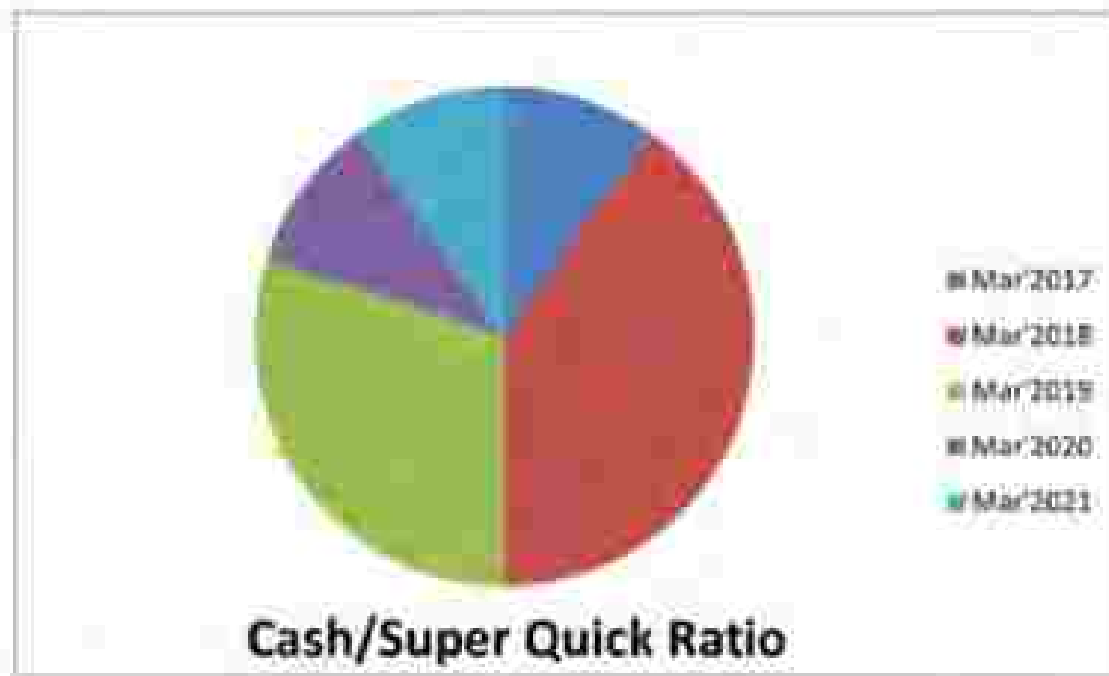
3.6 Cash/Super Quick Ratio:-

The cash ratio also known as Super Quick Ratio is a measurement of a company's liquidity, specifically the ratio of a company's total cash and cash equivalents to its current liabilities. The metric calculates a company's ability to repay its short-term debt with cash or near-cash resources, such as easily marketable securities. This information is useful to creditors when they decide how much money, if any, they would be willing to loan a company. The cash ratio is almost like an indicator of a firm's value under the worst-case scenario—say, where the company is about to go out of business. It tells creditors and analysts the value of current assets that could quickly be turned into cash, and what percentage of the company's current liabilities these cash and near-cash assets could cover.

❖ Formula of Cash/Super Quick Ratio:-

$$\text{Cash/Super Quick Ratio} = \frac{\text{Cash \& Cash Equivalent} + \text{Marketable Securities}}{\text{Current Liabilities}}$$

Year		Mar'2017	Mar'2018	Mar'2019	Mar'2020	Mar'2021
Rs. in crore	Cash & Cash Equivalent (A)	17.47	73.01	59.74	26.59	25.51
	Marketable Securities (B)	0	0	0	0	0
	Current Liabilities (C)	1337.61	1736.51	2058.95	2151.86	3009.13
	Cash/Super Quick Ratio (A+B/C=D)	0.01	0.04	0.03	0.01	0.01



Interpretation:-

Higher the super quick/cash ratio better the liquidity condition of a business. In the above case for every 1 unit of current liability, the company has on an average only 0.02 units of super quick assets, which is very bad for the company.

3.7 Working Capital Turnover Ratio:-

Working capital turnover is a ratio that measures how efficiently a company is using its working capital to support sales and growth. Also known as net sales to working capital, working capital turnover measures the relationship between the funds used to finance a company's operations and the revenues a company generates to continue operations and turn a profit.

A high turnover ratio shows that management is being very efficient in using a company's short-term assets and liabilities for supporting sales. In other words, it is generating a higher dollar amount of sales for every dollar of working capital used.

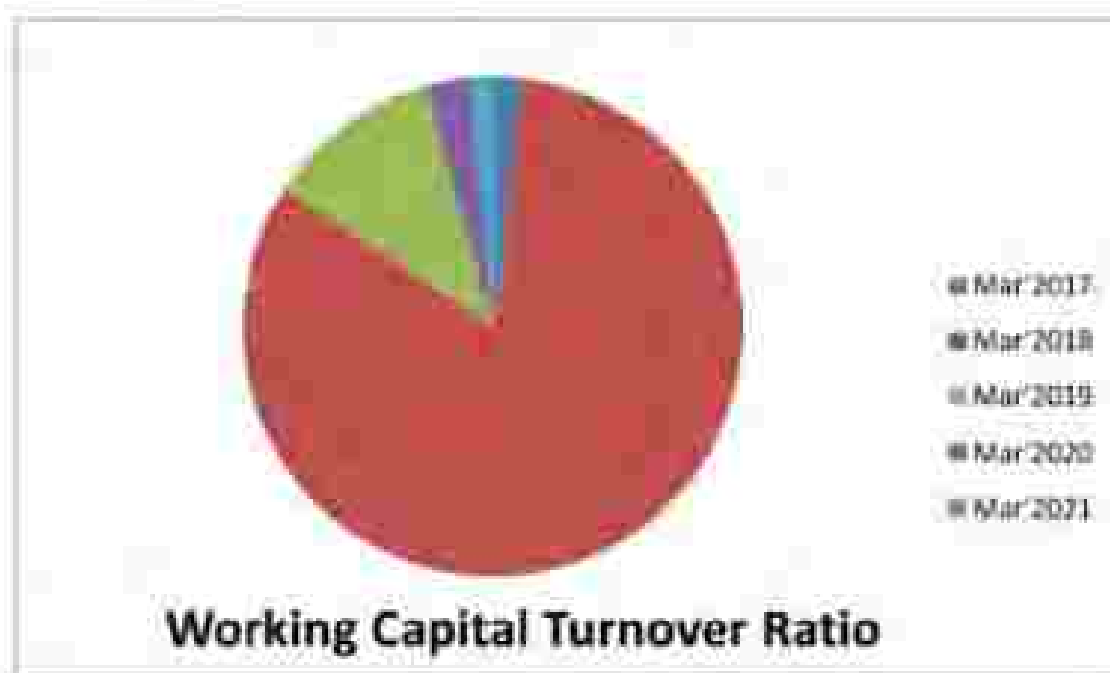
In contrast, a low ratio may indicate that a business is investing in too many accounts receivable and inventory to support its sales, which could lead to an excessive amount of bad debts or obsolete inventory.

❖ Formula of Working Capital Turnover Ratio:-

$$\text{Working Capital Turnover Ratio} = \frac{\text{Net Revenue From Operations}}{\text{Working capital}}$$

- Net Revenue From Operations= Gross Revenue From Operations – Excise/Service Tax/Other Levies
- Working Capital= Total Current Assets – Total Current Liabilities

Year		Mar'2017	Mar'2018	Mar'2019	Mar'2020	Mar'2021
Ratio	Net Revenue From Operations (A)	5658.25	6075.37	6800.06	6512.57	7572.79
	Total Current Assets (B)	1823.57	1748.08	1964.68	1795.42	2184.08
	Total Current Liabilities (C)	1337.61	1736.51	2058.95	2151.86	3009.13
	Working Capital (B-C-D)	485.96	11.57	-94.27	-356.44	-825.05
	Working Capital Turnover Ratio (A/D-E)	11.64	325.10	-72.13	-18.29	-9.18



Interpretation:-

From the above we can see that the amount of sales gradually increases except in the year March 2020. But the Working Capital of the company was decreasing in a high rate and it goes to negative. We also see that the working capital turnover ratio increasing trend in the year March 2018 compared to the year March 2017 and after that there is a huge decreasing trend and it goes to a negative ratio in the year March 2019 compared to the year March 2018 but in the next two years (i.e., March 2020 & March 2021) it increases but the ratio is negative.

CHAPTER 4: FINDINGS & CONCLUSION

4.1 Findings:-

Working Capital is the life line of every Industry, irrespective of whether it's a manufacturing industry or service industry. Working Capital is the prime and most important requirement for carrying out the day operations of the business. Working capital gives the much needed liquidity to the business. Working Capital finance reduces the overall fund requirement, required to build up the current assets, which in turn help you improve your turnover ratio.

In this project we have studied "**Working Capital Management**" - A Case Study of CEAT Company Ltd.

The major findings of the study are:-

- ✓ The ideal current ratio is 2:1. But the ratio are much below than the ideal ratio of 2:1. Even the ratio are less than one from the year March 2019 to the year March 2021. This is a negative side of the company. So we can say that the company does not have the required ability to meet its short-term obligation.
- ✓ The ideal quick ratio is 1:1. We find the ratio are less than one in all year. Not only that it is gradually decreasing in trend. But the higher quick ratio is much below than the ideal ratio of 1:1 understudy. So, we can surely say that the company is not able to meet its short-term liabilities or obligations.
- ✓ The inventory turnover ratio, which shows a quite good performance for the company. From the Inventory Turnover Ratio we can see that the inventory are replaced on an average 83 days interval. We can surely say that the companies having good inventories turnover ratio understudy.

- ✓ The debtor's turnover ratio is used for efficiency of the company. A high debtors turnover ratio is good for any company. Here we can see that the Debtors Turnover ratio is much greater than 9. It indicates the company that the average collection period from the debtors is 40 days approx.
- ✓ The creditors's turnover ratio is also used for efficiency of the company. A high creditors turnover ratio is good for any company. Here we can see that the Creditors Turnover ratio is below 1. Not only that it is gradually decreasing in trend, which is very bad for the company.
- ✓ Here we can see that the company's cash ratio is less than 1, it means there are more current liabilities than cash and cash equivalents. It means insufficient cash on hand exists to pay off short-term debt. This may not be bad news if the company has conditions that skew its balance sheets, such as lengthier-than-normal credit terms with its suppliers, efficiently-managed inventory, and very little credit extended to its customers.
- ✓ A high working capital turnover ratio shows that management is being very efficient in using a company's short-term assets and liabilities for supporting sales. In other words, it is generating a higher dollar amount of sales for every dollar of working capital used. In contrast, a low ratio may indicate that a business is investing in too many accounts receivable and inventory to support its sales, which could lead to an excessive amount of bad debts or obsolete inventory. From the study here we can see that this ratio is in much good position for the first year (i.e., March 2017) and in very good position in the next year (i.e., March 2018) and rest years in a very bad position.

4.2 Conclusion:-

In this project "**Working Capital Management**"- A Case Study of CEAT Company Ltd., which is one of the most important aspects of any organization, as it deals in managing the entire current assets and current liabilities. After analyzing the financial statement and having a in-depth study of various ratio of the company we conclude that the management of capital requires an evaluation of cost and benefits associated with each elements. CEAT maintains sound position of working capital its efficiency in receivable when we considered the company's current ratio, quick ratio, debtor's turnover ratio, creditor's turnover ratio, cash ratio, inventory turnover ratio, working capital turnover ratio, they are not showing good situation of the company but the company make profile rigorously and they make profile by using their working capital in a tricky way, but this procedure are not followed by all kind of company. The company has primarily be non cash drawn from the market and reaping full benefits of its brand name. The company makes full utilization of its fund before making payments to outsiders. We know that the CEAT company is a biggest company and they have a very well goodwill, also we know that this company is day by day increasing all over the world. So finally, we can easily conclude that working capital management has a great effect on the profitability of the company and the managers create value for the shareholders by decreasing receivables accounts and inventory and the managers must look for the method that by means of the correct management be effective on the profitability of the companies.

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3	Financial Management	Subrata Kar & Nimai Bagehi
4.	Financial management	M.Y. Khan & P.K Jain
5.	Financial management	Ravi. M. Kishore
6	Financial management	Debashish Majumdar, Dr. Sk. Raju Ali & Dr. Lutfun Nesha

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Annexure-1

CEAT

Standalone Balance Sheet

In Rs. Cr.

	Mar-21	Mar-20	Mar-19	Mar-18	Mar-17
	12 mths	12 mths	12 mths	12 mths	12 mths
EQUITIES AND LIABILITIES					
SHAREHOLDER'S FUNDS					
Equity Share Capital	40.45	40.45	40.45	40.45	40.45
Total Share Capital	40.45	40.45	40.45	40.45	40.45
Reserves and Surplus	3,124.29	2,885.95	2,710.59	2,508.37	2,265.70
Total Reserves and Surplus	3,124.29	2,885.95	2,710.59	2,508.37	2,265.70
Total Shareholders' Funds	3,164.74	2,927.40	2,751.04	2,548.82	2,306.15
NON-CURRENT LIABILITIES					
Long Term Borrowings	1,341.04	1,401.59	1,002.72	272.3	703.51
Deferred Tax Liabilities (Net)	265.6	261.11	207.71	178.15	134.58
Other Long Term Liabilities	79.57	164.47	4.61	12.91	27.16
Long Term Provisions	44.94	38.19	38.83	33.8	34.18
Total Non-Current Liabilities	1,731.15	1,865.76	1,251.87	497.16	899.44
CURRENT LIABILITIES					
Short Term Borrowings	0.53	165.59	214.31	143.64	57.89
Trade Payables	1,343.60	1,171.37	1,033.93	848.54	740.58
Other Current Liabilities	857.42	993.25	710.86	604.19	475.44
Short Term Provisions	107.58	121.65	99.65	50.14	54.6
Total Current Liabilities	3,009.13	2,151.86	2,058.75	1,736.51	1,327.91
Total Capital And Liabilities	7,905.02	6,945.02	6,061.86	4,780.49	4,543.20
ASSETS					
NON-CURRENT ASSETS					
Tangible Assets	5,481.06	3,736.88	2,785.74	2,409.81	2,340.62
Intangible Assets	0	83.59	60.57	65.44	66.25
Capital Work-In-Progress	0	916.86	718.69	161.66	45.77
Intangible Assets Under Development	0	16.92	33.65	0	0
Fixed Assets	5,481.06	4,754.25	3,595.75	2,637.11	2,457.64
Non-Current Investments	118.11	320.22	313.01	279.99	194.38
Long Term Loans And Advances	7.57	4.73	4.08	3.04	1.95
Other Non-Current Assets	104.2	70.4	184.34	112.27	86.86
Total Non-Current Assets	5,720.94	5,149.60	4,097.18	3,032.41	2,719.83

CURRENT ASSETS

Current Investments	0	0	0	40.06	64.27
Inventories	1,112.50	879.5	665.15	754.96	923.44
Trade Receivables	922.26	704.66	726.46	712.15	592.05
Cash And Cash Equivalents	25.51	26.59	59.74	73.01	17.47
Short Term Loans And Advances	0	50.32	58	49.02	50.02
Other Current Assets	123.81	134.35	155.33	116.68	176.32
Total Current Assets	2,184.08	1,795.42	1,964.68	1,746.88	1,823.57
Total Assets	7,305.02	6,945.02	6,061.86	4,780.48	4,543.20

OTHER ADDITIONAL INFORMATION**CONTINGENT LIABILITIES, COMMITMENTS**

Contingent Liabilities	0	1,116.98	1,738.22	1,459.67	555.2
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CIF VALUE OF IMPORTS**EXPENDITURE IN FOREIGN EXCHANGE**

Expenditure In Foreign Currency	0	1,797.45	2,609.43	1,385.58	1,442.52
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REMITTANCES IN FOREIGN CURRENCIES FOR DIVIDENDS

Dividend Remittance In Foreign Currency

EARNINGS IN FOREIGN EXCHANGE

FOB Value Of Goods	-	872.4	847.09	760.9	775.80
Other Earnings	-	-	-	-	-

BONUS DETAILS

Bonus Equity Share Capital	-	4.04	4.04	4.04	4.04
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NON-CURRENT INVESTMENTS

Non-Current Investments Quoted Market Value	-	-	-	-	-
Non-Current Investments Unquoted Book Value	-	320.22	313.01	279.99	184.38

CURRENT INVESTMENTS

Current Investments Quoted Market Value	-	-	-	40.06	64.27
Current Investments Unquoted Book Value	-	-	-	-	-

Source : 

Annexure-2

CEAT

Standalone Profit & Loss account

in Rs. Cr.

Mar-21

Mar-20

Mar-19

Mar-18

Mar-17

12 mths

12 mths

12 mths

12 mths

12 mths

INCOME

Revenue From Operations (Gross)

7,572.79

6,518.57

6,800.06

6,344.28

6,333.94

Less: Excise/Service Tax/Other Levies

0

0

0

168.81

674.79

Revenue From Operations (Net)

7,572.79

6,518.57

6,800.06

6,075.37

5,658.25

Other Operating Revenues

0

82.34

31.24

85.97

43.48

Total Operating Revenues

7,572.79

6,581.11

6,831.30

6,161.34

5,701.73

Other Income

31.8

41.34

55.3

50.81

41.16

Total Revenue

7,604.59

6,622.45

6,886.60

6,218.15

5,743.19

EXPENSES

Cost Of Materials Consumed

4,173.76

3,815.97

4,273.64

3,850.33

3,308.88

Purchase Of Stock-In Trade

10.09

21.2

60.92

59.88

142.65

Changes In Inventories Of FG,WIP And Stock-In Trade

67.43

14.58

-194.26

93.32

-78.16

Employee Benefit Expenses

867.13

500.84

481.85

413.11

383.86

Finance Costs

173.05

122.86

84.62

86.45

79.47

Depreciation And Amortisation Expenses

329.58

255.4

174.3

161.88

142.01

Other Expenses

1,880.59

1,523.52

1,581.51

1,317.32

1,282.60

Total Expenses

7,111.63

6,254.17

6,432.89

5,782.09

5,263.21

Mar-21

Mar-20

Mar-19

Mar-18

Mar-17

12 mths

12 mths

12 mths

12 mths

12 mths

Profit/Loss Before Exceptional, ExtraOrdinary Items And Tax

492.96

368.28

454.01

436.06

479.98

Exceptional Items

-34.06

-29.75

-44.24

-26.4

-13.33

Profit/Loss Before Tax

458.9

338.53

409.77

409.66

466.65

Tax Expenses-Continued Operations

Current Tax

45.26

74.01

90.09

104.08

114.45

Deferred Tax

0

-6.24

30.77

26.86

-10.53

Total Tax Expenses	45.26	67.77	120.86	130.94	103.92
Profit/Loss After Tax And Before ExtraOrdinary Items	413.64	270.76	288.91	278.72	362.73
Profit/Loss From Continuing Operations	413.64	270.76	288.91	278.72	362.73
Profit/Loss For The Period	413.64	270.76	288.91	278.72	362.73
	Mar-21	Mar-20	Mar-19	Mar-18	Mar-17

12 mths 12 mths 12 mths 12 mths 12 mths

OTHER ADDITIONAL INFORMATION

EARNINGS PER SHARE

Basic EPS (Rs.)	102.26	68.94	71.42	68.9	89.67
Diluted EPS (Rs.)	102.26	68.94	71.42	68.9	89.67

VALUE OF IMPORTED AND INDIGENOUS RAW MATERIALS

STORES, SPARES AND LOOSE TOOLS

DIVIDEND AND DIVIDEND PERCENTAGE

Equity Share Dividend	0	67.08	46.52	46.52	0
Tax On Dividend	0	17.87	8.29	5.53	0
Equity Dividend Rate (%)	180	120	120	115	115

Source : [Hansol Chemical Solutions Limited](#)

Reading

- Declaration (1)
- Preference (2)
- What for Tourism (3)
- ELO - Tourism (4)
- Tourism for quality (5) + (6)
- Effects on economy (7)
- Access of selected tourism (8)
- Environmental protection - tourism (9)
- Urban East (10)
- Urban East - expanding from the westward (11)
- Human development - tourism (12) + (13)
- Tourism - of tourism (14) + (15)
- Life - tourism (16)
- Stay on the trail when you're (17) + (18)
- Steps to become an ELO - Tourism (19) + (20)
- Sustainability tourism (21)
- (2000s) People and tourism (22)
- According to Richards (23)
- Economic sustainability (24)
- Environmental sustainability (25)
- Social sustainability (26)
- Life below water (27)
- High moral ground (28)

Declaration

#1 Nihal Malik, Roll No. 19029150099, Student of
B.Com (Hons) hereby declare that I have successfully
Completed this project on "A Study in Eco-Tourism
in India" under guidance of Mr. 2021-22.

I declare that this Unlimited Work is done by
me and to the best of my knowledge no such
work has been submitted by any other
person for the award of degree or this
course.

I also declare that all the information
collected from various secondary sources has
been duly acknowledged in this project
report.

Nihal Malik

19029150099

Introduction

As a part of B.Com (Hons) curriculum and in order to gain knowledge in the field of management, we are required to make a report on "A Study of Eco-tourism in India". The basic objective behind doing this project report is to get knowledge on the tourism industry and the changes that has taken place from earlier.

In this project report we have included various types of tourism in which we covered ecotourism and sustainable tourism and the status in India which are affecting eco-tourism changes.

NITIN KASHYAP

Q

What is Tourism?

The study of nature, its resources, their history and culture. So in the simple sense it is the study of the appreciation the nature, the culture of the area.

There is also since ancient times exploring, discovery and travelling with the intention of learning for the sake of all difficulties they have to overcome.

The modernising idea of visiting new places to appreciate their beauty, the course of time, has given birth to a modern industry called tourism. It is the art of travelling with the aim of visiting places, long and interesting and doing people and places physically closer to one another by travelling every facility and comfort.

Tourism is a modern form of activity to both international and domestic tourists. It is the temporary movement of people to different parts of the world to see new places of interest and relaxation.

It is an one of economic reforms within the framework of the national economy.

(1)

2. Recent Development of Tourism in India

1.2.1 Ecotourism

Ecotourism is a form of tourism involving visiting, enjoying, protecting, and relatively undisturbed natural areas, as well as an often socially desirable alternative to standard commercial mass tourism.

It encourages responsible travel to natural areas, conserving the environment and improving the well-being of local people.

The purpose may be to educate the traveller, to provide funds for ecological conservation, to directly benefit the economic development and political empowerment of local communities or to foster respect for different cultures and for human rights.

Ecotourism typically involves travel to destinations where flora, fauna and cultural heritage are the primary attractions. Ecotourism is intended to offer travellers an insight into the impact of human being on the environment and foster a greater appreciation of our natural world. Ecotourism in India has developed recently for the concept itself is a relatively new one. Ecotourism caters to the growing desire that one experiences to immerse in the beauty and rich culture, while enjoying and not to damage ecological balance.

⑤

1.2 Tourism in India

India can always boast of glorious cultural heritage, tourist and tourism in India is an integral part of tradition and culture.

In ancient times India was famous for pilgrimage - as the holy place, taking the routes acrossed by the pilgrims from different parts of the world. People always used to participate in large scale fairs, fests and festivals in different parts of the country. In such as a background, cultural traditions were developed where like the 'Dussehra' (the fight to evil) and 'Vanshnava Kumbh Mela' (the world to one family) became symbols of Indian spirit and heritage.

India's Sanskrit literature often "welcome a tourist and send back a friend".

India is a tourist spot among the world's 133 most attractive destinations and ranks very high on national resources (ranked 9th) and cultural heritage (10th), with a world heritage sites and strong creative industries country in the country.

Tourism is the most important activity in the service sector of the Indian economy.

The following line the Himalayan region, Kerala, the
northeast India, Andaman & Nicobar Islands, and
the Lakshadweep Islands, are some of the place
where you can find the beautiful beauty of the
Himalayan region.

Himalaya in Kerala is the first mountain
region in India.

➤ When did the tourism start?

Tourism and the history of tourism in India
have their origins with the historical movement of
the British. Tourism in India was started by the British
as a travel agency. In the late 19th century, during the
time, increasing number of tourists were coming
to India to visit the historical monuments and to
visit the famous historical monuments of the country.
In the late 19th century, the British started to
visit the historical monuments of the country and
to visit the historical monuments of the country.
In the late 19th century, the British started to
visit the historical monuments of the country and
to visit the historical monuments of the country.
In the late 19th century, the British started to
visit the historical monuments of the country and
to visit the historical monuments of the country.

➤ Importance of Tourism (Chapter 5019)

Tourism allows us to do more than just visit
places and enjoy the scenery. It allows us to
experience the culture and the history of the
country. It allows us to learn about the
history of the country and the people who
live there. It allows us to learn about the
history of the country and the people who
live there.

• Works on improving and maintaining among the people about India's indigenous flora and fauna. It acts as a forum to discuss and exchange information about and economic support for local communities.

• Promoting the economic development and livelihoods of people through sustainable development of environment.

• Generate the income for local communities, which is useful for their economic development.

• Preservation of local cultural assets.

• Training of employed construction for local people.

• Encouraging participation of local communities in the development and conservation of the local areas where they live.

• Negative impacts -

• Biodiversity's main purpose is only the conservation of flora and fauna. It does not support to improve income. It does not mean that good the people are not and high income. The people who are not the biodiversity and state to improve the income. But the people who are not the biodiversity have not good. Such as forest, land etc.

(3)

6. *Arumachal Pradesh* - Centre of the nation
work -

Organisation like *Forest Department*

Upward and down functions have been
returning to *Forest Department*, *Environment*, *Conservation* and *Education*. *Forests* are
the *Forest* are *Forest* are *Forest* are
also by *Forest* *Forest* *Forest* *Forest*
have been *Forest* *Forest* *Forest* *Forest*
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9. Uphampland - ascending from the
institutional arrangements

It is a major effort from Uphampland towards
development of the National Human Resource
Development Commission and the Commission of the
State for the Department and the State the
successful execution of the work, which has
taken a considerable amount of time. Finally,
the organization also has been working in the
area by providing controls and required
procedures for the management of the work
efficiently.

According to the Commission the
Uphampland: Valley of the River and the
New Human Resource.

R. State - Good and straight from the regional
capital.

From the Commission, the Commission
creating awareness and providing information
with the Commission and the Commission
the Commission, they have been a long way.
Resources have also been provided for the
providing the Commission and the Commission
making the Commission and the Commission
National - Commission - a Commission from
the Commission and the Commission
and the Commission and the Commission
part of the Commission and the Commission

9. Marshall Mathers - Significant towards the
highlands

The New Ecological Society for Marshall has been
promoting community-based development (CDD)
which is a continuing effort towards the
conservation of marine and cultural resources
for the future - working with the community
for the development of
projects have been proposed - a huge coral reef
protected area in the Marshall Islands
to preserve the marine resources that provide
income for the people of the Marshall Islands
keeping the environment clean and beautiful
for the future people of the Marshall Islands.

10. Laidak - moving to the Marshall Islands
and Marshall Islands, established by the
children's fund (CFF) in 1979, working to be the
New Marshall Islands the Marshall Islands for
Laidak. They have been at a very young age
related to child care, development, education,
health, and environmental development in
the Marshall Islands. In addition to the
Laidak Marshall Islands and Laidak,
Ecological Development Group have been
actively working to promote the Laidak
for Laidak.

(12)

Attractions for eco-tourists in valley :-
Hemis National Park, Tharok Wildlife
Conservation Reserve and ancient
monasteries, trekking, spotting birds & lakes,
going to experience the life of the valley.

All stations, planning, bookkeeping, and
the complete ecological survey of Kuma make
it a perfect citizenship education. The
grassroots gardens and tea estates are
perfect for maple leaf and maple. The maple
education project is a prominent development
in the South Indian tea-growing community.
The development of Shendur Wildlife Sanctuary
Reserve and Deer Rehabilitation Center. The
Sanctuary offers a number of water
and adventure zone for tourists. The
Education of Kuma Yashwantrao Chavan
and travel facilities has been promoting
sustainable tourism by offering a
community and community service for
the area.

Education for the community in Kuma:
The Kuma Kuma, Kuma Kuma, Kuma Kuma,
Kuma Kuma, Kuma Kuma, Kuma Kuma,
Kuma Kuma - the most important
place and world body work for Kuma.

11. a few more notes - Right mentioned
the wife - Justice and being from there
and there are other people and stuff
- finished suggestions - one of them
being both together - something violent
the news about the of Bangladesh and
Mumbai, there and that for.

- Make comparisons - Everyone has made it
a point to change composition efforts!
If you don't like education and which is
filled with all your thoughts and feelings
again - then it's even more surprising to
look at the results that support the
vision everyone needs to fight for cause.

➤ (Shawna, 1998) It says that the
collecting of information for gender is:

- 1) separate them for the purposes of women
groups

The library was located among the top
21 collecting methods for the women
and half of quite a few endogenous
methods of data.

• Stay on the trail when you go into the wild = this is beneficial for both you and the wild animals. you can easily find your way back without disturbing the animals or interfering in their personal space.

• Avoid smoking = this is good for your lungs and the earth's lungs - the forests. combustion from cigarettes releases a lot of dangerous particles back to ground and animals. forest fires are the biggest cause of destruction of many species of birds. if you smoke, you are taking all unnecessary chances of the presence of such disaster. Smoking, which are against the very spirit of wilderness, you should not do it. For wilderness is a place where you should be for 10 years to 20 years. If you are a wildlife animal, it is more life it's a paradise for them.

• Leave no rubbish (in the forest) = not photographs etc are not of the animals in a natural way.

• Get involved with organized groups promote ecotourism in India = you can go to various and be an active part of these organized - you will be able to

● Daily language JP practices = talking to people with verbal animals, and discussing reading & etc. from people, usually interaction with local communities, following animals, off making one's own space and relationships.

● Social practice = growing people as much as you can in a good practice for day to day life and also a way of communicating with you. India, growing for a more steady & hollow circles of people who are growing on the ground is more interesting about 200,000. Growing a good practice is not on the way of every, but of making people. Learning what on your life - this way to make your people more people than to get better - people go and the way of making people in a natural & state and life.

● Follow the state only, keeping people = while you explore changes, try and living both the smaller of your waste, which when culture is possible to house people or is the most appropriate place.

- In most regions there is increasing demand for education, food, medical care, and communication. It's being shifted through digital communication of food etc. to meet local needs, interests etc.

- Mismanagement of governmental strategies of education etc. causes more harm than any little good that education brought about.

- Education - pulls away a lot of capital resources from local communities, and for education provides them with a - paying employment - positions for the teachers etc. that are expanded - no value long-lasting employment opportunities.

➤ Steps to become an entrepreneur. (Karin Schopf) Nid

- Read and collect information - read as you can about the place you're moving to - before you go there - read about all the wildlife found in that ecosystem - disperse information from pure animals and plants to the with up existing differences to that that habitat.

19-10-06

To have the beautiful environment of
mountain, river, forest, and
sea - for only measures have been devised
by developing tourism for association
with direct observation of nature. In
this regard, planning of wild life and
nature has received a great deal
more help for another responsible
organization in the mountain visiting
towards the development of tourism
by promoting natural wildlife and scenic
spots opportunities for the tourists
for whom nature itself wildlife
scenery, and Khong, and national
park, etc. are the objects of sustenance
development - first objective of the national
environment strategy, published by the
Government of India in 1980. India
is one of those few countries which
is a wonderful record of all the
resources essential in nature of a good
spot on the tourism map of the world.

1.12 Sustainability, Tourism

Sustainable tourism refers to the concept of visiting a destination as a tourist and trying to make a positive impact on the environment, society, and economy.

Tourism can impact primary transportation, the spread of tourism, local transportation, accommodation, entertainment, recreation, and shopping. It can be related to travel for pleasure, business and other purposes, usually with a primary focus on leisure.

"Sustainable tourism development is that which meets the needs of present and future generations while protecting and enhancing the environment, the economy, and the culture of the destination. It is a development that can be sustained while meeting the needs of the present, the future, and the environment."

While tourism is welcomed almost continuously for the opportunities it brings, there is a growing recognition of the need to see tourism as an environmental context to ensure that the tourism industry and the environment are sustainable and to work to promote the positive impact of tourism on the environment and people's well-being.

- Ecotourism is valuable for people and the planet
- Ecotourism is a learning experience for everyone involved
- Ecotourism promotes economic stability
- We become more conscious through ecotourism
- Ecotourism reduces environmental impact
- Animals suffer when we don't travel responsibly
- Having to travel responsibly is better than not at all

➤ (Lee 2005) positive and negative impacts of ecotourism :-

ecotourism brings a lot of awareness among the people about the quality of the environment

o positive impacts -

According to Richards, "economic transition
to tourism, which involves as quickly as possible,
expanding capacity of current accommodation
capacity, to the local population, and the
employment of the population of tourism and
other services. For the tourism sector should
not depend from foreign funds. The tourism
facilities should be integrated with the
the environment."

Many of the challenges facing development such
as climate change, water scarcity, inequality
and hunger, can only be resolved at a global
level and by protecting respective development
the environment for

② Economic Responsibility—

(a)	Economic Profitability	Ensuring the viability and competitive success of region and business to achieve long-term viability,
(b)	Local Prosperity	Maximizing the economic benefits of business to the local community, generating the employment & revenue for the local area;
(c)	Quality of Employment	Improving the quantity and quality of jobs offered to persons for the local community, including wages, work environment and employment opportunities with fair discrimination;
(d)	Social Equity	Ensuring fair and equal distribution of social and economic benefits coming from business.

- NO poverty
- Zero hunger
- Good health and well-being
- Quality Education
- Gender Equality
- Clean water and sanitation
- Affordable and clean Energy
- Industry, Innovation and Infrastructure
- Reduce Inequality

• Environmental Sustainability —

(a)	Physical Integrity	Preserving and enhancing the landscape, its topography and natural areas and ensuring their ecological and visual quality.
(b)	Biological Diversity	Protecting and promoting indigenous biological resources as well as ensuring the integrity of ecosystems for the environment.
(c)	Efficient waste management	Minimizing the use of materials and energy, promoting measures for the development of tourism.
(d)	Green Economy	Promoting of green, clean and sustainable development, and production of goods and services with low carbon footprint.

• social responsibility -

(a)	welfare of community	Identifying welfare of the community, especially local infrastructure, or the facilities, own financial stability, and conduct of social responsibility and the distribution of the resources.
(b)	Central wealth	Maintaining and developing external exchange, social capital, business, and the operational capacity of the host community.
(c)	Heavy concentration of visiting	Providing safe and other foreign experience which will help the study of foreign and will be available to all.
(d)	Local control	Responsibility for planning and decision-making for the management of foreign by local community.

- (2)
- Life beyond borders
 - Life on land
 - Climate Action
 - Sustainable cities and communities
 - Partnerships
 - Peace, Justice and Strong Institutions
 - Responsible consumption and production

ACKNOWLEDGEMENTS:

Presentation, consideration and motivation have always played a key role in the success of any venture.

I am overwhelmed with humbleness and grateful to acknowledge my debt to all those who have helped me to put these ideas, well above the level of simplicity and into something concrete.

I would like to express special thanks of gratitude to my teachers - "Dr. Ritu Mann" who have gave me the golden opportunity to do this wonderful project topic "A Study on Eco-Tourism in India".

I would like to thank my Parents who helped me a lot in gathering different information collecting data and guiding me from time to making this project, despite of their busy schedules, they gave me different ideas making this project unique.

Thanking You,

With regards,

PROJECT REPORT

Submitted for the Degree of B.Com. Honours in
Accounting & Finance under the University of
Bundwan.

TITLE OF PROJECT "GOODS & SERVICES TAX"

SUBMITTED BY

Name of the Candidate = RAHIT BANERJEE
Registration Number = 201301049346
Name of the College = SARAT CENTENARY COLLEGE
College Roll NO. = 16
University Roll No. = 190241200006

SUPERVISED BY

Name of the Supervisor :- Prof. RINTU NATH
Name of the College :- SARAT CENTENARY COLLEGE

MONTH & YEAR OF SUBMISSION

Date =

SUPERVISOR'S CERTIFICATE

This is to certify that RAHIT BANERJEE a Student of B.Com. Honours in Accounting & Finance of SARAJ CENTE-NARY COLLEGE . under the University of South Western has worked under my supervision and guidance for his/her project work and prepared a project Report with the title 'GOODS & SERVICES TAX' which he/she is submitting, is his/her genuine and original work to the best of my knowledge.

DATE-

Signature:-

NAME:- Dr. Dintu Nath

NAME OF College:-

SARAJ CENTE NARY COLLEGE



DHRUBA®

STUDENT'S DECLARATION

I hereby declare that the project work with the title 'GOODS & SERVICES TAX' submitted by me for the partial fulfillment of the degree of B.Com Honours I in Accounting & Finance under the University of Burdwan is my original work and has not been submitted earlier to any other University / Institution for the fulfillment of the requirement for any course of study.

I also declare that no chapter of this manuscript in whole or in part has been incorporated in this report from my earlier work or by others or by me. However, extracts of my literature which has been duly acknowledged providing details of such literature in the references.

DATE -

Signature

NAME - SAHIL BANERJEE

Reg. No - 2019010490716

COLLEGE AILM - 16

ACKNOWLEDGMENT

I would like to convey my heartiest thanks to Dr. Rinku Bhatt, my Accounting & Finance department professor, who always gave me his valuable time and suggestions during the completion of this project. He has been a source of inspiration for me and he helped me in understanding and remembering important and necessary details of the project.

I would also like to thank my parents and friends who helped me a lot in this project and motivated me a lot.

I would also like to thank god for giving me such wonderful guide who keep on guiding me at every moment whenever I need them.

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CHAPTER - 1

Introduction of GST -

1.1 INTRODUCTION OF THE GST :-

The Goods and Service Tax (GST), implemented on July 1, 2017, is regarded as a major taxation reform Bill date implemented in India since independence. The primary objective behind development of GST is to substitute all 30 sorts of indirect taxes in India like Central Excise Tax, VAT / Sales Tax, Service Tax, etc. and implement one taxation system in India.

1.2. SALIENT FEATURES OF GST :-

- GST is an Indirect tax.
- For the words manufacture, Sales, Services, etc the only 'Supply' is used.
- GST is levied on Supply of Goods or Services on both.
- It is Consumption based tax.
- GST is levied both by Central Govt. and State Govt. / Union territory.
- Tax paid on inward Supply is available as input tax credit against tax on outward Supply subject to fulfilment of certain conditions.
- GST law is applicable all over India.

1.3 OBJECTIVES OF GST :

- To Develop national market. One Nation, one Tax.
- To reduce multiplicity dispute of indirect taxes.
- To Eliminate classification dispute between goods & Services.
- To remove barriers in inter-State movement of goods.
- To ease the administrative burden.
- Uniformity of tax rates and automated compliance.
- Ensuring availability of input tax credit across the value chain.
- Simplification of registration, filing of Return, tax administration and compliance.
- Harmonization of tax base, laws, and administrative procedures across the country.
- Minimizing tax rate slabs to avoid classification issues.
- Prevention of unhealthy competition among states.
- Free movement of goods across the country without any additional tax.

1.4. ADVANTAGES OF GST :-

- GST eliminates the cascading effect of tax.
- Higher threshold for registration.
- Composition Scheme for small business.
- Simple and Easy online procedures.
- The number of compliances is less.
- Defined treatment for E-commerce operations.
- Improved efficiency of logistics.
- Unorganised sector is regulated under GST.

1.5. ITS ADVANTAGES OF GST :-

- Increased cost due to software purchase.
- Being GST-Compliant.
- GST will mean an increase in operational costs.
- GST came into effect in the middle of the financial year.
- GST is an online taxation system.
- SMEs will have a higher tax burden.

1.6. STRUCTURE OF GST :-

Dual GST Structure :-

- 1) State → State goods and services tax (SGST)
- 2) Central → (a) Central goods and services tax (CGST)
(b) Integrated Goods and services tax (IGST)

$$\boxed{\text{IGST}} = \boxed{\text{SGST}} + \boxed{\text{CGST}}$$

GST Rate in India

5%	12%
18%	28%

Dual method GST is applicable in India i.e. two varieties of GST will be charged on same bill i.e. CGST (Central Goods and services tax) and SGST (State Goods and services tax). On an Intra-state supply, both CGST and SGST shall be applicable. Amount of GST is revenue of the Central Government and the amount of SGST is revenue of state Government.

1.7 TYPES OF GST

- Central Goods and Services tax (CGST)
- State Goods and Services tax (SGST)
- Integrated Goods and Services tax (IGST)
- Union Territory Goods and Services tax (UTGST)

Types of Difference	CGST	SGST	IGST	UGST/UTGST
Applicable transactions (Goods & Services)	Intrastate (with in one state)	Intrastate (with in one state)	Inter-state (between two states or one state and one UT) and imports	with in one Union Territory (UT)
Collected by	Central Govt.	State Govt.	Central Govt.	UT Govt.
Assessing Authority	Central Govt.	State Govt.	Central & State Govt. (Both)	UT Govt.

1.8 CENTRAL TAXES SUBSUMED IN GST

- Central Excise Tax.
- Service Tax.
- Additional Custom duty, Commonly known as Countervailing Tax (CVD)

19. STATE TAXES SUBSUMED IN GST :-

- VAT / Sales Tax,
- Luxury tax,
- Purchase tax,
- Entry tax / Octroi
- Central Sales tax.

1.10. TAXES NOT SUBSUMED IN GST :-

- Custom duty.
- Stamp duty.
- Security Transaction Tax.
- Central Excise on Petroleum - Products, Tobacco,
- VAT on Petroleum products and Alcohol.

1.11. RATES OF GST :-

Rate of GST varies from product to product, These are a popular rates of GST is. -

- (a) 5% (5% CGST + 5% SGST)
- (b) 12% (6% CGST + 6% SGST)
- (c) 18% [(9% CGST) + (9% SGST)] and
- (d) 28% [(14% CGST) + (14% SGST)]

Note, (a) Special Rate of GST on Jewellery. It is 5% in case of Gold, Silver, Platinum etc.
(b) In case of Rough diamond Rate of GST is 0.25%

1.12 GST COUNCIL :-

Goods & Services Tax (GST) Council is a Constitutional body for making recommendations to the Union and state Govt. on issues related to goods & services tax. The GST Council is chaired by the Union Finance Minister and other members are the Union state minister of Revenue or Finance and minister-in-charge of Finance or Taxation of all the states.

1.13 THE TAXABLE EVENT IN GST :-

The taxable event in GST is Supply of goods or services or both. The liability to pay tax arises at the 'time of supply of goods or services'. Thus determining whether or not a transaction falls within the meaning of Supply, is important to decide GST's applicability.

1.14 SUPPLY :-

The scope of term Supply is given under Section 7(1) of CGST Act which provides the inclusive definition of term Supply. As per the provision of Supply, Supply includes :-

(a) All forms of Supply of goods or services or both such as sale, transfer, barter, exchange, license, rental, lease or disposal made or agreed to be made for a consideration by a person in the course or furtherance of business.

- (b) Import of Services for a consideration whether or not in the course or furtherance of business and
- (c) the activities specified in Schedule I made or agreed to be made without a consideration and,
- (d) the activities to be treated as Supply of goods or Supply of Services as referred to in Schedule II.

CHAPTER - 3

IMPACT OF GST ON VARIOUS SECTORS

2.1. INTRODUCTION:-

Goods & Services Tax (GST) was introduced in the Indian Constitution through the 101st (Hundred and One) Constitutional Amendment Act, 2016. After the enforcement of Goods and Services Tax (GST), many sectors faced some positive effect as well as negative effects.

The enforcement of the tax was not the long term benefit. There were very few sectors that received an immediate benefit from the implementation of goods and service tax (GST). The long term benefit requires the patience of citizens.

Some of the major sectors, that have been affected by the implementation of GST are—

- Export- Import Sector,
- Real estate,
- Entertainment Industry,
- Hotel and Tourism,
- Logistics Industry,
- Banking Sector,
- Gold Industry,
- Textile / ready made garment sector,
- IT Industry,
- Fin. eq. Industry.

2.2 EXPORT AND IMPORT SECTOR :-

Before the enforcement of the Goods and Services Tax (GST), Export and Import were governed by the Services Tax, value added tax, Excise-duty and Custom duty. There were imposed on the Import and Export goods and services, when the Import and Export goods and services, when Goods and Services Tax (GST) was introduced all these taxes were merged into one. But the 'Basic Custom Duty' (BCD) continues to work on the import bills.

2.3. REAL ESTATE AND PROPERTY :-

We can see the positive impact of GST on property buyers. 12% GST charged on property value will be liable on all under constructions properties, excluding the registration charges and Stamp duty. Exemption provision is applicable on the ready property. Input Tax credits will increase profit margins for developers and builders, which further transfer benefits to the Home buyers.

ENTERTAINMENT INDUSTRY:-

The GST rate for entertainment services varies from 18% to 28% in different states. These rates are different where the entertainment services are provided. The GST rate varies depending on the type of service. The GST rate for entertainment services is 18% for most services and 28% for some services. The GST rate for entertainment services is 18% for most services and 28% for some services.

HOTEL AND TOURISM:-

Tourism and Hotel Industry play an important part to grow India's GDP. GST rate for hotels and tourism is different according to the location and the type of service.

- Less than Rs. 1000 = 0% (GST Free)
- Rs. 1000 to 2500 = 12%
- Rs. 2500 to 7500 = 18%
- Above Rs. 7500 = 28%

It is expected that the rate of transportation may come down due to the shift to transportation under GST regime. 5% tax is levied on the operators currently.

LOGISTICS INDUSTRY:-

The Logistics Industry is the backbone of Indian economy and it is estimated to be worth about \$400 bn by 2021. After the GST, the time taking clearance process has become easy i.e. less transport time. Corruption activities are reduced in logistics services. GST reduces the overall cost of logistics services and increases business turnover.

2.7 BANKING SECTOR :-

18% GST rates levied on banking services like insurance policies, ATM transactions etc. The earlier tax rate was 15%. Banking and Financial services become costly.

GST has reduced indirect taxes i.e. Ease of doing business in the banking and financial sectors which leads to increase in business. It will increase demand for funds and digital bank transactions in the banking industry.

2.8 GOLD INDUSTRY :-

18% GST rates levied on banking services like insurance policies, ATM transactions etc. GST on gold industry will be 3%. GST rates that is applicable to 10% import duty and 3% making charges which lead to rising the jewellery prices in India. The demand for gold may fall 60 to 70 percent. But there is more transparency in the gold industry due to the GST implementation.

Etc.

CHAPTER - 3

DATA FINDING & ANALYSIS OF GST

3.1 IMPACT OF GST ON RETAIL INDUSTRY

Impact of GST on different Sectors

	Impact of the rate	Investing Money value	Logistics	Factor of organised Region	Overall impact
Cement	•	•	•	•	•
Consumer Durables	•	•	•	•	•
FMCG	•	•	•	•	•
Pharmaceuticals	•	•	•	•	•
Automobiles	•	•	•	•	•
Exp. Goods	•	•	•	•	•
IT	•	•	•	•	•
Media	•	•	•	•	•
PSI	•	•	•	•	•
Textile	•	•	•	•	•
Building/Home Materials	•	•	•	•	•
Telecommunications	•	•	•	•	•
Metals	•	•	•	•	•
Multiple	•	•	•	•	•

• Positive

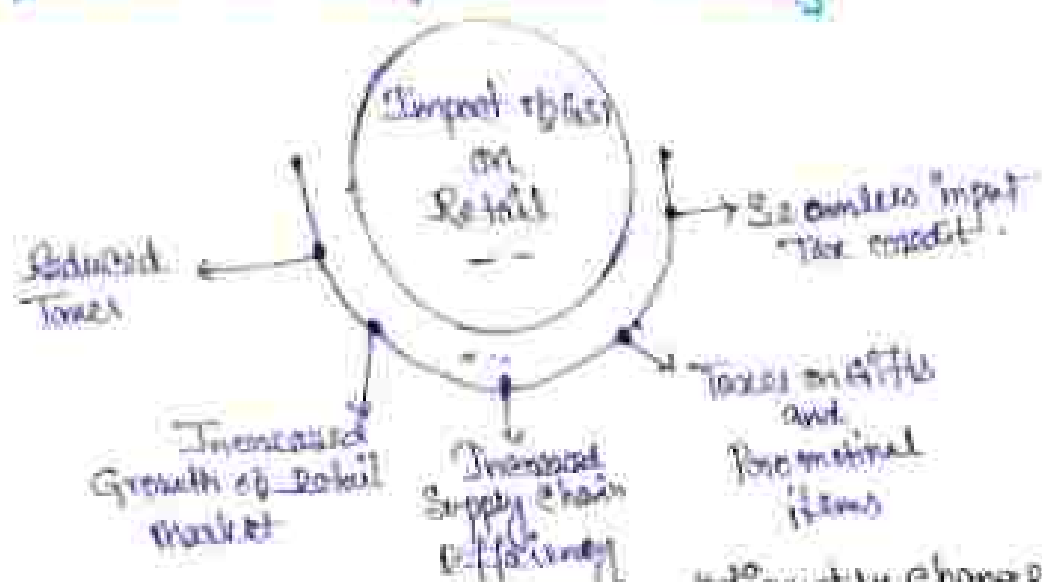
• Neutral

• Negative

After the implementation of the GST, we can see its positive and negative effects on different industries. Many sectors like manufacturing, electronics, telecom, FMCG, education, banking, Jewellery, tourism, logistics, IT etc, are the important part of the Indian economy. The positive impact of the GST on sectors is seen in the form of economic development of the country.

3.2 IMPACT OF GST ON RETAIL INDUSTRY

How will GST Shape Retail Industry?



Below five factors will significantly change the dynamics of the Retail Sector in India -

- (a) Reduced taxes :- The main impact of GST on retailers will be a significant reduction of the tax burden on the retailers.
- (b) Seamless Input tax credit :- GST will make an impact by eliminating the cascading effect of taxes there by reducing the total tax burden on the retail sector.
- (c) Increased Supply chain efficiency :- The impact of GST will be evident on supply chains, as their design would be efficiency oriented and not in alignment with the taxation system.
- (d) Tax on gifts and promotional items :- As per the model GST Law, any supply without any consideration will attract tax.
- (e) Better opportunities to growth of Retail market :- With implementation of GST, analysts predict upliftment of market.

CONCLUSION & RECOMMENDATION

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CONCLUSION

Primarily, the concept of GST was introduced and proposed in India a few years back, but implementation has been done by the current BJP Govt. under the able leadership of Prime Minister Shri. Narendra Modi on July 2019.

The New Govt. was in strong favour for the implementation of GST in India by giving many positive implications as discussed above in the paper. All sectors in India - manufacturing, service, telecom, automobile and small SMEs will bear the impact of GST.

One of the biggest taxation reform - GST will bind the entire nation under a single taxation system rate.

As forecasted by experts, GST will improve tax collections and boost up India's economic development and break all tax barriers between Central and State Govt.

RECOMMENDATIONS

Goods and Services Tax was considered to be an epitome of the ideal tax mechanism at the time of its implementation. The assumption is somewhere proved right as the GST system has reduced effective tax rates and boosted supply chain efficiency of businesses. On the other hand, it is also prevalent that the system is not at all simple and has burdened the taxpayer even more with tax filing complexity.

Now it is invariable needed to introduce a set of amendments contributing towards the certainty of the GST system.

Steps to make GST more compliant :-

- Reduction in number of Tax Slabs Rates.

- Effortless Input Tax Credit claims.

- Spreading the GST Net.

- Renovating ITC System.

- Practical Targets for GST Collections.

- Including some Exempted goods in GST Regime.

- Let E-way bills go away.

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PROJECT REPORT

Submitted for the Degree of B.Com Honours in
Accounting & Finance under the University of Burdwan.

TITLE OF THE PROJECT

**CORPORATE SOCIAL RESPONSIBILITY-
A CASE STUDY ON TATA MOTORS**

Submitted by

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Supervisor Name: Dr. Rintu Nath

Supervisor's Certificate

This is to certify that Mr. RAJDEB SINGH a student of B.Com Honours in Accounting & Finance of Sarat Centenary College under the University of Burdwan University has worked under my supervisor and guidance for his project work and prepared a project Report with title "CORPORATE SOCIAL RESPONSIBILITY -A CASE STUDY OF TATA MOTORS" to the best of my knowledge.

Signature:

Name:

Name of the College:

Place:

Date:

Student's Declaration

I hereby declare that the project work with the title **CORPORATE SOCIAL RESPONSIBILITY-A CASE STUDY ON TATA MOTORS** submitted by me for the partial fulfillment of the degree of B.Com Honours in Accounting and Finance under the university of Burdwan is my original work and has not been submitted earlier to any university for the fulfillment of requirement for any course of study.

I also declare that no chapter of this manuscript in whole or in part has been incorporated in this report from any earlier work done by others or by me. However, extract of any literature which has been used for this report has been duly acknowledged providing details of such literature in the references.

Signature:

Name: **Rajdeb Singh**

Registration No: **201901049577 of 2019-20**

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Acknowledgement

At the completion of my project, I would like to express my sincere gratitude to all the people without whose support this project could not be completed.

At the honest I would like to thank "Sarat Centenary College" for having provided me with a great opportunity to pursue my bachelor's degree in this institution.

I would like to acknowledge the constant help of my project guide dear sir, Rintu Nath who has given necessary suggestion, expert guidance and support for completion of the project.

Finally, I am gratefully acknowledging the support of my family and friends during the completion of this project.



CORPORATE SOCIAL RESPONSIBILITY – A CASE STUDY OF TATA MOTORS

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Abstract

Tata Motors formerly known as TELCO (Tata Engineering and Locomotive Company) is an Indian multinational automotive manufacturing company established in 1945 by Tata group. Tata Motors is India's largest automobile company. Different Tata companies have been actively involved in various social activities and Tata Motors is doing social work since its existence. Corporate Social Responsibility is becoming an important activity to businesses nationally and internationally. In the light of this background, the objective of the study is to analyse the Corporate Social Responsibility activities performed by Tata Motors from 2009 to 2015 towards activity as specified in Schedule VII to the 2013 Act.

Key words: Corporate social responsibility, rural areas, Tata, Tata Motors

Introduction

The globalization of the economy and the existence of a boundary-less environment, make such a phenomenon even more dramatic. Companies are more and more scrutinized and put under pressure by consumers associations and political lobbies (Ramesh & Goel, 2012). The main motive of CSR is to define a social contract to maximize the welfare of all the concerned parties. Welfare maximization should be considered as both short term and long term, in order to meet present expectations and needs without endangering the opportunities and the resources of the coming generations (Ramesh & Goel, 2012). The stakeholders of the organization contribute to firm's activities, and have a stake in

the firm and are affected by the firm's decisions. The shareholders being one of the constituencies of stakeholders should actively participate in the decision making process of implementing CSR programs, while the firm should ensure the continuity of their contribution through commitment to pay dividends and increase share value (Ramesh & Goel, 2012).

One of the areas of Corporate Social Responsibility research which remain untouched in the competitive country like India is the role of CSR in family operated business. Large numbers of companies are running business these days but very small numbers of companies are spending amounts on CSR activities in education. Tata Group is among the best companies in India. The Tata group is operated by Tata family since its establishment.

The history of Tata group springs from a small trading company established in 1868. Since then, the business has evolved into a well-established company with a wide distribution network and wholesale operations. He was the only son of Nusserwanji Tata, a Parsi family of the close-knit Zoroastrian community. He was working in his father's banking firm and established a trading company. In 1887 Jamsetji Tata formed a partnership firm, Tata & Sons with cousin Ratanji Dadabhai Tata and his elder son Sir Dorabji Tata. Ratan Tata, this was the start of the core business. This start-up could be described as entrepreneurship, changed to partnership and become family links between the founders and son played a considerable role in the start-up. Tata Motors was started by Tata group in 1945 by this group.

This study deal with the areas in which the CSR work has been done by Tata Motors company.

The areas of CSR activities given in the schedule VII of the companies Act 2013 is taken as a base to undertake the study. These areas include poverty & hunger eradication, education, women empowerment, child mortality, health, environmental sustainability, vocational skills, social projects, contribution to funds and others. The study is done year wise from 2009 to 2015. Each year of study is taken in tabular form to bring a more reliable result out of it. For the purposes of this item, the term *stakeholder* shall mean any area declared as such by the Central Government or any State Government or any other competent authority under any law for the time being in force.

Review of Literature

Raigamthan (2003) attempted to describe CSR practices in Tata group. It also reiterated need for replication of the Tata model on holistic development through CSR from its inception to till date. The study discussed the people who led their visionary leadership spearheaded the Tata group and the core values of the Tata Group which was to improve the quality of life of the communities it served and Social Initiatives of the Tata Group. The study discussed the Tata Index for sustainable human development proposed by TCCI to benchmark the contributions of Tata companies towards social development and protection of the environment. The study also reiterated need for replication of the Tata Model on holistic development through CSR. It was concluded that Tata group was performing CSR activities not for propaganda or visibility but they were doing it with integrity.

Prieta & Singh (2005) highlighted the lessons from India which were relevant to businesses seek endorsement as good corporate citizens through corporate social responsibility initiatives. The researchers saw repercussions in various companies of the world out of which India had also seen some repercussions. In India, it was traditionally linked to spirituality while respect in the corporate world was treated on a par with the human line. The research inferred that the CEO's reputation was a key factor in a company's reputation. Respect was considered an intrinsic part of Indian culture. The study also discussed the criteria for ranking India's most respected companies and corporate social

responsibilities programmes performed by various companies like Tata group of companies extended a wide spectrum including rural development, community development and social welfare, family initiatives, tribal development and water management. The study analysed the different drivers of CSR by using a comparative diagram and analysed the areas of CSR addressed in corporate policies of companies.

Zhang (2008) gave an overview of the issues surrounding CSR that should be kept in mind while discussing the emerging markets. The study was to frame the background of CSR in emerging markets, inform the actual seminars and prepare points for debate throughout the course of the project and to find this the project with Foreign Policy Centre in association with Coca-Cola Great Britain was launched. The study examined the impact of MNCs' businesses on the workplace, the marketplace, and the environment, and explored how well-designed CSR practices could contribute to economic, social, and environmental progress in emerging economies. In case of workplace, the study undertook Nike, Coca - Cola Company. However, in marketplace an example of HLL and Unilever and Vodafone was considered and in case of environment, Atlantic operating in aviation and general motors a leading company in automobile industry was considered.

Tomar & Gupta (2008) examined the way, reasons and to what extent corporate social responsibility was being implemented in leading family owned businesses in India. The study aimed to develop a framework that integrated the intention and the concern of an organization towards corporate social responsibility and the degree to which these activities were operational. The study addressed the two key challenges in social responsibility management i.e. firstly how to measure corporate social performance and secondly what capabilities an organization should have to be socially responsible. The research found the impact of the philosophy of Tata family on CSR policies and practices of TISCO. Tata Steel provided many examples of how business-community relations were approached by the private sector in India in the present time. Tata Steel also commenced

employees volunteering whereby employees were not only made aware and re-motivated properly but also participated actively in CSR activities.

Norhayati, Haslida, Zakiah & Dulliyawati (2009) tried to explore CSR in family business in Malaysia, in terms of firm practices towards CSR and disclosures of information related to CSR. The research explored the approach of the family businesses in responding towards CSR. The study presented the first phase of the research, which included CSR initiatives and activities of the family businesses. A multiple-case study consisting of five Malaysian family businesses (five topped on board of listed companies in 2009) was conducted in Malaysia. Of the five companies, one company engaged in commercial and retail banking and its related subsidiaries; two companies involved in plantation, one company was into investment holding and management while the fifth company engaged in power investments and energy market. Only one company was chaired by Malaysia while the other companies were chaired by Chinese. The study provided the information on the current practices of family businesses in Malaysia towards CSR. The findings had some policy implications on disclosure requirements related to disclosure of CSR and on drafting incentives from government and its institutions to promote greater CSR amongst family businesses and provided a basis for further suggestion on how companies could contribute to the society and environment through CSR.

Gjolberg (2009) explored the relative importance of global forces and national political economic institutions for companies' willingness and ability to engage in corporate social responsibility. The globalist hypothesis posulated that a company's CSR efforts were a function of the dictates of the global market place: strong anti-globalization and anti-corporate sentiments generated a need for a positive reputation to obtain a 'social license to operate'. The institutionalist hypothesis posulated that a company's CSR efforts were a function of institutional factors in the national political-economic system: companies based in political economic systems with strong institutions for social embedding of the economy had comparative institutional advantages for success in CSR. The study concluded that CSR

could be understood in isolation from contextual factors. The ensuing comparative analysis based on QCA gave a concise illustration of the importance of context when trying to capture the mechanisms behind a company's CSR engagement. The study suggested that CSR strategies could not necessarily be transferred successfully from one company to another irrespective of context.

Jodary & Frynan (2009) analysed CSR's potential and limitations for contributing towards wider societal challenges. The article investigated the key areas of CSR policies where oil companies were expected to make a positive contribution, improvements in environmental performance, development and governance. It was the culmination of more than 34 years of researching the oil and gas sector and the author had 100s of conversations with oil company staff, civil society advocates, government officials, consultants, development specialists, journalists and local people around these issues. In addition to interviews with oil company staff and insiders, the findings were based on the analysis of 20 social and environmental reports of selected oil and gas companies. The evidence suggested that CSR had the greatest potential for addressing environmental challenges. Corporate reporting on the environment was steadily improving, new environmentally friendly technologies were being developed and tangible improvements were being made by some companies. The limitations of CSR did not imply that oil companies should do nothing about societal issues. Firms were pressured to engage with the social and environmental aspects of their operations and they might benefit from the opportunities that CSR offers.

Reinhardt & Sayins (2010) examined the concept of firms sacrificing profits in the social interest within the environmental realm, with particular focus on the case of the United States. Their starting point for examining the first question was the prevailing view among economists and business scholars that corporate directors had a fiduciary duty to maximize profits for shareholders. US corporate law was consistent with the shareholder primacy model, but as long as managers claimed some plausible connection to future profitability, the business judgment rule granted them the way to commit corporate resources to projects that benefit the

public. The process of economic survival of the fittest suggested that firms which engaged in unsustainable CSR found themselves being pushed out of business. The study revealed that the firms that engaged in CSR were often active in markets that were imperfect or distorted by government intervention, so that they were protected from Friedman's evolutionary imperatives. Secondly, principal-agent problems led managers to make decisions that committed the firm to short-term CSR actions, even if those activities would not be continued in the long run. The study suggested that most firms view socially responsible actions in the same way that they viewed more traditional business activities. Instead of altruistically sacrificing profits, they engaged in a more limited but more profitable set of socially beneficial activities that contributed to their financial goals.

3.1 Importance of the study

It is apparent from the literature that CSR plays an indispensable role in the development of a country. The study endeavored to study the work done by Tata Motors. CSR came into light in India with the coming up of voluntary guidelines on CSR in 2009, voluntary guidelines on CSR got revised in 2011 and later on became an Act known as Companies Act 2013. The Companies Act, 2013 introduced the idea of CSR to the forefront and through its disclose-or-explain mandate, is bolstering greater transparency and disclosure. Ministry of Corporate Affairs had notified Section 135 and Schedule VII of the Companies Act as well as the provisions of the Companies (Corporate Social Responsibility Policy) Rules, 2014(CRS Rules) which has come into effect from 1 April 2014. The present research is exploratory in nature and will explore the possibilities of social responsibility done by Tata Motors. A plethora of empirical studies have been conducted in India on CSR but no proper research has been undertaken to examine the CSR activities performed by the family run business of Tata Group. Thus, the present study has been undertaken to fill the gap.

Scope of the study

The study is based on secondary data which was extracted from various published sources like annual reports, sustainability report various business magazines, journals newspapers & other relevant private and public publications. The values of variables considered for the study were taken as the values that existed as on 31st March every year during a period 2009-2015. The sample size of the study is restricted to Tata Motors and was selected in per non-probabilistic convenience sampling.

Limitations of the Study

1. The CSR activities towards other important internal stakeholders such as investors have not been covered. Some external stakeholders such as civil society groups, other companies are also not part of the study.
2. The activities performed once are sometimes not repeated next year which result in demoralization of the beneficiaries who are working for these activities or are getting benefit of these activities.
3. One of the major limitations of the study was the paucity of time and financial resources.
4. As the study was conducted on a single firm i.e. the Tata motors thus the results could not be generalized to other groups and remained limited to the study only.
5. The study included a small number of statistical observations and various other variables were left for future research.
6. The study covered the time period 2009-2010 to 2014-15, this period prior to 2009 and future period was ignored.
7. The study focused on the level of CSR with respect to stakeholders as a whole but CSR towards individual stakeholder was not the part of study.
8. The reliability of the CSR data is also an important issue, as data from different sources have significant differences regarding how to evaluate the CSR performance of a firm.

Results and Discussions

Areas	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Priority & Budget allocation	training in farm development, irrigation facility	irrigation facility	Milk Collection System	Land levelling		
Education	Teacher training, Co-curricular activities, Scholarship, desks and benches made from packing wood distributed, school ground	Scholarships	mobile science lab, students drop-in centre, school building renovated, students, providing desks & benches	e-learning programs, creative materials, scholarships, coaching classes, facility up gradation, Teacher training	collaboration with schools	Coaching of IT- JEE, financial help to student, coaching of student, scholarship to students, special coaching, infrastructure in school, co-curricular activity
Women Empowerment	Women training	women SHGs formed	Mukhya Sharan	opportunity for rural women		
Child Mortality	sanitis to tribal children, malnutrition prevention	Health check-ups	health services to malnourished, Food, medical, children immunised, malnourished children checking camp	Purva Kalyan Sanathan, Malnutrition prevention		Child malnutrition
Health	Mobile health awareness camp, men health camp, eye operation, Health Care, sanitation, toilet, drinking water	health check-ups, Sanitation, Anaemia treatment	patients treated, community health care services, Health check-up, Health awareness programs, Anaemia treatment to women, Eye camp program, Malaria prevention program, Children with special abilities, blind donation camp, drinking water scheme	JAITEV Program, health care, health check-ups, health awareness, eye-camp		drinking water project, Health awareness Seminars, Preventive health services

Environment Sustainability	installed smokeless chulias, trees planted, people sensitized on environment issues	rainwater harvesting, trees planted	environment protection plan, infiltration well created	biogas unit installed, zero waste discharge plants, tree plantation, environment intervention	trees planted	Awareness to students, Solar lamp, Tree plantation
Vocational skills	trained women plumbing, girls training, Driving training, Technical and vocational training	workshop to teachers, volunteers, Vehicle training, employment training, Technical and vocational training	computer skill training	modern training, Industrial training centres	Technical training to youth	Signed MOU for employment and training, Driver training, training non auto trade, agriculture Training
Social Projects	waste collection cart	Renovation of Primary School	inter-farm roads, farmers, Driving Training, Sanitation Drive, Safe drinking water Toilet	Driver training, sanitation drive, safe drinking water, training & support of entrepreneurs	Provided relief material, packing wood for underprivileged people	
Contribution to Funds	Donated one day salary					

2009-10

If we see the poverty and hunger eradication Tata Motors had focused on agriculture in different ways like training in farm. In case of education, company provided teacher training, co-curricular activities, scholarship, prepared school ground and 3000 desks and 730 benches made from packing wood in 20 schools. In women empowerment, Tata Motors provided training to women. In case of child mortality, they provided snacks to tribal children for the prevention of malnutrition prevention. In case of health, company provided mobile health care, awareness camp, men health care, eye operation, toilet and portable drinking water. In environmental sustainability, Tata Motors installed 200 smokeless chulias, planted trees and sensitized people on environment issues. In vocational skills, Tata Motors provided training in women, plumbing, driving and girls in computers. In social projects they provided waste collection cart. Tata Motors contributed to employees by

donating one day salary to the victims of tsunami, 26/11 terror attack and flood.

2010-11

To remove poverty & hunger eradication, Tata Motors provided irrigation facility to 2000 families and contributed in development of 441.5 acres of land. In the field of education, Tata Motors provided scholarship to 278 students. To empower women Tata Motors found 150 women's SHG. In case of child mortality health check up camp were organized in 2390 schools by Tata motors. In environment sustainability, Tata Motors established 200 rain water harvest locations and planted 100000 trees. Tata Motors provided vocational skills by organising half day workshop for teachers by 50 volunteers, vehicle training to 170 and trained 1467 persons, 354 sr students trained for employment, 7000 benefited through technical and vocational training. In social projects company renovated primary school,

Tata Motors had not provided any information regarding contribution in funds.

2011-12

To remove poverty & hunger eradication Tata Motors started milk collection system in which 15 youth were engaged. In education, Tata Motors organized 14 drop-in centres in which 139 students of villages participated, benefitted 3700 students by renovating school building, provided desks, benches for 1,700 students, mobile science lab for 1,500 students. To empower women Tata Motors provided training to 465 women and mulita shram to 200 women. To reduce child mortality, company provided health services to 100 malnourished children, food and medicine to 300 children, immunization to 6800, malnourishment benefit for 576 children and checkup camp for 723 children. In health Tata Motors treated 3800 patients, 72874 treated through community health care services, health check-ups in 5431 schools, health awareness programs in 10557,972 women given aluminum treatment, 5342 treated through eye-camp program, 1659 prevented through malaria prevention program. Tata Motors helped children with special abilities, organized blood donation camp and established 13 drinking water solutions. Tata Steel treated 150 patients under operation smile, primary health service to 289517 persons, HIV/AIDS Awareness to 310000 persons, family planning services to 7198, kushi clinic medical check up of 4864 patients, mobile medical units benefitted, outdoor and indoor patients treated and awared HIV. In care of environmental sustainability company benefitted 10000 people by creating infiltration wells and environment protection plan. In vocational skills, Tata Motors provided computer skill training to 35 persons. In social projects, Tata Motors constructed inter-farm roads benefitted 1875 farmers, driving training to 4880, benefitted 4098 through sanitation drive, safe drinking water to 32889 and provided toilets to 4098.

2012-13

To reduce poverty & hunger eradication Tata Motors levelled 3809 acres of land. In education, Tata Motors provided e-learning programs which helped 5739 persons, more than 22,000 school children, provided creative material to 295 children, organized various

events for 6276 persons, SC/ST scholarships provided to 971 students, coaching classes for 3350, infrastructure and facility up-gradation for 15597 people and teacher training to 374 teachers. In women empowerment, Tata Motors provided opportunity for 912 rural women. To reduce child mortality Tata Motors organized parivar kalyan samithan in which 400 participated, 317 prevented through malnutrition prevention drive. In health, Tata Motors janeev program benefitted 157 people, community health care services helped 84243 people, 2595 benefitted through health check-ups in schools, 10214 benefitted through health awareness programs, 2758 benefitted through eye camp, 16800 helped through a survey for leprosy detection. Tata Motors installed 5 biogas units in 2 villages, zero waste discharge plants, planted 233760 trees in 345 acres, awareness on environment conservation to 150 students in environmental Sustainability area. In Vocational skills, Tata Motors provided students training and Industrial Training Centre. Tata motors provided driver training, sanitation drive, safe drinking water and training & support of entrepreneurs in social projects.

2013-14

No contribution of Tata Motors is found in poverty & hunger eradication, women empowerment field, child mortality and health. In education, Tata Motors collaborated with schools to promote learning which led to participation of more than 32800 students in UK. In environmental sustainability company planted 16400 trees. In vocational skills, Tata Motors trained 125 enrolled apprentices in imperial technical training and trained 12 local youth. In social projects, Tata Motors provided relief material to 500 families and used parking road of the vehicle used underprivileged people. Tata Motors didn't show any contribution to Funds.

2014-15

Tata Motors had not provided any contribution in poverty reduction & hunger eradication, social projects and women empowerment. In education, they provided coaching of IIT-JEE, financial help to IIT students, coaching of X student in 146 schools of Mumbai, scholarship to 1302 students, special coaching to 24784, infrastructure in 12135 school and co-

curricular activities for 8314 students. Tata Motors addressed 1102 cases of child malnutrition to reduce problem in small children. Tata Motors provided 330 drinking water projects including 34 new project for 96200 persons, health awareness to 9385 females and preventive health services to 98083 persons. Tata Motors provided environmental awareness to 15263 students, solar lamp for 8500 students and planted 85140 saplings. Tata Motors provided vocational skills by signing a MOU with director general of employment and training, driver training to 22171, motor mechanic + vehicle training to 754, training of non auto trade to 1410, training agriculture and allied trades to 1837 persons.

Findings and suggestions of the Study

Many activities for instance tree plantation drives, philanthropic activities and charitable donations to CSR which exhibits that they understand CSR and follow guidelines as laid down by Companies Act, 2013 prior to their implementation by government.

In certain cases, some CSR initiative has been extremely successful, especially in the spread of computer education programs, providing livelihood for the differently able persons etc.

The contribution in Poverty & hunger eradication and women empowerment has reduced with the passage of time and no contribution is seen in last two years.

Very little work is seen in contribution to funds area by Tata Motors as only in 2009-10 work done is seen.

CSR work done under each is not constant or same every year. The activity goes on changing year wise.

It has been observed that startups or new companies to be started should be of social nature in the society and business nature in the company like hospitals and educational institutes. This will be helpful in fulfilling the social and commercial objectives.

Conclusion and Future Research Perspectives

The study concluded that Tata Motors is doing commendable work in different sectors as these are notified by government in 2013 but the company is performing these activities prior to government notification. The study found the different type of work done by company and the benefits provided to the society. Company has

done work in different manner and in different areas which has led to the benefit of people in different areas and in different sense. In general the CSR policies of Tata Motors cover the general topics mentioned in the CSR frame of reference, i.e. labour, environment and more economic related issues. A comparison between the CSR frame of reference and the practice of Tata Motors in India shows a small gap between them as the comparative table has shown that almost every variable in the sample companies is covered. Study has showed large number of people benefited by these work in this study. Future study can be performed by analyzing the amount of fund spented by Tata Motors in these areas.

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sarat centenary collage

Project Report

(Submitted for the Degree of B.Com. Honours in Accounting & Finance under the University of bardwan)

Title of the Project

A study on corporate social responsibility of Tata Motors Company Limited

Submitted by

Name of the Candidate : Samir Swain

Registration No: 20190149578 of 2019-20

Name of the Collage: Sarat Centenary Collage

College Roll No: 19

Supervised by

Name of the Supervisor: Dr. Rintu Nath

Name of the College: Sarat Centenary College

Month & Year of Submission
19 MAY 2022

Annexure- IA

Supervisor's Certificate

This is to certify that Mr. **Samir Swain** student of B.Com. Honours in Accounting & Finance of Sarat Centenary College under the University of Burdwan has worked under my supervision and guidance for his Project Work and prepared a Project Report with the title : A study on corporate social responsibility of Tata Motors Company Limited,

which he is submitting, is his genuine and original work to the best of my knowledge.

Place:

Date:

Signature

Name:

Designation:

Name of the College

Annexure- IB

Student's Declaration

I hereby declare that the Project Work with the title (in block letters) **..A STUDY ON CORPORATE SOCIAL RESPONSIBILITY OF TATA MOTORS COMPANY LIMITED**, submitted by me for the partial fulfilment of the degree of B.Com. Honours in Accounting & Finance under the University of Burdwan is my original work and has not been submitted earlier to any other University /Institution for the fulfilment of the requirement for any course of study.

I also declare that no chapter of this manuscript in whole or in part has been incorporated in this report from any earlier work done by others or by me. However, extracts of any literature which has been used for this report has been duly acknowledged providing details of such literature in the references.

Lomita Subia
Signature

Name:

Address: Jamalpur

Registration No.

20180149578 of 2019-20

Place:

Date: 28/05/2022

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CHAPTER 1 INTRODUCTION

What is “Corporate Social Responsibility”?

Definition

Corporate Social Responsibility (CSR) defined as “the principled behaviour of a company towards the general public,” evident itself in the form of such noble programs initiated by Non-profit organizations.

Corporate social responsibility (CSR) is how companies manage their business processes to produce an overall positive impact on society. It covers sustainability, social impact and ethics, and done correctly should be about core business and how companies make their money.

Meaning

Corporate social responsibility (CSR) is a business approach that contributes to sustainable development by delivering economic, social and environmental benefits for all stakeholders. Corporate initiative to assess and take responsibility for the company's effects on environmental and social wellbeing. The term generally applies to efforts that go beyond what may be required by regulators or environmental protection groups.

Corporate Social Responsibility is a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders. CSR is generally understood as being the way through which a company achieves a balance of economic, environmental and social imperative, while at the same time addressing the expectations of shareholders and stakeholders.

Corporate Social Responsibility is now accepted as a means to achieve sustainable development of an organization. CSR is about integrating economic, environmental and social objective with a company's operations and growth. CSR impacts governance and ethics, employee welfare, society welfare, environment protection etc. and many more.

Additional motive for this rapid acceptance of CSR is the state of the Indian society. Though India is one of the fastest growing economies, socio-economic issues like poverty, illiteracy, lack of healthcare etc. are still universally present and the government has limited resources

to embark upon these challenges. This state of affairs has opened up several areas for businesses to contribute towards social development.

Functions of CSR

The functions of CSR are Ethical, Legal, Societal and Ecological functions. The ethical functions of CSR help to prevent conflicts of interest between earning corporate profits and maintaining the integrity of the company. The legal function of CSR helps to encourage transparency in a company's business practices and financial reporting. The societal functions of CSR helps to respect and invest in the communities in which the company operation. The ecological function of CSR helps not only to respect the immediate environment in which the company operates but also to respect the company's effect on the global environment.

Importance of CSR

Corporate social responsibility (CSR) plays a major role in developing the economy of a country. It can be defined as the way in which a company manages various business entities to produce an impact on the society. Companies with high CSR standards are able to demonstrate their responsibilities to the stock holders, employees, customers, and the general public. Business organizations that have high corporate social responsibility standards can attract staff thereby reducing employee turnover and cost of recruitment. What is the importance of corporate social responsibility? Anyone can give a clear answer to this question. Companies voluntarily contribute a large sum of money to make a better society and a clean environment. Corporate social responsibility is a process in which all companies come together as one and take part in the welfare of the society. Many organizations conduct campaigns to create awareness among corporate, civic bodies, and government bodies about the importance of corporate social responsibility. Many national and multinational firms are booming in various developing countries. But at the same time, these countries suffer social challenges such as poverty, corruption, population growth, etc. Therefore, it is important for all companies to strive together and adopt corporate social responsibility standards to make the society better than before. An organization can exhibit a better image in the society if it cares for its employees and involve them in social activities. The responsibilities of an organization may range from providing small donations to executing bigger projects for the welfare of the society. Many business houses around the world show their commitment to corporate social responsibility. What is the importance of corporate social responsibility? The answer lies in two things: 1) organizations understanding their role in developing a society

and 2) awareness among business houses, corporate bodies, and the people. Versatile, profitable, and dynamic businesses are the driving forces that build the economy of the country. We must remember that the growth of a country purely depends on the growth of the society and the people in the society.

Benefits of CSR

Organizations of all sizes are rapidly discovering that Corporate Social Responsibility (CSR) and sustainable business practices can foster improved green programs and overall environmental stewardship. Today, we are seeing increased awareness and active participation by business professionals in the development of CSR policies. Organizations are increasingly more involved in green initiatives by adopting sustainable processes and practices, adapting products and services to the low-carbon economy and innovating in all areas their business.

Benefits of corporate social responsibility for businesses

The potential benefits of CSR to companies include:

- better brand recognition
- positive business reputation
- increased sales and customer loyalty
- operational costs savings
- better financial performance
- greater ability to attract talent and retain staff
- organisational growth
- easier access to capital

Benefits of corporate social responsibility for environment

Environmental CSR aims to reduce any damaging effects on the environment from your business' processes. Activities may focus on:

- energy use
- water use
- waste management
- recycling
- emissions
- eco-friendly office and business travel policies

CSR in Today's World

CSR is a business practice that aims to integrate communal and ecological goals into company operations. Instead of concentrating solely on increasing profits, many companies use the principles of corporate social responsibility to determine how their practices are affecting employees, customers, human rights, the environment, and local communities. The efforts of corporate social responsibility can help companies control costs, improve their corporate brand, attract competent job seekers, and facilitate long-term financial success.

Cost Savings

Corporate social responsibility practices can help business owners benefit both their companies and the environment. Some of the SCR practices that can help businesses save include developing eco-friendly products that require less packaging and save on utility bills and materials expenses.

Changing social expectations

Consumers and society in general expect more from the companies whose products they buy. This sense has increased in the light of recent corporate scandals, which reduced public trust of corporations, and reduced public confidence in the ability of regulatory bodies and organizations to control corporate excess.

Increasing affluence

This is true within developed nations, but also in comparison to developing nations. Affluent consumers can afford to pick and choose the products they buy. A society in need of work and inward investment is less likely to enforce strict regulations and penalize organizations that might take their business and money elsewhere.

Brand Benefits

Corporate social responsibility practices involve investing in communities and supporting local organizations. These practices help businesses set themselves apart from the rest. Businesses that adopt responsible practices improve public perception of their corporate brand, which can attract more customers and increase overall sales. Such businesses can also attract investors that invest in socially responsible organizations.

Employee Loyalty

CSR helps companies to attract and retain top talent. Today, many recruiters are looking for employees that display ethical behaviour and stand by values that align with their own. Many companies that engage their employees in corporate social responsibility experience an increase in employee loyalty and motivation.

Corporate Social Responsibility in India

India's new Companies Act 2013 (Companies Act) has introduced several new provisions which change the face of Indian corporate business". Companies Act 2013 (Companies Act) has introduced several new provisions which change the face of Indian corporate business. One of such new provisions is Corporate Social Responsibility (CSR). The concept of CSR rests on the ideology of give and take. Companies take resources in the form of raw materials, human resources etc from the society. By performing the task of CSR activities, the companies are giving something back to the society.

Under Companies Act, 2013 any company with a

- net worth of the company to be 500 crores or more or
- turnover of the company to be 1000 crores or more or
- net profit of the company to be 5 crores or more.

has to spend at least 2% of last 3 years average net profits on CSR activities as specified in Schedule VII and as amended from time to time. The rules came into effect from 1 April 2014.

Further as per the CSR Rules, the provisions of CSR are not only applicable to Indian companies, but also applicable to branch and project offices of a foreign company in India. Further, the qualifying company will be required to constitute a CSR Committee consisting of 3 or more directors.

The CSR Committee shall formulate and recommend to the Board, a policy which indicates the activities to be undertaken, allocate resources and monitor the CSR Policy of the company. If the company did not spend CSR, it has to disclose the reason for not spending. Non-disclosure or absence of the details will be penalised from Rs 50,000 to Rs 25 lakh or even imprisonment of up to 3 years. India is the first country in the world to enshrine corporate giving into law.

CHAPTER 2 LITERATURE REVIEW

- 1) Jitana and Crowther (2008) edited book named "Corporate social responsibility – theory and practice with case studies" has shed light on myths of Corporate social responsibility, value addition, Globalization perspectives on corporate governance while blowing policies as corporate social responsibility and other contemporary issues in corporate social responsibility. In addition, it dealt with various case studies related to various industrial sectors insurance, private banking, SMEs, Information Technology, power generation sectors and companies like Aditya cements, Coca-Cola. In all these articles details of current projects pursued by companies has given but the CSRD has not been measured in such.
- 2) Anupam Sharma and Ravi Kumar(2010), CSR is emerging as a new field in the management research. In India, many firms have taken the initiatives of CSR practices which have met with varying needs of society. According to him number of IT and Auto industry is more going for taking up CSR initiatives while FMCG sector. Authors said that India has entered or taken a transformational change by involving into new CSR initiatives.
- 3) Harish Kumar (2012) stated that Corporate Social Responsibility means putting something back into the society. CSR can be viewed as responsibility on the part of the business & industrial organizations to be accountable to their stakeholders including society. Business organizations have an active interplay with the society. They are independent on each other. If we create wealth from society, we will have to plough it back for the welfare of the society.
- 4) Kiran Neelakantan(2012), the enactment of the company act 2013 will create a big regulatory push for CSR activities and this is mandatory for all company operating in India. So it is good for economic development but how Shareholder think about it while evaluating company? So according to author suggests that framework for investors to evaluate companies' CSR efforts which is based on four key parameters- Integrity, strategic orientation, efficiency and transparency.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Research Objectives

- 1) To study on the Profile of Tata Motors and areas of operations.
- 2) To study the CSR activities carried and completed by Tata Motors.
- 3) Literature review for knowing the best practices for conduct of CSR activities in the world.

3.2 Type of Research: Descriptive

3.3 Data Collection Method: Data collected from Websites, Articles, News Papers, Company Website, and Company's Annual Report 2015-16, 2016-17.

CHAPTER 4 COMPANY PROFILE

Name of the Company: TATA MOTORS

Tata Motors Limited is the largest automobile manufacturer in India. Tata Motors offers a wide range of Sedan, Hatchback, MPV, SUV, cargo trucks and many other models. It is the leader in utility, commercial, defence & passenger vehicles in India. Tata Motors Group, a USD 42 billion organisation, is a leading automobile manufacturer with a portfolio that includes a wide range of cars, sports vehicles, trucks, buses and defence vehicles. Our marque can be found on and off-road in over 175 countries around the globe.

Tata Motors has auto manufacturing and assembly plants in Jamshedpur, Pantnagar, Lucknow, Sanand, Dharwad, and Pune in India, as well as in Argentina, South Africa, Great Britain and Thailand. It has research and development centres in Pune, Jamshedpur, Lucknow, and Dharwad, India and in South Korea, Great Britain and Spain. Tata Motors' principal subsidiaries purchased the English premium car maker Jaguar Land Rover (the maker of Jaguar and Land Rover cars) and the South Korean commercial vehicle manufacturer Tata Daewoo.

Part of the USD100 billion Tata group founded by Jamsetji Tata in 1868, Tata Motors is among the world's leading manufacturers of automobiles. They believe in 'Connecting aspirations', by offering innovative mobility solutions that are in line with customers' aspirations. They are India's largest automobile manufacturer, and they continue to take the lead in shaping the Indian commercial vehicle landscape, with the introduction of leading-edge powertrains and electric solutions packaged for power performances and user comfort at the lowest life-cycle costs. Their new passenger cars and utility vehicles are based on Impact Design and offer a superior blend of performance, drivability and connectivity.

Tata Motors is listed on the (BSE) Bombay Stock Exchange, where it is a constituent of the BSE SENSEX index, the National Stock Exchange of India, and the New York Stock Exchange. The company is ranked 226th on the Fortune Global 500 list of the world's biggest corporations as of 2016.

Tata Motors has vehicle assembly operations in India, Great Britain, South Korea, Thailand, Spain and South Africa. It plans to establish plants in Turkey, Indonesia, and Eastern Europe.

Registration Details

Registered Office

Bombay House,

24, Homi Mody Street, Mumbai 400 001

Tel: +91-22-6665 8282

Fax: +91-22-6665 7799

Email: info_tel@tatamotors.com

Website: www.tatamotors.com

Corporate Office

Aliaa Centre,

Mahakali Caves Rd, Shanti Nagar,

Andheri East, Mumbai, Maharashtra 400093

Hours: 8:30AM-5:30PM

Phone: 070394 66712

Form of Ownership

Industry: Automotive

Founded: 1945

Founder: Jehangir Ratanji Dadabhai Tata

Headquarters: Mumbai

Area Served: Worldwide

Key People: Natarajan Chandrasekaran (Chairman)

Gunter Rutschek (CEO)

P B Bhatnagar (CFO)

Products: Sports Cars, Commercial Vehicles, Buses, Construction Equipment, Military Vehicles and Automotive Parts.

MEMORANDUM OF ASSOCIATION of Tata Motors

I. The name of the Company is "TATA MOTORS LIMITED"

II. The Registered Office of the Company will be situate in the State of Maharashtra.

III. The objects for which the Company is established are:-

1. To carry on the business of manufacturing, assembling, buying, selling, re-selling, exchanging, altering, importing, exporting, hiring, letting on hire, or distributing or dealing in locomotives, boilers, engines steam gas electrical or otherwise, turbines, tanks, motor vehicles, trucks, lorries, omnibuses, buses, motorcycles, cycle cars, scooters, bicycles, tricycles, cycles, tractors, bulldozers and steam rollers of every description and kind and all component parts, spare parts, accessories, equipment and apparatus for use in connection therewith.
2. To carry on the business of iron foundries, mechanical and general engineers and manufacturers of implements and other machinery, tool-makers, brass-foundries, metalworkers, boiler-makers, millwrights, machinists, iron and steel converters, smiths, wood-workers, builders, painters, metallurgists, water supply engineers, gas-makers, printers, carriers and merchants, and to buy, sell, manufacture, repair, convert, alter, let on hire and deal in machinery, implements, rolling-stock and hardware of all kinds.
3. To carry on business as manufacturers, importers and exporters of and dealers in machinery articles and goods of all classes and kinds whatsoever including electrical and engineering materials, goods, machinery and requisites and as Electrical, Mechanical and General Engineers and Contractors and as manufacturers and workers in materials of any nature and kind.
4. To enter into any contracts or arrangements with any government, state or authorities, municipal, local or otherwise that may seem conducive to the Company's objects or any of them and to obtain from any such government, state or authority, any rights, privileges and concessions which the Company may think it desirable to obtain and to carry out, execute and comply with any such contracts, arrangements, rights, privileges and concessions.
5. To carry on business as quarry masters and stone merchants and to buy, sell, get, work, shape, hew, carve, polish, crush and prepare for market or use stone of all kinds.
6. Many more, etc.

Mission, Vision and Values

Mission

- They innovate mobility solutions with passion to enhance the quality of life.
- To be passionate in anticipating and providing the best vehicles and experiences that excite our customer globally.

Vision

As a high performance organization, we aim, by FY2019:

- Among the top 3 in Global CV and Domestic PV.
- Achieving Sustainable Financial Performance.
- Delivering Exciting Innovations.

Values

- Integrity
- Teamwork
- Accountability
- Customer Focus
- Excellence
- Spend

CHAPTER 5 CSR ACTIVITIES OF TATA MOTORS

At Tata Motors, Their CSR efforts are focused on improving the quality of life of underprivileged communities neighbouring our business operations. Their interventions focus on health, education, employability and environment, impacting over 5,80,000 lives in India. Tata Motors is committed to sustainable development, where business goes hand in hand with societal wellbeing and environmental consciousness.

India's Best Companies For CSR 2014: Tata Motors drives CSR through healthcare and education

By [Gauri Pathak](#), [ETimes](#) | Updated on: 02, April 2015, 11:47 AM



<http://economictimes.indiatimes.com/magazines/corporate-drummer/indias-best-companies-for-csr-2014-tata-motors-drives-csr-through-healthcare-and-education/articleshow/45239571.cms>

Tata Motors sold 1,41,846 passenger vehicles in India last year (2013-14). In the same year, the company planted over 1,64,000 trees. That might be like comparing apples to oranges but nevertheless, it's a pointer to the sheer size of the automaker's CSR programs.

Tata Motors' CSR initiatives span a wide range, from driver training schools to combating malnutrition. It spent around 5.17 per cent of its post-tax profit on such initiatives, during the last financial year.

The company's initiative to provide clean drinking in villages is partly funded by its employees. Tata Motors 27,943 employees contribute Rs 20 per month from their salary towards the program and the company chips in with an equal amount. Thanks to these contributions, over one lakh people living in 202 villages have been provided with clean drinking water.

"We are supporting 11 schools in Jamshedpur. Their senior colleagues are on school management committees to oversee academic performance of students," says Chandel. Tata Motors also supports municipal schools in cities like Mumbai and institutions like Asha Kinn, a school for children for special needs.

Tata Motors spends Rs. 25.94 Cr on Corporate Social Responsibility programs

The annual report released for the financial year 2016-17, titled "Tata Motors Limited Annual Report 2016-17" is a report of the company's financial performance, its business operations, its CSR initiatives and its commitment to the community.

By India CSR Network - September 13, 2017

1200 0 0

<http://indiacsr.in/tata-motors-spends-rs-25.94-cr-on-corporate-social-responsibility-programs/>

Tata Motors reported loss before and after tax for the year 2016-17 ended March 31, 2017 was Rs.2,421 crores and Rs.2,480 crores, respectively, against the Rs.67 crores and Rs.62 crores, respectively, for the last year. "Average Net Profit of the Company for last three financial years: Loss of Rs. 2,337 crore". Report said.

"Building sustainable relationships with all our stakeholders and creating shared value are key to our corporate philosophy," Tata Motors said.

The guiding philosophy for our CSR initiatives is 'More from Less for More People'. It implies achieving greater impacts, outcomes and outputs with strategic CSR investments, and the efficient deployment of financial and human resources.

"Our CSR initiatives envisage meeting the existing and emerging needs of the community through the development of customised programmes and adopt an entire life-cycle approach. Through our Affirmative Action programme, we reach out to the historically marginalised groups and 40% of our CSR budget is earmarked for programmes towards their upliftment. This is done through education, employability, employment and entrepreneurship."

Tata Motors have CSR projects in the following areas

- Arogya - Health
- Vidyadhanam - Education
- Kaushalya - Employability or Skilling
- Vasudhara - Environment
- Amritdhara - Drinking Water
- Seva -Volunteering Programme

1) Aarogya (Health)

Health has a important role to play in a person's physical, mental and psychological development.

Tata Motors has partnered with Avanti Fellows, an NGA, to support bright students of Jawahar Navodaya Vidyalaya (JNV) schools preparing for IIT-JEE and other competitive entrance exams. As part of the programme, They provide special coaching to students at JNV Mangalore and JNV Puducherry. They have also deployed innovative peer-to-peer learning pedagogy at these places. As a result of the intervention, the overall entrance exam performance of students from these schools has significantly improved.



With this belief, They have set up community hospital infrastructure in Jamshedpur and have been running programmes to address leprosy, malnutrition, etc. for many decades now. Under our CSR programme for health – Aarogya, we operate mobile health clinics for remote, last mile tribal community outreach in Pune. We have tied up with Anganwadis and nutrition rehabilitation centres across India to ensure better nutrition and health awareness for children, pregnant women and lactating mothers. Our initiatives also focus on holding awareness sessions for adolescent girls to address their queries on puberty, health and hygiene.

2) Vidyadhanam (Education)

Education is the foundation upon which the development of an individual's cognitive, psychological and intellectual faculties rests.

Education is the foundation upon which the development of an individual's cognitive, psychological and an intellectual faculty rests. Their CSR programme for education, Vidyadhanam, ensures support to thousands of young learners at several stages of their educational journey.



Tata Motors extends support to deserving students as well as the holistic development of education infrastructure and services. The focus of our education programme remains not just on the academic, but also on the physical and sociological development, along with inculcation of values. We pay emphasis on the overall personality development of students and facilitate their mentoring by professionals from their areas of interest.

The key projects under Vidyadhanam include:

- Scholarships.
- Financial aid to students of IITs and government engineering colleges.
- Coaching classes.
- Special coaching for IIT-JEE and other competitive exams.
- School infrastructure improvement.
- Co-curricular activities.

3) Kaushalya (Employability or Skilling)

Tata Motors skill development programme, Kaushalya, aims to build the capacity of unemployed youth by providing vocational training in automotive and other industrial trades.

Tata Motors skill development programme, Kaushalya, aims to build the capacity of unemployed youth by providing vocational training in automotive and other industrial trades. Under this initiative, They also help farmers and women boost their income through their agriculture and allied initiatives.



Absence of formal skills renders the population largely unemployable. Tata Motors has partnered with various skill development centres across India to address this issue. To enhance the quality of training, they have developed standardised course content for automotive trades as well as partnered with reputed NGOs having previous experience of running skill development programmes. They also build capacity of partners through train-the-trainer and management development programmes along with providing practical exposure to students through on-the-job trainings and industry visits.

Their skill development programme can be categorised as:

- Training youth in automotive trades such as drivers, mechanics, etc.
- Training youth in marketable vocational skills such as electrician, nursing assistant, etc.
- Capacity building of community-based groups in agriculture and allied industries.

4) Vasundhara (Environment)

Tata Motors, under the environment-related CSR programme – Vasundhara, strives to contribute to enhanced environmental sustainability by proactively facilitating the protection, conservation, judicious use and augmentation of natural resources.

Depletion of forests disturbs the delicate ecological balance and also contributes to climate change. With their initiatives under Vasundhara, They aim to promote environmental consciousness among community members, school students and our employees by engaging them in plantation and cleanliness drives. The underlying vision is that environment being a common global concern, any effort at promoting environmental sustainability at a local level would benefit the environment as well as local communities and society at large. They also encourage community members to use renewable energy products like solar lamps and promote innovative products like fuel efficient chulhas that reduce the carbon footprint.



Tata Motors partner with the communities and NGOs like Abhilasha Foundation, Avantii Fellows, Trishul Learning Centre around our manufacturing plants and office locations for deployment of Vasundhara projects. This approach meets the needs of the local community, and also inculcates in them a sense of responsibility. This, we believe, is essential for ensuring long-term sustainability of our collective interventions.

5) Amrutdhara (Drinking Water)

Tata Motors, under the Amrutdhara programme, has been working towards providing safe drinking water across India.

Water scarcity and water inequality is one of the major concerns affecting India's overall development. To address the issue of drinking water needs of disadvantaged communities, Tata Motors has initiated Amrutdhara. The programme not only addresses the concerns relating to safe drinking water, but also helps in improving health, fostering gender equality and promoting social equality.

In regard to operations of Tata Motors, They aspire to become water-neutral and eventually water positive (especially in green water). They have taken several initiatives in this context, such as rain water harvesting and storage, water pooling, water recycling, etc.

Sumant Moolgaonkar Development Foundation



Amrutdhara has been conceived and deployed under the aegis of Sumant Moolgaonkar Development Foundation (SMDF), a social arm of Tata Motors. It is powered through voluntary contribution of Rs. 20/month/employee and a matching contribution by the company. To support the programme's core team, comprising professionals from the construction division, community members contribute their hand, locally available raw materials, labour, etc. The government renders support to complete the project related processes and formalities. Community mobilisation and sustainability of the projects is ensured by voluntary organisations. The vendors develop cost-efficient water solutions and

deploy the work following all ethical standards. Volunteers help in identifying, deploying and monitoring the project. The diversity in the geographical landscape gives SMDF an opportunity to innovate on water solutions. Depending upon the terrain, the water solution could be installing RO plant, developing percolation wells or rebuilding water reservoirs.

6) Seva (Volunteering Programme)

The volunteering programme of Tata Motors, Seva, is aimed at providing employees and their families with varied opportunities to meaningfully volunteer their time for social causes.

Tata Motors continue to nurture a vibrant culture of volunteering by involving their employees and their families in our aspiration to meaningfully contribute to social causes. They see volunteering as a character-building activity that helps all of their employees in becoming socially responsible individuals.



Their employees offer pro-bono services based on their competencies to non-profits with clear deliverables. They have been recognised several times for our employee volunteering performance under the Tata Engage volunteering programme. It is our constant effort to involve our business partners in volunteering initiatives. They also encourage our employees to offer their voluntary services to serve the communities affected by natural disasters.

II) INTERNATIONAL:- SAFE WATER SAVES LIVES :-

Our focus on technology and innovation has led Jaguar Land Rover to work in partnership with ClimateCare to design an activity that used smart technology to deliver Safe Water to Schools. The programme is bringing award-winning LifeStraw water purification technology to 375 schools across western Kenya – giving over 220,000 school children access to safe water at school and the chance of a better education and future.

A safe source of drinking water means families can remain healthier and can spend more time at school and work – improving their education, future prospects and incomes.



LIGHTING UP LIVES:-

We know that light can transform lives. It creates the extra time in the evening for children and their families to learn once darkness falls.

At Jaguar Land Rover we have worked in partnership with ClimateCare to engineer solar technology solutions to improve the lives and experiences of others. Lighting up Lives helps people to build a brighter future through the distribution of safe solar lights to over one million people across Kenya.

Each solar unit aims to deliver up to 4 hours extra light per day, generating up to 4.8 million hours of extra light to play, work and learn.

Jaguar set to commission lighting, water heater plants

By [illegible]

The Jaguar Land Rover Group has announced a major new lighting project and water heater plant in Kenya, set to commission new solar lighting plants and water heaters for water heaters.

Rachel, Maria, Christine and Jonathan of Jaguar Group, said: "We are proud to be part of the project, which is a significant step towards the business and the

plant in Mombasa, Kenya and the water heater plant, which is being built in Mombasa on the island, where we have been and close to the water plant. Currently we have a water heater plant in Mombasa, which is being built in Mombasa, and we are in Kenya. We will now add this new plant to the project," he said.

Capex plans

While the Capex plan is being built in Mombasa, the project is being built in Mombasa, and we are in Kenya. We will now add this new plant to the project," he said.

CHAPTER 6 CONCLUSION

So here I conclude my Socially Relevant Project on CSR activities of Tata Motors, which states that Tata Motors is widely active in doing CSR activities in India by spending around 5.17 per cent of its post-tax profit on such CSR activities which gives benefits not only to the Society, Environment, Employees but to the Company as well by boosting their public and corporate image.

Tata Motors comes in No.1 ranking in conducting CSR activities in India. Tata Motors spends Rs. 25.94 Cr on Corporate Social Responsibility programs which is the most amount spend by the any of the corporate company in India.

I can clearly see that the efforts of Tata Motors are focused on improving the quality of life of underprivileged communities neighbouring their business operations. Their interventions focus on health, education, employability and environment, impacting over 5,80,000 lives in India.

Tata motors has help a lot of people by doing a CSR in various field such as Health care, Drinking Water, Environment and specially in Education in which almost 2000 student per year get helped by Tata motors.

Tata motors has given the chance of educating student by giving them the training in foreign. Almost 30 student initiative has been taken by Tata motors for foreign training.

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Project report
University of burdwan

A Project report submitted in partial fulfilment of requirement for the degree of B.COM Honours in Accounting and Finance under the University of burdwan

ON

A STUDY ON ONLINE PAYMENT APPLICATIONS IN INDIA WITH
REFERENCE TO AMAZON PAY

Submitted by:-

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SARAT CENTENARY COLLEGE

DECLARATION

I hereby declare that the Project Work with the title **“A STUDY ON ONLINE PAYMENT APPLICATIONS IN INDIA WITH REFERENCE TO AMAZON PAY.”** submitted by me for the partial fulfillment of the degree of B.Com. Honours in Accounting & Finance under the University of burdwan in my original work and has not been submitted earlier to any other University for the fulfillment of the requirement for any course of study.

I also declare that no chapter of this manuscript in whole or in part has been incorporated in this report from any earlier work done by others or by me. However, extracts of any literature which has been used for this report has been duly acknowledged providing details of such literature in the references.

Place – PORABAZAR , HOOGHLY.

Date -

signature –

Name – Soumen tewari

Reg no –201901049579

Bu Roll no – 19024120009

Supervisor's Certificate

This is to certify that **Mr. Soumen tewari**, a student of **B.Com. Honours in Accounting & Finance of The Sarat centenary College** under the University of **burdwan** has worked under my supervision and guidance for his Project Work and prepared a Project Report with the title "**A STUDY ON ONLINE PAYMENT APPLICATIONS IN INDIA WITH REFERENCE TO AMAZON PAY**" which he is submitting, is his genuine and original work to the best of my knowledge.

Place -

Signature -

Date -

Name -

Name of the college -

Sarat centenary College

Acknowledgement

To list who all have helped me is difficult because they are so numerous and the depth is so Enormous.

I would like to acknowledge the following as being idealistic channels and fresh dimensions in The completion of this project.

I take this opportunity to thank the University of burdwan or giving me a chance to do this Project.

I would like to thank my Principal **DR.SANDIP KUMAR BASAK** for providing the necessary facilities Required for completion of this project.

I would like to express my special thanks to our mentor **Dr rintu nath** her time And efforts she provided throughout the year. Your useful advice and suggestions were really helpful to me during the project's completion. In this aspect, I am eternally grateful to you.

Lastly, I would like to thank each and every person who directly or in directly helped me in the Completion of the project especially My Parents and Peers who supported me through out my Project.

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CHAPTER 1: INTRODUCTION

INTRODUCTION:-

Now-a-days world is becoming digitalized in every field and one of the best example of this is Various countries in the world are moving towards becoming a cashless society. A cashless Society is the one which doesn't use cash for any of its transaction instead all the transactions are Done digitally. There are various countries in the world which have more than 50% of their Transactions through cashless methods.

According to a study conducted by Capgemini and BNP Paribas, digital payments are expected To reach about 726 billion transactions by the year 2020. In India 98% of the total transactions Used to be done through cash but after the Demonetization of the Government on Nov 8 2016, Our country has also started getting steered towards a cashless society. Due to the Demonetization act already existing mobile payment applications came into the limelight like Paytm, Google pay, Phone Pay etc.

The Digital India program is a flagship agenda of the Government of India with vision to Transform India into a digitally empowered society and a knowledge economy. "Faceless, Paperless, Cashless is one of the professed role of Digital India. The Prime Minister of India Mr. Narendra Modi has empowered India to adopt cashless

transactions by giving digital payments Sector of India a significant boost. The digital payment sector of India experienced a unpredicted Growth since Demonetization in November 2016. Digital wallet companies in India has shown a Growth of 271% for a total value of US\$2.8 Billion i.e Rs 191 crores. A Google- BCG Report Had estimated that the digital payment industry in India will experience a growth of US \$ 500 Billion by 2020.

Government of India is also encouraging various digital payment apps such as Aadhaar Payment App, UPI App, Bharat Interface for Money (BHIM) app along with private sector apps like Paytm, Mobikwik, Freecharge etc. Such new apps are beneficial to transfer funds across various Parts of our country. Digital payments industry in India is growing on a rapid pace providing a Highly attractive platform for foreign investors to invest in India.

WHAT IS DIGITAL PAYMENT?

Digital Payment means when any goods or services are purchased through the use of various Electronic modes of payments which means there is no use of physical cash or cheques in digital Payment. Now-a-days people use Digital Payments more is because Digital payment methods are Easier and more convenient and they also provide customers the flexibility to make the payment From anywhere at any time which proves as a good alternative to the traditional methods of Payment and which fastens the transaction cycles.

10 Types of Digital Payment methods in India:

1. Banking Cards- Debit/Credit / Prepaid Cards.
2. USSD (Unstructured Supplementary Service Data).
3. AEPS (Aadhaar Enabled Payment System).
4. UPI Mobile (Unified Payments Interface).

5. Mobile Wallets.
6. Bank Pre-paid Cards.
7. POS Terminals.
8. Internet Banking.
9. Mobile Banking.
10. App (Bharat Interface for Money).

WHAT IS A DIGITAL WALLET ?

An electronic device or online service that allows an individual to make electronic transactions is called a digital wallet. An individual's bank account can also be linked to the digital wallet. One in five customers in Asia are now using a digital wallet. Some of the popular digital wallets Are Paytm, Freecharge, LIME, Jio Money, Airtel Money, State Bank Buddy, Citrus, Mobikwik, PayUMoney etc.

Various Digital Wallets Apps in India:-



1. **Paytm**:-

Paytm is an Indian e-commerce operator and Financial Technology company. Paytm was Founded in August 2010 by its founder Mr. Vijay Shekhar Sharma. In 2014, the company Launched its first Digital E-wallet known as Paytm Wallet. Paytm offers Digital wallet payment, Mobile payments, online shopping, Paytm Payments Bank etc.

In the year 2015, RBI gave License to Paytm to launch Paytm Payments Bank which was later Inaugurated in the year 2017 by the then Finance Minister Mr. Arun Jaitley. Paytm works in 2 Different ways :- Paytm Wallet and Paytm Payments Bank. Paytm is known as a digital payment system which allows you to transfer money through your Debit/credit cards and which also allows you to do online banking. Once you register to Paytm You can make online payment of bills or you can make payment through you Paytm wallet by First adding money into your wallet.



2. Google Pay:

Google Pay also known as G Pay or Pay with Google it is also one type of Digital Wallet and Online payment system developed by Google. The services of Android Pay and Google Wallet merged in January 2018 and the name was changed to Google Pay. On September 2017, Google launched an UPI-based app known as TEZ in India which was later rebranded As Google Pay. Google pay has more than 25 million active users in a month of the digital Wallets in India. Google pay transactions are safe and secure.

Google Pay enables you to:-

- Send and receive money,
- Store your credit/ debit card information safe.
- And use this information to pay for various items on various apps

Google Pay is known for its security among other similar digital payment apps. Google store Your credit/debit card information in its secure servers using strong encryption. Cloud Storage and data security of the customers is the prime concern of Google.



3. PhonePe

PhonePe or PhonePe Private Limited it is an Indian e-commerce payment service and digital Wallet company. PhonePe was founded in the year 2015 by its founders, Mr. Sameer Nigam and Rahul Chari and it was the first payment app in India which was built on Unified Payments Interface i.e (UPI). PhonePe is now available in 11 Languages. Phone Pe offers various services Such as:-

- User can send or receive money through Phone Pe app.
- User can make various payment- mobile recharges, DTH recharges; users can also make Payments of shopping online on various apps.
- Phone Pe even allows users to book tickets through various apps such as Redbus, Goibibo, Ola etc.

Phone Pe app has more than 100 million users and it has crossed more than 5 billion Transactions.

Latest development of Phone Pe app is that it allows its customers to withdraw cash through its in app UPI feature which is also known as Phone Pe ATM, which means that transferring the Said amount which has to be withdrawn to a nearby Phone Pe enabled merchant/ seller.



4. MobiKwik

MobiKwik is also another Indian company app which acts as a digital wallet, as a mobile Payments system. MobiKwik is an app founded by Bipin Singh and Upasana Taku in the Year 2009. Initially MobiKwik was just a website with closed wallet facility but later Started with mobile apps. In the year 2016 MobiKwik launched 'MobiKwik Lite app Which was for older 2G mobile networks and those with poor network connectivity. MobiKwik launched its first ever Mobile Wallet system in the year 2012.

MobiKwik also launched the feature of sending and receiving money through a mobile App. MobiKwik also provides financial services such as providing loans, various Insurances such as life insurance, accident insurance, fire insurance as well as mutual Funds. In the year 2017, MobiKwik „s biggest competitor was Paytm.

According to Forbes India Magazine, in the year 2015 MobiKwik was used by more than 15million users for its unique features and was also claiming of Increase of one million Users every month.



5. Freecharge:-

Freecharge, a wholly owned subsidiary of Axis Bank Limited, is India's No.1 payments app. Customers across the country use Freecharge to make prepaid, postpaid, DTH, metro recharge and utility bill payments for numerous service providers. We launched our wallet in September 2015 and customers are already using it to pay across all major online platforms and offline stores like Shoppers Stop, McDonalds, Cineole's, Home Stop, Crosswords, Hyper city and even for E-Rickshaws, the list is growing by the day.

We are on a mission to get millions of merchants both in organized and unorganized sector to be a part of the digital payments ecosystem. Our Chat-n-Pay service is all about social payments. It is an engaging and secure way for you to seamlessly Chat-n-Pay to friends, family, and merchants in less than 5 seconds. It also enables merchants, small or large to accept digital payments in less than 1 minute after registering on the Freecharge App.

- An easy and instant recharging process
- A hassle-free online experience
- A safe and secure payment process
- Best discounts available in the market
- Simple voucher redemption with no hidden costs or complex terms and conditions
- And a totally satisfied you, who'll want to come back to us again and again.



6. UPI BHIM App:-

BHIM stands for Bharat Interface for Money. BHIM App is developed by National Payments Corporation of India i.e (NPCI) and it is based on Unifies Payment Interface i.e (UPI). Our Prime Minister Shri Narendra Modiji had launched this app. BHIM App was Launched on 30th December 2016 and is currently available in 20 languages.

BHIM App accepts all Indian banks which works on UPI system and which is built over IMPS i.e Immediate Payment System which allows the user to transfer money to Bank Accounts of any two parties.

Using UPI system user can make transactions in an easy, quick and simple manner. Through BHIM App users can do the various services:-

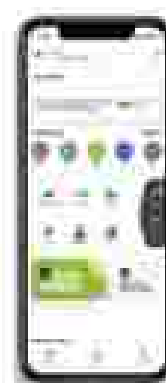
- User can Send money.
- User can Request money, for this it is mandatory that the users mobile number be with the bank account using.
- For quick transactions users can Scan and Pay.
- Additional feature of BHIM App is that it allows the customers to check their Transactions history.
- There is a report tab in BHIM App for the customers if they have any complaint To raise they can use this tab to do the same.
- Next option in the BHIM App is the Bank account option, so through this option User can view the bank account that is linked with his/her BHIM App. A customer Can also change the bank account by just clicking „Change Account” in the BHIM App.
- Through BHIM App it is easy to transfer money as BHIM App allows a customer To transfer money to more than one payment address.



Access to BHIM



Request Money



Transfer Money

INTRODUCTION ABOUT AMAZON:-

Amazon or Amazon.com is an American e-commerce company based in Seattle. Amazon is Considered as one of the big four technology based companies along with Apple, Microsoft, and Google. Amazon is a company which focuses on E-commerce, Digital streaming, Cloud Computing, and Artificial Intelligence. Amazon is considered to be world's largest internet based Company by its revenue.

In the year 1994, Jeffrey .P. Bezos founded Amazon in Washington, by initially starting with an Online market place for selling books, but gradually it expanded its business by selling Electronics; video games, foods, toys, jewellery, software etc. Amazon was a technology Company whose business was primarily simplifying online transactions to the customers.

On 5th July 1994, Amazon.com was founded by Jeff Bezos as an online bookstore . Later Jeff Bezos incorporated the company as Cadabra in 1994 but changed the name to Amazon for the Website launch in 1995. . Today Amazon is a titan of e-commerce, logistics, payments, hardware, Data storage, and media. In 2013 Amazon was launched in Indian Economy with an investment Of USD\$ 5 Billion. Amazon designed a payment gateway called Amazon Payments for both Amazon merchants and shoppers.



Amazon offers various products and services such as:-

- Alexa, Amazon Fresh.
- Amazon Prime.
- Echo, Kindle, Fire Tablets and Fire TV.

- Amazon Digital Game store.
- Amazon Wireless. Amazon web services.

Amazon follows four important principles and they are:

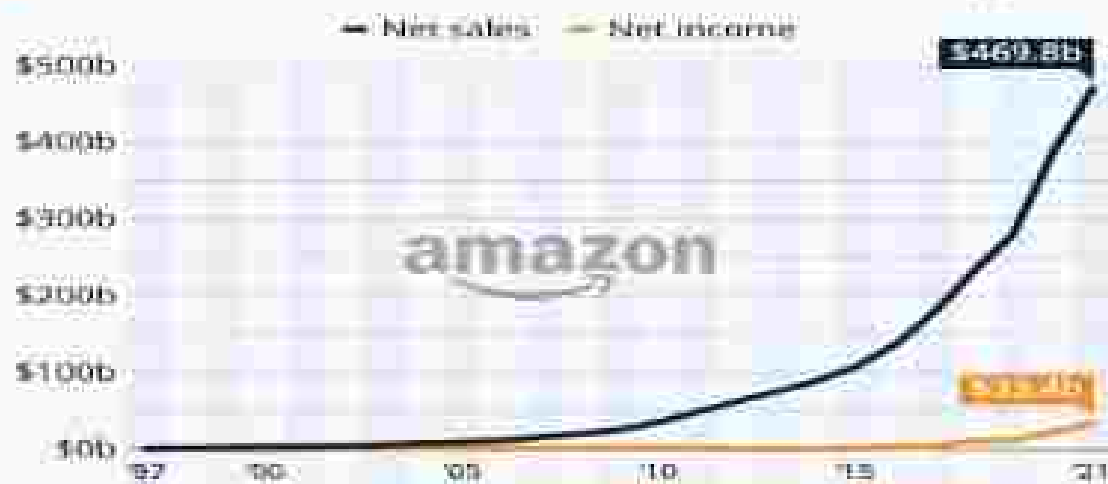
- Customer Obsession rather than Competitor Focus.
- Passion for Invention.
- Commitment for Operational Excellence.
- Long-term Thinking for the Company as well as for the Customers.

Various Goals of Amazon are as follows:

- **Supporting Small Business:-** Amazon provides a platform to small traders, businessmen, Entrepreneurs to grow their sales and an opportunity to reach customers. In today's world More than 1.9 million business, traders, and developers use Amazon as a way to develop Their business and reach customers to increase their business.
- **Creation of Jobs:-** Amazon has more than 45,000 employees in its hometown i.e in Seattle. Amazon plans to create 1million jobs in India by 2025 through investing in the Indian market in technology, in infrastructure etc., which will be an addition to the 7 Lakh Jobs the company has provided over a span of 6 years in India.
- **Sustainability:-** Amazon is committed to sustainability as its good for the business as Well as to the society, the customers and the communities. Amazon uses 10,000 electric Delivery vans to deliver their products as this will save tons of carbon every year, this Proves that amazon conducts business in a sustainable and lawful manner.
- **Community:-** Amazon is always focused on providing basic necessities to the under Privileged, homeless people. Amazon has also supported tens of thousands of under –Represented writers by providing them grants of about \$ 10 million from the Amazon Literary Partnership since 2009.
- **Investment:-** Amazon has invested over \$ 270 billion in the U.S which includes the Infrastructure, job creation, economic investment in innovative services for a better Future. 2,000,000 jobs were granted to people in the U.S.

Amazon's Incredible Long-Term Growth

Amazon's revenue and net income from 1997 through 2021



SOURCE: Amazon



statista

The above graph the Long-Term growth of Amazon i.e their Revenue and their Net Income over The years. In this graph the number of years taken are from 1997 to 2022, so the above figures are Only for these years. In the initial years i.e in 1997 both the net income as well as the revenue is The same. In the year 2021, the Net income is \$ 33.36 billion and the Revenue is \$469.8 billion. The above graph shows that Amazon in the year 2022 is making a profit, and the profit has been increasing since the year 2005. The graph below shows the difference between the GMV i.e the Gross Merchandise Value or Gross Revenue of both Amazon and Flipkart from the Financial Year 2020 to 2021 in India.

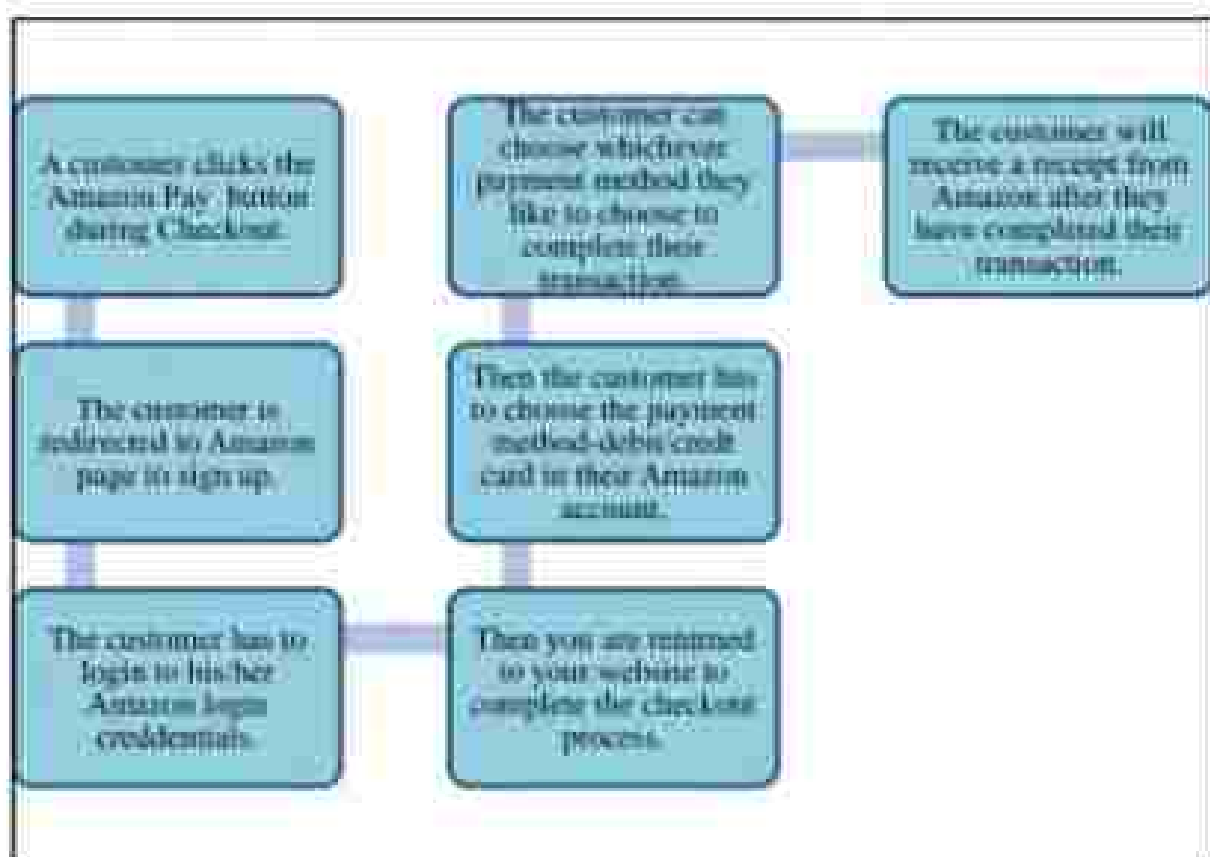
• WHAT IS AMAZON PAY ?

Amazon owns Amazon Pay, it is an online payment processing service which was launched in The year 2007. The service of Amazon Pay is available in total 18 countries in the world. There is no registration fees for Amazon Pay. Amazon Pay has undergone various changes on its Evolution so that the payment process would become more quick, simple and efficient for the Customer.

Amazon pay does not share the card details with the merchants to avoid theft and fraud. Amazon Pay gives the option to the user to pay with their amazon pay account to external or third party Websites. Amazon pay can be used on both in Amazon app as well as in third party e-commerce Websites/apps. Amazon pay can be used to make the payment from grocery shopping to smart Home appliances etc.

How does Amazon Pay works on third-party websites?

The third-party e-commerce website can add Amazon Pay as a payment option while checkout Process.



Security at Amazon Pay:

Amazon's first priority is providing safe and secure transactions to their customers so that the Personal information of the clients is not disclosed. Here are some of the tips that makes Amazon Pay more secure for payments:

1. **Personal Information should not be shared:-** Amazon always focuses on that the personal Information of the customers will never get disclosed as amazon will never share an Email or a message the customer to share the personal detail (amazon. In password, credit Card details, or bank account number). If any customer will receive such email or Message then they should report the same to Amazon. In.
2. **Identify E-mails:-** Genuine Amazon email come from "@Amazon. In" or "@amazon.com". So if a customer receives an email from any other email id it is Considered as fraudulent mail or a phishing mail in which once the customer clicks on the Link that consists the word „Amazon“ you will be directed to a complete different website in which all your details will be hacked.
3. **Phishing mails should be reported:-** The customer receiving such phishing or spoofing Mail should report the same to Amazon by sending a mail to" stop-spoofing@amazon.com" and the customer can even attach the fake mail or can give Information about the header of the mail so that it would be easier to trace the mail by Amazon.
4. **Password:-** Choosing a strong password is very important in Amazon account, for Instance a customer should not select a password that is easy to crack like for example a Customer should not select a password as – password or 123456 or amazon. Customers Should also avoid keeping their password on their name or email address or any other Personal information which can be easily cracked.
Passwords are case sensitive, so "MOUNTAIN2!%" and "mountain2!%" are two

Different passwords. A customer should set a stronger password which is difficult to Crack rather than an easy password by using special characters for example- a customer Can keep the password as "ocean2!%" rather than keeping "ocean".

5. **Protection of your system:-** If your system is hacked then all your data will be misused, So it is very important to protect your system. Here are

some of the steps through which a Customer can protect his/her system:-

- Customer should install an antivirus or an anti-malware software into his/her System and should run a full scan of the software in your computer to detect any Viruses in your system. Do not click on any link that you receive on a phishing Mail. Microsoft provides free anti-malware software so that you don't install a Fake anti malware software at <https://microsoft.com/security>.
- Update all your Windows programs on your computer.
- If a customer has typed the password in the malicious website then the customer Should change the password immediately in the amazon website. A customer Should keep a strong password which includes letters, numbers, symbols etc.
- If a customer has received a malicious mail and has clicked on the link which will Be redirected to a website and if the customer has entered credit card information Then the customer should immediately report the same to the credit card company About the phishing mail received to the customer. A customer should never reply –To phishing or spam mail or messages, if you do so the sender will be confirmed That tis email address is a valid email id to send further more spam messages.

Advantages of Amazon Payments:

Customer Protection:- Amazon ensures 100% Purchase Protection to the customers by Offering genuine products, easy return policies, secure payments, safe ordering. Amazon Pay alerts the customer if there are any security issues with the customer's account and Even protects the customer with frauds. Amazon pay never shares the card information Of the customer to the seller

Easy Return and Refund Policy:- Through Amazon Pay users are benefitted by easy and Faster refunds, various offers like cash-backs up to 15% (maximum Rupees 450) only on Those payments which are done by Amazon Payments, and maintain gift-card balances as Well.

Decent Discounts:- Amazon Pay offers decent discounts and offers on various apps like Redbus, Fresh menu offer, Just Tickets offer, House joy offer which creates a huge saving Opportunities for customers. For its customers, Amazon offers EMI based schemes as Well.

A-Z guarantee plan and protection:- Amazon is known for continuously innovation for Better customer satisfaction and protection of retailers and customers. Amazon also Protects its customers by lending A-Z guarantee on its products which acts as an extra Safety for its customers. Amazon pay has Amazon's 100% buyer protection guarantee Which it provides to its customers.

Manage Bank accounts:- Amazon pay allows a customer to add cash up to Rs 20,000 per Month. A customer can manage the amazon pay account by adding a new credit/debit Card to your account. A customer can also manage bank account in case of refund.

Disadvantages of Amazon Pay:

It doesn't eliminate your security risks:- The security of your Amazon Pay Balance Depends on the security of your smartphone. If your device is not protected by some kind Of password, then it will prove a threat to your Amazon Pay Balance. Even if your device is not secured by some anti-virus then also it can be a threat to your amazon pay account.

It could encourage reckless spending:- Some people struggle with their reckless spending Habits when the money is electronically-based instead of physical form. People tend to Spend more while paying through E-Wallets.

It is not fully available worldwide:- In December 2016, just 36% of retailers accepted Apple Pay and 34% of retailers accepted PayPal as a form of payment, and just 25% Accepted Master Pass as a form of payment. Still across globe E-wallets are not much Preferred by either retailers or customers.

Inconvenient for Offline users:- Online payment methods like Amazon pay, Google pay, Paytm etc. are useless for offline users i.e internet connectivity is very important for your Transaction to become successful. A customer cannot use theses apps if he/she does not Have strong network connection. Internet

and server problems can prove inconvenience to Complete online payment transactions.

These are some of the advantages and disadvantages of using Amazon Pay.

IMPORTANCE OF CASHLESS TRANSACTIONS :-

There is no fear of robbery or theft:- When physical cash is in large amount it is difficult To carry cash as there is danger of theft, but in cashless transaction this fear is eliminated.

Tracking of expenses:- When the transactions are done in cashless way through e-wallets Or internet banking we can keep a track on all our expenses which becomes easier to Determine how much is our total expenditure. With the help of cashless transactions a Customer can make payments in exact denominations i.e if you have to pay Rs 299.89 You can pay the same when you use cashless mode of payment.



Transparency and accountability:- In cashless economy as there is more currency in the Bank which means there is more currency in circulation, which means greater liquidity And there is less scope of hiding income which eventually leads to lower interest rates Which leads to better economic development of the country.

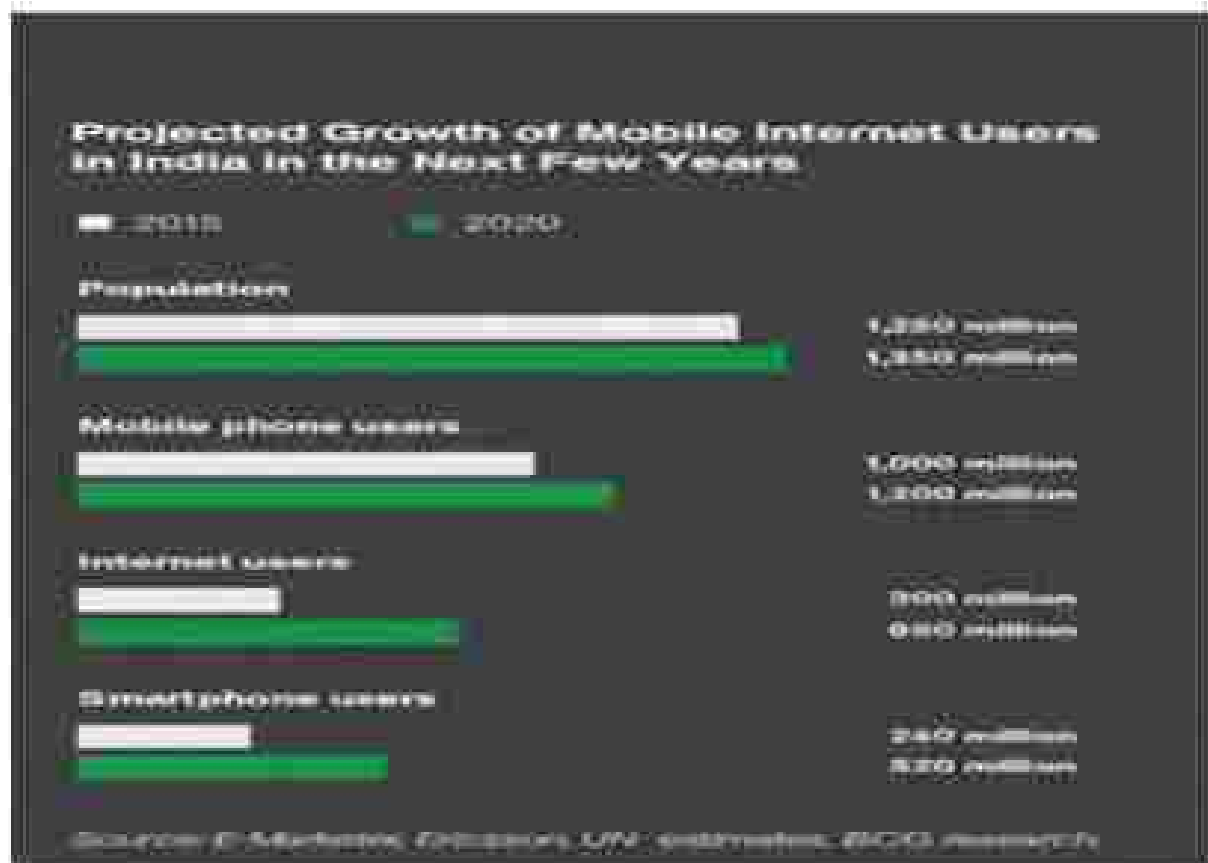
No tension about counterfeit currency:- Every economy in the world faces the problem of Counterfeit currencies, while the government is taking stringent actions against Counterfeit currencies but the common people are the ones who suffer in these counterfeit Currencies. But when an economy adopts cashless or digitization then the hassles about Handling counterfeit currency is sorted.

Easier Accounting and Easier transactions:- By going cashless customer can complete a Transaction in a more convenient manner than before and can complete the transaction With increased security. A customer can do direct bank to bank transactions without Physically transferring or depositing the cash to the bank this saves time, money and Efforts.

Decrease in cost and Economic growth:- If the whole nation will go cashless then there Will be decrease in cost for printing of notes. RBI spends around Rs 12,000 crores on Replacement of Rs 500 and Rs 1000 notes. By going cashless there will be improvement in government monetary policy and government revenue as well as there will be greater Transparency and efficiency in the economy.

These are some of the importance of cashless transactions.

FUTURE OF DIGITAL PAYMENTS IN INDIA



Smartphone and mobile phone users, internet users as shown in the above projections are increasing with the increase in population in India. The above graph is compared between two years i.e. 2015 and 2021. With greater access to internet and growth and development of infrastructure and greater usage of smartphones, there is significant development of digital payments in India. India is witnessing exponential growth in the digital payment industry as India is considered as the second largest in the world in case of mobile users with a billion connections in the country. In India, nearly 1.5 billion transactions take place every single day, and most of these transactions are P2M transactions i.e. person to merchants, which means purchases like groceries, newspapers, mobile recharges, DTH recharges, ticket bookings, cab booking etc. Earlier in the year 2015, all the transactions were cash transactions; now it is estimated that by 2023, transactions in India will be more digital and will rule the market with the increasing number of smartphone and internet users.

By the year 2025 in India it is estimated that cashless transactions would be 80 % and the volume Of the digital transactions would reach up to \$ 1 trillion. In India it will take time to become a Completely cashless society as it will require the support and understanding by the public and Various initiatives by the government. In India the lack of digital literacy and education in rural Areas can be a hindrance towards a cashless society. It is very important to encourage people to adopt cashless modes of payment by giving various Cash back offers which is been provided by the payment apps whether private or government Initiated payment applications. By making the payment process simpler, safe, transparent it will Become easier for people to access.



The above report by Statistic shows the rise in Digital commerce as well as the increase in mobile Payments for a past few years. According to a study conducted by Ascham-PWC India, the Digital payments in India will be increasing from \$64.8 billion to \$135.2 billion till 2023. The Study also specified that India is expected to have the fastest growth in digital payments between The years 2019 to 2023 and also it stated that between the years 2019 to 2023 on a worldwide Transaction scale India's share will increase at a greater pace i.e from 1.56 % to 2.02%.

NEED OF THE STUDY:-

Financial transactions are the backbone of any economy in the world. In India cash was always The king, i.e all the transactions in our country used to take place through the means of cash Only. Nearly four of every five transactions used to take place through cash means during the Year 2015, cash was the predominant mode of payment and was the base of our economy and This was because of digital illiteracy, lack of education, lack of infrastructure, low network Connections in remote areas of our country and many more reasons.

The Reserve Bank of India is doing its best to encourage various methods of payments and to Make the whole payment process easier, more secure, reliable, and user friendly. With the Introduction of various digital modes of payment such as:-

- i. NEFT/RTGS.
- ii. IMPS (Immediate payment services).
- iii. USSD (Unstructured Supplementary Service Data).
- iv. UPI (Unified Payments Interface).
- v. BHIM (Bharat Interface for Money).
- vi. Digital Wallets.
- vii. Bharat QR code (Quick response code).
- viii. Bharat Bill Pay.
- ix. AEPS (Aadhaar Enabled Payment System).
- x. WhatsApp Pay.

The transaction process has become more convenient, secure and transparent in nature with the Help of such Digital modes of Payment. If cashless transactions is adopted and implemented in India then it will be easier to exchange currency while travelling to abroad countries. A cashless Society leads to lower crime rates which is an advantage to the society. There will be no scenario Of black money and can stop corruption once a society is cashless in economy and this can be Done by adopting more and more digital mode of payment for various transactions.

The main purpose of the study is to investigate the benefits of using online payment applications And to analyze the various online payment applications

in India. The main agenda of this study is To find out the impact of using Amazon Pay and to find out that using Amazon Pay as a payment Method has helped the customers or not.

CHAPTER 2: REVIEW OF LITERATURE

Mamta, Prof. Hariom Tyagi and Dr. Abhishek Shukla (2016)

the article entitled "The Study of Electronic Payment Systems". This investigation aimed to identify the issues and challenges of electronic payment systems and offer some answers for improve the e-payment system quality. The successful implementations of electronic payment systems depend on how the security and protection dimensions perceived by consumers just as sellers are famously managed, thus would improve the market confidence in the system

Sujith T S, Julie C D (2017)

the article entitled "Opportunities and Challenges of E-Payment System in India". This investigation aimed to identify the issues and challenges of electronic payment systems and offer some answers for improve the e-payment system. E-payment system provides more opportunities as well as. The examination found that, Digital revolution has provided an easy approach for digital payments. The investigation additionally found that, the reach of mobile network, Internet and electricity is likewise expanding digital payments to remote areas. This will surely increase the number of digital payments.

According to Ashish Baghla (2018)

This research paper titled "A Study on the Future of Digital Payments in India" focused On the adoption of Digital payments in India. This paper identifies the problems or Challenges faced by the people of India in adopting Digital modes of payment. One of the Objectives of this study was to find out the attitude of the people towards the adoption of Digital payment in India. The research methodology used in this research i.e the data is Collected from both the primary and secondary sources , the primary has been collected Through a questionnaire from 110 people. The paper concluded that the efforts by the Government to make India cashless is going well but it will take time for India

to become Completely cashless as there are various challenges which the government has to take Care of.

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According K. Suma Vally and Dr. K. Hema Divya (2018)

This research paper titled " A Study on Digital Payments in India with perspective of Consumers adoption." Focuses on the analysis of the level of adoption of these digital Payments by the consumers. The research methodology used that is the data collected is a Primary data and is collected through a structured questionnaire and the results has been Collected through 183 respondents. The research tool used to analyze the data is Chi-Square technique. The main objective of this study was to verify the customers Perception on Digital Payment with the concept of Digital banking in our country. This Study also suggested that appropriate measures should be taken to create awareness about Various technology and security of the usage of digital payments in India.

CHAPTER 3: RESEARCH METHODOLOGY

Research Methodology is a way to solve the research problem in a systematical way. The Research strategy which forms the basic structure of the entire research project is methodology Which helps in identifying the methods to be used. Research methods and Research Methodology are two different concepts which has to understood research methods can be Understood as all the methods or techniques that will be used in the research project, various Research types has various methods and techniques. Research Methodology forms the base of Every research and the scope of research methodology is much wider than that of research Methods because research methodology also means specifying the logic behind the methods or The techniques we use to conduct a research.

Research Methodology also explains how to conduct a research, how to find the information and How to present the collected data. For example how an architect designs a building he has to Specify every single detail and has to evaluate every single decision that he has taken and specify The result. Research Methodology can be different for every research problem.

OBJECTIVES OF THE STUDY

Research objectives state or describe what the research is trying to achieve or what we expect to Achieve by the project. The objectives of the study gives a brief idea about the areas of the Research which is studied. Research objectives help in the formulation of Hypothesis for the Study and It also helps in narrowing down the research and helps in focusing on the point.

Here are some of the objectives of the study:

- To study the impact of online payment applications on consumers
- To analyze the problems faced by the users while using online modes of Payment

To know whether going cashless has helped the India HYPOTHESIS OF THE STUDY.

HYPOTHESIS OF THE STUDY

The principal instrument in any research is the Hypothesis of the research. A hypothesis is a Proposed explanation for the research problem to be solved. The integral part of a research Project is the framing of the hypothesis. Hypothesis framed has to be clear, precise and specific. Hypothesis framed should consider the objectives of the research.

There are two types of hypothesis i.e Null hypothesis and Alternative hypothesis.

The null hypothesis states that there is no relation between the variables. The alternative Hypothesis states that there is relation between the variables.

The Hypothesis designed should help us to find if there is any relation between the variables that is being studied in the research project. The study on the topic is based on 1 Hypothesis:-

Hypothesis 1:-

H0: There is no significant relationship between Amazon Pay and consumer satisfaction.

H1: There is significant relationship between Amazon Pay and consumer satisfaction.

There are various types of study for doing a research and they are:

- **Quantitative Research:**

Quantitative research is based on the measurement of quantity or the amount. It is applicable to The phenomena that can be expressed through quantity. Quantitative research is used to solve Problems through numbers. It is a systematic investigation by collecting quantifiable data and Performing mathematical and statistical techniques.

- **Qualitative Research:**

Qualitative research is concerned with qualitative phenomena which means: the quality or the Kind. This type of research is used in behavioral sciences in which it is important to find the Underlying motives and desires of human behavior. Qualitative research can be applied using Words, feelings, emotions etc.

- **Applied Research:-**

Research can be applied (action) research which aims to finding the solution for an immediate Problem facing by the society or any business organization. In applied research the main aim is To find the solution to a particular problem.

- **Empirical Research:**

Empirical research is based on experience or observations. It is research which is based on data Which is capable of being verified by experiment so it can be called as an experimental research . In this type of research the researcher should get the facts, data or the evidence to prove or Disprove his hypothesis.

- **Analytical Research:**

In Analytical research the researcher has to use already available facts, information, data and Analyze them to draw a critical evaluation on the material.

- **Descriptive Research:**

This type of research includes surveys and fact-finding enquiries of various kinds. The main Characteristics of this research is that the researcher has no

control over the various variables of The research and can only report of what has happened or what is happening. In social science And business and finance we often use descriptive research and descriptive research is studied by Taking various Review of literature in the research project. The best advantages of conducting Descriptive research is that we can study both the qualitative aspects of the research as well as the Quantitative aspects.

This research is based on Descriptive study as it studies both the qualitative and quantitative Aspects of online payment applications . Descriptive research is used to understand the concept Behind the topic and to find the problems faced on the research. However my research also Studies various Review of literature which acts as a base for the study. In this research various Online payments applications are studied and focus is given to Amazon Pay and my research Analyses consumer behavior towards online payment applications.

SAMPLE SIZE

Sample size refers to the number of respondents or participants or observations which is included In the research. This is the term which is used to define the subjects of the study which is Selected from the entire population for the specific study.

Sample size is an important feature in the entire research as through this we understand the Strength of our study I.e the respondents. Correct sample size can give accurate results. The Sample size in this research is 80 respondents from the area Kandivali to Virar so this becomes Our sample size. As the sample size is small to study the topic there may be slight inaccuracy of Data which is further stated in the research.

SAMPLE DESIGN

Sample design is classified into 2 types: - Probability sampling and non-probability sampling

Probability sampling is also known as random sampling or chance sampling in which every item Has an equal chance of inclusion in the sample. The result obtained from probability sampling or Random sampling can be assured in terms of probability.

Non-probability sampling is also known by deliberate sampling, judgement sampling. In this Type of sampling items for the sample are deliberately selected by the researcher.

For the purpose of this research I have used probability random sampling for collecting Responses as fixed set of questions were asked to a small set of respondents.

COLLECTION METHOD

Data for the study was collected from primary as well as secondary sources.

- **Primary Sources of Data Collection –**

For this research primary source of data collection was done by survey method. The survey was Conducted through Structured Questionnaire which was asked to the respondents. The Questionnaire was prepared keeping in mind the objectives of the study and also the hypothesis Of the study. The questions asked to the respondents were close end so that the respondents Could answer quickly without any problem. The questionnaire was prepared with the help of Google forms.

The questionnaire was divided in to 2 main parts i.e the age, gender and other details of the respondents and the questions relating to the topic.

- **Secondary sources of Data Collection:-**

Secondary sources of data means the data that is already available on various platforms. Secondary data can be obtained by various publications by the central or the state government or By any organizations, journals, books,, magazines, and even newspapers, reports published by Various organizations, schools, universities etc. This type of data collection is used to gain more knowledge of the topic of our research by Collecting articulated by authors who have previously researched on the topic that we have selected. In this study secondary data was collected through various websites, online journals, which

Helped in completing the review of literature. Secondary source of data collection was useful to Understand the research topic more accurately.

LIMITATIONS OF THE STUDY

There are certain limitations to every research as in research cannot cover all the aspects of the Topic cannot be covered and because of certain uncontrollable factors and variables limitations Arise in a study. Limitation of the study reduces the accuracy of the research project. Here are Certain Limitations of this study,

- This research was carried in a shorter period of time with limited geographical areas into Consideration.
- Some of the respondents did not answer the questions accurately with interest.
- The sample size was small and constraint, the research would have been accurate if the Sample size was more.
- For this research the scope of discussion was limited, the research could have been in More depth.

CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

The collected data was analyzed by using pie-charts and the analysis of the collected data is Given bellow. Data analysis helps us to determine whether our hypothesis is accepted or not.

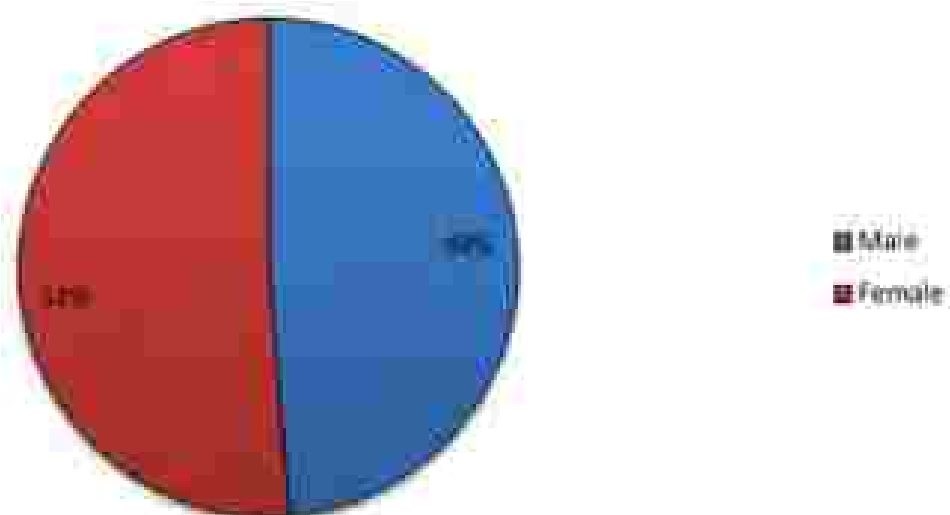
And it is also useful to determine whether all our objectives are fulfilling or not. Data analysis Helps us to draw a conclusion or a result to our research problem.

Overall Analysis of Online payment application on the basis of survey.

Total Respondents: 111 respondents.

1. Gender:-

Gender



Option	%	Count
Male	48.65%	54
Female	52.35%	57

INTERPRETATION:-

The above diagram is a Pie-chart. A pie-chart is a statistical graphic which is divided into pieces That demonstrate the proportion of our data.

A pie-chart is used to demonstrate the data collected by the respondents. The above question is The gender of the respondents and the two options are Male and Female.

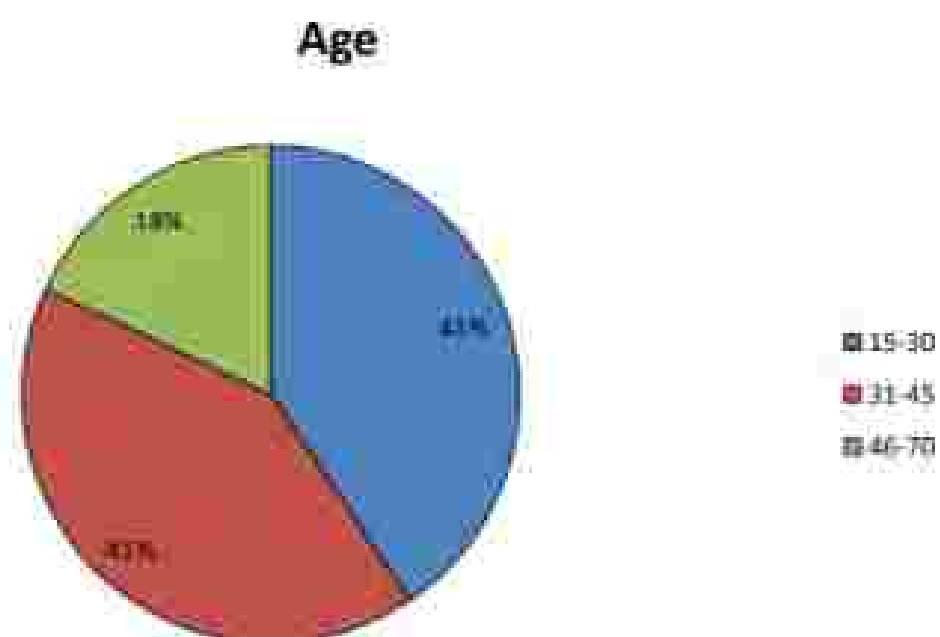
Total Male respondents are 54

Total Female respondents are 57 in count.

Total male respondents are 48% of the whole number of respondents and total female Respondents are 51.35 % out of 100%.

This shows that that are more female respondents as compared to male respondents in our study.

2. Age:-



Option	%	Count
15-30	40.54%	45
31-45	41.44%	46
46-70	18.04%	20

INTERPRETATION:-

The above diagram is a pie-chart showing the age of our respondents. The options set for this age 15 to 30 years, 31 to 45 years and 46 to 70 years.

The total number of respondents between 15 to 30 years are 45 respondents.

The total number of respondents between 31 to 45 years are 46 respondents.

The total number of respondents between 46 to 70 years are 20 respondents.

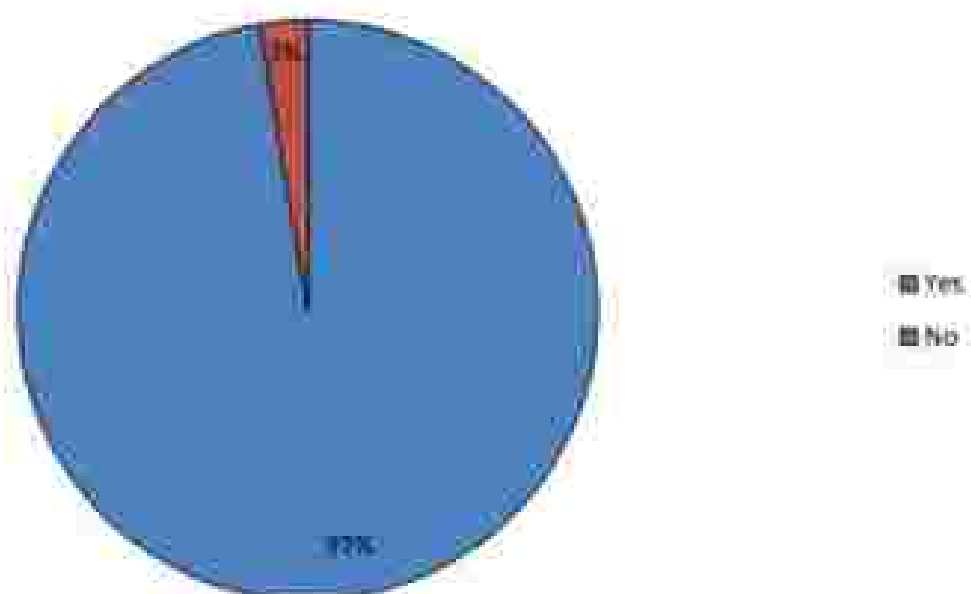
The percentage of the number to respondents in each category is

Between 15 to 30 years the percentage of respondents is 40.54%.

Between 31 to 45 years the percentage of respondents is 41.44%.

Between 46 to 70 years the percentage of respondents is 18.02%.

3. Have you ever used online payment application for making payments?



Option	%	Count
Yes	97.30%	108
No	2.70%	3

INTERPRETATION:-

The above diagram is a pie-chart diagram showing the results of the question asked to the Respondents that have they ever used online payment applications such as amazon pay or google Pay or Paytm etc. The two options were Yes and No and the data received are as follows:-

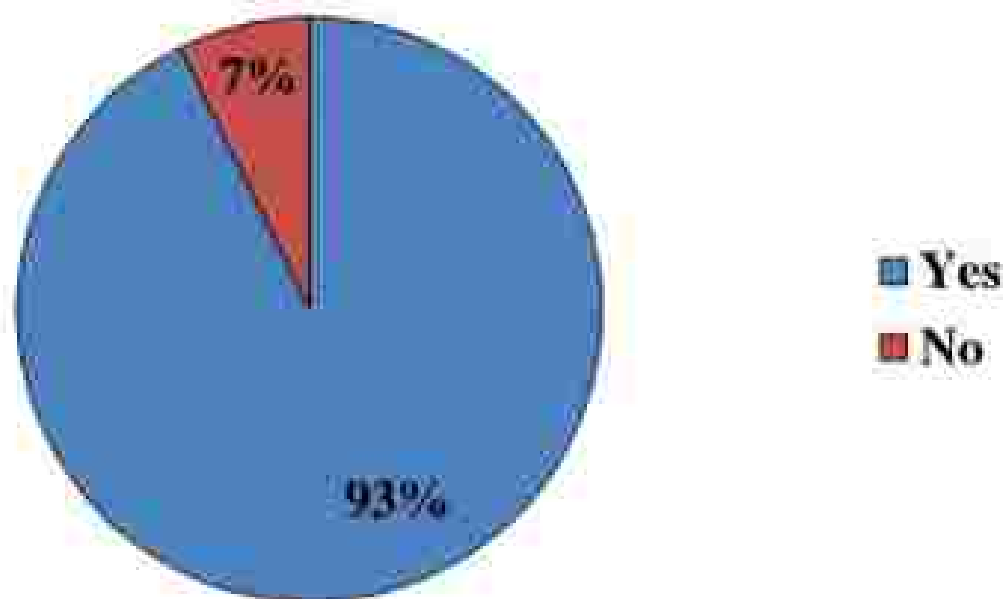
The total number of respondents who have used online payment applications is 108 respondents.

The total number of respondents who have never used online payment application is 3 Respondents. 2 respondents didn't answered this question.

Out of 100%, 97.30% of respondents are familiar with the usage of online payment applications And 2.70% of respondents are not familiar with the usage of online payment applications.

This means that majority of our respondents have a good knowledge and experience about how To use various online payment applications.

4. Have you ever used Amazon pay for making payments?



Option	%	Count
Yes	92.66	101
No	7.34	8

INTERPRETATION:-

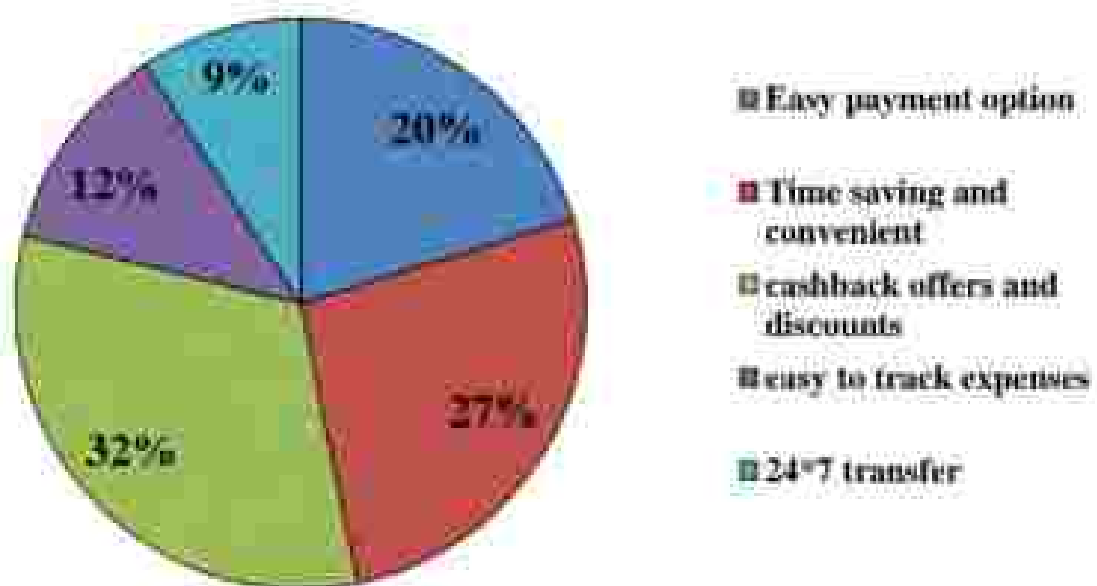
The above diagram is a pie-chart which shows the result of the question asked to our respondents That have they ever used amazon pay for making any payments. The options are Yes and No and The answer received are as follows:-

The total number of respondents who had used amazon payment for making payments is 101 Respondents and only 8 respondents had not used amazon pay for making payments:-

Out of 100% , 92.66 % were aware and had used amazon pay and 7.34 % of respondents had Never used amazon pay.

This means that our respondents are well aware of amazon pay and how to use amazon pay for Making payments as the popularity of amazon pay is increasing day by day.

5. Why would you adopt online payment option over physical payments?



Option	%	Count
Easy payment option	20.18%	22
Time saving and convenient	26.61%	29
Cashback offers and discounts	32.11%	35
Easy to track expenses	11.93%	13
24*7	9.17%	10

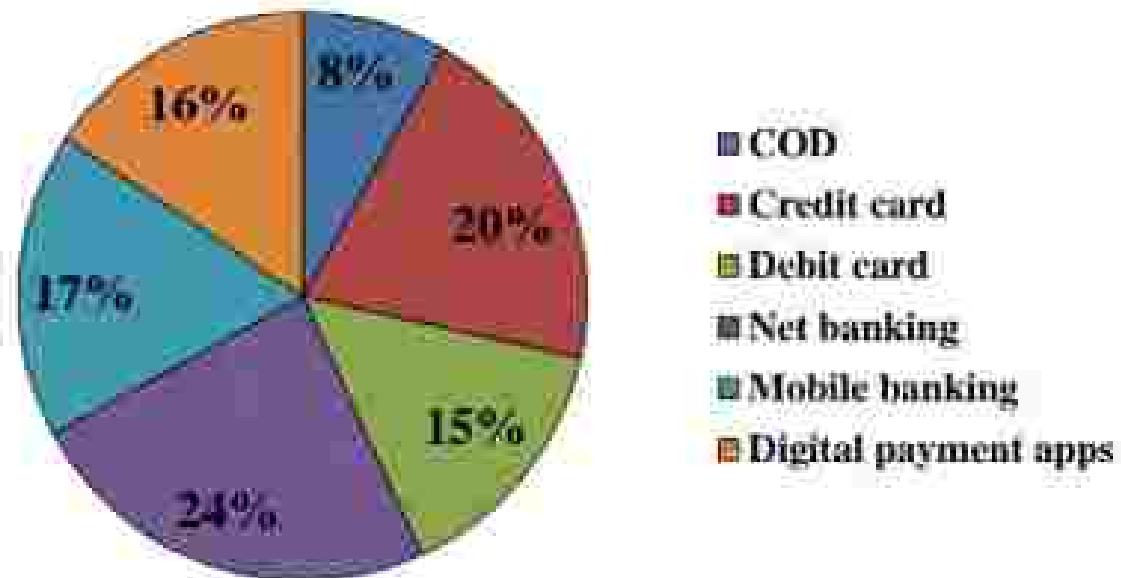
INTERPRETATION:-

The above diagram is a pie-chart which is being used to demonstrate the data received from the Respondents, the question is why would you adopt online payments option over physical Payments. There are various options which the respondents have used and those are:-

- Total 22 respondents felt that online payments are easy payment option as compared to Physical payments and the percentage for the same is 20.18 % out of 100%.
- Total 29 respondents agreed that online payments is time saving and convenient as Compared to physical payments and the percentage for the same is 26.61%.
- Total 35 respondents used online payments to avail various cashback offers and Discounts on their transactions and the percentage for the same is 32.11 %.
- Total 13 respondents felt that online payments are better as it helps to keep a track of Their expenses as compared to physical payments and the percentage for the same is 11.93%.
- Total 10 respondents use online payment as it is available 24*7 and the transfers can be Done anytime as compared to physical payments and the percentage for the same is 9.17%. out of 100 %.

Through the above interpretation it can be stated that respondents have various benefits That they receive when they use online payment over physical payments.

6. What payment gateway do you use while making online payments?



INTERPRETATION

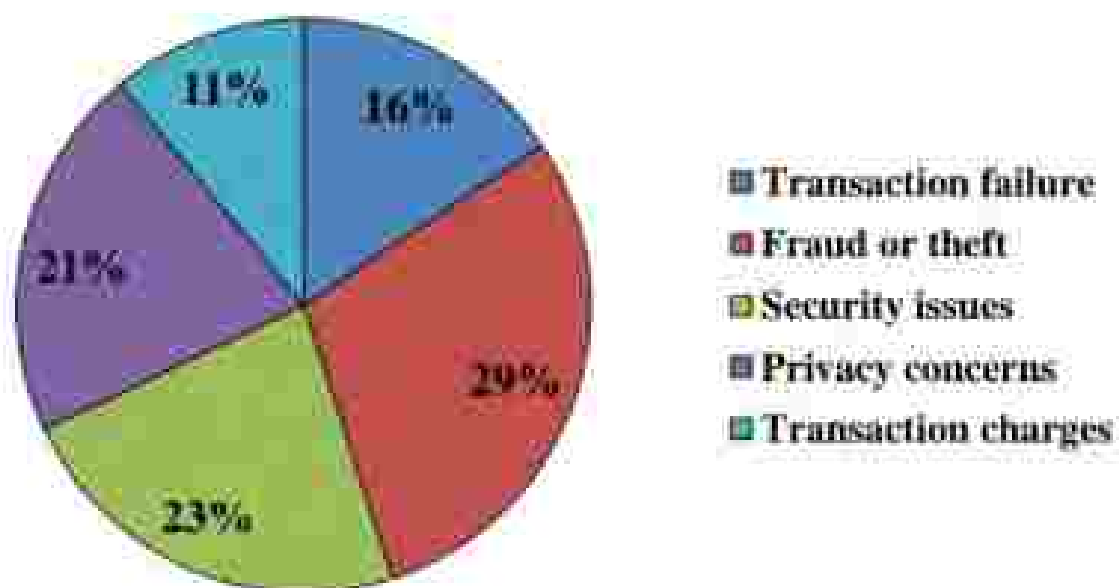
The above pie-chart shows the results of the question asked to the respondents about which Payment gateway do they use for making online payments. The results for the same are as Follows:

- Total 9 respondents use COD(Cash on delivery) as a payment gateway for making online Payments and the percentage for the same is 8.26%.
- Total 22 respondents use Credit card as a payment gateway for making online payments And the percentage for the same is 20.18%.
- Total 16 respondents use Debit card as a payment gateway for making online payments And the percentage for the same is 14.68%.

- Total 26 respondents use Net banking as a payment gateway for making online payments And the percentage for the same is 23.85%.
- Total 19 respondents use Mobile banking as a payment gateway for making online Payments and the percentage for the same is 17.43%.
- Total 17 respondents use Digital payment apps as a payment gateway for making online Payments and the percentage for the same is 15.60%.

From the above interpretation it can be seen that a higher percentage of people use net Banking as a payment gateway for making payments.

7. What is your biggest concern while using e-payments?



Options	%	Count
Transaction failure	15.60%	17
Fraud or theft	29.36%	32
Security issues	22.94%	25
Privacy concerns	21.10%	23
Transaction charges	11.01%	12

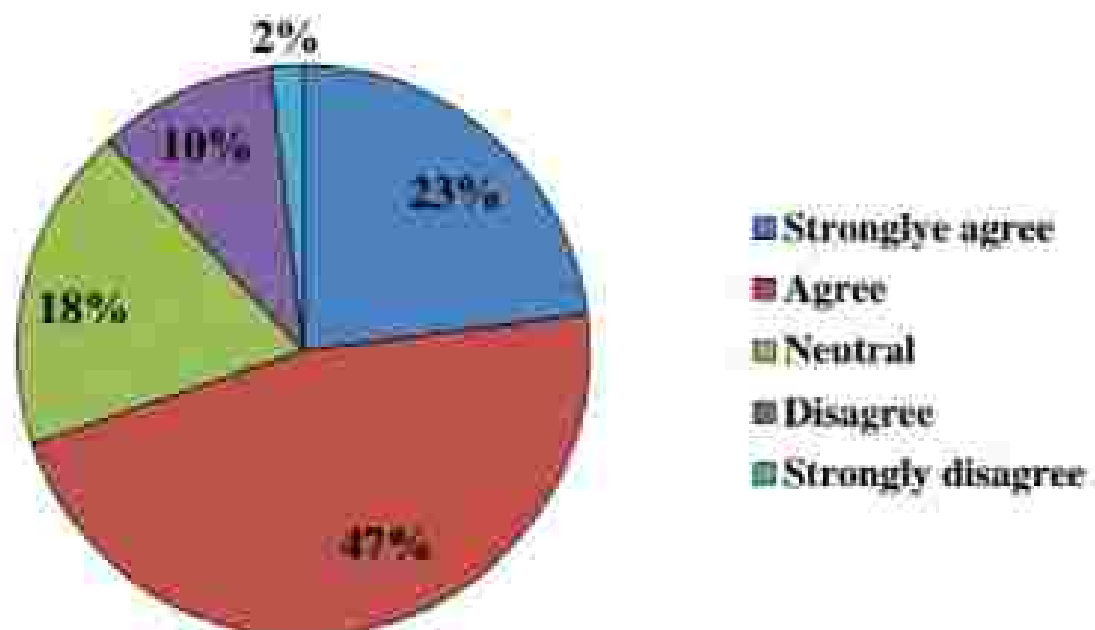
INTERPRETATION

The above pie-chart represents the responses on the question what is the biggest concern while Using e-payments and the respondents have answered to the question with various options and They are:

- Total 17 respondents feel transaction failure is their biggest concern while using e-Payments and the percentage for the same is 15.60 %.
- Total 32 respondents feel Fraud or theft is their biggest concern while using e-payments And the percentage for the same is 29.36 %.
- Total 25 respondents feel Security Issues is their biggest concern while using e-payments And the percentage for the same is 22.94 %.
- Total 23 respondents feel Privacy concerns is their biggest concern while using e-Payments and the percentage for the same is 21.10 %.
- Total 12 respondents feel Transaction charges is their biggest concern while using e-Payments and the percentage for the same is 11.01 %. Out of 100%.

From the above interpretation it can be observed that respondents have various concerns while doing online payments.

8. Do you think e-payment systems like amazon pay are a secure mode of payment?



Options	%	Count
Strongly agree	20.94%	25
Agree	46.79%	51
Neutral	18.35%	20
Disagree	10.09%	11
Strongly disagree	1.83%	2

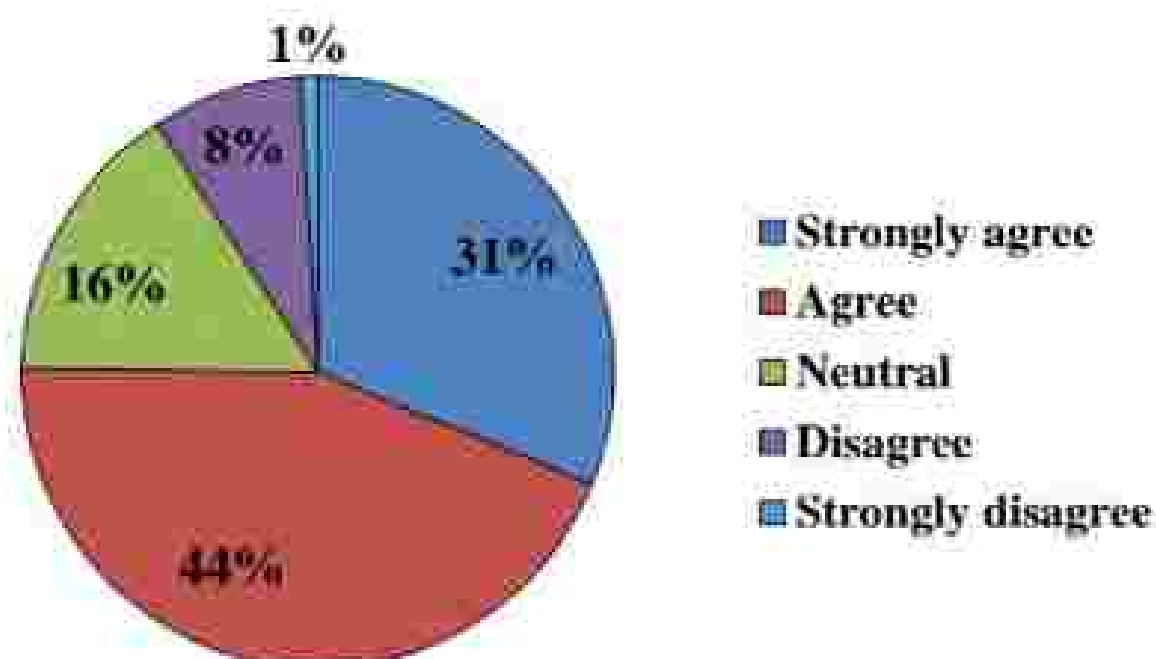
INTERPRETATION:-

The above pie-chart represents the data given by the respondents to the question asked to them i.e. do they think e-payment systems like amazon pay are a secure mode of payment. The responses for the same are as follows:-

- Total 25 respondents strongly agree that e-payment systems like amazon pay are a secure Mode of payment and the percentage for the same is 20.94%
- Total 51 respondents agree that e-payment systems like amazon pay are a secure mode of Payment and the percentage for the same is 46.79%.
- Total 20 respondents are neutral about whether e-payment systems like amazon pay are a Secure mode of payment and the percentage for the same is 18.35%.
- Total 11 respondents disagree with the statement that e-payment systems like amazon pay Are a secure mode of payment and feel e-payments are not secure mode of payment and The percentage for the same is 10.09%.
- Total 2 respondents strongly disagree that e-payment systems like amazon pay is not a Secure mode of payment and the percentage for the same is 1.83%.

From the above interpretation it can be observed that majority of the respondent agree That e-payment system like amazon pay are a secure mode of payment.

9. Do you think after demonetization the use of e-wallets have increased?



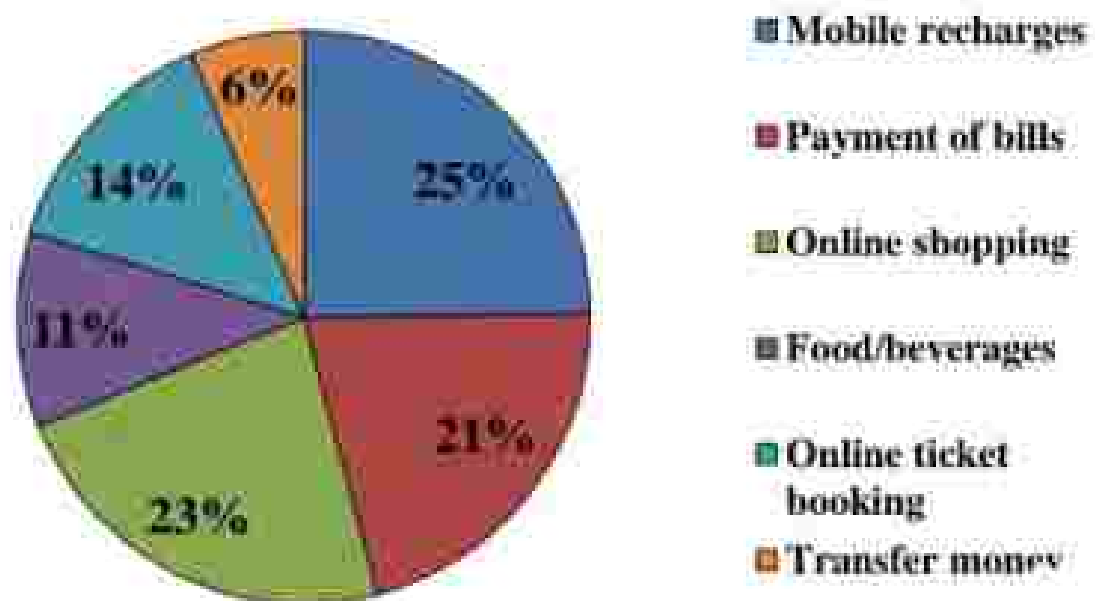
INTERPRETATION

The above pie-chart represents the data received from the respondents to the question asked to Them that do they think after demonetization the use of e-wallets have increased. And the Responses are as follows:-

- Total 34 respondents strongly agree that after demonetization the use of e-wallets have increased and the percentage for the same is 31.19%.
- Total 48 respondents agree that after demonetization the use of e-wallets have increased And the percentage for the same is 44.04%.
- Total 17 respondents are neutral that after demonetization the use of e-wallets have increased and the percentage for the same is 15.60%.
- Total 9 respondents disagree that after demonetization the use of e-wallets have increased And the percentage for the same is 8.26%.

- Total 1 respondents strongly disagree that after demonetization the use of e-wallets have increased and the percentage for the same is 0.92%.

10.What are the types of purchase you do while using payment applications like Amazon pay?



Options	%	Count
Mobile recharge	24.77%	27
Payment of bill	21.10%	23
Online shopping	22.94%	25
Food order	11.01%	12
Online ticket booking	13.76%	15
Transfer money	6.42%	7

The above pie-chart shows the responses given by the respondents to the question asked to them And here is the analysis of the same:-

- Total 27 respondents use online payments for mobile recharges
- Total 23 respondents use online payments for payments of bills.
- Total 25 respondents use online payments for online shopping.
- Total 12 respondents use Online payment food/ beverage

- Total 15 respondents use Online payment for online ticket booking
- Total 7 respondents use Online payment for transfer money

These are some of the payments that people pay using online payment applications Like amazon pay.

11. In your opinion what do you think in India the contribution of new Technologies like online payments to the success of the banks?



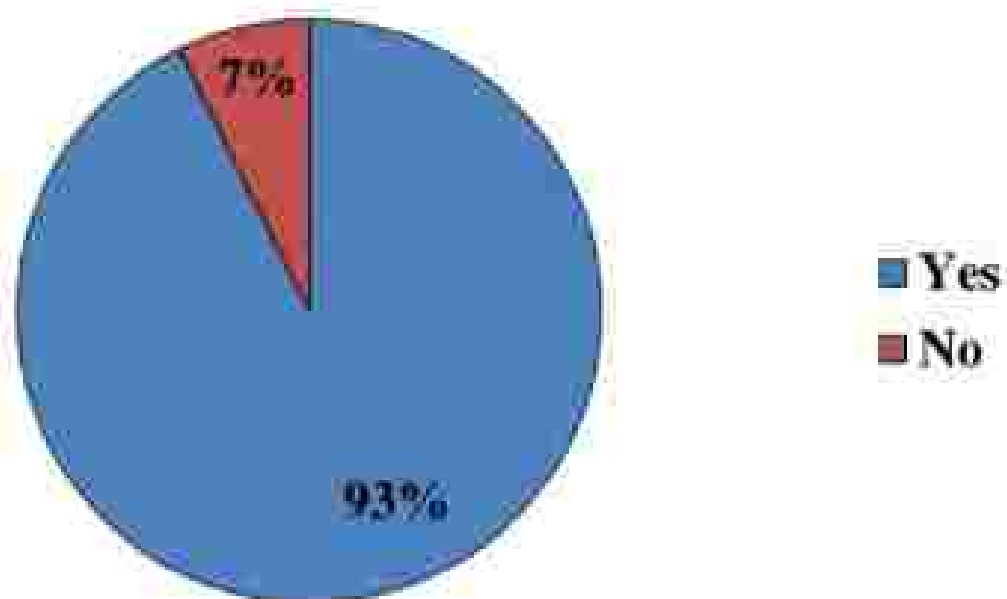
Options	%	Count
Very high		42
High		46
Average		11
Low		9
Nil		1

INTERPRETATION

- The above pie-chart show the responses by the respondents and the answer for the same can be As follows:-
- Total 42 respondents feel that the contribution of new technologies in banking sector is Very high i.e about 38.53%.
- Total 46 respondents feel that the contribution of new technologies in banking sector is High i.e about 42.20%.

- Total 11 respondents feel that the contribution of new technologies in banking sector is Average i.e about 10.09%.
- Total 9 respondents feel that the contribution of new technologies in banking sector is Low i.e about 8.26%.
- 1 respondents feel that the contribution of new technologies in banking sector is nil i.e About 0.92%.

12.you think in near future new technologies like amazon pay will be Popular in rural areas as much as it is in urban areas?



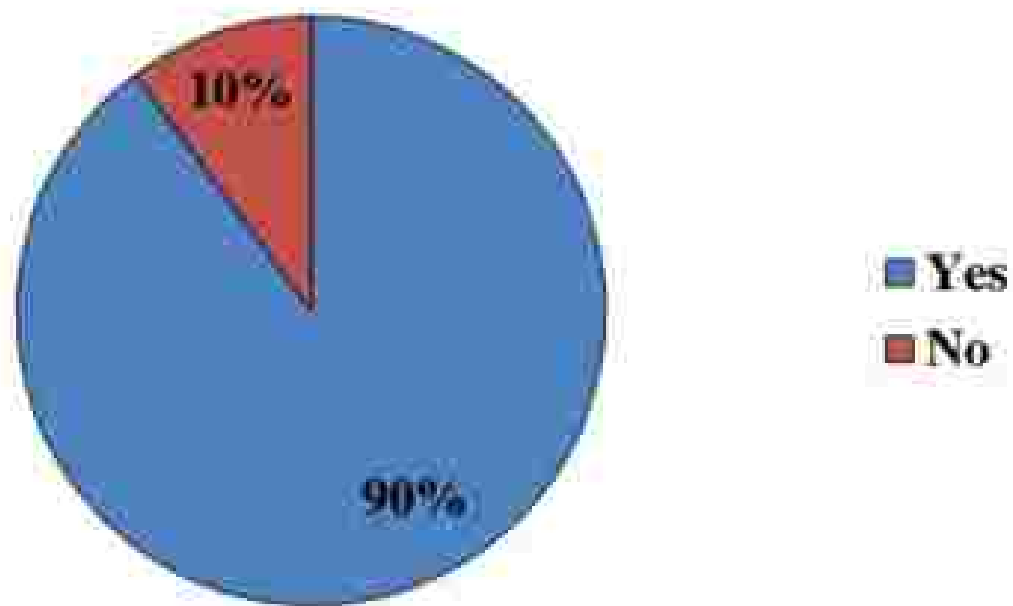
Options	%	Count
Yes	92.66%	101
No	7.34%	8

INTERPRETATION

The above pie-chart show that around 101 respondents feel that in future new technologies will be popular in rural areas as well.

13.Do you think online payment application like amazon pay has a great Future in Indian market?

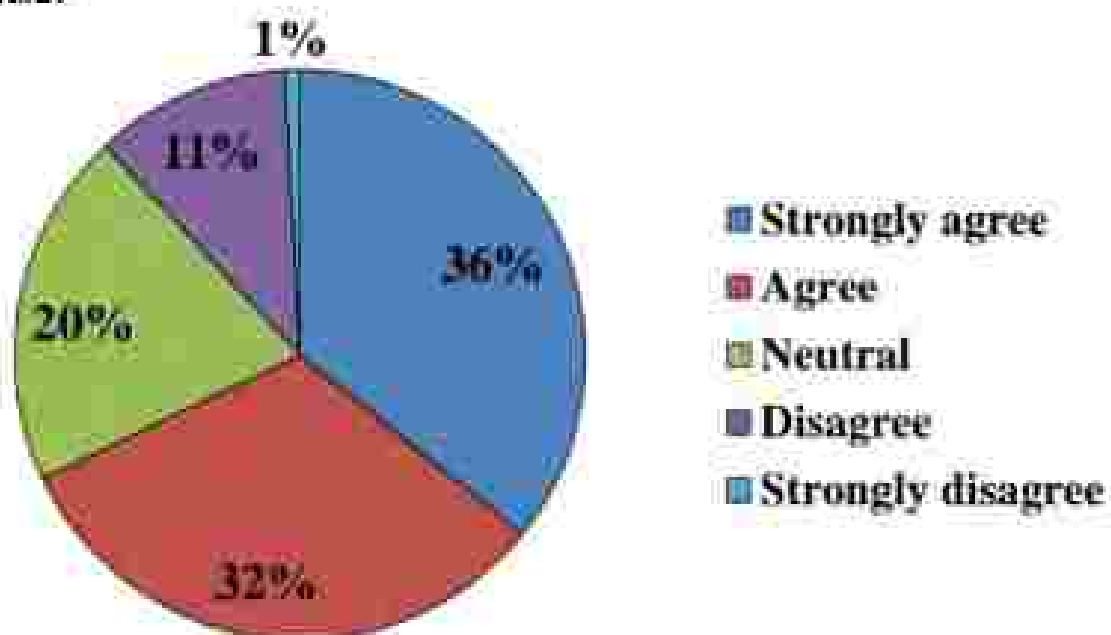
Options	%	Count
Yes	89.91%	98
No	9.09%	11



INTERPRETATION

From the above pie-charts 98 respondents or 89.91% of respondents feel that online payments like Amazon Pay has a great future in Indian market.

14. Do you think going cashless is beneficial for the economic growth of India?



Options	%	Count
Strongly agree	35.78%	39
Agree	32.11%	35
Neutral	20.18%	22
Disagree	11.01%	12
Strongly disagree	0.92%	1

INTERPRETATION

The above pie-chart shows the responses of the respondents on the question that going cashless Has helped the economic growth of India. The responses for the same are as follows:-

Total 39 respondents strongly agree that going cashless is beneficial for the economic Growth of India i.e 35.78%.

Total 35 respondents agree that going cashless is beneficial for the economic growth of India i.e 32.11%.

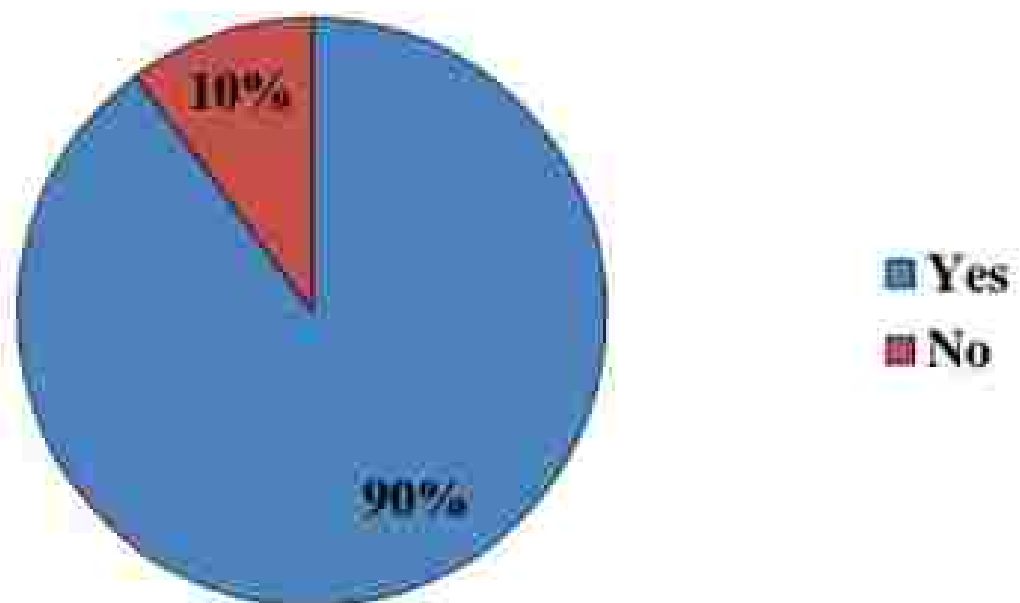
Total 22 respondents are neutral that going cashless is beneficial for the economic growth Of India i.e 20.18%.

Total 12 respondents disagree that going cashless is beneficial for the economic growth Of India i.e 11.01%.

1 respondent strongly disagree that going cashless is beneficial for the economic growth Of India i.e 0.92%.

This state that various respondents have various view point on online payment Applications.

15.Are you satisfied by using amazon pay for making payments?



Options	%	Count
Yes	89.81%	97
No	9.19	11

INTERPRETATION

The above pie-chart represents the data received from respondents when asked the question that Are they satisfied by using Amazon Pay for making payments 97 respondents were satisfied by Using amazon pay i.e around 89.81 % of 100%.

CHAPTER 5: FINDINGS OF THE STUDY

FINDINGS OF THE STUDY:-

- An online survey was conducted through structured questionnaire and In total we Collected 111 responses out of which:
- From the total respondents of 111, there was 51% female respondents.
- From the total respondents of 111, Majority of the respondents were from age group 31-45 years i.e 41.44 %.
- 97.30% of the total respondents had used online payments applications for making Payments.
- 92.66% of the total respondents had used amazon pay for making payments.
- 32% of the total respondents adopt online mode of payment to avail cashback offers And get discounts as compared to physical payments and 27% of the respondents feel Online payments are time saving and convenient.
- 24% of the total respondents use net banking as a payment gateway while making Online payments and only 8.26% of respondents use COD i.e.cash on delivery.
- 29.36% of the total respondents have the concern of fraud or theft while using e-Payments and 11.01% of respondents feel that transaction charges will be a concern While using e-payments.

46.79% of the total respondents agree that e-payment systems like amazon pay are a Secure mode of payment and use various e-payments modes.

- Around 44.04% of respondents agree that after demonetization the use of e-wallets Have increased and around 31.19% of the total respondents strongly agree that Demonetization has increased the use of online payment application in India.
- 24.77% of the respondents use payment application like amazon pay for mobile Recharge and around 21% of the total respondents use payment application while Shopping online; 6.42 % of the respondents use applications to transfer money.

- 42.20% of the total respondents feel that the contribution of new technologies on banks is high and around 38.53% of the total respondents feel that the contribution is very High on banks.
- Around 92.66% of the total respondents think that in near future new technologies such As amazon pay will be popular in rural areas as well as it is in urban areas which means That there will be increase in the usage of online payment applications.
- Around 89.91% of the respondents think that online payment applications like amazon Pay has a great future in the Indian market with the increasing number of usage of Smartphones.
- Around 35.78% of the total respondents strongly agree that going cashless is beneficial For the economic growth of India and around 32.11% of the respondents agree that Going cashless has helped the economy. Around 11.01% of the respondents disagree That going cashless has helped the economy.
- Around 89.81% of the total respondents are satisfied by using amazon pay for making which is a majority.

TESTING OF HYPOTHESIS

Through the survey conducted and the results evaluated we can say that our hypothesis is Accepted as the consumers are satisfied by using Amazon pay.

STEPS TAKEN BY GOVERNMENT TO INCREASE ONLINE PAYMENT APPLICATIONS

The government of India has been taking various measures to increase the online payments after Demonetization as the government is encouraging cashless payments. Here are some of the Initiatives taken by the government to encourage cashless transactions in India till date:

- The banks have declared to waive transaction charges upto 31st December 2016 to Encourage the use of debit card by the consumers.
- The National Payment council of India (NPCI) has already waived the switching charges For the use of Rupay cards by the customers.

- RBI has decided to increase the monthly transaction limit to Rs 20,000 from Rs 10,000 to Encourage the increase of the use of Digital wallets by the consumers.
- The Indian railways has decided not to levy service charges on the purchase of reserved e-tickets upto 31st December 2016, this is done to encourage the customers to book tickets online.
- TRAI has decided to reduce the USSD charges (Unstructured supplementary service Data) to Rs 0.50 from Rs 1.50 per for the transactions that are relating to payments and Banking.
- Till 31st December 2016 many Public sector banks and also some of the private sector Banks had decided to waive the MDR (Merchant Discount Rate) charges to encourage More cashless transactions.
- With the Digital India, the government of India aims to make the government a cashless Society through six point plan i.e the cash counters in all the government offices should Have BHIM UPI QR codes for accepting Digital payments which is great step as this will Reduce corruption issues in our country. All the cash counters can send the indent to the Customer phones to enable the online payment system through UPI.
- All the bills which is being issued by the government of India contains QR code to Encourage the customers to pay digitally.
- There will be a saving of around Rs 2 lakh crore if the country goes digital as these would Reduce the cost of handling cash.
- To encourage digital payments and a move towards cashless society Finance Minister of India Nirmala Sitharaman in her budget speech of financial year 2019-20 stated that the Business organizations with turnover of more than Rs 50 crore shall offer low cost digital Mode of payments to their customers through BHIM, UPI, NEFT, RTGS etc and low Charges or no charges shall be applicable to customers as well as merchants.

These are some of the initiatives taken by the government of India to encourage Digital Payments in our country.

CHAPTER 6: CONCLUSION AND SUGGESTIONS.

CONCLUSION :-

This research paper started by focusing on the meaning of online or digital payment ,Digital wallet in India. This paper then focused on various digital wallets or online Payment application in India like Google pay, Paytm, PhonePe, Mobikwik, etc, then Complete explanation about Amazon and amazon pay is stated with the advantages and Disadvantages of using amazon pay.

An online survey was conducted through structured questionnaire which received 111 Responses some of the respondents did not answered the questions accurately which Proved to be the limitation of the study. From the survey conducted it can be seen that Many people are adopting cashless mode of payment as it has its own pros like it :-Reduces time and is convenient to use as well as various online payment apps offers Various cashback offers and discounts as well for encouraging people to use digital mode Of payment. A consumer can track all their expenses with online payment.

The concern that consumers have is their security, their privacy being hacked or leaked, High transaction charges etc. With the increase in the usage of smartphones the world has come closer and with a Single touch any payment can be done. In our study it can be seen that the consumers or The respondents are satisfied with the use of Amazon pay for making various payments And that online modes of payments are increasing day –by-day with the increase in Various technologies which facilitate the entire process of a transaction.

As it can be seen that cashless economy or the use of online payment application has its Various advantages and disadvantages so if any government is planning to adopt cashless Economy should carefully analyze the situation of the country. The government of India is taking efforts to encourage the people of India to use digital Modes of payments along with the private sector companies.

SUGGESTIONS

- Many respondents felt that the hindrance in adopting cashless economy is the digital and Technological illiteracy among the people of India, so to overcome this problem Government need to take initiatives in educating the people about the same;
- As majority of the crowd in our country belong to the rural areas it is very important to Educate the people about cashless transactions and about e-wallets.
- Many of the respondents felt that cashless mode of transactions in India is not safe so the Government should make electronic payments infrastructure completely safe and secure.
- To increase more digital payments the government should bring transparency and Efficiency in the transactions
- The government should conduct a financial literacy campaign to educate the population About the digital modes of payment.
- Government should make the infrastructure capable and secure so that there are minimum Fraud and thefts.

These are some of the suggestions which can help better implementation of cashless Society in India.

CHAPTER 7: BIBLIOGRAPHY

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