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Drawing of Random Six-Digit Numbers from Tables of Random Three-Digit Numbers

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ABSTRACT: One table of random three-digit numbers was constructed by Chakrabarty in 2013. Due to the necessity of more such tables, another independent table of random three-digit numbers was also constructed by Chakrabarty in 2016. Method of drawing of random six-digit numbers from these two independent tables of random three-digit numbers has been derived in the current study. This paper describes the derivation of the method with numerical example in order to show the application of the method.

KEYWORDS: Random three-digit numbers, independent tables, drawing of random six-digit numbers.

I. INTRODUCTION

In order to draw random sample, a number of tables of random numbers have already been constructed by the renowned researchers. Some of them are (in chronological order) due to *Tippett* (1927), *Mahalanobis* (1934), *Kendall* & *Smith* (1938 , 1939), *Fisher* & *Yates* (1938), *Hald* (1952), *Royo* & *Ferrer* (1954), *RAND Corporation* (1955), *Quenouille* (1959), *Moses* & *Oakford* (1963), *Rao*, *Mitra* & *Matthai* (1966), *Snedecor* and *Cochran* (1967), *Rohlf* & *Sokal* (1969), *Manfred* (1971), *Hill* & *Hill* (1977) etc. Among these tables, the following four tables are treated as suitable in drawing of simple random sample (with or without replacement) from a population (*Cochran*, 1940): (1) Tippett's Random Numbers Table that consists of 10,400 four-digit numbers giving in all 41,600 single digits selected at random from the British Census report (*Tippett*, 1927). (2) Fisher and Yates Random Numbers Table that comprises 15000 digits arranged in two's (*Fisher* & *Yates*, 1938). (3) Kendall and Smith's Random Numbers that consists of 100,000 digits grouped into 25,000 sets of random four-digit numbers (*Kendall* & *Smith*, 1938). (4) Random Numbers Table by Rand Corporation that contains of one million digits consisting of 200,000 random numbers of 5 digits each (*Rand Corporation*, 1955). The proper randomness of these tables is yet to be tested. In a study made by *Chakrabarty* (2010) on the testing of randomness of the table due to Fisher and Yates (1938), it has been found that this table, consisting of the 7500 occurrences of the 100 two-digit numbers, is not properly random and deviates significantly from proper randomness. Due to this reason, one table consisting of 6000 random occurrences of the 100 two-digit numbers has been constructed as an alternative/competitor of this table (*Chakrabarty*, 2013*a*). Also, one table containing 5000 random occurrences of the 1000 three-digit numbers has been constructed by *Chakrabarty* (2013*b*) due to the unavailability of such table of three-digit numbers. Two more tables, one containing 20000 occurrences of random two-digit numbers and the other containing 20000 occurrences of random three-digit numbers, have also been constructed by the same author [*Chakrabarty*(2013*a* , 2016*b*)]. Recently, study has been made on testing the proper randomness of the random number tables due to Tippett (*Sarmah* & *Chakrabarty*, 2014), due to Kendall & Smith (*Sarmah* & *Chakrabarty*, 2014*b*), due to Rand Corporation (*Sarmah*, *Chakrabarty* & *Barman* (2015*b*). In the studies, each of the tables has been found to be suffered from proper randomness. This leads to think of constructing of table of random four-digit numbers. Moreover, there is or there may be necessity of drawing of random five-digit numbers, random six-digit numbers, random seven-digit numbers etc.. However, due to the increasing difficulties in the construction of tables of these types of random numbers by the method composed by *Chakrabarty* (2013*a*), it has been compelled to think of an alternative approach of drawing of these types of random numbers. In a study, one method has already been derived for drawing random five-digit numbers from the tables of random two-digit numbers and of random three-digit numbers (*Chakrabarty*, 2016*c*). One method of drawing of random six-digit numbers from the two independent tables of random three-digit numbers, due to *Chakrabarty* (2013*b*) and *Chakrabarty* (2016*b*), has been derived in the current study. This paper describes the derivation of the method with numerical example in order to show the application of the method.

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II. DRAWING OF RANDOM THREE-DIGIT NUMBERS

The two tables of random three-digit numbers constructed by *Chakrabarty* (2013*b*) and *Chakrabarty* (2016*b*) will be called **Table-1** and **Table-2** respectively in the current paper. The two tables carry the following features:

Features of the Table of Random Three-Digit Numbers:

(1) In the table, each of the 1000 three-digit numbers occurs n times out of $1000n$ consecutive occurrences ($n = 1 , 2 ,$ …….) if we start counting from the observation at the $(1000k + 1)^{th}$ position ($k = 0 , 1 , 2 ,$ …….).

(2) In the table, the frequency of occurrence of each of the 1000 three-digit numbers out of $100n$ consecutive trials ($n = 1 ,$ 2 , …….) may be one more or less than n if we start counting from any position.

(3) The table can be treated as random as per the logic behind the two definitions of probability namely definition in theoretically ideal situation and definition in practically ideal situation (*Chakrabarty*, 2011).

(4) The table is random with respect to the occurrences of the numbers row-wise but not column-wise. Thus while drawing random numbers from the table, one requires moving row-wise either to the right or to the left starting from any position in the table. The starting position and the direction of movement are to be selected at random by suitable randomized trials in order to keep their randomness intact.

Method of Drawing of Random Three-Digit Numbers from the Table:

Each of the two tables, constructed here, can be used in drawing of random two-digit numbers

(1) which are distinct

and (2) which are not necessarily distinct.

Drawing of Distinct Random Three-Digit Numbers

Suppose that we want to draw n random three-digit numbers from the table such that the drawn numbers are distinct. Since distinct three-digit numbers are to be drawn, one can draw a maximum of 1000 such numbers since the total number of such numbers is 1000.

Feature no (2), mentioned in section III, implies that if n three-digit numbers occurred consecutively from the $(100k + 1)^{th}$ position ($k = 0 , 1 , 2 ,$ …….) in the table are drawn subject to the feature no (4) then the drawn n numbers will be distinct and random.

Also feature no (3), mentioned in section III, implies that if n three-digit numbers occurred consecutively in the table are drawn starting from any position then the drawn n numbers may not be distinct. Some of them may occur twice. Thus in order to draw distinct numbers, it is required to exclude the next occurrence of the same number and to draw the next consecutive number occurred in the table following feature no (4) mentioned in section II.

Thus the drawing of random three-digit numbers consists of the two basic tasks namely

(a) selection of the starting position at random

and (*b*) selection of the direction (right or left) of movement at random.

Accordingly, in order to obtain the n random two-digit numbers one is to proceed with the following steps:

1. Select the position, from where to start, at random. Since the table contains 10000 random occurrences of the 100 two-digit numbers, accordingly there are 10000 positions of the numbers namely

0000 , 0001 , 0002 , …… , 9999.

In selecting the starting position, one thus can apply some usual manual randomization technique of drawing one number from among the10000 numbers

0000 , 0001 , 0002 , …… , 9999

in the case of the table of random three-digit numbers due to Chakrabarty (2013 *b*)

and from among the 20000 numbers

00000 , 00001 , 00002 , …… , 19999

in the case of the table of random three-digit numbers due to Chakrabarty (2016 *b*).

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One method of drawing of such number is as follows:

For Table-1

Take a set of 10 identical small balls distinguishing them by marking with the 10 digits

0 , 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9

and put them inside a opaque container, say C_1 .

Similarly, take another set of 4 identical small distinguishing them by marking L , R , M_1 , M_2 respectively and another

opaque container, say C_2 .

Now, draw one ball at random from the container C_1 containing the 10 balls and note down digit appeared on it. Let the

digit is d_1.

Next, draw another ball at random from the container C_1 containing the same 10 balls and note down digit appeared on

it. Let the digit is d_2.

Then, draw one ball at random from the container C_2 putting 2 balls marked with L & R inside it.

If the drawn ball is R, put the digit d_2 at the right position of d_1 and if the drawn ball is L, put the digit d_2 at the left position of d_1.

Thus if the ball R appears, the selected two-digit number will be $d_1 d_2$ and if the ball L appears, the selected two-digit

number will be $d_2\, d_1$.

Let the selected two-digit number be $d_2 d_1$.

Next, draw another ball at random from the container C_1 containing all the 10 balls and note down digit appeared on it.

Let the digit is d_3.

Then, draw one ball at random from the container C_2 putting 3 balls marked with L , M_1 & R inside it and put the digit

d_3 at the

left position of $d_2\, d_1$ if the drawn ball is L,
middle position of $d_2\, d_1$ if the drawn ball is M_1
and right position of $d_2\, d_1$ if the drawn ball is R.

Thus the selected three-digit number will be $d_3\, d_2 d_1$ or $d_2 d_3\, d_1$ or $d_2 d_1 d_3$ in accordance with the selected ball is L or M_1 or

R.

Let the selected three-digit number be $d_2 d_3\, d_1$.

Finally, draw another ball at random from the container C_1 containing all the 10 balls and note down digit appeared on

it. Let the digit is d_4.

Then, draw one ball at random from the container C_2 putting 4 balls marked with L , M_1 , M_2 & R inside it and put the

digit d_4 at the

left position of $d_2 d_3\, d_1$ if the drawn ball is L,
1st middle position (from left) of $d_2 d_3\, d_1$ if the drawn ball is M_1 ,
2nd middle position (from left) of $d_2 d_3\, d_1$ if the drawn ball is M_2 ,
& right position of $d_2 d_3\, d_1$ if the drawn ball is R.

Thus the selected four-digit number will be $d_4\, d_3\, d_2\, d_1$ or $d_2 d_4\, d_3\, d_1$ or $d_2\, d_1 d_4\, d_3$ or $d_2\, d_1 d_3 d_4$ in accordance with the selected

ball is L or M_1 or M_2 or R.

This selected number will be the required starting position.

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For Table-2

In the case of this table, one digit from the two digits 0 & 1 is to be selected by conducting a Bernoulli trial and is to be placed at the left position of the selected number as selected above. The number so obtained is the selected number of the starting position.

2. Let the i^{th} position be selected in the earlier step. Draw the number that occurs at the i^{th} position in the table.
3. Chose whether to move towards left or towards right. The choice can be made at random by a binary trial e.g. by tossing of an unbiased coin or by drawing a number from the container C_2 putting two identical balls, marked with L and R respectively, inside it.
4. If it is chosen to move towards right, draw the numbers occurred at the positions
$$i\ ,\ i+1\ ,\ i+2\ ,\ \ldots\ldots\ldots\ldots\ ,\ i+n-1$$
in the table to obtain the n random two-digit numbers.
5. If it is chosen to move towards left, draw the numbers occurred at the positions
$$i\ ,\ i-1\ ,\ i-2\ ,\ \ldots\ldots\ldots\ldots\ ,\ i-n+1$$
in the table to obtain the n random two-digit numbers.
6. It may occur that some number or numbers among those drawn may be occurred twice. In that situation, retain only one occurrence of them and draw additional numbers appeared at the consecutive positions in the table as per requirement.

If k additional numbers are required to draw, then draw the numbers occurred at the positions
$$i+n\ ,\ i+n+1\ ,\ ,\ i+n+2\ ,\ \ldots\ldots\ldots\ldots\ ,\ i+n+k-1$$
if it is chosen to move towards right and draw the numbers occurred at the positions
$$i-n\ ,\ i-n-1\ ,\ ,\ i-n-2\ ,\ \ldots\ldots\ldots\ldots\ ,\ i-n-k+1$$
if it is chosen to move towards left.

Note 2.1: Drawing of distinct random numbers corresponds to the drawing of simple random sample without replacement.

Drawing of Random Three-Digit Numbers (Not Necessarily Distinct)

The features (1) and (2), mentioned in section III, imply that if three-digit numbers are picked up at a gap of g positions ($1001 \leq g \leq 1999$), the picked up numbers will not necessarily be distinct.
Thus in order to to draw n random three-digit numbers which need not necessarily be distinct, one is to proceed with the following steps:

1. Select one position from where to start at random by the similar method as in the case of drawing of distinct random two-digit numbers mentioned above. Let the i^{th} position be selected.
2. Draw the number that occurs at the i^{th} position in the table.
3. Chose the length of jump that is to be 1001 or more and 1999 or less at random. It can be chosen by some usual manual randomization technique of drawing one number from among the numbers
$$1001\ ,\ 1002\ ,\ 1003\ ,\ \ldots\ldots\ldots\ldots\ ,\ 1999.$$
Let the selected length of jump be l.
The random selection of the length of the jump can be done by similar method as done in the selection of the starting position.
4. Chose whether to jump towards left or towards right. The choice can be made by the same method as in the earlier case.
5. If it is chosen to jump towards right, draw the numbers occurred at the positions
$$i\ ,\ i+l\ ,\ i+2l\ ,\ \ldots\ldots\ldots\ldots\ ,\ i+(n-1)\,l$$
in the table to obtain the required n random thre-digit numbers.
6. If it is chosen to move towards left, draw the numbers occurred at the positions
$$i\ ,\ i-l\ ,\ i-2l\ ,\ \ldots\ldots\ldots\ldots\ ,\ i-(n-1)\,l$$
in the table to obtain the required n random three-digit numbers.

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Note 2.2: Drawing of random numbers, not necessarily, distinct corresponds to the drawing of simple random sample with replacement.

III. DRAWING OF RANDOM SIX-DIGIT NUMBERS

Let $d_1d_2d_3$ and $d_4d_5d_6$ be two three-digit numbers drawn at random from two independent tables of the three tables of random three-digit numbers.

The possible values that $d_1d_2d_3$ will assume are the 1000 three-digit numbers

000 , 001 , 002 , …… , 999

and the probability that $d_1d_2d_3$ will assume any of them is equal which is 0.001.

Similarly, possible values that $d_4d_5d_6$ assumes are the possible 1000 three-digit numbers

000 , 001 , 002 , …… , 999

and the probability that $d_4d_5d_6$ will assume any of them is equal which is 0.001.

Now if the two numbers $d_1d_2d_3$ and $d_4d_5d_6$ are combined together to form the six-digit number $d_1d_2d_3d_4d_5d_6$ then the possible values that $d_1d_2d_3d_4d_5d_6$ will assume are the 100000 six-digit numbers

000000 , 000001 , 000002 , …… , 999999

and the probability that $d_1d_2d_3d_4d_5d_6$ will assume any one of them is equal which is 0.000001 (since the two numbers $d_1d_2d_3$ and $d_4d_5d_6$ have been drawn independently).

Thus the six-digit number $d_1d_2d_3d_4d_5d_6$ is a random one.

Similarly, the six-digit number $d_4d_5d_6d_1d_2d_3$ is also a random one.

If one of these two six-digit numbers is selected by performing a binary random trial, the selected number will be a random six-digit number.

If the process is repeated once, one more random six-digit number can be obtained. By further repetitions, one can obtain more random six-digit numbers.

Thus, in order to draw *n* random six-digit numbers one can proceed with the following steps:

(1) Make a choice at random which table's three-digit numbers will be placed at the left position and which table's three-digit numbers will be placed at the right position while combining them in the formation of random six-digit numbers. This can be done by a binary random trial as mentioned earlier.
(2) Draw *n* random three-digit numbers from **Table-1** by the steps as outlined in the section **2.2.1**.
(3) Draw *n* random three-digit numbers from **Table-2** by the same as outlined in the section **2.2.1**.
(4) Combine the random three-digit numbers obtained from **Table-1** with the corresponding random three-digit numbers obtained from **Table-2**. to obtain the *n* random six-digit numbers.

In order to draw *n* random six-digit numbers one can also proceed with the following steps:

(1) Draw two random three-digit numbers one from **Table-1** and the other from **Table-2** by the same as outlined in the section **2.2.1**.
(2) Make a choice at random which table's three-digit number will be placed at the left position and which table's three-digit number will be placed at the right position while combining them in the formation of random six-digit number. This can be done by a binary random trial as mentioned earlier.
(3) Combine the two numbers as per the selected choice of the position to obtain one random six-digit number.
(4) Repeat the three steps, from the 1st step to the 3rd step, more $(n-1)$ times to obtain *n* random six-digit numbers. .

IV. NUMERICAL EXAMPLE

Example (4.1): Drawing of Distinct Random Three-Digit Numbers:
Let it be wanted to draw 30 random distinct three-digit numbers from the table of random three-digit numbers (Chakrabarty, 2016 *b*).

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Suppose that the starting position selected at random be 02631.
The three-digit number at this position in the table is 534.
Thus this is selected as the 1st one among the 30 to be selected.
Suppose that it is chosen by random trial to move towards the right direction.
Then the numbers at the positions

02632 , 02633 , …….. , 0260.

are to be drawn.
Now the three-digit numbers at the next 9 positions in the table are

270 , 367 , 715 , 203 , 267 , 662 , 513 , 638 , 328 , 071 , 488 , 025 , 835 , 950 , 704 , 135 , 472 , 447 , 391 , 495 , 390 , 259 , 314 , 893 , 199 , 896 , 850 , 614 , 374 .

Therefore, the 30 random distinct three-digit numbers will be

534 , 270 , 367 , 715 , 203 , 267 , 662 , 513 , 638 , 328 , 071 , 488 , 025 , 835 , 950 , 704 , 135 , 472 , 447 , 391 , 495 , 390 , 259 , 314 , 893 , 199 , 896 , 850 , 614 , 374 .

Example (4.2): Drawing of Distinct Random Three-Digit Numbers:

Let it be wanted to draw 30 random distinct three-digit numbers from the table of random three-digit numbers (Chakrabarty, 2016*b*).
Suppose that the starting position selected at random be 19981.
The three-digit number at this position in the table is 078.
Thus this is selected as the 1st one among the 30 numbers to be selected.
Suppose that it is chosen by random trial to move towards the right direction.
Then the numbers at the next 29 successive positions are to be selected.
However, after the next 18 positions, the table comes to the end.
The remaining 11 positions are then taken from the beginning (i.e. from position number 00000) of the table treating the table to be a circular one.
Thus the 29 three-digit numbers at the next 29 successive positions in the table are

217 , 857 , 246 , 814 , 935 , 349 , 197 , 707 , 836 , 190 , 620 , 272 , 401 , 981 , 497 , 344 , 592 , 944 , 799 , 512 , 748 , 721 , 626 , 548 , 059 , 831 , 039 , 969 , 282 .

Accordingly, the 30 random three-digit numbers drawn from the table are

078 , 217 , 857 , 246 , 814 , 935 , 349 , 197 , 707 , 836 , 190 , 620 , 272 , 401 , 981 , 497 , 344 , 592 , 944 , 799 , 512 , 748 , 721 , 626 , 548 , 059 , 831 , 039 , 969 , 282

Example (4.3): Drawing of Random Three-Digit Numbers (Not Necessarily Distinct):

Let it be wanted to draw 30 random three-digit numbers from Table-2, which are not necessarily distinct.
Suppose that the starting position selected at random is 05378.
The three-digit number at this position in the table is 444.
Thus this is selected as the 1st one among the 15 numbers to be selected.
Suppose that it is chosen by random trial to move towards the right direction.
Let the length of jump selected at random be 1002.
Then the next 14 positions in the table to be considered (treating the table as circular) will be

6318 , 7320 , 8322 , 9324 , 10326 , 11328 , 12330 , 13332 , 14334 , 15336 , 16338 , 17340 , 18342 , 19344

The numbers appeared at these positions in the table are

194 , 121 , 530 , 895 , 183 , 500 , 239 , 291 , 980 , 503 , 477 , 392 , 526 , 963

respectively.
Accordingly, the 15 random three-digit numbers drawn from the table are

444 , 194 , 121 , 530 , 895 , 183 , 500 , 239 , 291 , 980 , 503 , 477 , 392 , 526 , 963 .

Example (4.4): Drawing of Random Six-Digit Numbers:

Let it be wanted to draw 10 random six-digit numbers from two independent tables of random three-digit numbers namely Table-1 and Table-2.

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Let a binary trial be performed to choice which table's three-digit numbers will be placed at the left position and which table's three-digit numbers will be placed at the right position while combining them in the formation of random six-digit numbers.
Let Table-2 be the choice that the numbers drawn from this table will be placed at the left in this case.
Now let us draw 10 random three-digit numbers from Table-1 by the steps as outlined in the section II.
Let the numbers drawn from Table-1 be

811 , 682 , 707 , 218 , 966 , 171 , 020 , 582 , 591 , 122 .

Next let us draw 10 random three-digit numbers from Table-2 by the same steps as outlined in the section II.
Let the numbers drawn from Table-2 be

789 , 908 , 801 , 031 , 798 , 507 , 317 , 870 , 754 , 050 .

Thus the 10 random six-digit numbers to be selected will be

789811 , 908682 , 801707 , 031218 , 798966 , 507171 , 317020 , 870582 , 754591 , 050122 .

V. CONCLUSION

The method of drawing random six-digit numbers from two independent tables of random three-digit numbers, discussed here, can be treated as an alternative of drawing the same from a table of random six-digit numbers. Thus random six-digit numbers can be drawn in the absence of a table of random six-digit numbers.
It can be possible to draw random six-digit numbers from three independent tables of random two-digit numbers. Thus one problem for researcher at this stage is to construct three independent tables of random two-digit numbers and to search for the method of drawing of random six-digit numbers from the three tables to be constructed.
It can also be possible to draw random six-digit numbers from a single table (of course, sufficiently large) of random two-digit numbers or of random three-digit numbers. Thus one problem for researcher at this stage is to search for the method of drawing of random six-digit numbers from such single table.
It may be necessary to draw random m-digit numbers (for $m > 6$) in the situation of drawing of a large sample from a large population (consisting of billions of elements). It can be possible to draw random m-digit numbers (for $m > 6$) from independent tables of random two-digit numbers and/or independent tables of random three-digit numbers and/or from a combination of independent tables of random two-digit numbers and independent tables of random three-digit numbers. Therefore, there is necessity of constructing of sufficient independent tables for random two-digit numbers and also for random three-digit numbers.

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Dr. Dhritikesh Chakrabarty passed B.Sc. (with Honours in Statistics) Examination from Gauhati University in 1981 securing 1st class &1st position. He passed M.Sc. Examination (in Statistics) from the same university in the year 1983 securing 1st class & 1st position and successively passed M.Sc. Examination (in Mathematics) from the same university in 1987 securing 1st class (5th position). He obtained the degree of Ph.D. (in Statistics) in the year 1993 from Gauhati University. Later on, he obtained the degree of Sangeet Visharad (inVocal Music) in the year 2000 from Bhatkhande Sangeet vidyapith securing 1st class, the degree of Sangeet Visharad (in Tabla) from Pracheen Kala Kendra in 2010 securing 2nd class, the degree of Sangeet Pravakar (in Tabla) from Prayag Sangeet Samiti in 2012 securing 1st class and the degree of Sangeet Bhaskar (in Tabla) from Pracheen Kala Kendra in 2014 securing 1st class. He obtained Jawaharlal Nehru Award for securing 1st position in Degree Examination in the year 1981. He also obtained Academic Gold Medal of Gauhati University and Prof. V. D. Thawani Academic Award for securing 1st position in Post Graduate Examination in the year 1983.

Dr. Dhritikesh Chakrabarty is also an awardee of the Post Doctoral Research Award by the University Grants Commission for the period 2002–05.

He attended five of orientation/refresher course held in Gauhati University, Indian Statistical Institute, University of Calicut and Cochin University of Science & Technology sponsored/organized by University Grants Commission/Indian Academy of Science. He also attended/participated eleven workshops/training programmes of different fields at various institutes. Dr. Dhritikesh Chakrabarty joined the Department of Statistics of Handique Girls' College, Gauhati University, as a Lecturer on December 09, 1987 and has been serving the institution continuously since then. Currently he is in the position of Associate Professor (& Ex Head) of the same Department of the same College. He has also been serving the National Institute of Pharmaceutical Education & Research (NIPER), Guwahati, as a Guest Faculty continuously from May 02, 2010. Moreover, he is a Research Guide (Ph.D. Guide) in the Department of Statistics of Gauhati University and also a Research Guide (Ph.D. Guide) in the Department of Statistics of Assam Down Town University. He has been guiding a number of Ph.D. students in the two universities. He acted as Guest Faculty in the Department of Statistics and also in the Department of Physics of Gauhati University. In the mean time, he guided some M. Phil. Students of Vinayak Mission University. He also acted as Guest Faculty cum Resource Person in the Ph.D. Course work Programme in the Department of Computer Science and also in the Department of Biotechnology of the same University for the last six years. Dr. Chakrabarty has been working as an independent researcher for the last more than twenty five years. He has already published seventy four research papers in various research journals mostly of international level and eight research papers in conference proceedings. Fifty four research papers based on his research works have already been presented in research conferences/seminars of national and international levels both within and outside India. He has written a book titled "Statistics for Beginners". He is also one author of the Assamese Science Dictionary titled "Vigyan Jeuti" published by Assam Science Society. Moreover, he is one author of the research book "BIODIVERSITY- Threats and Conservation (ISBN-978-93-81563-48-9)" published by the Global Publishing House. He delivered invited talks/lectures in several seminars He acted as chair person in some seminars. He visited U.S.A. in 2007, Canada in 2011 and U.K. in 2014. He has already completed one post doctoral research project (2002–05) and one minor research project (2010–11). He is an active life member of each of the following academic cum research organizations:

(1) Assam Science Society (ASS)
(2) Assam Statistical Review (ASR)
(3) Indian Statistical Association (IAS)
(4) Indian Society for Probability & Statistics (ISPS)
(5) Forum for Interdisciplinary Mathematics (FIM)
(6) Electronics Scientists & Engineers Society (ESES)
(7) International Association of Engineers (IAENG)

Moreover, he is a Referee of the Journal of Assam Science Society (JASS) and a Member of the Editorial Board of the Journal of Environmental Science, Computer Science and Engineering & Technology (JECET).

Dr. Chakrabarty acted as members (at various capacities) of the organizing committees of a number of conferences/seminars already held.