

MATHEMATICS IN THIRUKKUAL

M. VINAYAGAMURTHI

M.Phil Research Scholar Of Mathematics, SCSVMV University, Kanchipuram, India.

T. N. KAVITHA*

Assistant Prof. Of Mathematics, SCSVMV University, Kanchipuram, India.

(Received On: 03-03-16; Revised & Accepted On: 25-03-16)

ABSTRACT

In this paper, we find the rank correlation coefficient between the knowledge about chapters of thirukkural, on according to the data collected from 1330 people opinion. Thiruvalluvar is a legend, we try to find uniformity of people opinion by chapter wise, and we collect the data about the knowable number of kurals by chapters from 1330 educated people, The chapters aram, porul, inbam and usages of this kurals by the people are different but all the people we met are used atleast one kural in their everyday work. We collect those details for our research. Some of them use the same kurals that uniformity we collect separately as numbers. So we gather the number of kurals people like the same by chapter wise, and find the rank correlation coefficient between the usage of kurals by chapters Aram, Porul and Inbum.

Key words: Thirukkural, Arathupal, Porutpal, Inbathupal, Oru, Iru, rank correlation coefficient.

1. INTRODUCTION

Thirukkural was a famous literary classical work written by the great poet Thiruvalluvar over 2500 years ago. It has 1330 couplets under 133 chapters, each chapter contains 10 verses. The 133 chapters are divided into 3 major divisions. The first one is 'ARAM', that is 'VIRTUE', it contains 38 chapters. The second one is 'PORUL', called 'WEALTH'. It comprises 70 chapters. The last chapter called 'INBAM', and it is about 'LOVE'. It contains 25 chapters.

After The Bible, Thirukkural is the only work, which has been translated in many languages. This fact tells the widely acceptances of this work by the people all over the world.

When we are scrutinizing all the couplets, we find the numbers 1, 2, 3, 4, 5, 6, 7, 8, 10, 100, CRORE, 10 CRORE, 70 CRORE and MANY CRORE in Thirukkural.

In this work we find the rank correlation coefficient between the most used (numbers) of kural by the people of Tamilnadu by chapters, Arathupal, Porutpal and Inbathupal. Here we are surprised of it, maximum of people knows atleast satisfied number of kurals and each chapters are with equal correlation.

2. USAGE OF NUMBERS IN THIRUKKURAL

In the overall 1330 kurals 14 number names are only used by Thiruvalluvar.

When we are scrutinizing all the couplets, we find the numbers 1, 2, 3, 4, 5, 6, 7, 8, 10, 100, CRORE, 10 CRORE, 70 CRORE and MANY CRORE in Thirukkural.

3. NUMERICAL FORM OF PEOPLE KNOWLEDGE ABOUT THIRUKKURAL

We collect the data from 1330 educated people, who uses the kural in their real life, and how many numbers of kurals they know. Some of the people know the similar numbers of kurals the repetition numbers we are classified, we try to find the uniformity of the knowable number of kural with the same total in chapter wise. The result, gives us the report no correlation between each chapters by the collection of data.

Corresponding Author: T. N. Kavitha*
Assistant Prof. of Mathematics, SCSVMV University, Kanchipuram, India.

4. THE DATA ANALYSIS OF NUMERALS

The educated people we met are at least know 312 kurals and at most they know 598 numbers of kural. So we can analyze by the number of kurals from 300 to 600 how many of them can know the same number of kural, but not the same kural. The table is below shows that:

Number of kural people know (from - to)	No Of people
300 – 320	1
321 – 340	5
341 - 360	8

361 - 380	17
381 - 400	19
401 - 420	20
421 - 440	20
441 - 460	20
461 - 480	20

481 - 500	20
501 - 520	20
521 - 540	18
541 - 560	15
560 - 580	8
581 - 5600	8

The people known number of kurals extended from 312 to 598. The known number of kurals is repeated more than one time.

We find the kurals by chapter wise and analyse it using the rank correlation method, any of the chapter have special than other? But our answer is no. All the chapters of kurals have the same place in our people mind.

The rank correlation between Arathuppal, Porutpal and Inbathuppal

The following table gives the opinion of people about the useage in their real life. The number people having the same opinion (about the same number of kurals) and we find it in the arathuppal porutpal and inbathuppal. We find their ranks.

People we met	Usage number of kurals	Arathuppal	Porutpal	Inbathuppal	Rank(A)	Rank(P)	Rank(I)
483	19	3	12	4	165.5	218	208.5
473	18	4	10	4	194	214.5	208.5
446	17	3	8	6	165.5	207	217.5
451	17	3	10	4	165.5	214.5	208.5
422	16	5	9	2	206.5	210.5	170
466	16	2	11	3	133	217	196.5
433	15	6	5	4	213	163.5	208.5
445	15	2	10	3	133	214.5	196.5
448	15	4	6	5	194	187	214.5
460	15	4	7	5	194	202	214.5
463	15	8	4	2	217.5	143.5	170
478	15	3	10	2	165.5	214.5	170
482	15	8	7	0	217.5	202	43.5
423	14	5	7	2	206.5	202	170
441	14	3	6	5	165.5	187	214.5
420	13	3	5	5	165.5	163.5	214.5
444	13	3	6	4	165.5	187	208.5
453	13	6	5	2	213	163.5	170
457	13	6	5	2	213	163.5	170
459	13	3	8	2	165.5	207	170
472	13	3	9	1	165.5	210.5	119
480	13	4	6	3	194	187	196.5
425	12	3	5	4	165.5	163.5	208.5
437	12	6	4	2	213	143.5	170
438	12	4	5	3	194	163.5	196.5
439	12	5	3	4	206.5	124.5	208.5
440	12	4	6	2	194	187	170

455	12	4	7	1	194	202	119
462	12	3	7	2	165.5	202	170
465	12	0	6	6	30	187	217.5
411	11	6	3	2	213	124.5	170
421	11	4	4	3	194	143.5	196.5
426	11	3	5	3	165.5	163.5	196.5
434	11	4	4	3	194	143.5	196.5
449	11	4	4	3	194	143.5	196.5
471	11	5	5	1	206.5	163.5	119
474	11	6	3	2	213	124.5	170
475	11	6	5	0	213	163.5	43.5
490	11	4	6	1	194	187	119
410	10	3	6	1	165.5	187	119
432	10	4	6	0	194	187	43.5
435	10	3	6	1	165.5	187	119
436	10	2	7	2	133	202	170
443	10	5	5	0	206.5	163.5	43.5
464	10	1	8	1	89.5	207	119
468	10	2	6	2	133	187	170
470	10	1	9	0	89.5	210.5	43.5
484	10	3	5	2	165.5	163.5	170
488	10	3	5	2	165.5	163.5	170
492	10	3	4	3	165.5	143.5	196.5
501	10	1	6	3	89.5	187	196.5
516	10	3	6	1	165.5	187	119
412	9	3	5	1	165.5	163.5	119
430	9	3	6	0	165.5	187	43.5
442	9	2	6	1	133	187	119
447	9	1	6	2	89.5	187	170
452	9	2	4	3	133	143.5	196.5
454	9	4	3	2	194	124.5	170
479	9	1	6	2	89.5	187	170
486	9	3	5	1	165.5	163.5	119
487	9	3	5	1	165.5	163.5	119
511	9	0	9	0	30	210.5	43.5
405	8	2	5	1	133	163.5	119
408	8	4	2	2	194	95.5	170
413	8	2	4	2	133	143.5	170
414	8	3	3	2	165.5	124.5	170
415	8	2	6	0	133	187	43.5
416	8	2	4	2	133	143.5	170
417	8	2	5	1	133	163.5	119
418	8	2	5	1	133	163.5	119
419	8	1	7	0	89.5	202	43.5
429	8	0	4	4	30	143.5	208.5
456	8	1	6	1	89.5	187	119
458	8	1	6	1	89.5	187	119
461	8	3	5	0	165.5	163.5	43.5
469	8	2	3	3	133	124.5	196.5

493	8	4	2	2	194	95.5	170
502	8	5	3	0	206.5	124.5	43.5
391	7	3	3	1	165.5	124.5	119
396	7	2	4	1	133	143.5	119
397	7	1	5	1	89.5	163.5	119
401	7	4	1	2	194	54.5	170
406	7	1	3	3	89.5	124.5	196.5
427	7	3	2	2	165.5	95.5	170
431	7	4	3	0	194	124.5	43.5
450	7	1	4	2	89.5	143.5	170
481	7	0	6	1	30	187	119
485	7	1	3	3	89.5	124.5	196.5
509	7	1	6	0	89.5	187	43.5
514	7	1	5	1	89.5	163.5	119
522	7	0	5	2	30	163.5	170
523	7	1	5	1	89.5	163.5	119
381	6	3	2	1	165.5	95.5	119
389	6	1	4	1	89.5	143.5	119
390	6	2	4	0	133	143.5	43.5
424	6	3	2	1	165.5	95.5	119
428	6	1	3	2	89.5	124.5	170
476	6	3	3	0	165.5	124.5	43.5
491	6	0	3	3	30	124.5	196.5
497	6	3	2	1	165.5	95.5	119
498	6	3	2	1	165.5	95.5	119
504	6	0	6	0	30	187	43.5
506	6	1	3	2	89.5	124.5	170
513	6	3	2	1	165.5	95.5	119
542	6	3	2	1	165.5	95.5	119
394	5	0	3	2	30	124.5	170
403	5	1	2	2	89.5	95.5	170
409	5	1	2	2	89.5	95.5	170
494	5	2	2	1	133	95.5	119
495	5	4	0	1	194	16	119
496	5	2	0	3	133	16	196.5
499	5	0	4	1	30	143.5	119
503	5	0	5	0	30	163.5	43.5
517	5	3	1	1	165.5	54.5	119
518	5	1	2	2	89.5	95.5	170
525	5	2	2	1	133	95.5	119
545	5	3	2	0	165.5	95.5	43.5
357	4	0	3	1	30	124.5	119
375	4	1	2	1	89.5	95.5	119
379	4	1	2	1	89.5	95.5	119
395	4	2	0	2	133	16	170
398	4	1	2	1	89.5	95.5	119
399	4	1	2	1	89.5	95.5	119
402	4	1	2	1	89.5	95.5	119
467	4	2	2	0	133	95.5	43.5

505	4	3	1	0	165.5	54.5	43.5
508	4	2	1	1	133	54.5	119
510	4	1	3	0	89.5	124.5	43.5
519	4	4	0	0	194	16	43.5
520	4	1	3	0	89.5	124.5	43.5
526	4	0	4	0	30	143.5	43.5
533	4	2	1	1	133	54.5	119
537	4	1	2	1	89.5	95.5	119
543	4	1	3	0	89.5	124.5	43.5
551	4	3	1	0	165.5	54.5	43.5
352	3	2	1	0	133	54.5	43.5
361	3	0	1	2	30	54.5	170
362	3	1	1	1	89.5	54.5	119
363	3	1	1	1	89.5	54.5	119
364	3	1	2	0	89.5	95.5	43.5
376	3	0	1	2	30	54.5	170
380	3	0	2	1	30	95.5	119
383	3	3	0	0	165.5	16	43.5
385	3	0	2	1	30	95.5	119
386	3	0	2	1	30	95.5	119
393	3	2	1	0	133	54.5	43.5
404	3	0	2	1	30	95.5	119
407	3	0	3	0	30	124.5	43.5
500	3	2	0	1	133	16	119
524	3	1	2	0	89.5	95.5	43.5
529	3	1	1	1	89.5	54.5	119
558	3	0	3	0	30	124.5	43.5
562	3	2	1	0	133	54.5	43.5
337	2	1	1	0	89.5	54.5	43.5
340	2	0	2	0	30	95.5	43.5
367	2	1	0	1	89.5	16	119
368	2	0	1	1	30	54.5	119
374	2	0	1	1	30	54.5	119
388	2	0	2	0	30	95.5	43.5
400	2	0	2	0	30	95.5	43.5
489	2	1	1	0	89.5	54.5	43.5
507	2	0	1	1	30	54.5	119
512	2	0	1	1	30	54.5	119
521	2	1	1	0	89.5	54.5	43.5
527	2	1	0	1	89.5	16	119
528	2	0	2	0	30	95.5	43.5
535	2	1	1	0	89.5	54.5	43.5
538	2	1	0	1	89.5	16	119
549	2	0	2	0	30	95.5	43.5
550	2	0	2	0	30	95.5	43.5
554	2	1	1	0	89.5	54.5	43.5
561	2	0	2	0	30	95.5	43.5
564	2	1	1	0	89.5	54.5	43.5
566	2	0	2	0	30	95.5	43.5

578	2	1	1	0	89.5	54.5	43.5
583	2	2	0	0	133	16	43.5
312	1	0	0	1	30	16	119
330	1	1	0	0	89.5	16	43.5
331	1	1	0	0	89.5	16	43.5
338	1	1	0	0	89.5	16	43.5
342	1	0	1	0	30	54.5	43.5
350	1	0	1	0	30	54.5	43.5
354	1	1	0	0	89.5	16	43.5
355	1	0	1	0	30	54.5	43.5
358	1	1	0	0	89.5	16	43.5
359	1	1	0	0	89.5	16	43.5
365	1	0	1	0	30	54.5	43.5
366	1	0	1	0	30	54.5	43.5
370	1	0	1	0	30	54.5	43.5
373	1	1	0	0	89.5	16	43.5
377	1	0	0	1	30	16	119
378	1	0	0	1	30	16	119
384	1	1	0	0	89.5	16	43.5
387	1	1	0	0	89.5	16	43.5
392	1	0	1	0	30	54.5	43.5
515	1	0	1	0	30	54.5	43.5
530	1	0	1	0	30	54.5	43.5
531	1	0	1	0	30	54.5	43.5
534	1	0	1	0	30	54.5	43.5
536	1	0	1	0	30	54.5	43.5
539	1	0	0	1	30	16	119
541	1	1	0	0	89.5	16	43.5
544	1	0	1	0	30	54.5	43.5
548	1	0	0	1	30	16	119
553	1	0	1	0	30	54.5	43.5
556	1	0	1	0	30	54.5	43.5
559	1	1	0	0	89.5	16	43.5
560	1	0	1	0	30	54.5	43.5
565	1	0	1	0	30	54.5	43.5
567	1	1	0	0	89.5	16	43.5
569	1	0	0	1	30	16	119
579	1	1	0	0	89.5	16	43.5
581	1	1	0	0	89.5	16	43.5
582	1	0	1	0	30	54.5	43.5
585	1	0	1	0	30	54.5	43.5
590	1	0	1	0	30	54.5	43.5
593	1	1	0	0	89.5	16	43.5
598	1	0	1	0	30	54.5	43.5

Considering the orders corresponding to two characteristics Arathupal, Porutpal or Porutpal, Inbathupal and Arathupal, Inbathupal the correlation between these 218 pairs of ranks is called the rank correlation in this two characteristics.

The Karl Pearson's formula for calculating rank correlation is developed on the assumption that the values of the variables are exactly measurable.

where $d = x - y$ is the difference between two characteristic ranks of corresponding pairs of A, P and I.

When the values of arathupal (A) and porutpal (P), Inbathupal (I) are find, we can rank the values in each of the variables and determine the Spearman's rank correlation coefficient. If two or more observation have the same rank we assign to them the mean rank. In this case, there is a correlation factor in the formula for ρ . The formula for ρ is given by,

$$\rho = 1 - \frac{6 \left[\sum d^2 + \frac{\sum m(m^2 - 1)}{12} \right]}{n(n^2 - 1)}$$

Therefore the repeated number of ranks can be calculated to find the rank correlation. The rank correlation between arathupal and porutpal

$$P_{AP} = 1 - \frac{6 \left[\sum d^2 + 41928.5 + 17900 \right]}{218(218^2 - 1)} = 1 - \frac{6 \left[949277 + 59828.5 \right]}{10360014} = 1 - 0.58442 = 0.41558$$

The rank correlation between porutpal and inbathupal

$$P_{PI} = 1 - \frac{6 \left[\sum d^2 + 17900 + 80483 \right]}{218(218^2 - 1)} = 1 - \frac{6(855228 + 98383)}{10360014} = 1 - 0.55228 = 0.44772$$

The rank correlation between arathupal and inbathupal

$$P_{AI} = 1 - \frac{6 \left[\sum d^2 + 80483 + 41928.5 \right]}{218(218^2 - 1)} = 1 - \frac{6 \left[941784 + 122411.5 \right]}{10360014} = 1 - 0.61633 = 0.38367$$

Since the rank correlation coefficient between porutpal and inbathupal is positive and highest among the three chapters, porutpal and inbathupal have the nearest approach from people of Tamilnadu. Also it is not much difference between the another two.

REFERENCES

1. H. P. Blavatsky, 1880.. The Number Seven. *Theosophist*, June, 1880. Available online at the following links: <http://theosophy.org/tlodocs/hpb/NumberSeven.htm>, <http://www.blavatsky.net/blavatsky/arts/NumberSeven.htm>
2. Bullinger, E.W. 1921. Number in Scripture: Its Supernatural Design and Spiritual Significance, Kregel Publications, Grand Rapids, Michigan, p. 158. The entire book is also available online at http://philologos.org/__eb-nis/ and at [http://www.levendwater.org/boeken/numbers/frameset.htm?index.html & inhoudsopgave.htm](http://www.levendwater.org/boeken/numbers/frameset.htm?index.html&inhoudsopgave.htm).
3. Raghavan Iyer, 1985. Seven Deadly Sins: The Historical Context. *Hermes*, November 1985. <http://theosophy.org/tlodocs/SevenDeadlySins-1.htm>
4. Subbu Reddiyar, N. 1990. Science in Tamil: Then and Now. International Institute of Tamil Studies, Madras. Pp68-69.
5. Vedavyas, 1998. The concise text book of Vedic Hinduism. University of Vedic Sciences, Hyderabad, India. 330 pages
6. Hamdy A. Taha, Operations research, Eighth edition-2008.
7. Thiruvalluvar, Thirukkural.

Source of support: Nil, Conflict of interest: None Declared

[Copy right © 2016. This is an Open Access article distributed under the terms of the International Journal of Mathematical Archive (IJMA), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.]