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A i li[illegible] e i [illegible] aly i of o ivi y a e[illegible] of i[illegible] e i al a o of ige ia [illegible] g 1967–2002

WILLIAMS NWAGWU

Africa Regional Centre for Information Science (ARCIS), University of Ibadan, Oyo State (Nigeria)

Bi li [illegible] ic [illegible] ata n i [illegible] ical [illegible] ratu[illegible] f Ni[illegible] ria [illegible] ra n fr m [illegible] artic[illegible] s li[illegible] ri [illegible] M [illegible] c [illegible] ri [illegible] p[illegible] ri 1967 2002, [illegible] n um[illegible] ri 6820 [illegible] [illegible] a[illegible] aly[illegible] t s tu y [illegible] p[illegible] [illegible] f p r uctivity f vari us [illegible] aut [illegible] r [illegible] [illegible] s usri L tka's [illegible] la . T[illegible] t [illegible] tal f 2184 aut [illegible] s [illegible] r [illegible] [illegible] p[illegible] [illegible] s [illegible] ivi[illegible] ri t f ur [illegible] [illegible] m t [illegible] s n [illegible] ly all aut [illegible] s , fir t aut [illegible] s n n -c [illegible] la [illegible] rativ [illegible] aut [illegible] s [illegible] c [illegible] aut [illegible] s . W [illegible] [illegible] s [illegible] t [illegible] at [illegible] p r uctivity [illegible] [illegible] s [illegible] ac [illegible] f [illegible] [illegible] s f [illegible] aut [illegible] s [illegible] fr m L tka's ri [illegible] p [illegible] r [illegible] la . T[illegible] [illegible] s ult s [illegible] t [illegible] at n ly [illegible] c [illegible] aut [illegible] r [illegible] ry [illegible] fr m [illegible] ri [illegible] p [illegible] r [illegible] s in f [illegible] la , [illegible] [illegible] r [illegible] s i n t, [illegible] alt [illegible] u [illegible] y [illegible] [illegible] vari us [illegible] n [illegible] n [illegible] s .

I[illegible] o [illegible]

T[illegible] is tri utin p[illegible] [illegible] s f s [illegible] in tific p u lic[illegible] atin s [1] [illegible] [illegible] ir s u[illegible] s s uc [illegible] [illegible] s j u[illegible] [illegible] s [2] [illegible] r s ri [illegible] [illegible] xt [3] [illegible] [illegible] [illegible] t [illegible] [illegible] ct [illegible] r[illegible] ta i s [illegible] [illegible] ularit[illegible] s . T[illegible] [illegible] is tri utin s [illegible] [illegible] c [illegible] ra[illegible] t ri[illegible] y [illegible] [illegible] J s [illegible] p s itiv s [illegible] n ss [illegible] s tra [illegible] ln [illegible] tail s ; [illegible] [illegible] [illegible] s imi[illegible] lar t [illegible] ac [illegible] [illegible] r. [illegible] rally, [illegible] is tri utin s [illegible] p [illegible] n ts [illegible] maj rs [illegible] cial [illegible] ularit[illegible] s [illegible] [illegible] [illegible] t [illegible] s i li [illegible] tric r ri f r[illegible] tric is tri utin s [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] s [illegible] ly s tu [illegible] . [4] B [illegible] [illegible] ri [5] [illegible] s cri[illegible] [illegible] i li [illegible] tric [illegible] ularit[illegible] s s uc[illegible] ctly, [illegible] s [illegible] [illegible] y [illegible] y cn f rm t [illegible] [illegible] ral

[illegible] [illegible] [illegible] r 20, 2005

Address for correspondence:
WILLIAMS NWAGWU
Africa [illegible] in [illegible] al [illegible] [illegible] f r[illegible] f rmatin [illegible] [illegible] (ARCIS)
6 [illegible] R , P.O. B x 22133 UIPO, [illegible] [illegible] ity f I [illegible] a [illegible] , Oy [illegible] [illegible] , Ni[illegible] ria
E-mail: i[illegible] [illegible] i@ya [illegible] .c m

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ri e is p e r la . Acc r ri t him, the e ularities fitn s tart it h ap p ulatin f is e e t en tities s uc h as articles , j ur als r a y the rs cial se ryatin s . Eac h f the se se ryatin sp r ues s m t h e r a tim -lik yaria d s uc h as citatin s e e iv , r n ume r f articl sp u lis h , as the cas may e . The se e ularities a n ri the s cial a i m ical s cin e s e e the e fitn e xis ts m ifficulty ri cn ep tualisri a e fi ri p e cis ly lat yaria d s ul e cn s i e e as c mp n en ts f a e ularity.

The i li m tric is tri utin s actually ri ri at ri 1926, hen A.J L tka, a i mat h matici a , ri e s ti at the list ratu e up ut f as amp d f c h mis ts a f n t lat the n ume r f aut h s h la p u lis h a spe cific n ume r fp pe rs as pp r xim at ly e qual t the ri e s qua e f t lat n ume r multi li y the n ume r f aut h s h la p u lis h ne p pe r n ly. L tka a e his a alys is n the p e r e latin ,

T is is e ry tru f Ni e ria, e sp ist . n e . arly is t ry f. ast m ts ri t is e . ar . Ri it e . arly ri t h is t ry f i li m tric s , Ai ye ku[14] fla e ff i li m tric e e . arc h n l cal list ratu e n e carri ut . a i li m tric . n cum n tatin . n . alys is f e rp ical list ratu e f Ni e ria. n s m f is s tu e i s t. at f ll e , Ai ye ku[15] s tu e i t h p r uctivity f e rp ical aut h rs ri Ni e ria, n . als e t s t t h yali ity f Br k s p r . a ility t h ry n e rp ical list ratu e . ar ri . pp licatin s f Bra f r s la .[16]

M e e . lat t t is s tu y. a e T y s[17] cn s tructin f. a i li rp ly n Ni e ria n t m l ical list ratu e , n . a s tu y f t h c. aract ris tics f Ni e ria n t m l ical list ratu e ri 1975 . a e n t. at i li rp ly.[18] B a e n T y s i li rp ly, A la i[19] . n . aly e t h p r uctivity f n t m l ical s cin tis ts . n j ur. als y . pp ly ri Bra f r s la . Als , Gp ta[6] t s t t h yali ity f L tka s la n f ur. aut h r cat ri s f t h n t m l ical e e . arc h ri Ni e ria f r t h p e ri 1900 1974 n. am ly . all. aut h rs , fir st. aut h rs n n -c lla rativ . aut h rs . n c -aut h rs . H e s. ta lis h t. at t h ri e e s qua e la f L tka i n t. pp ly t . n y f t h cat ri s , alt h u h t h ri e e p e r e rs in f t h la . pp li it h yari us e p n n t yalu s . n . n t h rs tu y n i c h mical list ratu e ri Ni e ria, Gp ta[20] e p ist t. at t h ri e e s qua e la f L tka n ly. pp li ri t s ituatin s : e n e . ac h aut h r . as i n full c e it f r full . aut h rs p . n e n ly fir st. aut h rs e e c n t . Gp ta. als s h e t. at a e n e ral ri e e p e r e latin it h t h e p n n ts f 2.3. n 2.9. pp li t t h . ata e t n n n -c lla rativ . aut h rs . n c -aut h rs n ly. A p. art fr m t h e s tu e i s , ic h f cu e n s u j ct. a e . as , s m f ic h a e h e e r, e lat t i m ici e , t h e isn i n tifi e ff rt . ai m . at fitti t h e n e ral i m ical list ratu e f Ni e ria t L tka s is tri utin .

e o ology

Alt h u h s m ri s titutin s ri Ni e ria mai tai lis ts f p u licatin s f t h ir s cin tis ts , t h e is n n. atin. al s cin tific . ata. a e ri Ni e ria t. at ri e e s Ni e ria s i m ical list ratu e f Ni e ria. W t h e f e s ist t M h e f t h Natin. al Li rary f M ici e (NLM), USA, c e ri . a p e ri f 36 y. ars (1967 2002). n t is ln p e ri f c e ra e , M h e ri e e n ly e i it f Ni e ria s 121 j ur. als , n t is . as im licatin s t. at t h . ata u e ri t is . artic l c e e n ly p u licatin s ri t h e e i it j ur. als , ri . a itin t t h e p u lis h ri j ur. als / s ur e s ut s i e Ni e ria. T is im lis t. at p u licatin s ri l cal. n t h r j ur. als t. at a e n tri e e ri M h e . a e . aut matically e xclu e fr m t h . ata u e ri t is . artic l , n t is cn s titu t s. as ur e f e . ak e ss t ur e s ult. T h . ata . as s ur e fr m Ovi CD-ROM e rs in f M h e . ayaila l . at t h O e ku Li rary, t h m ical li rary f t h U i e rs ity C l e H sp ital f t h U i e rs ity f I. a. n , Ni e ria.

Pa [10,11] amn t h s, ha e s timat t h p. aram t s α. a k, usi t h d. as t s quar s ma t h, ap r e ur t. hat ha s en s h n t ha e e ral ra acks. T h maj r e t. ack is t. hat t h hi e. ar d. as t s quar s ma t h i v s n ly. acep ta d r s ults h n ata ar tru cat. But Nic h ls [21] ha s h n t. hat t h maximum lik li h ma t h is t h e s t f r e s timati α. Usi t his ma t h, R use. au. a R use. au [22] ha p r vi e a fe n hi e s ft. ar, LOTKA, hic h is cp. a d f is lati all t h valu s f α. a k, as e ll as t s ti t h e p. aram t s f r n e ss f fit. at n e, fi v. a tn pe ren t d v ls f s in ifica e r spe ctiv ly. R use. au. a R use. au's p r ramm f ll s Nic h ls' ma t h l yn. am ly spe cificatin f t h m e l (L tka's p e r la), r. a izatin f t h ata (i. as i e -fr qun cy f rm, usi all ata, is n tru catin ha e en pe rf rm), e s timatin (usi t h maximum lik li h pp r. ac h). a t s ti (usi K lm r v-Smir v). LOTKA e ks t h n e ss f fit y c m. ari K lm r r v-Smir v (K-S) maximum if f m e t s ts. tatis tic (|D-Max|) it h t h K-S. ta d valu s. at 0.01, 0.05. a 0.1s in ifica e d v ls. a i n e s f fe m.

T h en tral c. hara t ris tic. a u e f L tka's la is t. hat t h e p n en t, α, f t h is tri utin. a t h cn s. ta t, k,. ar ri icat s f ni e quality ri t h p r uctin f s ein tis s ri. a i li rp hy. W ill e t s ti t h hy t h e s t. hat t h p r uctivity p. at r fe. ac h f t h if f m t. aut h r cat ri s ri t h i ma ical lit ratur f Ni e ria if f s s in ifica tly fr m t h valu s f t h ri v ie p e r r. latin s hi. T his n e s. ta ri is v ry u e ful f r t h v m m t, r e. arc h ri s titutin s. a t h r. a en ei s, hic h may. a t t e s in r s ure. all catin p r rams. a e n. a ri f rm f t h k d e f t h p r uctivity f t h vari us. aut h r cat ri s.

W cat ri e t h. aut h s ri t f ur cat ri sn. am ly:

(i) 'All. aut h s', ri hic h all. aut h s e r c n t. T his cn f rms t c m d t. aut h r c n ti ma t h ri hic h. ac h f t h. aut h s r e i v s. a er i e qual t n e. ac h tim his r h n. am. pp e. as n t h yhi e f a. arti d ri t h i li rp hy.

(ii) 'Fir s t. aut h s' r s trai ht. aut h r c n ti ri hic h n ly t h fir s t. aut h s r e i v. a er i e qual t n e n e d cti t h c -aut h s.

(iii) 'C -aut h s' ri hic h n ly. aut h s h. pp e. ar. as c -aut h s e r cn s i e r.

(iv) S d rn n -c lla rativ. aut h s, r. ar ri t h e. aut h s h. pp e. ar. as sri d. aut h s n ly.

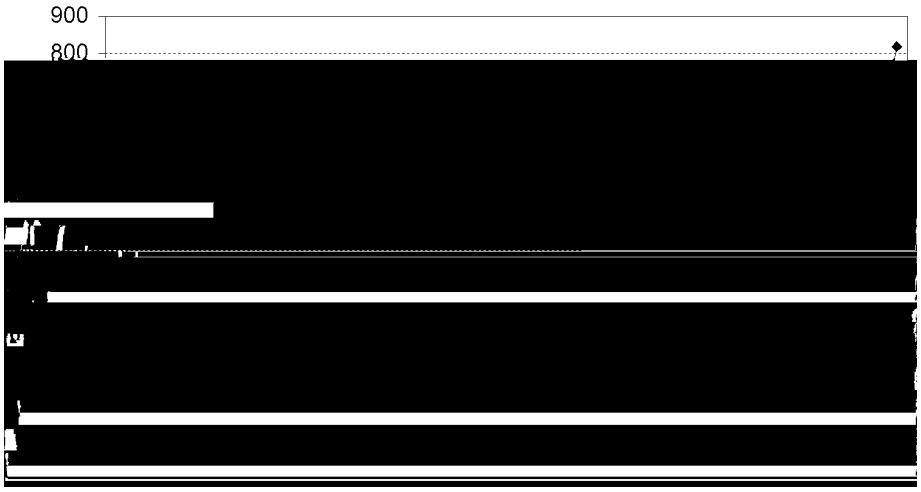
a a e a i , a aly i i i

Fi ur 1s h s t h is tri utin f t h. arti d s. acc r ri t t h. aut h r cat ri s e ha spe cifi. Fir s t. aut h s n ly cn tri ut 63.06% f t h. arti d s; c -aut h s cn tri ut 16.48% hi s d. aut h s cn tri ut 20.45%. T h fi ur s h s t. hat. aut h s, h p u lis h. as c -aut h s n ly, f ll e y t h e h. pp e. ar. as s d. aut h s n ly, cn tri ut t h d. as tn um e r f. arti d s. all t h u h t h p e ri e xep t

uri 2001, ji l aut h rs h r t articl s as multi l aut h rs pp e ar t ja v cn tri ut t h m s t. W n all t h aut h rs ar a r at t e t h r, t h ir cn tri utin is vi us ly ji h r t ja t h t h s f t h fir t aut h rs as e ll as t h r cat ri s f aut h rs, a t ji s acc n ts f r t h lar e p rp rtin f aut h rs ri t h 'all aut h rs' cat ry.

T m e t it h t h r qui r m n t f r usri L tka's la , e r a i e t h ata as a is tri utin f articl s v r aut h rs f re ac h f t h cat ri s f aut h rs as s h n ri Ta l 1.

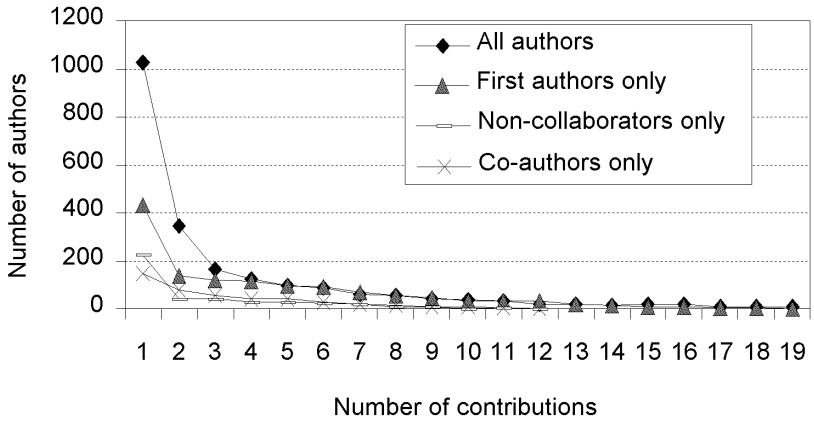
Ta l 1 s h s t at v r 59.6% f t h aut h rs pp e ar as 'fir t aut h rs n ly', a 19.6% pp e ar as ri n -c lla rati v aut h rs n ly', ji l 20.6% pp e ar as 'c - aut h rs n ly'. H n e , t h n um e r f s ci n ti ts pp e ari as 'fir t aut h rs n ly' as m r t ja t h s pp e ari as e it h r n n -c lla rati v r c -aut h rs. Gi n t h p r yal n e f c -aut h rs ji ri i m ici , n n -c lla rati v p u licatin s c ul s in ify t h upt ut f aut h rs h e it h r c h s t rk al n e r ar fr m is qi li e s h r c lla ratin is n t h avy, alt h u h s uc h p u licatin s ar p u li h ri i m ical j ur als. O t h t h r ja , m r s ci n ti ts pp e ar as 'c -aut h rs n ly' t ja t h s h pp e ar as ri n -c lla rati v aut h rs n ly'. T ji s mi ji e ri icati v f a lar e n um e r f aut h rs h ma e pp rtu is tic cn tri utin s t f rmal i m ical s ci n e ri Ni e ria uri t h p e ri . T h s aut h rs e it h rp artici at ri r s arc h activiti s ri ji c h t h y ma e s in ifica t cn tri utin s, ji c h qualify t h m t c -aut h rs ji , r s u mi t e r e t h s is ji c h ar p r a ly c -aut h r y t h ir s p e rvis rs/a vi e rs.



Fi ur 1. Di tri utin f articl s y t h aut h r cat ri s uri t h p e ri

Ta e 1. Di tri utin f arti e s e r aut h s

Num e r f cn tri utin s (x)	All aut h s (y)		Fir t aut h s		Nn -c lla rati e aut h s		C -aut h s	
	N . f aut h s	% f t tal	N . f aut h s	% f t tal	N . f aut h s	% f t tal	N . f aut h s	% f t tal
T tal	n = 2184		n = 1302		n = 430		n = 452	
1	1027	47.028	120	32.850	225	52.942	264	67.341
2	345	15.797	115	10.518	42	9.882	38	9.692
3	167	7.646	98	9.146	40	9.412	18	4.590
4	124	5.677	91	8.765	28	6.588	48	12.240
5	98	4.487	65	7.469	27	6.353	6	1.533
6	87	3.983	53	7.088	23	5.412	3	0.761
7	59	2.701	45	5.107	17	4.000	6	1.530
8	53	2.426	33	4.040	9	2.118	5	1.272
9	43	1.968	29	3.430	8	1.882	1	0.252
10	38	1.739	32	2.515	2	0.471	1	0.254
11	34	1.556	16	2.363	3	0.706	1	0.251
12	19	0.869	10	2.439	1	0.235	1	0.254
13	17	0.778	9	1.372				
14	13	0.595	8	0.915				
15	17	0.778	5	0.686				
16	18	0.824	3	0.610				
17	9	0.412	1	0.381				
18	9	0.412		0.229				
19	7	0.320		0.076				
20	0							
21	2							
22	1							
23	6							
24	1							
25	6							



Fi ue 2. Si e -fe qu n cy is tri utin f aut h s maki x cn tri utin s

W p l st t e h fr qu n cy is tri utin f t e ra se ryatin s fn um e r f aut h rs a ai s tn um e r f cn tri utin s f r t e f ur cat ri s . Fi ur 2s h s cl arly t at t e is tri utin f t e yari us cat ri s f aut h rs ri t e i ma ical lit ratur f Ni e ria actually se rv s t e ne ral f rm f t e i li m tric is tri utin s . Is t usn e xami e t e is tri utin f aut h rs p s ri t e yari us cat ri s f aut h rs , n als is lat t e ir p aram t rs .

E ri a io of e va io a ego ie

Ta l 2s h s t e p aram t rs f t e yari us cat ri s f aut h rs , t e K lm r v-Smir vs tatis tics n t e ir yari us D-Max yalu s .

Ta l 2. Param t rs f t e yari us aut h r cat ri s

Aut h r cat ri s	D Max	Param t r	N	Df	K lm r v-Smir vs tatis tics 1%	2%	10%
All aut h rs	0.0840	$\alpha = 1.88$ k = 56.38%	2184	24	0.0349	0.0291	0.0261
Fir t aut h rs	0.1703	$\alpha = 1.64$ k = 45.74%	1312	24	0.0450	0.0375	0.0337
Nn -c lla rati aut h rs	0.0997	$\alpha = 1.97$ k = 57.94%	430	11	0.0793	0.0662	0.0794
C -aut h rs	0.0166	$\alpha = 2.34$ k = 68.04%	452	11	0.0823	0.0687	0.0616

All authors

T e n tir se t f aut h rs ri t e cat ry f 'all aut h rs' as als cn s i e r as a sri l r p , n t is as cn s titut f t e 2184 aut h rs ri t e ata t. An e xami atin f t e is tri utin f artic l s ri t is cat ry (ri Ta l 1)s h s t at a ut 47% f t e s ein tis ts cn tri ut just n e artic l e ac h ri t e i li rp y i l a ut 16% cn tri ut n ly t it ms e ac h n a ut 7% cn tri ut t ir e artic l s e ac h On t e t e r a , n ly a ut 8% f t e aut h rs ri t e i li rp y cn tri ut at l as t 10 it ms e ac h T is e s ult c m ar L tka's ri ri al e s ult cl s ly. F rri s tn e , L tka a e s tim at t at ut f all t e aut h rs ri a i n fi l , 60% ill av just n e p u licatin e ac h n 15% ill av just t p u licatin s e ac h i l 7% f t e aut h rs ill av t ir e p u licatin s e ac h n s n ; s uc h t at n ly a ut 6% f aut h rs ri n y i li rp y ri n y fi l c ul p r u e p t 10 it ms e ac h LOTKA ri cat t at $\alpha = 1.88$, i l t e ri t rep t as 56.38%. Hn e , α as t e f rm f L tka's ri e p e r la . Als , t e ata yi l e a e lativ ly l p rp rtin f s ein tis ts it h just a sri l cn tri utin ri t e i li rp y, n am ly $k = 56.38\%$ a ai s t L tka's n en c h markri ic h $k = 60.79$.

F r the hy the sis, Table 2 s h s that LOTKA ni ication that the |D-Max| = 0.084, hile K-S = 0.0349, 0.0291, 0.0261 at 1%, 5% a 10% s in ificance le el ve ls re spe ctiv ely. We c ul then ase that the K lm r v-Smir v maximum iffe en e s tatis tic |D-Max| f r the all aut h r ca t ry is le, at r that the quiyalen t critical yalu s (K-S) at the thre le el ve ls f s in ificance . We the e f re ject the n ull hy the sis a cn clud that the ca t ry f 'all aut h rs' in t iffe r fr m the ge neral ni ve rse p e r is tri utin .

Only first authors

n t his ca t ry, the t taln um e r f aut h rs, N, as 1212. A ut 33% f the s cin tis ts ni t his ca t ry ma e a si le cn tri utin e ach h ild a ut 10% ma e 2 cn tri utin s e ach h a a ut 9% ma e 3 cn tri utin s e ach M e r that 31% cn tri ut e tween 4 a 9 it ms h ild a ut 8% cn tri ut a t le as t 10 it ms e ach h A ai , this nf rmatin ca e c mp ar it h LOTKA's ri ni al is lat s t s h that the p r ue rs ar cl se t ine ti L tka's n e r sult.

We s ta lis the that $\alpha = 1.64$, usi LOTKA (see Table 2). The is tri utin f the 'firs t-aut h r-n ly' ca t ryni the i li rp hy, als f ll e the ni ve rse p e r tpe f e latin s hip . The c re sp n ni yalu *k*, the p rp rtin f the s cin tis ts that cn tri ut just ne it me ach is 45.74%, e ry muc h l e r that LOTKA's e r sult f 60.79. n i c mp aris n it h the ca t ry f 'all aut h rs', 'firs t aut h rs n ly' ca t ry se ms t ha e e it r p r uctivityp aramet rs, it h *k* e ni l e r e lativ t 'all aut h rs' ca t ry. Alt h u h the ni ies iffe r, t his e r sult cn f rms t that f Gp ta[6] n en t m l ical ist ratur f Nig ria, ni hic h the ca t ries aut h rs the s ame ay as ne ni t his artic l . At 18 f a 0.05 s in ificance le el, the K lm r v-Smir v maximum iffe en e s tatis tic ((|D-max|)) = 0.1703) as e, at r that the quiyalen t critical yalu s, KS = 0.045, 0.0375 a 0.0337 at 1%, 5% a 10% le el ve ls f s in ificance e re spe ctiv ely. We the e f re ject the n ull hy the sis a cn clud that the slpe f the 'firs t aut h rs n ly' ca t ry in t iffe r fr m the ni ve rse p e r la .

Non-collaborative authors

n Table 1, e s a that a ut 430 s cin tis ts ma e p t his ca t ry. A ut 53% f the s cin tis ts p r ue ne it me ach h ild a ut 10% p r ue t it ms e ach h ild ma e the 9% p r ue t his it ms. A ut 24% p r ue e tween 4 a 10 artic l s h ild ss that 2% p r ue a le, as ten it ms.

LOTKA's h e that slpe f the is tri utin fn n -c lla ra ti e aut h rs is 1.97, a , $k = 57.94\%$. hen e , the p rimitiv f rm f the L tka's ni ve rse s quar f rm as n t ma t (α 2), alt h u h the is tri utin ma t the ni ve rse p e r e ctatin . The p rp rtin f s cin tis ts it h n ly ne n it ten try ni the i li rp hy as e lativ ly

ji h $k = 57.94\%$ ri c rp. ari s n it h it h r th 'all aut h r' cat ry r th 'fir st aut h rs n ly cat ry'.

W. al s t s t th r th s rv yalu f th s lp e . as if f m t fr m th yalu s e p e ct fr m th ri v re p e r la yalu y c rp. ari th K lm r v-Smir v maximum if f m e s tati tic (|D-max|) it h th e quiyal n t critical yalu s, fr m Ta l 2. W f n t hat (|D-max|) = 0.0997. n t hat K-S = 0.0793, 0.0662, 0.0794. at 1%, 5%. n 10% 0.05 s in ifica e l v l s, r sp e ctiv ly. Si e th maximum if f m e s tati tic . as r. at r t h th th r tical yalu , th hy th s is t hat th s lp e f th n n - c lla rati v . aut h rs ul n t if f r fr m th ri v re p e r la . as r j ct , s t hat e cn clu e t hat th cat ry fn n -c lla rati v . aut h rs i n t if f r fr m th ri v re p e r la .

Co-authors only

Th t tal um e r fs ci n ti s ti t h s cat ry . as 452. I t h s cat ry, a ut 32% p r u e n e t m e. ac h jd m r t h 17% p r u e t t m e. ac h n t h e t m e. ac h e r p r u e y m r t h 12% f th s ci n ti s t . W e s ta li th t hat f r th c - . aut h rs cat ry, α, is 2.34. Th n um e r f. aut h rs it h a sri l . artic l e. ac h ri th i li rp hy . as. as ji h as $k = 68.04\%$.

Ta l 2 s h s t hat at 11 .f., th maximum if f m e f th K lm r v-Smir v s tati tic . as 0.0166 jd th th r tical e quiyal n t critical yalu . at 1%, 5%. n 10% s in ifica e l v l. ar 0.0823, 0.0687, n 0.0616. Th maximum if f m e s tati tic is l ss t h th critical yalu s. at th sp e cifi s in ifica e l v l s, s t hat e . ac p t th n ull hy th s is n. am ly t hat th is tri utin f c -aut h rs n ly i if f r fr m th ri v re p e r r latin .

m m a y n o l i n

W hat h as e n n e ri t h s. artic l is t t s t th p r s cri e . aut h r cat ri s f th i m ical p u licatin s f Ni e ria li t ri M h e uri 1967 2002 f r fitti t L tka's la fs ci n tific p r uctivity. W h av e n t hat th cat ri s f 'all aut h rs', 'fir st aut h rs', ri n -c lla rati v . aut h rs' i fit th L tka's ri v re p e r la it h if f m tp. aram t rs f α = 1.88, 1.64. n 1.97, r sp e ctiv ly. As c ul e e n , th p r uctivity c e ffici n t f 'fir st aut h rs n ly' ri ica t ji h rp r uctivity p. aram t r (α = 1.64) t h th th r cat ri s .

W cn c rp. ar t h s r s ult it h t hat f Gp ta[6] n th s u j cts f n t m l y. n i c h mis try. Gp ta s h e t hat f r Ni e ria n t m l ical li t ratur , c v ri th p e ri 1900 1973, th . ata n th f ur cat ri s f. aut h rs fit t L tka's tp e f la it h p n n t yalu s rn ri e t e n 1.8. n 2.4. Gp ta fur th r s h e t hat it h r sp e ct t Ni e ria i c h mical li t ratur uri 1970 1984, th ri v re p e r la

. pp li t t h s t fn n -c lla rati . aut h s it h a e p n n t f 2.3. a c -aut h s n ly it h a e p n n t f 2.6. T is . lat r e s ult c m. a s it h ur e s ult it h s p e ct t . all. aut h s. a fir t. aut h s , ut if f e it h s p e ct t n n -c lla rati e . aut h s. a c -aut h s . It is. a e qua t s r e t. h ats m s h rt tim p e ri ri Gp . ta s s tu i s n n t m l y uri (1900 1973). a i c h mis try uri (1970 1984) li s ut s i e , h l . a t h rs h rt p e ri is s u s um y, t h tim p e ri ri urs tu y (1967 2002).

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I rat fully. ack l e t h h l f Pr f. Dr. Rn. al R us e. au f KHBO, li l ium h e. a t h fir t raft f t is. artic l . a h s u s tin s e. atly im r e t h quality f t is. artic l .

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