

American Journal Of Agricultural Economics: A Bibliometric Analysis

Sindhu V. Navghare¹ Dr. Madhukar D. Garad²

¹Research Scholar Dr. Babasaheb Ambedkar Marathwada University,
Chhatrapati Sambhajanagar, Maharashtra, India – 431004

²Former Librarian, Ankushrao Tope College, Jalna, Maharashtra, India

Abstract- *The present study provide a bibliometric analysis of total 1026 articles published in “American Journal of Agricultural Economics” (AJAE) covering a ten-year period from 2010 to 2019. AJAE during the selected period analyze with the help of bibliometric techniques with the aim of examining the publication trends, publication productivity and collaboration rate, authorship and collaboration trend, most productive author, international collaboration pattern of articles, institution- wise distribution, and degree of collaboration and rate of single authorship, in the field of agricultural economics. Out of 1026 articles, 750 (73%) were multi-authored publications, while 276 (27%) were single-authored, demonstrating a strong inclination towards collaborative research. The highest publication output was observed in 2011 with 136 articles, whereas the lowest was recorded in 2017 with 82 articles. The overall Degree of Collaboration (DC) was found to be 0.73, indicating a predominance of multiple authorship. Conversely, the rate of single authorship showed a decreasing trend across the decade, signifying a growing culture of cooperative scientific engagement.*

Keywords- Agricultural Economic; Bibliometric Analysis; United States; Economic; Bibliometric; Degree of collaboration.

I. INTRODUCTION

“A Publication which has scholarly usually written by professors, researchers or experts in a subject’s area & not intended for the general public” (Glossary of Library Information communication & technological terms & acronyms, 2007). Journals are the primary source of information and an important media for communication. They play a major role for communicating the latest research findings and publishing the articles containing the current development in any field of knowledge. In the digital age journals have also appeared in digital form i.e. E-journals. An electronic version of journal is called as E-journal. E-journals are usually published on web. They are specialized form of electronic document they have the purpose of providing material for academic research & study & they are formatted

approximately like journal articles in traditional printed journals.

The American Journal of Agricultural Economics is a peer-reviewed academic journal of agricultural, natural resource, and environmental economics, as well as rural and community development. AJAE published five times per year, it is one of two journals published by the Agricultural & Applied Economics Association, along with Applied Economic Perspectives and Policy. It was established in 1919, at which point it was called the Journal of Farm Economics.

Economic

Economics is the social science that studies how individuals, businesses, and governments make choices to allocate scarce resources for the production, distribution, and consumption of goods and services. It is the study of scarcity, choice, and the production, distribution, and consumption of wealth and resources.

Economics is the Study of People in their Ordinary business of life, earning and enjoying a living. “Economics as a social science that studies how societies choose to employ scarce, alternative resources to produce and distribute goods and services for consumption now and in the future” (Paul Samuelson, 1980).

Agricultural Economic

Agricultural economics is a branch of economics that applies economic principles to the agricultural sector, including the production, distribution, consumption, and marketing of agricultural products. It analyzes how to efficiently use scarce resources like land, labor, and capital in farming and related activities to maximize income and well-being for farmers and the wider community. The field studies issues like supply and demand, government policies, and resource allocation at both the micro and macro levels.

According to Prof. Hibbard, “Agricultural economics is the study of relationships arising from the wealth-getting and wealth-using activity of man in agriculture”.

Bibliometric

Allen Pritchard, (1969) who first used the word bibliometric described it as “application of mathematical & statistical methods to books & other media of communication”. According to Mr. Raising "The assembling and interpretation of statistics relating to books and periodicals to demonstrate historical movements to determine national and universal research, use of bank and journals and to ascertain in many local situation the general use of books and journals and to ascertain in many local situation the general use to books and journals". Bibliometric is defined as the “the application of mathematical and statistical methods to books and other media”.

Review of Literature

Bibliometric analysis continues to be a powerful approach for evaluating research trends and scholarly impact. Recent studies emphasize its ability to map intellectual structures and identify emerging themes across disciplines through co-citation, co-word, and bibliographic coupling techniques (Donthu et al., 2022). The coverage of Google Scholar in bibliometric research has been compared to Web of Science and Scopus, highlighting its inclusion of regional and non-English publications, which provides a more inclusive picture of global research, albeit with concerns about citation normalization (Martín-Martín et al., 2023).

Bibliometric is a study and measurement of all forms of written publication and their authors by applying mathematical and statistical methods. The published literature can analyze using various tools like counting, rank-frequency distributions and citation analysis. Bibliometric studies have a range of applications to such areas like book and journal acquisitions, study of communication patterns, library use analysis, obsolescence of literature, identification of specialties, and identification of prominent authors and papers. Bibliometric study helps to calculate the citations in journals, monographs and thesis in different disciplines like bibliographic form, year-wise distribution of theses, authorship pattern, ranking of core journals and country-wise distribution of cited documents (Reddy and Babu, 2016).

Academic mobility, given its importance in the dissemination of knowledge and globalization of research collaboration, has received growing attention over the past decades. Based on a bibliometric analysis of the literature on academic mobility (119) from 343 journal articles in Web of Science over the period of 2010 to 2020 (Liu, Che and Zhu, 2022). The bibliometric study used to analysis the international collaboration in the period of 2019 to 2021 on

PubMed and Scopus database on COVID -19, it found that the 159132 records published on this databases Overall, 125155 (78.6%) records were published form national, 22548 (14.2%) records were published form bi-national, and 11429 (7.2%) records were published from multi-national. And only 928 (66.8%) international publications had the highest percentage of international (Mohammad and et al, 2021). This paper contributes to this research field conducted between March 2020 and November 2020. Only 59 articles were published and 30 present actual articles were published from Home Country and other articles were published collaborative work by home and other country authors (Saeed, 2021).

The Study conduct to measuring a scientist impact through the number publication which has published by his/her scientific research work have generated and illustrated by single author or collaboratively. Let a co-author have written joint publications with one or several colleagues. Rank all the co-authors of that individual according to their number of joint publications, giving a rank r to each co-author, starting with $r = 1$ for the most prolific (Amjad, T; Daud, and Naif Radi, 2018). This study reviews the literature were used for the ranking of authors, and the study is to find out the challenges and future directions of ranking of academic objects, especially authors, for future researchers (Salman, Ahmed, and Afzal, 2021). The study used to analysis various authors contributes their contribution multi-authorship or single in the literature for better performs for the ranking of authors. And multi-authorship indices are assessed on very small datasets mostly single authors (Ausloos, 2013).

Scope & Limitations

The American Journal of Agricultural Economics is a peer-reviewed academic journal of agricultural, natural resource, and environmental economics, as well as rural and community development. AJAE published five times per year, it is one of two journals published by the Agricultural & Applied Economics Association, along with Applied Economic Perspectives and Policy. It was established in 1919, at which point it was called the Journal of Farm Economics. Scope and limitation of the present study is limited to the content of these journal is collected the total 1026 articles published from years 2010 to 2019. The data was then subjected to analysis as per the objectives of the study. All the analyzed data is arranged and tabulated systematically for making observations. At the end data accessed has analyzed by helping of MS-Excel was used for data entry and analyzed data has represented in the form of tables and graph.

Objectives of the Study

1. Year-wise publication productivity and collaboration rate.
2. Year-wise authorship and collaboration trend.
3. To find out the most productive Author.
4. To find out international collaboration pattern of articles.
5. Institution- wise distribution of contributions.
6. Degree of collaboration & rate of single authorship

Total	276	750	1026	0.73
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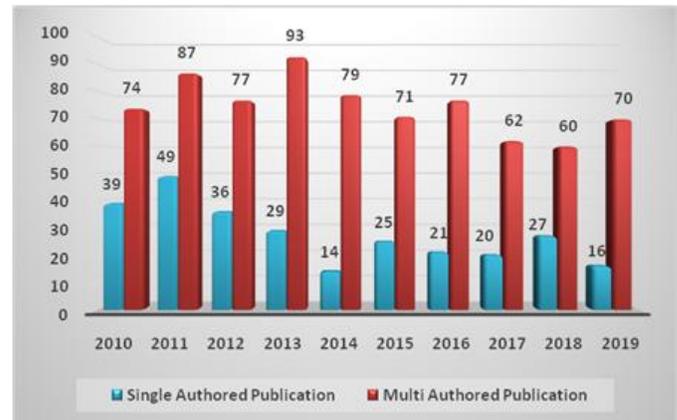


Figure No.1 Year-Wise Publication Productivity and Collaboration Rate

Methodology

Bibliometric studies include quantitative and qualitative techniques. For this purpose, several science indicators have been developed and used. The most commonly used indicator is the number of publications. To measure quality of journal present research focuses on author productivity and productivity patterns of authors writing in journal.

Data Analysis

In the American Journal of Agricultural Economics analysis of total no. of 1026 articles published during 2010 to 2019 was done. The collected data is arranged and tabulated systematically for making observations. At the end data accessed has analyzed by helping of MS-Excel was used for data entry and analyzed data has represented in the form of tables and graph.

It can be seen from table 1 & figure 1 that during 2010 to 2019 a total no. 1026 articles were published in the journal of AJAE by researchers in various countries. It is observed that the highest number of the contributions were contributed in year 2011 with 136 contributions, Minimum contributions were contributed in years 2017 with 82 contributions. In Total, over the entire period, there were 276 single authored publications, 750 multi authored publications, and a total of 1026 publications. The overall collaboration rate for this period was 0.73, indicating that, on average, 73% of publications were the result of collaboration between multiple author.

Year-wise publication productivity and collaboration rate

The year-wise distribution of publications in the American Journal of Agriculture Economics has presented in table and figure.

Year-wise Authorship and Collaboration Trend

Collaborative writing engages two or more persons in the process of producing a written work as a group, where everyone involved is contributing content or decisions on the work being produced. Collaboration in research is said to have taken place when 2 or more person work together on a scientific problem of project and effort, both intellectual.

Table no.1 Year-Wise Publication Productivity and Collaboration Rate

Year	Single Authored Publication	Multi Authored Publication	Total No. of Publication	Collaboration Rate
2010	39	74	113	0.65
2011	49	87	136	0.64
2012	36	77	113	0.68
2013	29	93	122	0.76
2014	14	79	93	0.85
2015	25	71	96	0.74
2016	21	77	98	0.79
2017	20	62	82	0.76
2018	27	60	87	0.69
2019	16	70	86	0.81

Table No. 2 Authorship and Collaboration Trend

Year	Number of paper with various authorship						Total No. of Publication
	One	Two	Three	Four	Five	More than Five	
2010	39	34	26	9	3	2	113
2011	49	33	37	14	1	2	136
2012	36	32	33	7	3	2	113
2013	29	35	34	15	6	3	122

2014	14	39	26	11	2	1	93
2015	25	32	24	11	4	0	96
2016	21	29	30	10	5	3	98
2017	20	26	22	9	3	2	82
2018	27	24	24	8	1	3	87
2019	16	21	29	9	9	2	86
Total	276	305	285	104	37	20	1026
%	26.90	29.73	27.78	10.04	3.61	1.95	100

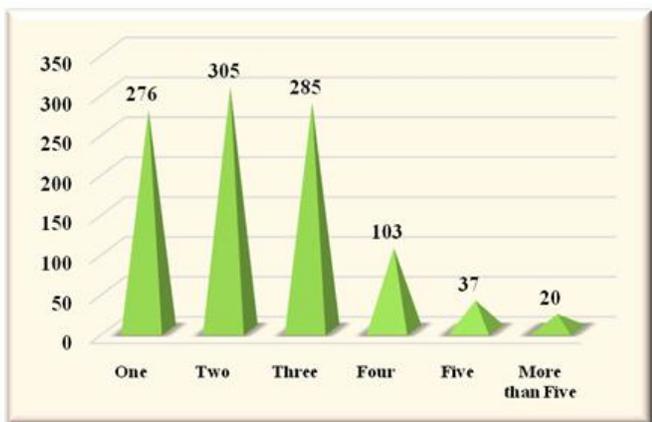


Figure No. 2 Authorship and Collaboration Trend

Analysis in the table No.2 & Figure No.2 shows that Single Authors contributions form 276 (26.90%), two authors contributions form 305 (29.73%), three authors contributions form 285 (27.78%), four authors contributions form 104 (10.14), five authors contributions form 37 (3.61%) and more than five authors Contribution from 20 (1.85%).

Most Productive Author

An author is defined both as “the person who originates or given existence to anything” and as “who sets forth written statements” in the Oxford English Dictionary. The characteristics of any literature include not only basic publishing pattern but that of the authors themselves. The authors who are highly cited in sources, are important to keep in the library, for that purpose author is ranking is essential for the librarians and the users. A rank list is prepared on the basis of frequency of citation.

Table No. 3 Most Productive Author

Sr. No.	Author	Frequency	Percentage	Rank
1	Jayson L. Lusk	13	0.53	1

2	Timothy J. Richards	13	0.53	1
3	David R. Just	12	0.49	2
4	Aaron Smith	11	0.45	3
5	Christopher B. Barrett	11	0.45	3
6	Rodolfo M. Nayga Jr.	11	0.45	3
7	Barry K. Goodwin	10	0.41	4
8	David Zilberman	10	0.41	4
9	David A. Hennessy,	9	0.37	5
10	Daniel A. Sumner	8	0.32	6
11	Gian Carlo Moschini	8	0.32	6
12	Marc F. Bellemare	8	0.32	6
13	Richard J. Sexton	8	0.32	6
14	Stephen F. Hamilton	8	0.32	6
15	Bruce A. Babcock	7	0.28	7
16	Julian M. Alston	7	0.28	7
17	Keith H. Coble	7	0.28	7
18	Madhu Khanna	7	0.28	7
19	Miguel I. Gómez	7	0.28	7
20	Philip G. Pardey	7	0.28	7

21	Jill McCluskey	6	0.24	8
22	Sergio H. Lence	6	0.24	8
23	Timothy K.M. Beatty	6	0.24	8
24	Xiaodong Du	6	0.24	8
25	Ardian Harri	5	0.20	9
26	B. Wade Brorsen	5	0.20	9
27	Bradford L. Barham	5	0.20	9
28	Carl Gagné	5	0.20	9
29	Catherine L. Kling	5	0.20	9
30	Chen Zhen	5	0.20	9
31	Gregory Colson	5	0.20	9
32	Hongli Feng	5	0.20	9
33	Jeffrey H. Dorfman	5	0.20	9
34	Kathleen Segerson	5	0.20	9
35	Matthew T. Holt	5	0.20	9
36	Michael K. Adjemian	5	0.20	9
37	Nathan P. Hendricks	5	0.20	9
38	Nicholas Magnan	5	0.20	9
39	Nigel Key	5	0.20	9
40	Pilar Useche	5	0.20	9
41	Rachael E. Goodhue	5	0.20	9

42	Robert G. Chambers	5	0.20	9
43	Scott H. Irwin,	5	0.20	9
44	Scott M. Swinton	5	0.20	9
45	Travis J. Lybbert	5	0.20	9
46	Wuyang Hu	5	0.20	9
47	Alain Carpentier	4	0.16	10
48	Alan P. Ker	4	0.16	10
49	Colin A. Carter	4	0.16	10
50	Conner Mullally	4	0.16	10
51	Dermot J. Hayes	4	0.16	10
52	Gal Hochman	4	0.16	10
53	Glynn T. Tonsor	4	0.16	10
54	Gordon C. Rausser	4	0.16	10
55	Harvey Lapan	4	0.16	10
56	J. Edward Taylor	4	0.16	10
57	Jacob Ricker-Gilbert	4	0.16	10
58	Jason H. Grant	4	0.16	10
59	Jeremy D. Foltz	4	0.16	10
60	Jesse Tack	4	0.16	10
61	John M.	4	0.16	10

	Antle			
62	Jordan F. Suter	4	0.16	10
63	Joseph A. Herriges	4	0.16	10
64	Joseph P. Janzen	4	0.16	10
65	Jun Jie Wu	4	0.16	10
66	Keith O. Fuglie	4	0.16	10
67	Maoyong Fan	4	0.16	10
68	Michael A. Boland	4	0.16	10
69	Michael R. Carter	4	0.16	10
70	Philip Garcia	4	0.16	10
71	Robert J. Myers	4	0.16	10
72	Ruiqing Miao	4	0.16	10
73	Spiro E. Stefanou	4	0.16	10
74	Thomas Reardon	4	0.16	10
75	Thomas W. Hertel	4	0.16	10
76	Tina L. Saitone	4	0.16	10
77	Wallace E. Huffman	4	0.16	10
78	Xiaoguang Chen	4	0.16	10
79	Yuqing Zheng	4	0.16	10
80	Three	267	10.83	11

	Author Publication (3x86)			
81	Two Author Publication (2x227)	454	18.42	12
82	One Author Publication (1x1296)	1296	52.58	13
	Total	2465	100	

There were 2465 contributors or authors for 1026 articles. According to the table no.3 shows the most productive authors Jayson L. and Timothy J. Richards had the highest number of first rank with 13 (0.53%) contribution, Followed by David R. Just on second rank with 12 (0.49%) contribution, Aaron Smith, Christopher B. Barrett and Rodolfo M. Nayga Jr. are followed by third rank with 11 (0.45%) contribution, then Barry K. Goodwin and David Zilberman on fourth rank with 10 (0.41%) contribution. Table gives a list of Authors showed in the articles.

International Collaboration Pattern of Articles

International collaboration means any Work with persons who are foreign nationals. Working jointly towards a common goal. Collaboration patterns provide methods based on experience to use and reuse proven ways of organizing communication and joint activities for specific collaboration tasks.

Table No. 4 International Collaboration Pattern of Articles

Year	Single Authored Publication	Int. Coll. Authored Publication	Total No. of Publication
2010	100	13	113
2011	116	20	136
2012	94	19	113
2013	96	26	122
2014	66	27	93
2015	76	20	96
2016	78	20	98
2017	71	11	82
2018	76	11	87
2019	54	32	86
Total	827	199	1026
%	80.60	19.40	100

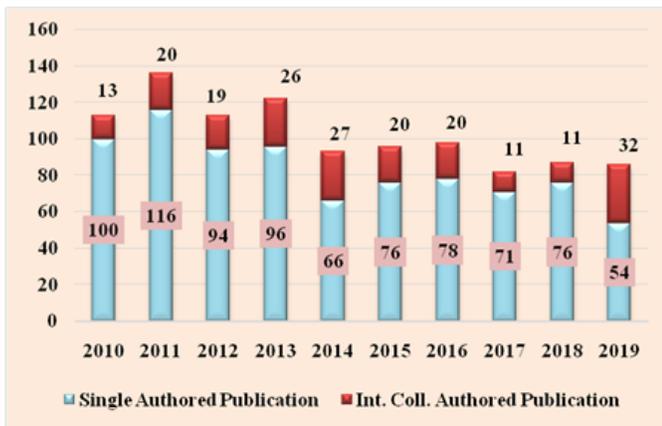


Figure No. 4 International Collaboration Pattern of Articles

This data provides insights into the international collaboration pattern over the years, showing the proportion of articles with single authors and those that involve collaboration with multiple author. It can be observed from the table no.4 and figure no. 4 shows that, out of 1026 articles, 199 articles (19.40%) are written in collaboration with International Institutions.

Institutes Wise Distribution of Articles

Institution is a society or organization for the promotion of science, education etc. An institute is a permanent organizational body created for a certain purpose. Often it is a research organization (research institution) created to do research on specific topics. An institute can also be a professional body. In some countries institutes can be part of a university or other institution of higher education, either as a group of departments or an autonomous educational institution without a classic full university status such as a University Institute. A total number 2465 of institutions involved in research activity, the institutions that have contributed in the publication during 2010-2019. The institution ranking is shown in table no.5.

Table No. 5 Institutes Wise Distribution of Articles

Sr. No.	Affiliation	Frequency	%	Rank
1	Economic Research Service, USDA, 1800 M Street N.W., Washington, DC, 20036-5831 United States	54	2.19	1
2	International Food Policy Research Institute	41	1.66	2

	(IFPRI), Washington, DC, US			
3	Department of Agricultural Economics, Purdue University, Department of Agricultural Economics, Purdue University, West Lafayette, IN 47907 United States	39	1.58	3
4	Department of Agricultural and Resource Economics, University of California-Davis, United States	38	1.54	4
5	Department of Agricultural and Consumer Economics, University of Illinois, Urbana-Champaign, United States	33	1.34	5
6	Department of Applied Economics, University of Minnesota	29	1.18	6
7	Department of Agricultural, Environmental and Development Economics, Ohio State University	27	1.10	7
8	Department of Economics, Iowa State University	24	0.97	8
9	Department of Agricultural and Resource Economics, University of Maryland, College Park, MD.	20	0.81	9
10	Department of Agricultural Economics, Kansas State University	20	0.81	9
11	Iowa State University, United States	18	0.73	10

12	USDA Economic Research Service, Washington, D.C.	18	0.73	10	Management, Cornell University, Ithaca, NY			
13	University of Minnesotas	17	0.69	11	Food and Resource Economics Department, University of Florida.	13	0.53	15
14	Department of Agricultural Economics, Mississippi State University.	16	0.65	12	University of California, Berkeley,	13	0.53	15
15	Department of Agricultural, Food, and Resource Economics, Michigan State University	16	0.65	12	University of California, Davis	13	0.53	15
16	School of Economic Sciences, Washington State University, Pullman, WA, 99164-6210	16	0.65	12	World Bank, Washington, D.C.	13	0.53	15
17	Charles H. Dyson School of Applied Economics and Management, Cornell University, U.S. Department of Agriculture, Economic Research Service	15	0.61	13	Department of Agricultural and Applied Economics, University of Wyoming, Laramie	12	0.49	16
18	Department of Agricultural and Applied Economics, University of Georgia	15	0.61	13	Department of Agricultural Economics, Texas A&M University	12	0.49	16
19	Cornell University, New York	14	0.57	14	International Institute of Tropical Agriculture (IITA), Ibadan, Nigeriya	12	0.49	16
20	Purdue University	14	0.57	14	Department of Agricultural and Applied Economics, University of Wisconsin–Madison	11	0.45	17
21	Department of Agricultural and Resource Economics, North Carolina State University	13	0.53	15	Michigan State University,	11	0.45	17
22	Department of Agricultural Economics, Oklahoma State University, US	13	0.53	15	Department of Agricultural and Resource Economics, University of California, Berkeley	10	0.41	18
23	Dyson School of Applied Economics and	13	0.53	15	Department of Agricultural Economics and Economics, Montana State University	10	0.41	18
					Department of Agricultural and Resource Economics, Oregon State University	8	0.32	19
					Department of	8	0.32	19

	Agricultural Economics and Management, The Hebrew University of Jerusalem, Israel							
37	Department of Agricultural Economics, University of Nebraska, Lincoln	8	0.32	19				
38	Department of Food, Agricultural and Resource Economics, University of Guelph, Guelph, Canada	8	0.32	19				
39	Environment and Production Technology Division, International Food Policy Research Institute, Washington, DC, USA	8	0.32	19				
40	Friedman School of Nutrition Science and Policy, Tufts University, Massachusetts, United States	8	0.32	19				
41	University of Wisconsin-Madison, Wisconsin, United States	8	0.32	19				
42	Department of Agricultural Economics and Rural Sociology, Auburn University, Auburn, Alabama	7	0.28	20				
43	Department of Applied Economics, Oregon State University	7	0.28	20				
44	Department of Resource Economics and Environmental Sociology, University of Alberta, Canada	7	0.28	20				
45	North Carolina State University, North Carolina, United States	7	0.28	20				
46	Oklahoma State University, Oklahoma, United States	7	0.28	20				
47	University of Georgia, Griffin Campus, Griffin, GA 30223, United States	7	0.28	20				
48	University of Nebraska-Lincoln, Nebraska, United States	7	0.28	20				
49	Centre for Environmental Economics and Policy, School of Agricultural and Resource Economics, University of Western Australia	6	0.24	21				
50	Department of Agricultural and Resource Economics, Colorado State University	6	0.24	21				
51	Department of Economics and Center for Agricultural and Rural Development, Iowa State University	6	0.24	21				
52	Departments of Economics and Agricultural and Resource Economics, North Carolina State University	6	0.24	21				
53	French Institute for Agricultural Research (INRA), SMART-LERECO unit, Rennes, France	6	0.24	21				
54	International Livestock Research Institute (ILRI), Nairobi, Kenya	6	0.24	21				
55	University of Florida, Gainesville, Florida, United States	6	0.24	21				
56	University of Kentucky,	6	0.24	21				

	Lexington, Kentucky, United States			
57	Five Institution Publication (5x24)	120	4.87	22
58	Four Institution Publication (4x27)	108	4.38	23
59	Three Institution Publication (3x69)	207	8.40	24
60	Two Institution Publication (2x179)	358	14.52	25
61	One Institution Publication (1x866)	866	35.13	26
	Total	2465	100	

According to the table 5 shows that, there were 2465 institutions involved in research activity. Economic Research Service, USDA, 1800 M Street N.W., Washington, DC, 20036-5831 United States is on first rank with 54 (2.19) production it is most productive institution, followed by International Food Policy Research Institute (IFPRI), Washington, DC, United States is on second rank with 41 (1.66) production, followed by Department of Agricultural Economics, Purdue University, West Lafayette, IN 47907 United States is on third rank with 39 (1.58) production, followed by Department of Agricultural and Resource Economics, University of California-Davis, United States is on forth rank with 38 (1.54) production, followed by Department of Agricultural and Consumer Economics, University of Illinois, Urbana-Champaign, United States is on fifth rank with 33 (1.34) production. There were many affiliations were contributed in the study table shows the list of affiliations with their product 866 are Institutions with Single contribution.

Degree of collaboration & Rate of Single Authorship

In recent decades there has been an increasing trend towards collaboration in research. Subraman yam (1983) has deduced a formula for calculating the degree of collaboration (DC). The authorship collaboration in publications during a specific period is calculated using the following formula.

It is stated as Degree of Collaboration (DC)

DC =

Where DC = Degree of Collaboration

Nm = Number of multiple authored papers

Ns = Number of single authored papers

Here Nm = 74

Ns = 39

DC =

DC =

= 0.65

Table No. 6 Degree of Collaboration & Rate of Single Authorship

Ye ar	Single Authore d Publicat ion	Multi Authore d Publicat ion	Total No. of Publicat ion	Collabora tion Rate	Rate of Single Authers hip
2010	39	74	113	0.65	34.51
2011	49	87	136	0.64	36.03
2012	36	77	113	0.68	31.86
2013	29	93	122	0.76	23.77
2014	14	79	93	0.85	15.05
2015	25	71	96	0.74	26.04
2016	21	77	98	0.79	21.43
2017	20	62	82	0.76	24.39
2018	27	60	87	0.69	31.03
2019	16	70	86	0.81	16.60
Tot al	276	750	1026		
Overall Degree of Collaboration					0.73
Overall Rate of Single Authorship					26.90

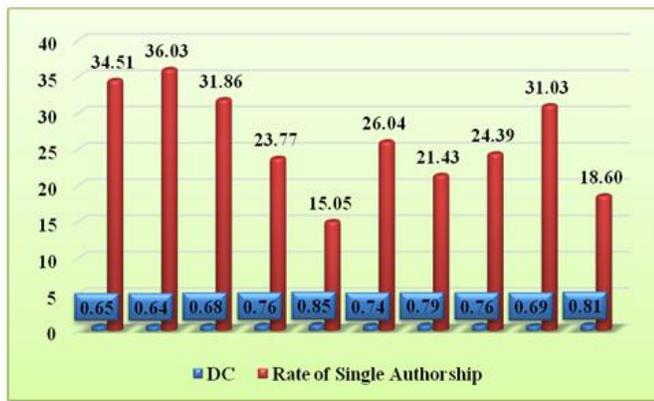


Figure No. 6 Degree of Collaboration & Rate of Single Authorship

Table No.6 and figure no.6 shows that in the 10 years period, the multi authorship contribution are higher and predominant than single authored. The multi authored articles are highest in the year with degree of collaboration (DC) 2014 (0.85), 2019 (0.81), 2016 (0.79), 2013 and 2017 (0.76). It is seen that the multi authorship trend in increasing. The single author articles highest in the year 2011 with rate of single authorship has 36.03. And the single author articles lowest in the year 2014 with rate of single authorship has 15.05. It is seen that the single authorship trend in decreasing. The overall degree of collaboration for the study period is 0.73. The overall rate of single authorship is 26.90.

II. CONCLUSION

1. It can be seen from table 1 & figure 1 that during 2010 to 2019 a total no. 1026 articles were published in the journal of AJAE by researchers in various countries. It is observed that the highest number of the contributions were contributed in year 2011 with 136 contributions, Minimum contributions were contributed in years 2017 with 82 contributions. In Total, over the entire period, there were 276 single authored publications, 750 multi authored publications, and a total of 1026 publications. The overall collaboration rate for this period was 0.73, indicating that, on average, 73% of publications were the result of collaboration between multiple author.
2. Analysis in the table No.2 & Figure No.2 shows that Single Authors contributions form 276 (26.90%), two authors contributions form 305 (29.73%), three authors contributions form 285 (27.78%), four authors contributions form 104 (10.14), five authors contributions form 37 (3.61%) and more than five authors Contribution from 19 (1.85%).
3. There were 2465 contributors or authors for 1026 articles. According to the table no.3 shows the most productive authors Jayson L. and Timothy J. Richards had the

highest number of first rank with 13 (0.53%) contribution, Followed by David R. Just on second rank with 12 (0.49%) contribution, Aaron Smith, Christopher B. Barrett and Rodolfo M. Nayga Jr. are followed by third rank with 11 (0.45%) contribution, then Barry K. Goodwin and David Zilberman on fourth rank with 10 (0.41%) contribution. Table gives a list of Authors showed in the articles.

4. This data provides insights into the international collaboration pattern over the years, showing the proportion of articles with single authors and those that involve collaboration with multiple author. It can be observed from the table no.4 and figure no. 4 shows that, out of 1026 articles, 199 articles (19.40%) are written in collaboration with International Institutions.
5. According to the table 5 shows that, there were 2465 institutions involved in research activity. Economic Research Service, USDA, 1800 M Street N.W., Washington, DC, 20036-5831 United States is on first rank with 54 (2.19) production it is most productive institution, followed by International Food Policy Research Institute (IFPRI), Washington, DC, United States is on second rank with 41 (1.66) production, followed by Department of Agricultural Economics, Purdue University, West Lafayette, IN 47907 United States is on third rank with 39 (1.58) production, followed by Department of Agricultural and Resource Economics, University of California-Davis, United States is on forth rank with 38 (1.54) production, followed by Department of Agricultural and Consumer Economics, University of Illinois, Urbana-Champaign, United States is on fifth rank with 33 (1.34) production. There were many affiliations were contributed in the study table shows the list of affiliations with their product 866 are Institutions with Single contribution.
6. Table No.6 and figure no.6 shows that in the 10 years period, the multi authorship contribution are higher and predominant than single authored. The multi authored articles are highest in the year with degree of collaboration (DC) 2014 (0.85), 2019 (0.81), 2016 (0.79), 2013 and 2017 (0.76). It is seen that the multi authorship trend in increasing. The single author articles highest in the year 2011 with rate of single authorship has 36.03. And the single author articles lowest in the year 2014 with rate of single authorship has 15.05. It is seen that the single authorship trend in decreasing. The overall degree of collaboration for the study period is 0.73. The overall rate of single authorship is 26.90.

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