

A SCHOLARLY EXAMINATION OF TAX COMPLIANCE: A BIBLIOMETRIC ANALYSIS (1960-2021)

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ABSTRACT

Introduction/Main Objectives: Tax compliance plays a significant role in ensuring government has revenue for its expenditure. Thus, tax compliance should be understood thoroughly. **Background Problems:** Since tax compliance is important, a scholarly examination with bibliometric analysis is needed. This study aims to map past and current research on tax compliance to direct future research. **Novelty:** To the best of our knowledge, no article discusses tax compliance using bibliometric analysis. **Research Methods:** This study uses the bibliometric method to observe 715 documents on tax compliance research publications from the Scopus database from 1960-2021. Metadata was analyzed using Microsoft Excel for frequency analysis, VOSviewer for data visualization, and Harzing's Publish or Perish for citation metrics. **Finding/Results:** The number of publications on tax compliance has grown significantly. Most articles were published in journals and conferences, mainly in English. The most widely cited articles and most co-authors come from the United States, Australia, Europe, Malaysia, and Indonesia. This study identifies the widely discussed themes and possible themes for future research. **Conclusion:** Tax compliance studies are increasing in number and are being carried out with a multidisciplinary approach by authors from various countries. This paper also proposes some future avenues of tax compliance research. In future research, it is recommended to extend the use of databases and to include more fields in search queries.

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INTRODUCTION

Taxes are the key to the wealth of a nation. Tax compliance plays a significant role in ensuring government has revenue for its expenditure. Thus, tax compliance should be understood thoroughly. To ensure tax compliance, trust in authority and the power of authority is important to note (Kirchler et al., 2008). If government is endorsed by public trust, the result is voluntary compliance. Additionally, if government emphasizes the use of power, it will create enforced compliance (Kirchler et al., 2008). These efforts are aimed at increasing tax revenues.

Discussions on tax compliance are ongoing and increasing. Alm (2019) pointed out that taxpayers can be seen as social creatures whose behavior is shaped by their norms regarding how paying taxes is the right thing to do. Accordingly, voluntary moral compliance is critical to note. Voluntary moral compliance is an intrinsic motivation to pay taxes, or the willingness of an individual to pay taxes based on ethical principles that are believed by the individual (Torgler & Murphy, 2004). In this sense, researchers increasingly recognize various behavioral aspects in the studies conducted.

This article portrays scholarly examination regarding tax compliance with bibliometric analysis. This method is necessary to map past and current research in order to direct future research. Previous articles in the taxation field that use bibliometric analysis are related to goods and service tax (Dhar & Khandelwal, 2020), tax evasion (Buele & Guerra, 2021), tax accounting (Henrique et al., 2020), tax competitiveness (Mazurenko & Tiutiunyk, 2021), and taxation (Ya'u & Saad, 2021). To the best of our knowledge, there is no article discussing tax compliance using bibliometric analysis.

This article analyzes the tax compliance concept by using the bibliometric method. This method has advantages relating to quantification

and objectivity; therefore, it can reduce subjective biases and validate what experts may intuitively presume (Fauzan & Jahja, 2021). By employing this method, researchers can identify publication trends, citation analysis, popular authors, and research themes on tax compliance. The research questions posed in this study are: First, what are the trend and current state of publication in tax compliance research? Second, what is the current citation pattern of publication on tax compliance? Third, who is the most popular author of tax compliance research? Lastly, what are the future avenues of tax compliance research?

LITERATURE REVIEW

There are several interpretations of what tax compliance means. It has been defined as a situation where taxpayers promptly file all required tax returns and return accurately reported taxes in line with their obligations and the applicable regulations (Roth et al., 1989). In a narrow sense, compliance is defined as more focused on the tax gap (the discrepancy between a person's actual income tax liability and what is finally collected on a voluntary or enforced basis); in a broad sense, compliance focuses on the behavior of taxpayers (James & Alley, 2000). According to the Internal Revenue Service (2021), tax compliance is the compliance of individual citizens in terms of reporting their income freely and voluntarily, calculating their tax obligations correctly, and making timely tax payments. These insights led to the growing importance of understanding tax compliance drivers. In this respect, the existing literature (Prihandini et al., 2019) mentions economic and social psychology approaches.

First, the economic approach is considered as the main way to prevent tax evasion. In this approach, penalties and audit prospects are seen as effective tools in threatening people not to

evade taxes, as evidenced in several studies (Mohdali & Pope, 2014). However, in another study, Witte & Woodbury (1985) found that tax penalties or sanctions and tax audits had an insignificant impact on taxpayer compliance. There is a possibility of failure of the economic approach to improve tax compliance because penalties, sanctions, and audits carried out by tax authorities are only applicable to certain groups of taxpayers. Another critique of this approach is that regulations are limited to incentive-based behaviors, which might not be the only way to address non-compliance (Inasius et al., 2020). Hence, non-economic factors should be considered.

The second is the social psychology approach. According to this approach, the real problem of tax compliance lies not in the question of 'why people avoid paying taxes, but rather 'why people are compliant in paying taxes' (Alm et al., 1995). Non-economic factors can be considered to increase awareness, understanding, willingness, and compliance, therefore shaping the behavior of taxpayers in carrying out their obligations to report, calculate and pay taxes (Alm, 2019; Holzinger & Biddle, 2016). According to social psychology theorists, the personal attitudes of individuals influence the process of making decisions on their compliance with tax obligations (Song & Yarbrough, 1978). It assumes that taxpayers prioritize beliefs and norms and are not selfish. In this regard, to increase tax compliance, the existence of a mutually trustful relationship between the tax authority and taxpayers could create a synergetic climate that can minimize coercive measures (Randlane, 2016). Accordingly, both approaches are found in many studies.

Numerous studies examine various topics about tax compliance. Previous research in tax compliance tended to investigate the negative attitudes of taxpayers; for example, the research

about "tax avoidance" (Allingham & Sandmo, 1972; Cowell, 1985). Recently, however, the research's focus has shifted to a more positive attitude of taxpayers toward tax compliance. For instance, the study about "voluntary tax compliance" (Hofmann et al., 2008; Kirchler et al., 2008) and "tax morale" (Feld & Frey, 2002; Torgler & Murphy, 2004). Thus, the taxpayers' behavior is no longer regarded as a fully rational human being; taxpayers are influenced by economic factors and social and psychological factors.

METHOD, DATA, AND ANALYSIS

Bibliometric analysis is used to answer the research questions. It is "the application of mathematical and statistical methods to books and other communication media" (Pritchard, 1969). According to Potter (1981), bibliometrics is the study and measurement patterns of publication, all kinds of written communication, and their authors. More specifically, bibliometric analysis is one of the methods to measure the pattern of publications, texts, information, and publishing documents in particular scientific literature by using quantitative and statistical analysis approaches (Bellis, 2009; Daim et al., 2006; Hall, 2011). It also analyzes publication trends in the articles studied and detailed information related to publications, including authors, citations, and keyword frequency (Ahmi & Mohamad, 2019; Rusly et al., 2019). Thus, the bibliometric method is beneficial for analyzing the impact of literature on each scientific discipline.

In this study, the metadata were retrieved from the Scopus database on August 6, 2021, 6.09 pm, using a search query (TITLE(tax AND compliance)) in the title of the article from 715 documents regarding tax compliance that Scopus generated for the period 1960-2021. The metadata were exported in CSV and RIS

formats. Microsoft Excel was used to make frequency analysis, VOSviewer was used to create network visualizations, and Harzing's Publish or Perish was used to develop citation metrics.

RESULT AND DISCUSSION

1. Trends and current state of publications of tax compliance

The first research question is about the trends and current state of publications on tax compliance research. In this respect, we describe trends and publications by year, document type and source, publication by source title, publication by country, institution, document language, and subject area. The publications section by year also identifies the total citations, the number of publications cited, average citations, h-index, and g-index.

1.1. Evolution of Published Studies

Table 1 presents research productivity on tax compliance published by year. The popularity and pattern of research can be observed over time through document examination by year of publication (Ahmi & Mohamad, 2019). Research

on tax compliance has been conducted since 1960. W.D. Gardner was the first author to write a study which was titled "Farm income tax compliance" (Gardner, 1960). In 2003, there was a significant increase in these studies and they continued to increase until 2021. The largest number of tax compliance studies published was in 2020, with 88 documents (see Table 1). Tax compliance is becoming a more popular topic among academics.

Table 1 also reports on the number of cited publications (NCP), total citations (TC), average citations per publication (C/P), average citations per cited publication (C/CP), h-index, and g-index. The highest total citations occurred in 1998, with 1,063 citations per year with publications numbering six. The paper entitled "Tax compliance" written by J. Andreoni, B. Erard and J. Feinstein (1998) accounted for the highest number of citations with 973 per year. Figure 1 depicts total publications and citations by year. Figure 2 demonstrates that publications on tax compliance research are experiencing a linear trend from 1960 to 2021 and are expected to increase in the years to come.

Table 1. Year of Publications

Year	TP	% (N=715)	NCP	TC	C/P	C/CP	h	g
1960	1	0.14	0	0	0	0	0	0
1963	1	0.14	1	3	3	3	1	1
1978	1	0.14	0	0	0	0	0	0
1979	1	0.14	0	0	0	0	0	0
1982	2	0.28	1	6	3	6	1	2
1984	1	0.14	1	82	82	82	1	1
1985	3	0.42	3	207	69	69	2	3
1986	2	0.28	2	205	102.5	102.5	1	2
1987	1	0.14	1	1	1	1	1	1
1988	1	0.14	0	0	0	0	0	0
1989	2	0.28	1	41	20.5	41	1	2
1991	4	0.56	3	91	22.75	30.33	3	4
1992	2	0.28	2	54	27	27	2	2
1993	8	1.12	8	397	49.63	49.63	7	8

Year	TP	%(N=715)	NCP	TC	C/P	C/CP	h	g
1994	1	0.14	1	123	123	123	1	1
1995	7	0.98	5	248	35.43	49.6	5	7
1996	2	0.28	2	85	42.5	42.5	2	2
1997	4	0.56	4	58	14.5	14.5	3	4
1998	6	0.84	6	1063	177.17	177.17	5	6
1999	7	0.98	6	290	41.43	48.33	4	7
2000	6	0.84	5	183	30.5	36.6	5	6
2001	6	0.84	5	207	34.5	41.4	5	6
2002	7	0.98	7	462	66	66	5	7
2003	12	1.68	12	439	36.58	36.58	10	12
2004	12	1.68	12	608	50.67	50.67	10	12
2005	13	1.82	13	612	47.08	47.08	9	13
2006	12	1.68	11	291	24.25	26.45	9	12
2007	18	2.52	16	936	52	58.5	10	18
2008	14	1.96	12	639	45.64	53.25	7	14
2009	20	2.80	19	438	21.9	23.05	8	20
2010	30	4.20	27	747	24.9	27.67	14	27
2011	28	3.92	21	428	15.29	20.38	9	20
2012	33	4.62	29	469	14.21	16.17	12	21
2013	26	3.64	16	451	17.35	28.19	10	21
2014	58	8.11	48	724	12.48	15.08	16	25
2015	37	5.17	27	376	10.16	13.93	10	19
2016	48	6.71	39	516	10.75	13.23	14	21
2017	47	6.57	41	470	10	11.46	10	20
2018	39	5.45	26	131	3.36	5.04	6	9
2019	65	9.09	40	302	4.65	7.55	7	15
2020	88	12.31	42	88	1	2.1	4	5
2021	39	5.45	7	12	0.31	1.71	2	2
Total	715	100.00						

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Figure 1. Total Publications and Citations by Year

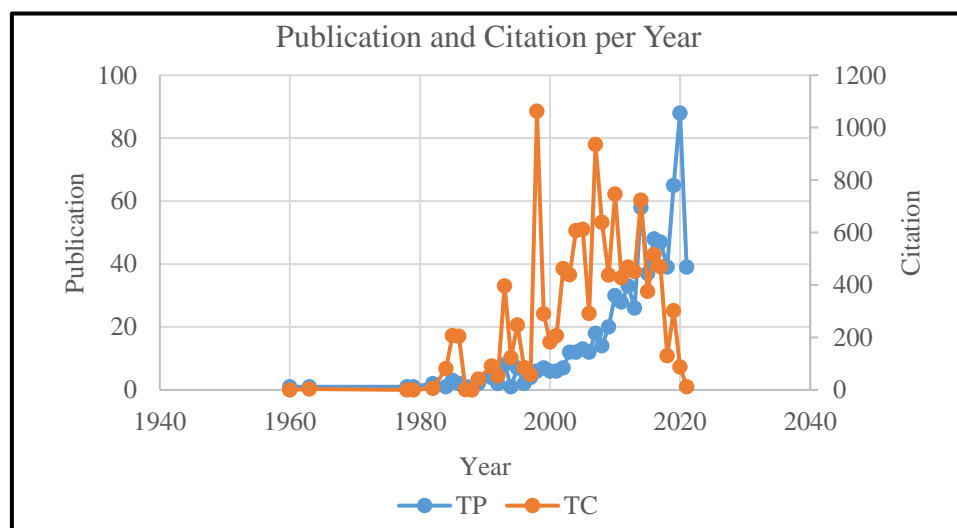
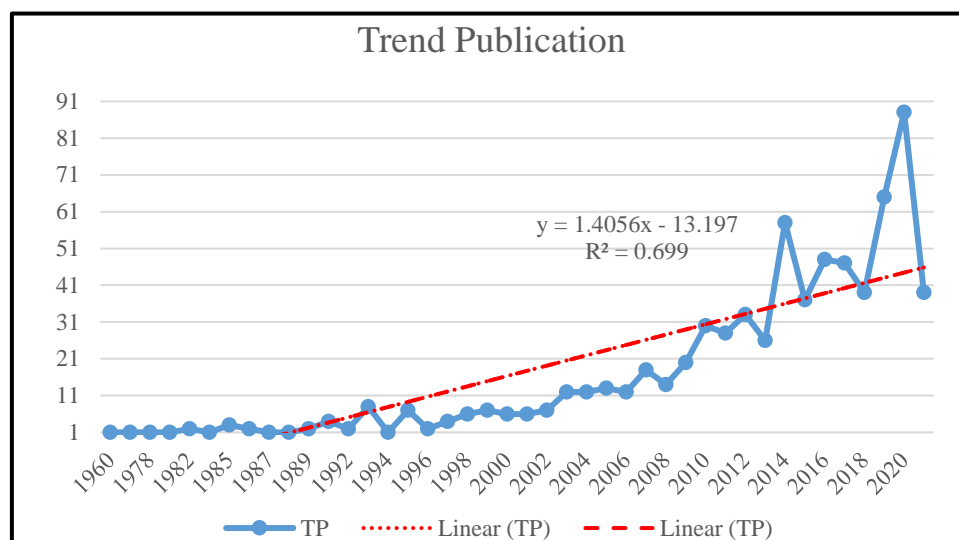


Figure 2. Trend Publications



1.2. Types and Source Document

Document types comprise articles, book chapters, and conference papers; document sources include journals, books, book series, conference proceedings, and trade journals. It is crucial to note that conference papers that appear under document types may vary from those under source documents (Sweileh et al., 2017). To illustrate, a paper presented at a conference is categorized as a conference paper under the document types. However, that paper can also be published as a journal article or book chapter within the source type (Ahmi et al., 2019).

Table 2. Document Type

Document Type	Frequency	% (N=715)
Article	579	80.98
Book Chapter	45	6.29
Conference Paper	38	5.31
Review	35	4.90
Book	10	1.40
Note	5	0.70
Editorial	1	0.14
Letter	1	0.14
Retracted	1	0.14
Total	715	100.00

Table 2 reports nine types of documents. Most publications were from articles (80.98%),

followed by book chapters (6.29%). The smallest proportions coincidentally with the same percentage (0.14%) are editorials, letters, and retracted documents.

Subsequently, Table 3 reports the source of documents in tax compliance research publications. The source of the document is measured by the title of the source presented. There are five sources of documents in tax compliance research publications (journals, books, book series, conference proceedings, and trade journals). More than half of the total sources of these documents are Journals, with 622 documents representing 86.99% of the total publications, followed by books with 51 documents (7.13%). The least contributions were from trade journals.

Table 3. Document Source

Document Source	Frequency	% (N=715)
Journal	622	86.99
Book	51	7.13
Book Series	20	2.80
Conference Proceeding	20	2.80
Trade Journal	2	0.28
Total	715	100.00

1.3. Most Active Source Titles

Table 4 shows that the Journal of Economic Psychology is a journal has the most publications in tax compliance research, which consists of 38 documents (7.90%). It is followed by the E-journal of Tax Research with 27 documents (5.61%) and the National Tax Journal with 19 documents (3.95%). The leading role of the Journal of Economic Psychology in this field of study can be understood because of its scope, which focuses on behavioral and psychological aspects of economic processes and decisions. It is in line with the nature of the tax compliance subject.

1.4. Geographical Distribution of Publications

Researchers in seventy-five countries have contributed to the publication of tax compliance research. Table 5 displays only ten countries that contributed to the publications. Interestingly, two Asian countries are in the top 10: Malaysia and Indonesia. However, tax compliance research is still dominated by developed countries and the United States is in ranked first.

1.5. Most Influential Institutions

One hundred sixty institutions have contributed to the publication of tax compliance research.

Table 6 presents ten institutions with a minimum of ten tax compliance research publications. The institution that publishes the most tax compliance research is the University of Vienna, with 49 publications (6.99%). Additionally, two universities are from Malaysia (Universiti Utara Malaysia and Universiti Teknologi MARA). Indonesian universities have also contributed to tax compliance research, although it is not in the top ten institutions. Those institutions are Universitas Indonesia, Universitas Brawijaya, Satya Universitas Kristen Satya Wacana, Perbanas Institute, and Universitas Mahasaraswati Denpasar.

Table 5. Top 10 Countries contributed to the publications

Country	Total Publication	% (N=951)
United States	189	19.87
Australia	63	6.62
Malaysia	59	6.20
Austria	58	6.10
United Kingdom	58	6.10
Italy	45	4.73
Germany	40	4.21
Indonesia	40	4.21
Netherlands	20	2.10
South Africa	17	1.79

Table 4. Most Active Source Title

Source Title	No. of Document	% (N=481)
Journal of Economic Psychology	38	7.90
E-journal of Tax Research	27	5.61
National Tax Journal	19	3.95
Public Finance Review	15	3.12
Journal of Public Economics	14	2.91
Journal of Economic Behavior and Organization	13	2.70
International Tax and Public Finance	11	2.29
Advances In Taxation	9	1.87
Developing Alternative Frameworks for Explaining Tax Compliance	9	1.87
Journal of Behavioral and Experimental Economics	9	1.87
Journal of Business Ethics	9	1.87
International Journal of Public Administration	7	1.46

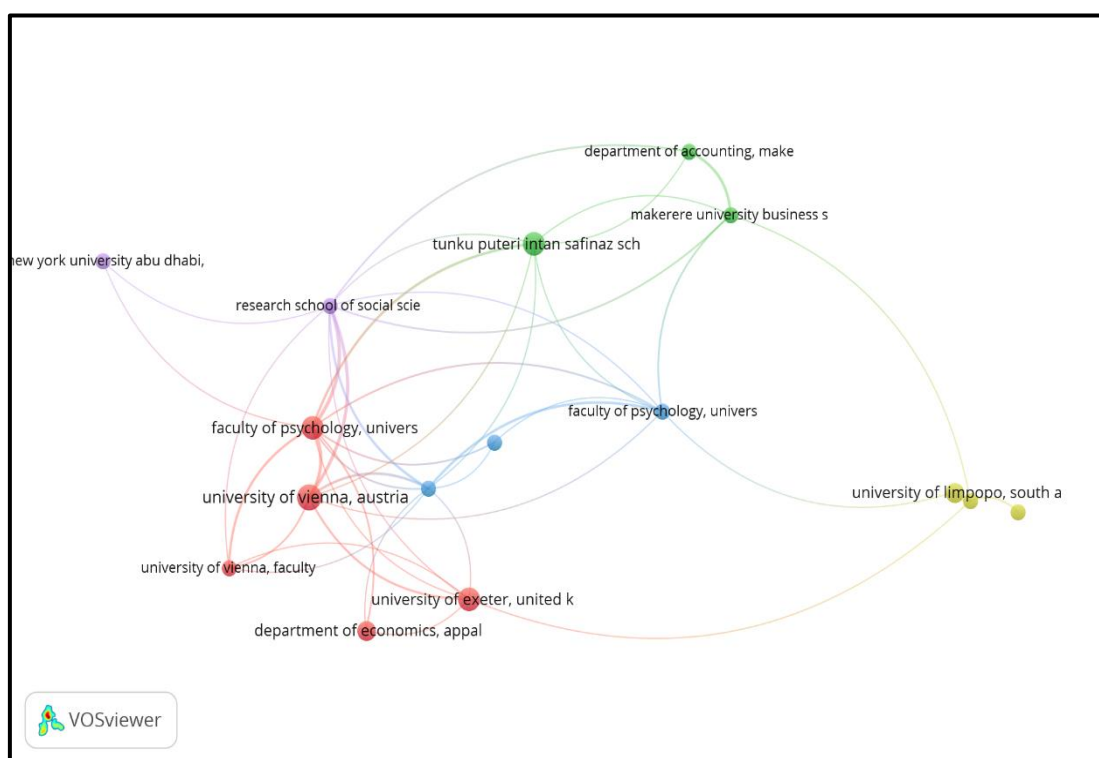
Table 6. Most influential institutions with a minimum of ten publications

Affiliation	Country	Total Publication	% (N=701)
University of Vienna	Austria	49	6.99
Universiti Utara Malaysia	Malaysia	38	3.14
Queensland University of Technology	Australia	16	2.28
Georgia State University	United States	15	2.14
The Australian National University	Australia	13	1.85
University of Exeter	United Kingdom	13	1.85
Tulane University	United States	12	1.71
University of Colorado Boulder	United States	11	1.57
Università di Trento	Italy	11	1.57
Universiti Teknologi MARA	Malaysia	10	1.43

Figure 3 shows collaboration between institutions in tax compliance research. VOSviewer presents analysis results with a minimum of three documents per institution and one citation. VOSviewer has generated five different colors: red, yellow, blue, green, and purple, representing five clusters with 16 institutions and 43 links. This figure demonstrates the cluster of institutional

collaboration in tax compliance research. For example, the University of Vienna, University of Exeter, Appalachian State University (represented in red). New York University Abu Dhabi, Research School of Social Science Australian National University (represented by purple), and others. These networks indicate collaboration between universities in investigating tax compliance.

Figure 3. Network visualization map of the co-authorship based on affiliation



1.6. Language of Document

Table 7 indicates the use of language used in publications. There are ten languages. English is the most widely used language (96.79%). The variety of languages used in publications shows that tax compliance research is conducted in many countries.

1.7. Subject Area

Based on metadata taken from the Scopus database, there are 22 fields of study related to the publication of tax compliance research. Table 8 displays various subject areas of tax compliance research, where Economics, Business, and Social Science subjects dominate. This table indicates that tax compliance is a multidiscipline field of study.

Table 7. Languages Used for Publications

Language	Frequency	% (N=716)
English	693	96.79
Italian	4	0.56
Spanish	4	0.56
German	3	0.42
Portuguese	3	0.42
Chinese	2	0.28
Czech	2	0.28
French	2	0.28
Korean	1	0.14
Russian	1	0.14
Undefined	1	0.14
Total	716	100.00

**1 document has been prepared in dual languages*

Table 8. Subject Area

Subject Area	Total Publication	% (N=1321)
Economics, Econometrics and Finance	431	32.63
Business, Management and Accounting	301	22.79
Social Sciences	285	21.57
Psychology	73	5.53
Arts and Humanities	46	3.48
Computer Science	38	2.88
Engineering	33	2.50
Decision Sciences	28	2.12
Environmental Science	23	1.74
Mathematics	14	1.06
Medicine	12	0.91
Energy	10	0.76
Agricultural and Biological Sciences	5	0.38
Biochemistry, Genetics and Molecular Biology	4	0.30
Chemical Engineering	4	0.30
Multidisciplinary	4	0.30
Chemistry	2	0.15
Nursing	2	0.15
Pharmacology, Toxicology and Pharmaceutics	2	0.15
Physics and Astronomy	2	0.15
Earth and Planetary Sciences	1	0.08
Materials Science	1	0.08
Total	1321	100.00

2. Current citation pattern of publication on tax compliance

Research question two: What is the citation pattern in current tax compliance publications? This research question aims to find impactful articles and identify citation patterns. Harzing's Publish and Perish software was used to analyze citation metrics, and VOSviewer was used to visualize the network of 715 articles. The number of citations by other works is employed to measure the impact of documents on tax compliance research (Baker et al., 2020).

2.1. Citation Analysis

Table 9 summarizes the citation metrics. This table is obtained by importing RIS-formatted files from the Scopus database into the Harzing's Publish or Perish software. There were 12,483 citations reported in the 61 years (1960 – 2021) of tax compliance publications, which means 204.64 citations per year.

Table 9. Citation Metric

Metrics	Data
Publication years	1960-2021
Citation years	61 (1960-2021)
Papers	715
Citations	12483
Citations/year	204.64
Citations/paper	17.46
Authors/paper	2.50
h-index	53
g-index	94

Source: Harzing's Publish or Perish

Table 10 displays the top 20 most cited articles (based on the number of documents that cited them). The Documents entitled "Tax compliance" by Andreoni, Erard, and Feinstein (1998) affiliated with the University of Wisconsin, Carleton University, and Yale School of Management, United States. It was published in the Journal of Economic Literature, Vol. XXXVI, 1998. Their article has received the highest number of citations (973 citations or an average of 42.3 citations per year).

Table 10. Highly cited articles

No	Author	Title	Year	Cites	Cites Per Year	Cites Per Author
1	J. Andreoni, B. Erard, J. Feinstein	Tax Compliance	1998	973	42.3	324
2	E. Kirchler, E. Hoelzl, I. Wahl	Enforced versus voluntary tax compliance: The "slippery slope" framework	2008	380	29.23	127
3	B. Torgler	Tax compliance and tax morale: A theoretical and empirical analysis	2007	317	22.64	317
4	L.P. Feld, B.S. Frey	Tax compliance as the result of a psychological tax contract: The role of incentives and responsive regulation	2007	243	17.36	122
5	B. Torgler	Speaking to theorists and searching for facts: Tax morale and tax compliance in experiments	2002	224	11.79	224
6	J. Alm, I. Sanchez, A. DE Juan	Economic and Non-economic Factors in Tax Compliance	1995	208	8	69
7	K. Murphy	Regulating more effectively: The relationship between procedural justice,	2005	207	12.94	207

No	Author	Title	Year	Cites	Cites Per Year	Cites Per Author
8	M.J. Graetz, J.F. Reinganum, L.L. Wilde	legitimacy, and tax non-compliance The tax compliance game: Toward an interactive theory of law enforcement	1986	204	5.83	68
9	J.F. Reinganum, L.L. Wilde	Income tax compliance in a principal-agent framework	1985	203	5.64	102
10	J. Alm, G.H. McClelland, W.D. Schulze	Changing the social norm of tax compliance by voting	1999	184	8.36	61
11	J. Alm, B. Torgler	Do Ethics Matter? Tax Compliance and Morality	2011	177	17.7	89
12	R.G. Cummings, J. Martinez-Vazquez, M. McKee, B. Torgler	Tax morale affects tax compliance: Evidence from surveys and an artefactual field experiment	2009	176	14.67	44
13	M. Wenzel	An analysis of norm processes in tax compliance	2004	172	10.12	172
14	K. Murphy	The role of trust in nurturing compliance: A study of accused tax avoiders	2004	171	10.06	171
15	M. Hallsworth, J.A. List, R.D. Metcalfe, I. Vlaev	The behavioralist as tax collector: Using natural field experiments to enhance tax compliance	2017	162	40.5	41
16	M. Wenzel	The impact of outcome orientation and justice concerns on tax compliance: The role of taxpayers' identity	2002	151	7.95	151
17	J. Alm, B.R. Jackson, M. McKee	Fiscal exchange, collective decision institutions, and tax compliance	1993	148	5.29	49
18	M. Wenzel	Motivation or rationalisation? Causal relations between ethics, norms and tax compliance	2005	133	8.31	133
19	B. Erard, J.S. Feinstein	Honesty and evasion in the tax compliance game	1994	123	4.56	62
20	M. Wenzel	Misperceptions of social norms about tax compliance: From theory to intervention	2005	113	7.06	113

Figure 4 demonstrates the network's visualization map of authors according to their countries. In this analysis, the country is included if it has a minimum of five articles with a minimum of one citation. In this study, of 87 countries involved in the publication of tax

compliance research, 34 countries met the threshold. This figure is in line with Table 5. This figure reveals that the United States plays a significant role in networking with authors from other countries, followed by Australia, Malaysia, and Austria.

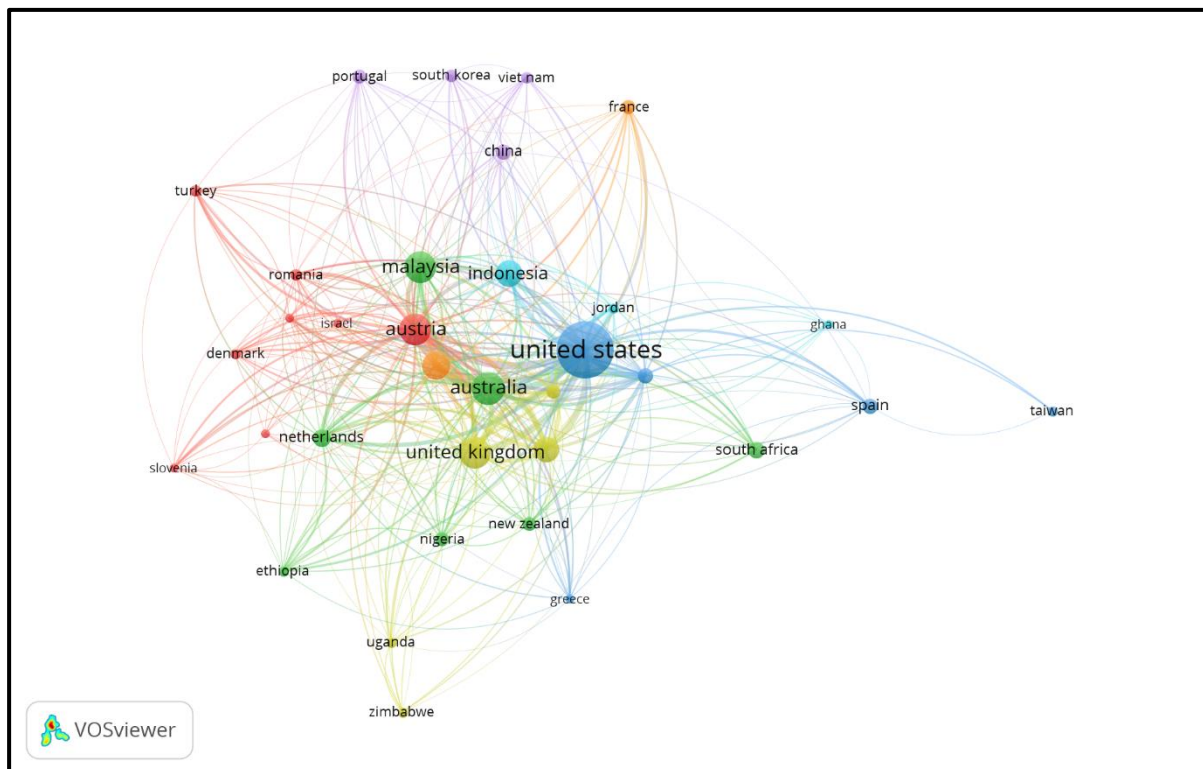
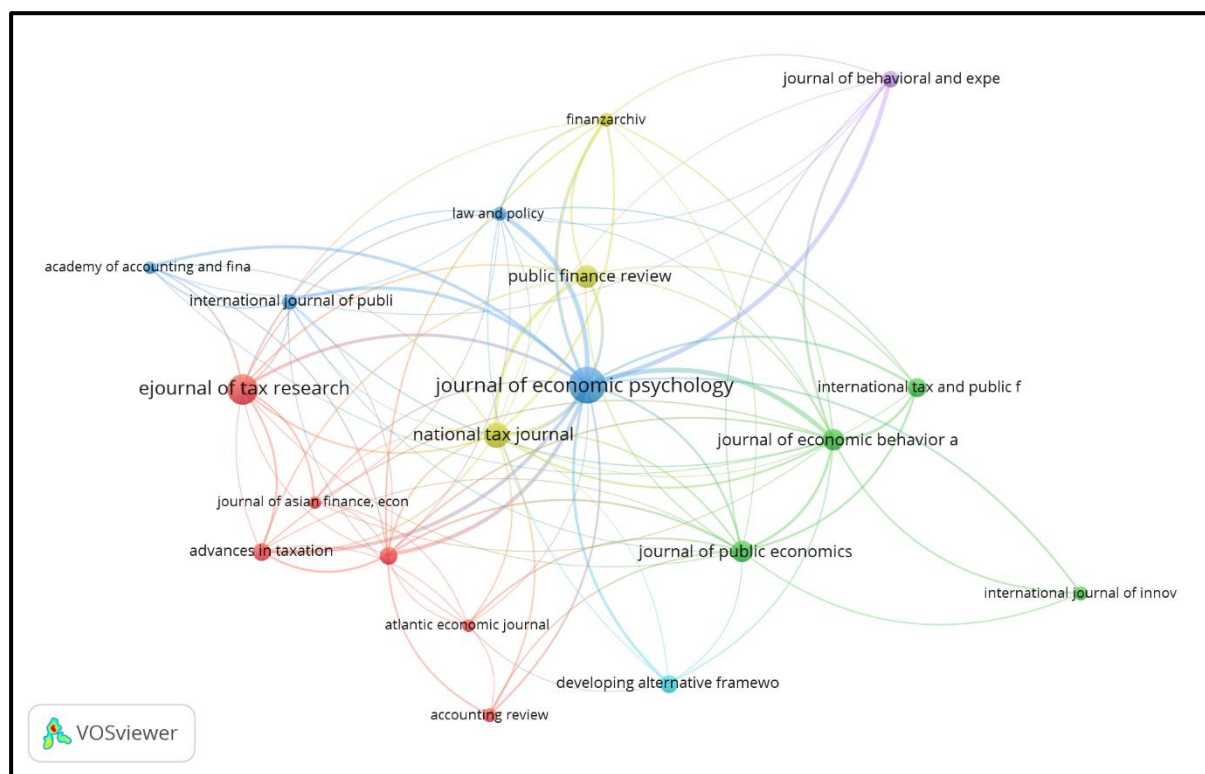
Figure 4. Network visualization map of the citation by countries

Figure 5 presents a network visualization map based on the source document. In this matter, the source documents cite each other, represented by the number of citations between sources. For example, the Journal of Economic Psychology cites Law and Policy, and vice versa. In this analysis, the document is included if it has a minimum of five articles with a minimum of one citation. This figure is in line with Table 4. There were 394 document sources, in which 19 document sources titles meet the criteria. This figure reveals that Journal of Economic Psychology plays a major role in networking with other journals, followed by others like E-journal of Tax Research, National Tax Journal, and Public Finance Review. The dominant role of Journal of Economic Psychology in this matter corroborates the view

that non-economic factors of tax compliance are also crucial.

3. Most popular author of tax compliance research

Research question three is about the most popular author and themes of the tax compliance research. To answer this research question, first, we analyzed how many authors wrote each article and how many articles were published by an author. Then, we performed an analysis of keywords and terms from the title and abstract based on the metadata obtained from the Scopus database. The co-occurrence of keywords that appear simultaneously in an article shows that these keywords reflect the article's content and have interrelated concepts (Baker et al., 2020; Comerio & Strozzi, 2019).

Figure 5. Network visualization map of the citation by sources

We conducted authors' analysis to determine the number of authors of each document, productivity, affiliation, and citation analysis. Harzing's Publish or Perish was used to analyze metadata retrieved from the Scopus database. There are 715 documents in tax compliance research publications contributed by 160 authors. Table 11 displays the number of publications based on the number of authors for each publication. This table shows that a single author wrote 27.13% of publications, and the rest were written collaboratively. Interestingly, there is one paper written by more than 56 authors, entitled "Trust and power as determinants of tax compliance across 44 nations", authored by Larissa Batrancea et al. (2019) and published in the Journal of Economic Psychology, Vol. 74, 2019.

This study also presents the most productive authors on tax compliance. Table 12 lists the most productive authors with at least seven

publications. Erich Kirchler, affiliated with the University of Vienna, Austria, is the most productive author in this field of research. He wrote 50 publications on tax compliance. However, Andreoni, Erard, and Feinstein (1998) are the most cited authors.

Table 11. Number of Author(s) per Document

Author Count	Total Publication	% (N=715)
1	194	27.13
2	206	28.81
3	178	24.90
4	88	12.31
5	27	3.78
6	6	0.84
7	3	0.42
8	3	0.42
10	3	0.42
50	1	0.14
0	6	0.84
Total	715	100.00

Table 12. Most Productive Authors

Author Name	Affiliation	Country	TP	% (N=602)
Kirchler, E.	University of Vienna	Austria	50	8.31
Alm, J.	Tulane University	United States	26	4.32
Torgler, B.	Queensland University of Technology	Australia	18	2.99
Muehlbacher, S.	Karl Landsteiner University	Austria	12	1.99
Kogler, C.	University of Vienna	Austria	10	1.66
McKee, M.	Appalachian State University	United States	10	1.66
Kastlunger, B.	Digital Business University	German	9	1.50
Gangl, K.	University of Vienna	Austria	8	1.33
Mittone, L.	Università degli Studi di Trento	Italy	8	1.33
Hofmann, E.	University of Vienna	Austria	7	1.16

Note: TP=Total Publication

We employed VOSviewer platform to conduct co-authorship analysis which aims to determine collaboration between authors on tax compliance research publications. Authors who have at least five documents and have at least one citation were counted using the full counting method. VOSviewer produces network visualizations between authors who collaborate in tax compliance research. The strength of the

relationship between authors is indicated by the color, circle size, font size, and thickness of the connecting line. Figure 6 also shows collaborating authors grouped under the same color. The visualization results from VOSviewer indicate that most of the authors made collaboration in tax compliance research publications. In this sense, Kirchler is the author who was the most frequent co-author.

Figure 6. VOSviewer visualization of a term co-occurrence network based on the author

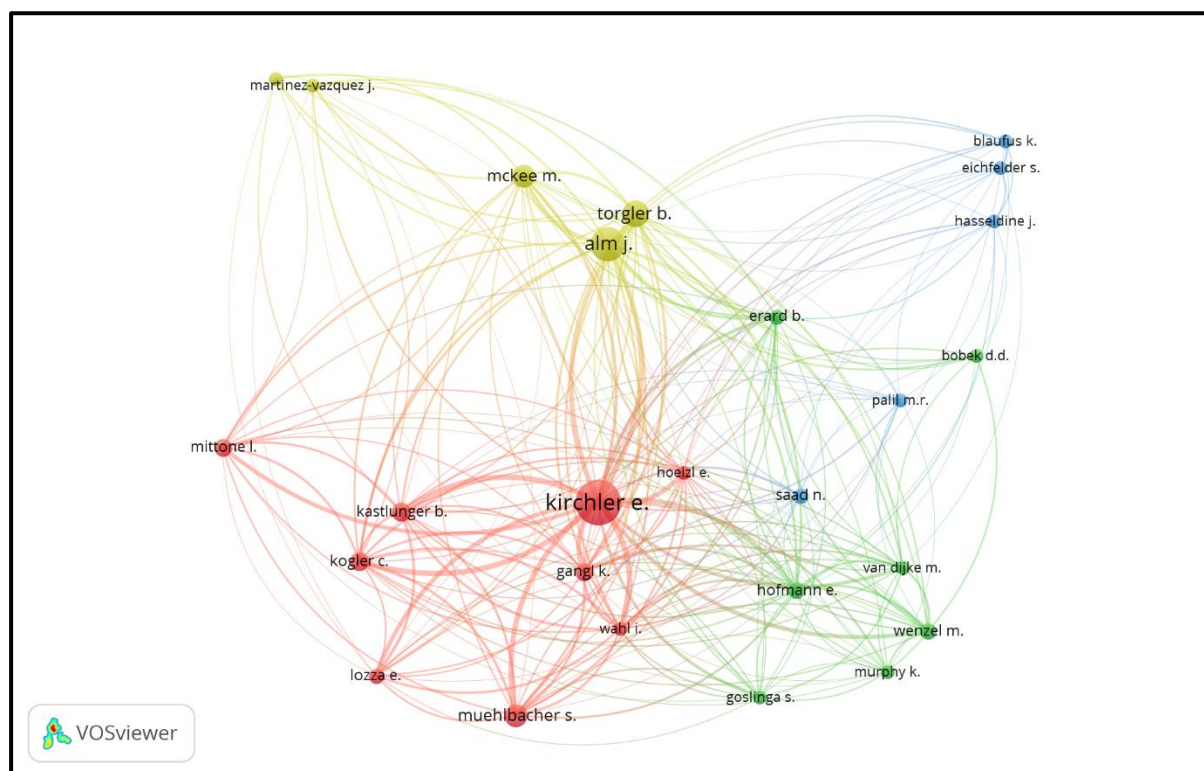


Figure 7 reports a co-authorship visualization map according to country. There are 87 authors from countries that publish research on tax compliance. In this sense, authors from countries with a minimum number of five documents and at least one citation are analyzed by the full counting method using VOSviewer. The authors from 34 countries meet that criteria. This network visualization analysis resulted in seven different colors representing seven clusters: red, yellow, green, blue, light blue, purple, and orange. In this visualization of the co-author network by country, the United States has the most collaborations, followed by authors from Australia, Malaysia, Austria, Indonesia, and Italy.

4. Future Studies

The fourth research question is about the future avenues of tax compliance research. In this regard, we demonstrate themes that have been widely studied and identify potential future research themes.

4.1. Keyword Analysis

Keyword analysis was conducted by employing VOSviewer to visualize the dynamics and structure of the science under study. VOSviewer is a software that has a strong network to perform in-depth co-occurrence analysis on keywords and helps explore the targeted research field (Valenzuela et al., 2017; van Eck & Waltman, 2010). Figure 8 presents the network visualization of keywords. The strength of the relationship between keywords is expressed through color, circle size, font size, and thickness of connecting lines (Sweileh et al., 2017).

This study identifies nine clusters in the tax compliance research developed based on keywords. They are tax compliance (260 occurrences), compliance (54 occurrences), taxation (54 occurrences), tax morale (40 occurrences), tax (27 occurrences), trust (22 occurrences), corruption (14 occurrences), prospect theory (11 occurrences), and tax administration (7 occurrences). Those themes are discussed a lot.

Figure 7. Network visualization map of the co-authorship based on countries

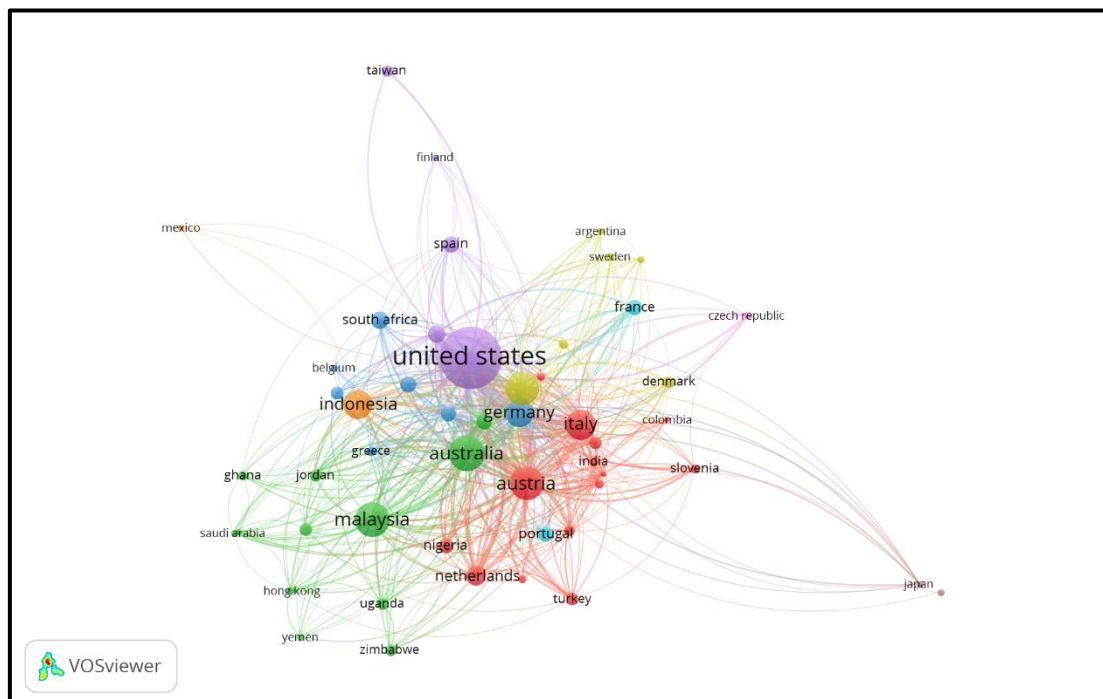
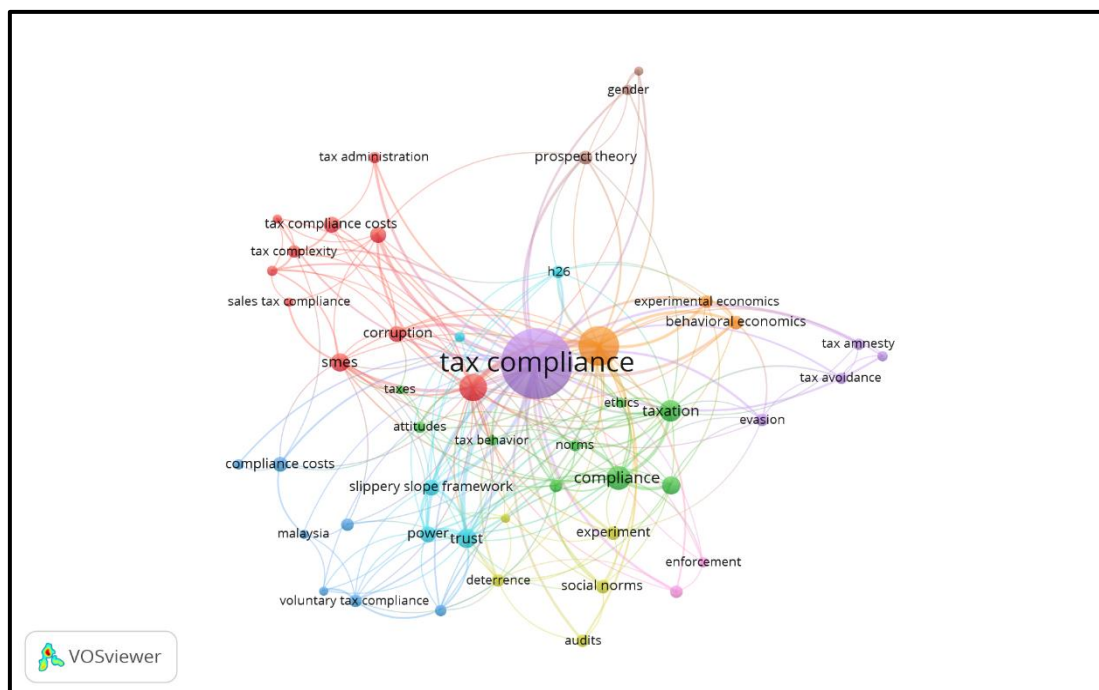


Figure 8. Network visualization map of the author keywords

4.2. Title and Abstract Analysis

We also analyzed the occurrence of a noun phrase in the combination of titles and abstracts from the Scopus database. The occurrence of a noun phrase in the title and abstract of a publication, even if only once, is treated the same as a phrase that occurs more than once (van Eck & Waltman, 2010). In this study, co-occurrence was considered for each word that occurred at least twenty times. Based on this arrangement, out of 10,592 terms that appear, 148 words meet the threshold. VOSviewer calculates the relevance score of those 148 words. A link is a connection or a relation between two terms, and the strength of a link indicates the number of publications in which two terms occur together (van Eck & Waltman, 2010). Thus, the number of terms that have been selected based on the default suggested by VOSviewer is 89 words. The appearance of these 89 words is visualized by VOSviewer, is depicted in Figure 7. The size of the nodes indicates the terms or concepts in this network

visualization, and the strength of the relationship between terms is determined by the distance between nodes (Sedighi, 2016).

Figure 9 indicates that four clusters represent the four main themes in tax compliance research publications. The four themes are grouped into the system group (28 items – red), behavior (27 items – green), survey (20 items – blue), and authority (14 items – yellow). Several terms that have relationships appear together under the same color. For example, as shown in Figure 8, the terms behavior, audits, probability, effectiveness, person, tax evasion, participant, experiment, income, difference, contrast, subject, evasion, tax return, and others are closely related and grouped under green color. This network analysis by titles and abstracts obtained 89 terms with 3,431 links and a total link strength of 14,973. Unlike keyword analysis that produces nine clusters, this analysis produces four clusters: survey, system, authority, and tax evasion. Those four clusters represent the themes that have been extensively investigated.

CONCLUSIONS AND SUGGESTIONS

This paper employs bibliometric analysis to gain insight into trends and the current state of research, current citations, most popular authors, and future research for the tax compliance literature.

The first is about the trends and current state of tax compliance research. In 1960 G.D. Gardner initiated a study on tax compliance. Since then, the number of publications on tax compliance has grown significantly. Tax compliance studies will still be attractive for researchers in the years to come. Most of the tax compliance research has been published in articles, mainly in English. In this vein, the *Journal of Economic Psychology* has published the most studies. Authors from the United States comprise the highest number of contributors examined by this study. On the other hand, the institution that currently publishes the most is *Universitat Wien* from Austria. Additionally, the study of tax compliance is conducted in economic and non-economic subject areas, which means this field of study should be viewed from a multidisciplinary perspective.

The second is about the current pattern of citations in publication on tax compliance. The articles that get a lot of citations are mostly written by three authors. The highest number of citations are to Andreoni Erard, and Feinstein (1998) with 973 citations. In 61 publication years, there were 715 articles on tax compliance with 12,483 citations. Thus, Andreoni, Erard, and Feinstein (1998) significantly contributed to the total number of citations. The widely cited articles generally come from the US, Australia, and Europe. It is important to note that Southeast Asian countries such as Malaysia and Indonesia also have made significant contributions. Moreover, when viewed in terms of the contribution made by institutions, Malaysian universities play a key role.

The third is about the most popular authors in the field of the tax compliance. Most of the publications were written by three authors. We identify Kirchler from Austria as the most productive author. He is also the author who has done the most co-authored research. On the other hand, the authors who did most of the co-authorship came from the United States, Australia, Malaysia, Austria, Indonesia, and Italy.

The fourth is about future research. We identify the widely discussed themes and the themes for future research. The most studied themes based on keywords analysis are the themes in clusters: Tax compliance, compliance, taxation, tax morale, tax, trust, corruption, prospect theory, and tax administration. Whereas, based on the title and abstract analysis, the most studied themes are the themes in clusters: Survey, system, authority, and tax evasion. Potential research themes for the future are voluntary tax compliance, SMEs, corruption, sales tax compliance, tax fairness, tax compliance costs, and tax amnesty.

This study has limitations that need to be addressed. The first is about the database used. This study mainly uses data from the Scopus database. The database used needs to be expanded to obtain more thorough findings in future research. Although Scopus is the largest academic database, there is the possibility that many journals have not been covered in this database. Other databases that can be used in future research are Dimension, Web of Science, PubMed, and Google Scholar.

Second, the keyword used in this study is tax compliance, which is retrieved only from the document title. It means that query search results in other fields like author, affiliation, source title, abstract, and keywords have not been included. It is expected that more representative results will be obtained by including other fields.

This can be done in the subsequent research.

Third, it is recognized that no search query is 100% perfect. However, despite all these constraints, our research has contributed to the bibliometric analysis of the tax compliance field, which has not been researched yet. It provides meaningful insights that can be used as a reference for developing knowledge in this field.

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