A Bibliometric Analysis on the presence of a quantitative measure of the development hindering behavior of individuals and institutions – The 'Bad Behavior Index'

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Abstract

Objective. Political instability, corruption, exclusive institutions et al. are some of the hypotheses backed by literature as to why some nations are more developed than others. One hypothesis which has not been intensively studied is the culpability of individual and institutional behavior and its impact on development. To examine the validity of such a hypothesis, a composite index which quantifies such development hindering behavior must be developed. The prelude to developing this index is to investigate whether such a quantitative measure exists to begin with. To achieve this objective, a bibliometric analysis of Scopus and Web of Science databases will be conducted.
Method. A bibliometric and content analysis of Scopus and Web of science databases using Excel, VOSviewer, and R software.
Results. The findings of the bibliometric analysis indicate the absence of such measure particularly within the scope of 'bad behavior', 'unethical behavior', and 'development'.
Conclusions. The study findings provide the greenlight to proceed with the construction of the 'Bad Behavior Index'.
Contribution. The practical contribution of this study is that it provides researchers with an improved methodology on how to conduct a bibliometric analysis to identify the absence of knowledge and provide a justification for the creation of such knowledge by integrating and analyzing two journal databases instead of one, using three mediums: Excel, VOSviewer, and R software.

Keywords: Bibliometric Analysis; Bad Behavior; Unethical Behavior; Composite Index; Development.

1 Introduction

The question why some countries are more developed than others has been occupying the minds of academics and politicians alike for decades. Various hypotheses have been raised and studied on this subject. Gezer[1] contends that economics freedoms are pivotal for short and long-run development. Priambodo[2] blames unemployment and poverty for the poor development of nations. Mo[3] finds that corruption is detrimental to growth. Whilst Alesina et al.[4] find that political instability negatively impacts growth. Rehman et al.[5] blames government and their respective policies for the poor development of Middle east countries. Robinson et al.[6] emphasize the importance of institutions on development, particularly the presence of inclusive institutions, i.e., institutions which facilitate for equal opportunities, and the absence of extractive institutions, i.e., institutions which are exclusive in nature and are controlled by the few. The aforementioned are but a few of the many explanations as to why some nations are less developed than others. These determinants of development can be categorized into internal and external determinants – i.e., the causes for the poor development are coming from within the country, overpopulation for example, or due to external causes, i.e., economic sanctions caused by a totalitarian regime. Once such hypothesis that is not well developed is that some nations are underdeveloped due to internal forces such as the bad behavior of individuals and institutions. Al Attas[7] brushed upon this hypothesis when he discussed how individual culpability is to blame for the collapse of Muslim civilizations of the past, stating that "it is important to stress the individual in seeking a just solution to our problem rather than the society and the state". This research seeks to further explore this hypothesis by

developing a quantitative measure of the development hindering behavior of individuals and institutions – i.e., the 'Bad Behavior Index' (BBI). To achieve this objective, a precursor step must be completed, and that is to analyze the scholarly literature for the presence of such a quantitative measure using a statistical method known as bibliometric analysis. The upcoming section will elaborate upon this method, as well as discuss the application of this method to achieve the purpose of this paper.

2 Bibliometric Analysis

There are three major data review methods used by researchers: Systematic Literature Review, Meta-Analysis, and Bibliometric Analysis[8]. Systematic literature review is primarily used to summarize and integrate the findings of existing literature for a particular field or topic. It involves the qualitative analysis of a small dataset with a specific scope. On the other hand, meta-analyses are utilized to summarize evidence of the existence of a relationship between variables, whilst highlighting the existence of a relationship between variables which are yet to be studied. It involves the quantitative analysis of both large and small datasets, and it can have both broad and specific scope of work. Lastly, bibliometric analysis is a rigorous statistical method which facilitates for the analysis of a large volume of scholarly literature. The utility of bibliometric analysis over the other review methods is its ability to handle large volumes of literature, its ability at producing high research impact, its ability at summarizing the current state and emerging trends of a particular research topic or field, its ability to identify gaps in literature, and its ability to facilitate for both quantitative and qualitative analysis[8].

Various software facilitate the use of such method. These include but are not limited to HistCite, R, CiteSpace, VOSviewer, among others. Bibliometric analysis involves collecting data from scientific databases such as Web of Science (WOS), Scopus, EBSCO etc., and analyzing the results of these databases for the presence of various relationships among the literature.

It must be noted that most bibliometric studies conduct their analysis of one journal database, and that is because collecting data from more than one database is unpractical due to "the difficulty of transposing data from multiple databases into a single format"[9]. Regarding the limitation of using one database for bibliometric analysis, the authors address this limitation by stating that it is generally acceptable as the subset of the published articles provide a general idea of the larger scientific community. With that said, Echchakoui[10] and Caputo et al.[11] are some of the few scholars who have attempted to combine databases, particularly Scopus and WOS, with the former positing that individually analyzing the databases "cannot give a broader view of knowledge and tendencies in a field", and that despite the high correlation between the two databases, according to Gavel et al.[12], it is necessary to combine the two databases due to the many disparities between the two databases.

Regarding the paper selection process, there are several contingencies reseacheres must take into consideration[9]. To elaborate, the papers must be peer-reviewed, include at least one of the keywords or concepts of the research, a publication year range must be fixed, the papers must be indexed under the selected database with a particular journal classification code, and the paper must be referenced for a particular number of times – in this regard, the authors chose the number ten, stating that it might be an arbitrary figure, but due to a lack of a benchmark from literature, the choice is rational[9]. The most important factor in selecting the papers, as long as they include one of the keywords of the research, is the frequency of citations, as this is the best measure of the quality and influence of the papers[13,14].

3 Methodology

According to Zupic et al.[15], the workflow for science mapping has five stages: 1) Study Design; 2) Data Collection; 3) Data Analysis; 4) Data Visualization; and 5) Interpretation. This study follows the science mapping methodology recommended by the authors, and this section begins by elaborating upon the research design.

The research design of this paper, or the overall strategy of the research, involves conducting a content analysis, bibliometric analysis in particular, to identify from literature whether any quantitative measures of the development hindering behavior of individuals and institutions exist. Regarding the data collection, this research follows in the steps of Echchakoui[10] and Caputo et al.[11] and conducts a bibliometric analysis of merged results of both WOS and Scopus databases to address the gaps for the unaccounted articles when simply analyzing a single database (Method 1).

With that said, and in accordance with the methodology of most bibliometric studies, a bibliometric analysis is also conducted for a single database (Method 2). The database of choice in this instance is Scopus since it covers 84% of the journals in WOS[12]. The purpose of analyzing a single database is to address the limitations of combining databases, as well as the limitations of the software's utilized for the bibliometric analysis, i.e., VOSviewer[16] and R package 'bibliometrix'[17]. Another reason for utilizing a single database is to facilitate for a comparison of the combined results and the individual database results.

Lastly, a bibliometric analysis of the 'unrefined' Scopus results will be conducted (Method 3). The purpose for doing so it to ensure that by refining or cleaning up the data, no relevant articles are being excluded simply because they pertain to fields which are not within the same scope as the phenomenon being study by the BBI. This method has a very limited scope since it solely focuses on any articles which include the keyword 'Behavior Index'.

Regarding the keywords utilized for the data analysis, i.e., step 3 of the science mapping workflow, they are presented as follows:

- Bad Behavior OR Behaviour.
- Unethical Behavior OR Behaviour.
- Ethical Behavior OR Behaviour.
- Mafsada OR Mafsadah.
- Index.
- Development.
- Socio-economic.

The reason for including different spellings for the word's 'behavior' and 'mafsada', i.e., harm according to the concept of 'Maqasid Al Shariah' which serve as influence for the selection of the proxies of the index being developed, is to accommodate for any alternative spellings by the authors of the selected articles. It must be noted that unlike Phillips et al.[9], this paper adopts a contingency that two of the chosen keywords must be present for the sake of reducing noise. Moreover, the keywords included in the database search criteria for WOS focused on a search by 'topic', with a further search criterion based on paper title, abstract, author keywords, and Keywords Plus. Regarding Scopus database, the search was based on Keywords. The reason for such discrepancy for the different search criterion is due to how both databases search engines are built different.

Regarding the publication year range, given that composite indices were born from the OECD[18] framework for developing composite indices, the year range begins with 2008 and ends with the present, i.e., 31/01/2022.

Regarding the publication type, and to ensure that results are highly inclusive, all publication types, i.e., journal articles, conference papers etc., are included. Furthermore, peer review status is not specified to achieve the objective of high inclusivity.

The software's utilized to combine the databases and analyze the results are Excel, R (bibliometrix package), and VOSviewer. Whilst excel allows one to identify and remove any duplicate data between the two database results, the bibliometrix package in R allows one to combine, analyze and map the results[19]. VOSviewer provides a visual illustration of the results in the form of co-occurrence analysis, density visualization, amongst other features.

The methodology for the bibliometric analysis of the single database is similar to the methodology of the combined databases, the difference being that the process of identifying duplicates is not as troublesome.

The final step of the methodology before results are ready for analysis is to further refine the results by excluding any papers which pertain to a different field, subject, or phenomenon the researcher is attempting to study. For example, and in the case of the BBI, papers pertaining to fields such as Economics; Social Sciences Interdisciplinary; and Behavioral Sciences are to be included, whilst papers related to Computer Science; Engineering; and Medicine, for example, are to be excluded. This process of cleaning the data is imperative for the integrity of the results, as the bibliometric analysis might include papers which might include the keywords the researcher is seeking, but the papers will be quite far from the phenomenon he is measuring – i.e., false association. The upcoming section provides the results of the bibliometric analysis conducted for the purpose of identifying any existing measures for the development hindering behavior of individuals and institutions.

4 Results

This section addresses the third step in the workflow for scientific mapping, i.e., data analysis. For the combined databases, two queries were conducted (Table 1), and the results are presented in Table 2. The first query does not specify the field to be analyzed, as the focus is to identify the presence of the keywords in all the fields included in WOS and Scopus databases. The second query facilitates for more specific results, by only including results which are specific to the fields of Economics; Social Sciences Interdisciplinary; Behavioral Sciences (WOS) and Economics; Econometrics and Finance; Social Sciences (Scopus).

Table 1 Search Queries Criteria for WOS and Scopus databases.

Query 1
WOS search by "Topic".
Searches title, abstract, author keywords, and Keywords Plus.
Scopus search by "Keywords".
Publication Date Range:
WOS: 01/01/2008 to 31/01/2022.
Scopus: 2008 to Present.
Field(s): Not Specified.
Peer review: Not Specified.
Query 2
WOS search by "Topic".
Searches title, abstract, author keywords, and Keywords Plus.
Scopus search by "Keywords".
Date Range:
WOS: 01/01/2008 to 31/01/2022.
Scopus: 2008 to Present.
Field(s):
WOS: Economics; Social Sciences Interdisciplinary; Behavioral Sciences.
Scopus: Economics, Econometrics and Finance; Social Sciences.
Peer review: Not Specified.

Query Results[1] Summary:

Table 2 Summary results of Scopus & WOS keyword search.

Query #	Keywords	All Fields		Specified Fields	
		Scopus	WOS	Scopus	WOS
1	"Bad Behavior Index"	-	-	-	-
2	"Bad Behaviour Index"	-	-	-	-
3	"Unethical Behavior Index"	-	-	-	-
4	"Unethical Behaviour Index"	-	-	-	-
5	"Behavior Index"	425	797	10	17
6	"Behaviour Index"	425	223	10	5
7	"Behavior" **AND** "Index"	40,161	58,565	1,878	3,611
8	"Behaviour" **AND** "Index"	40,161	14,005	1,878	830
9	"Behavior" **AND** "Index" **AND** "Development"	1,579	5,592	138	665
10	"Behaviour" **AND** "Index" **AND** "Development"	1,579	1,468	138	155
11	"Bad Behavior"	12	273	3	24
12	"Bad Behaviour"	12	109	3	5
13	"Behavior Index" **AND** "Development"	6	60	-	6
14	"Behaviour Index" **AND** "Development"	6	18	-	-
15	"Behavior Index" **AND** "Socioeconomic"	4	7	1	2
16	"Behaviour Index" **AND** "Socioeconomic"	4	-	1	-
17	"Unethical Behavior"	399	1,309	193	128
18	"Unethical Behaviour"	399	232	193	37
19	"Unethical Behavior" **AND** "Development"	6	119	5	18
20	"Unethical Behaviour" **AND** "Development"	6	27	5	7
21	"Ethical Behavior" **AND** "Development"	32	211	15	32
22	"Ethical Behaviour" **AND** "Development"	32	113	15	23
23	"Unethical Behavior" **AND** "Index"	2	21	1	7
24	"Unethical Behaviour" **AND** "Index"	2	5	1	-
25	"Unethical Behavior" **AND** "Socioeconomic"	1	7	-	1
26	"Unethical Behaviour" **AND** "Socioeconomic"	1	3	-	1
27	"Mafsada" **AND** "Index"	-	-	-	-
28	"Mafsadah" **AND** "Index"	-	-	-	-
29	"Development Index"	2,479	4,238	1,182	775
30	"Socioeconomic Index"	67	244	16	13
31	"Development" **AND** "Index"	26,200	116,317	3,790	7,316
32	"Socioeconomic" **AND** "Index"	11,546	17,751	1,437	731

[1] *N.B.: Results are not unique, i.e., duplicates exist.*

Since the results of the bibliometric analysis presented in Table 2 are quite exhaustive, the next step is to limit the analysis to the specific results, i.e., Query 2 or Columns 5 & 6 in Table 2, and particularly the keywords 'behavior' and index', and to only include the results for journal articles. The results of this analysis are presented in Table 3:

Table 3 Scopus & WOS results refined to only include literature with keywords "Behavior" & "Index".

Query #	Keywords	Specified Fields	
		Scopus Results	WOS Results
1	"Behavior Index"	10	17
2	"Behaviour Index"	10	5
3	"Behavior" **AND** "Index"	1,878	3,611
4	"Behaviour" **AND** "Index"	1,878	830
5	"Behavior" **AND** "Index" **AND** "Development"	138	665
6	"Behaviour" **AND** "Index" **AND** "Development"	138	155
7	"Unethical Behavior" **AND** "Index"	1	2
8	"Unethical Behaviour" **AND** "Index"	1	-

Despite only taking into consideration Query 2 results, some of the articles included in the bibliometric analysis pertain to fields which are not relevant to the phenomenon being measured. As such, further data cleanup is required. Beginning with the Scopus results, 2,027 articles (Table 3) were further refined by excluding fields which were irrelevant to the phenomenon being measured. The result of this cleanup is presented in Table 4:

Table 4 Refined Search results of Scopus database to exclude irrelevant fields.

Query #	Keywords	Scopus Results
1	"Behavior Index"	3
	"Behaviour Index"	(As above)
2	"Behavior" **AND** "Index"	144
	"Behaviour" **AND** "Index"	(As above)
3	"Behavior" **AND** "Index" **AND** "Development"	3
	"Behaviour" **AND** "Index" **AND** "Development"	(As above)
4	"Unethical Behavior" **AND** "Index"	1
	"Unethical Behaviour" **AND** "Index"	(As above)

The above results were achieved by applying the following criteria to the respective query:

Table 5 Search criteria to further refined the results.

Query 1: Only include articles under the field of: Mathematics or Social Sciences or Economics, Econometrics and Finance or Psychology.
Query 2: Only include articles under the field of: Psychology or Mathematics or Decision Sciences or Business, Management, and Accounting.
Query 3: Only include articles under the field of: Psychology or Decision Sciences or Business, Management, and Accounting.
Query 4: Not refined.

Regarding the WOS search results, 5,285 articles (Table 3) were further refined by excluding papers pertaining to irrelevant fields – similar to the steps performed for refining the Scopus results. The refined WOS search results are presented in Table 6 as follows:

Table 6 Refined Search results of WOS database to exclude irrelevant fields.

Query #	Keywords	WOS Results
1	"Behavior Index"	3
2	"Behaviour Index"	1
3	"Behavior" **AND** "Index"	124
4	"Behaviour" **AND** "Index"	100
5	"Behavior" **AND** "Index" **AND** "Development"	27
6	"Behaviour" **AND** "Index" **AND** "Development"	22
7	"Unethical Behavior" **AND** "Index"	7
8	"Unethical Behaviour" **AND** "Index"	-

The above results were achieved by applying the following criteria to the respective query:

Table 7 Search criteria to further refine the results.

Query 1: Only include articles under the field of: Mathematics Interdisciplinary Applications or Social Sciences Mathematical Methods or Business or Statistics Probability.
Query 2: Only include articles under the field of: Business Finance or Mathematics Interdisciplinary Applications or Social Sciences Mathematical Methods.
Query 3: Only include articles under the field of: Social Sciences Mathematical Methods or Development Studies or Psychology Multidisciplinary or Social Sciences Interdisciplinary.
Query 4: Only include articles under the field of: Social Issues or Religion or Multidisciplinary Sciences or Sociology or Business or Mathematics Interdisciplinary Applications or Management or Social Sciences Mathematical Methods or Business Finance.

Query 5: Only include articles under the field of: Development Studies or Business or Management or Social Sciences Interdisciplinary or Psychology Multidisciplinary or Mathematics Interdisciplinary Applications.
Query 6: Only include articles under the field of: Sociology or Business or Management or Statistics Probability or Social Sciences Mathematical Methods or Social Issues or Operations Research Management Science.
Query 7: Includes: Economics AND Ethics AND Business.

The final step of the data cleanup process is to make sure once more that duplicates do not exist, a function which can be performed in excel, to only include publications in their final stage, i.e., passed the peer review process and are ready for publication or have been published, and to only include publications in English, an optional step this research has decided to adopt since some content can be mistranslated and misinterpreted.

Once the final cleanup process is performed, a total of 385 journal articles, 242 pertaining to WOS and 143 to Scopus, were included in the bibliometric analysis.

Method 1: WOS & Scopus Results in VOSviewer & Bibliometrix Package

The fourth step of the scientific mapping workflow is data visualization. Several science mapping techniques exist for visualizing bibliometric data [8]. Such techniques include citation analysis which facilitates for the researcher to identify the relationship among publishers, as well as reveal are the most influential publications among the data being studied. A similar technique is the co-citation analysis, which exhibit the relationship among cited publications as well as exhibit foundational themes. A third technique according to the authors is bibliographic coupling which exhibit the relationship among citing publications as well as and periodical or current themes among the data being analyzed. A fourth technique is the co-authorship analysis which identifies any relationships between the authors, as well as identifying the authors affiliation by country and institution. A fifth technique is the co-word or co-occurrence analysis, which serves the purpose of revealing any current or future relationships among the topics, fields, content, keywords etc. The co-word or co-occurrence analysis is the science mapping technique most fitting for the purpose of this research, as it allows once to identify the presence or absence, i.e., gaps, of any content the researcher is seeking to find – i.e., does the BBI exist?

The aforementioned science mapping techniques can be performed via VOSviewer. VOSviewer is a software which facilitates for the visualization and analysis of bibliometric data. The software provides researchers with many features to assist them in their bibliometric analysis. Some of these features include but are not limited to citation analysis, bibliographic coupling, co-authorship analysis, co-occurrence analysis, and many others. The core competency of VOSviewer is its ease of use, its ability to process large data, and its excellent bibliometric data visualization relative to software such as SPSS and Pajek which have been traditionally used for bibliometric analysis[16].

As stated earlier, the co-word or co-occurrence analysis mapping technique will be used for the purpose of this research as it facilitates for the identification of the presence or absence of a quantitative measure of the bad behavior of individuals and institutions, as well as the relationship or linkage between the articles included in the analysis. The co-occurrence analysis conducted via VOSviewer for the combined WOS and Scopus databases for the 385 bibliometric data was assigned threshold value of 5 for the minimum number of occurrences of a keyword. Of the 3,018 keywords in the bibliometric data, 183 keywords met this threshold. Moreover, for each of the 183 keywords selected, the total strength of the co-occurrence link will be calculated and the words with the greatest strengths will be shown in the co-occurrence map. The co-occurrence map of the 183 keywords is presented as follows in Figure 1.
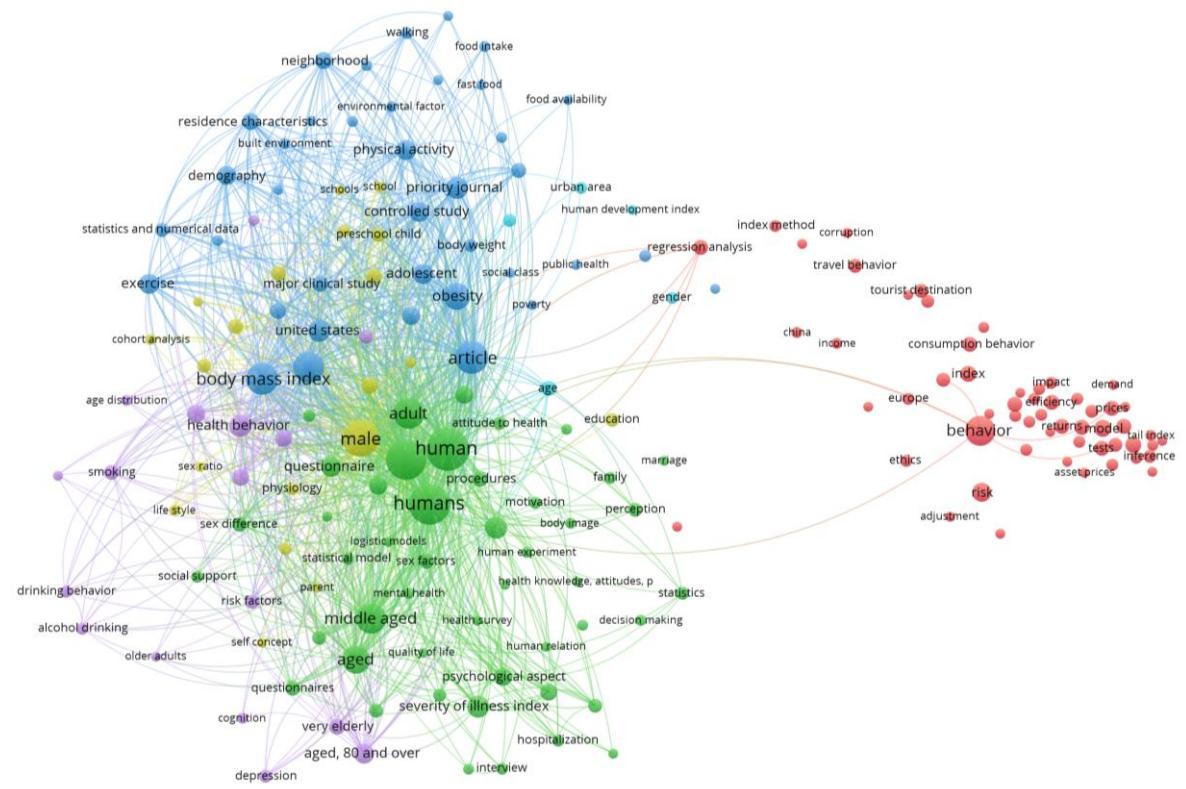
Figure 1 VOSviewer Co-Occurrence Analysis Map (WOS & Scopus combined).

Further analysis of the co-occurrence map shows the presence of 6 clusters. Clustering is a technique which groups the journals into related fields. The clustering technique utilized is a modularity-based clustering method based on Clauset et al.[20]. According to the 183 items included in the clusters, only 11 items pertain to the term 'Behavior' or 'Behaviour', whilst the keyword 'Behavior/Behaviour Index' is missing (Table 8).

Keyword "Behavior"
adaptive behavior
behavior
child behavior
consumption behavior
coping behavior
drinking behavior
feeding behavior
health behavior
social behavior
tourist behavior
travel behavior

Table 8 Keywords present in the 6 clusters of the co-occurence analysis map (WOS & Scopus combined).

An alternative view which can be applied to the co-occurrence analysis is the density visualization view. The benefit of this method is that it highlights the most prominent keywords in the bibliometric data being analyzed, with lesser visual emphasis on the linkage between them. Figure 2 exhibits the density visualization of the co-occurrence analysis of the 385 documents retired from WOS and Scopus databases:
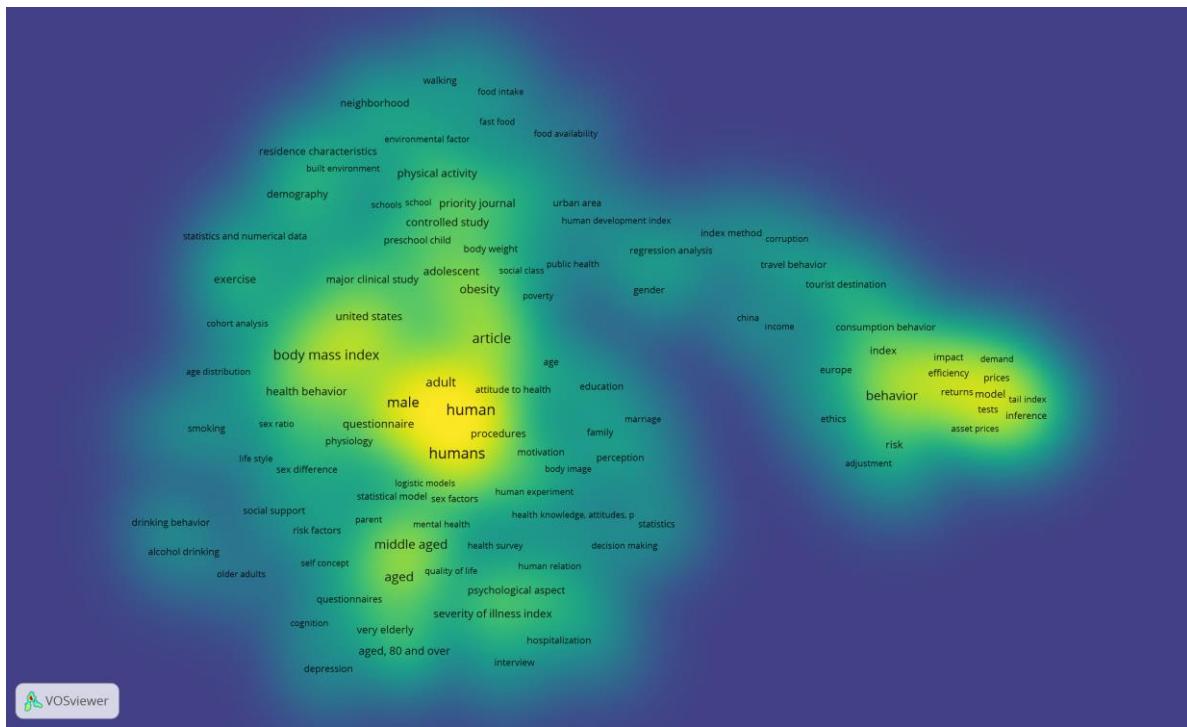
Figure 2 VOSviewer Density Visualization Map (WOS & Scopus combined).

Elaborating upon the density visualization map, one of the primary keywords being investigated is 'Behavior Index' or 'Behaviour Index'. According to the density visualization, the keyword 'Behavior' is present, centered on the right side of Figure 2, but confirming the results of the cluster analysis, the keywords are missing from the articles being analyzed.

Content Analysis

The fifth step of the scientific mapping workflow is data interpretation. Whilst interpreting the visualized data in VOSviewer, it becomes clear that co-occurrence analysis alone is insufficient to identify the presence or absence of the measure this research seeks to develop. To elaborate, one of the limitations of co-occurrence analysis in VOSviewer is that it focuses on the linkage between keywords and articles and excludes any articles which contain the keywords if the threshold for the presence of the keywords falls behind a certain value. To elaborate, the keywords threshold used for the co-occurrence analysis in this research is the default setting of the VOSviewer software, and that is a threshold value of 5. Even though this facilitates for the study of the relationship between the various articles included in the bibliometric data, it does not fully serve the purpose of this paper which is to identify the presence of any quantitative measures of the development hindering behavior of individuals and institutions. As such, the co-occurrence analysis must be supplemented with a content analysis which focuses on the presence of the keywords rather on the relationship or links between them. This process is a continuation of the precursor steps to the co-occurrence analysis, i.e., the analysis performed in Tables 1 through 7.

Further analysis can be performed by individually reviewing the 385 journal articles included in the bibliometric analysis, or by utilizing statistical software such as R, and in

particular, the package biblometrix. The package "provides a set of tools for quantitative research in bibliometrics"[17], with the purpose of facilitating for data collection, data analysis, and data visualization. Besides facilitating for the integration of WOS and Scopus bibliometric data, the bibliometrix package in R allows the researcher to consolidate their findings in VOSviewer by identifying the presence of the keywords they are investigating. Table 9 below provides an example on how to achieve this task, and Table 10 exhibits the results of the keyword analysis in the bibliometrix package.

Table 9 Steps on how to utilize bibliometrix package in R to conduct keyword analysis.

Step 1: Open R and load package bibliometrix: *library(bibliometrix)*
Step 2: Run code for biblioshiny app, which provides a user-friendly web interface for bibliometric analysis: *biblioshiny()*
Step 3: Once the web interface is loaded, click on 'Data' in the top navigation bar and select 'Import or Load Files'**.**
Step 4: Select 'Import raw file(s)', database of choice[1], and upload file by clicking 'Browse' and selecting file from directory of choice.
Step 5: Once the dataset is imported, click on 'Documents' in top navigation bar and select 'Most Frequent Words'.
Step 6: On the left-hand navigation pane, begin by selecting 'Keywords Plus' followed by 'Authors Keywords' and click 'Apply'.
Step 7: On the right-hand pane, an option to select 'Plot' or 'Table' appears. Select 'Table' and enter the keywords, in the search bar on the right, which are central to your bibliometric analysis. The results, if any, will appear directly below the search bar.

[1] *The researcher can either follow the steps highlighted by Echchakoui[10] on how to merge the bibliometric data from WOS and Scopus database, or they can simply reformat the files of one database so that they are in line with the formatting of the other database. In the case of this research, the WOS bibliometric data was reformatted to fit the style of the Scopus data.*

Table 10 exhibits the results of the content analysis for the keywords 'Behavior Index', and 'Behaviour Index'. In summary, the analysis of the bibliometric data via R package bibliometrix confirm the findings of the bibliometric analysis conducted in VOSviewer, and that is no quantitative measures of development hindering behavior currently exist in the academic literature reviewed, particularly with the keywords 'Behavior or Behaviour' and 'Index' in mind.

Keyword Search in R bibliometrix package	
Behavior Index	**Behaviour Index**
behavior problem index (bpi)	consumer behaviour change index
herd behavior index	index of responsible corporate behaviour towards consumers (i-rcbc)
risk-taking behavior index	nexus eco-purchasing behaviour index

Table 10 Content and keyword analysis results via bibliometrix package (WOS & Scopus combined).

Method 2: Single Database 'Refined' Results (Scopus)

To consolidate the results of the merged WOS and Scopus databases, a bibliometric analysis of a single database is conducted. The keywords were limited to: "Behavior" AND "Index"; "Unethical Behavior" AND "Index"; and "Behavior" AND "Index" AND "Development". Moreover, literature was limited to the fields of "Social Sciences" and "Economics, Econometrics, and Finance". The initial search results returned 1,741 documents and their breakdown by field is presented in Figure 3.

Documents Breakdown By Subject Area
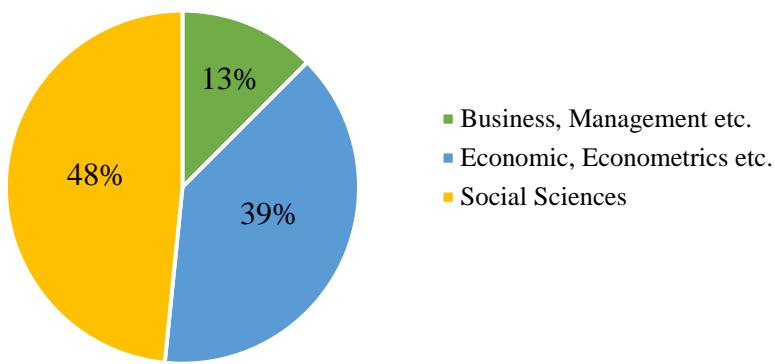
Figure 3 Scopus (single database) initial search results breakdown by field.

The results were further refined and a final document count of 259 was achieved. The bibliometric data was analyzed in VOSviewer similar to the data of the merged databases. Of the 2,161 keywords which meet the threshold value of 5, 206 were included in the analysis. The results of the co-occurrence analysis and keyword search in VOSviewer are presented in Figure 4 & Table 11 respectively. Further analysis in R bibliometrix package was performed on the single database (Table 12), i.e., Scopus, and the results are also in line with the findings of VOSviewer analysis, and that is, like the merged databases, no quantitative measure of the development hindering behavior (BBI) exists – i.e., results are valid and consolidated.
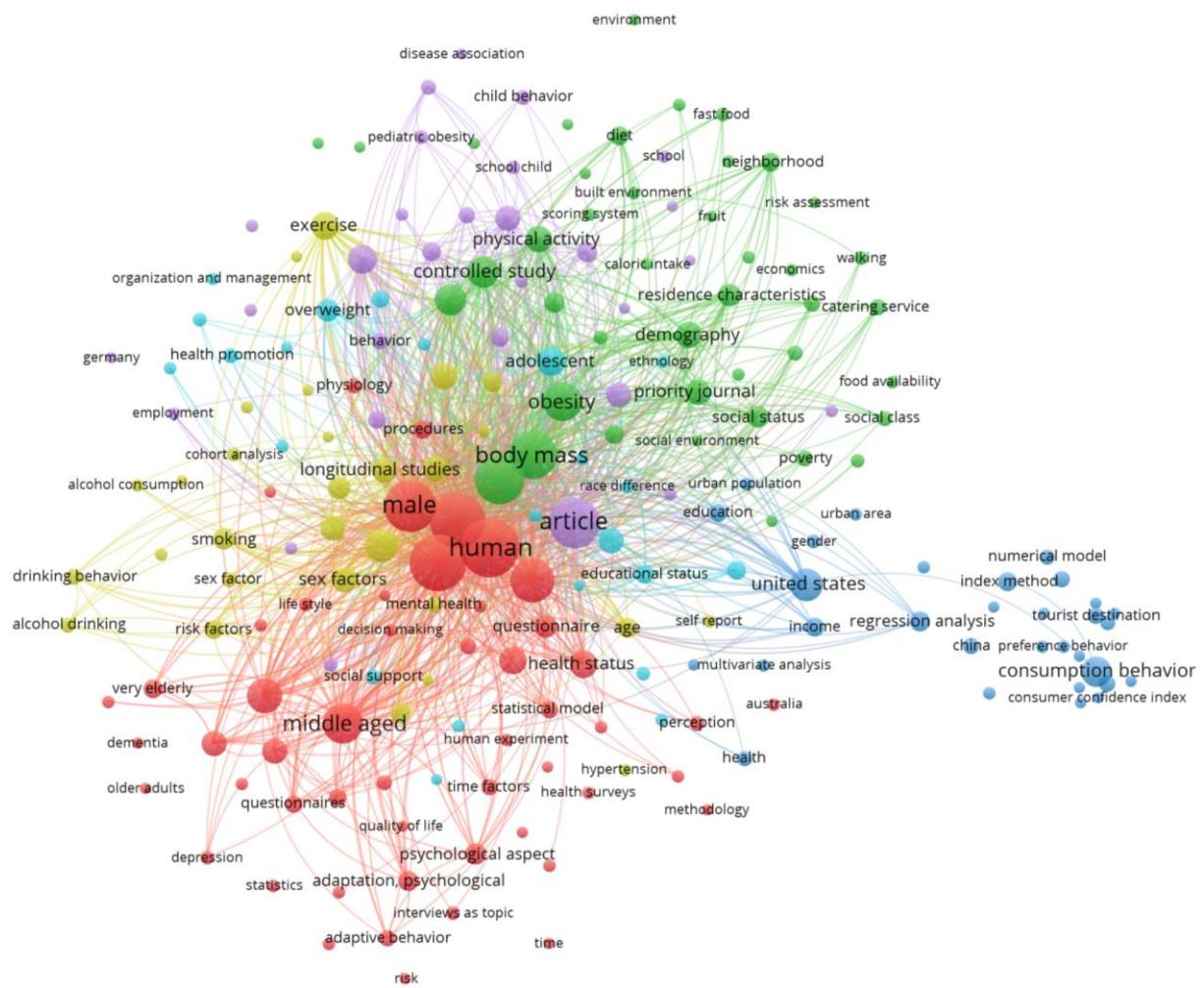
Figure 4 VOSviewer Co-Occurrence Analysis Map (Scopus database ONLY).

Keyword "Behavior"
adaptive behavior
adolescent behavior
behavior
child behavior
choice behavior
consumption behavior
coping behavior
drinking behavior
feeding behavior
health behavior
high risk behavior
preference behavior
sedentary behavior
sexual behavior
social behavior
tourist behavior
travel behavior

Table 11 Keywords and Cluster Analysis (Scopus database ONLY).

Keyword Search on R bibliometrix package	
Behavior Index	**Behaviour Index**
behavior problem index (bpi)	consumer behaviour change index
behavior problems index (bpi)	index of responsible corporate behaviour towards consumers (i-rcbc)
risk-taking behavior index	

Table 12 Content and keyword analysis results through bibliometrix package (Scopus database ONLY).

Method 3: Single Database 'Unrefined' Results (Scopus)

To ensure that no articles were excluded from the literature in the cleanup process in Method 1 & 2 presented earlier, the results of a single database, i.e., Scopus, will be analyzed where no articles are excluded because they pertain to a different field to the phenomenon being studied by the researcher. The scope of this method is very specific, with only publications which include the keyword 'Behavior Index' are included in the bibliometric analysis. The Scopus search query returns the result of 425 documents, of which none have been subjected to further cleanup either by field, publication type, or otherwise.

Analyzing the bibliometric data in VOSviewers, and forgoing the option to apply a threshold value to the data, returns a result of 4,734 keywords. Of these 4,734 keywords, 32 pertain to 'behavior index' and 8 pertain to 'behaviour index' (Table 13). Further analyzing these keywords and the publications they relate to, confirms the results of the previous analysis, i.e., Methods 1 & 2, and that is no existing measure of development hindering behavior, i.e., BBI, exists among the literature reviewed.

Keyword	
Behavior Index	**Behaviour Index**
aberrant drug behavior index	activity sleep behaviour index
animal behavior index	behaviour index
antisocial behavior index	behaviour index (k)
behavior index	flow behaviour index
behavior indexes	health-promoting behaviour index
bicyclist behavior index naturalistic riding	maternal health seeking behaviour index
child behavior index	multiproblem behaviour index
child distress behavior index	nexus eco-purchasing behaviour index
conservation behavior index	
driving behavior index	
environmentally responsible behavior index (irbi)	
flow behavior index	
flow behavior index (dimensionless)	
fluid behavior index	
garos sexual behavior index	
generalized flow behavior index	
health and behavior index	
healthy behavior index	
herd behavior index	
knowledge-creating behavior index	
motor behavior index	
multiple problem behavior index	

n (flow behavior index)	
risk-taking behavior index	
rock behavior index (rbi)	
seismic behavior index	
smoking behavior index	
soil behavior index	
soil behavior index (ic)	
the criminal behavior index	
unhealthy behavior index	
unhealthy weight control behavior index	

Table 13 Keywords Analysis (Scopus database ONLY, 'unrefined' data).

5 Discussion & Limitations

The results of the content and bibliometric analysis provide sufficient evidence for the absence of a quantitative measure for the development hindering behavior of individuals and institutions within the context of socio-economic development, i.e., the 'Bad Behavior Index'. Three methods were conducted to ensure sufficient due diligence was taken to ensure the absence of such measure. The most important keyword for this analysis is 'behavior index'. All three bibliometric methods utilized in this paper confirm the absence of this measure. With that said, this study is not without its limitations. To elaborate, the study does not include all research databases which is a significant limitation since the measure this paper is attempting to identify its presence or absence could be included in an article published in one of the databases not included in this paper. Furthermore, journals published in a foreign language, have a lower impact factor, or are not indexed by WOS and Scopus, i.e., the databases selected for the bibliometric analysis in this study, are not included in the analysis. Thus, many publications have not been included in the bibliometric analysis. Another limitation of this study pertains to how some authors might fail to list key terms in their title, abstract, or keywords, or might simply use similar but not identical words, i.e., synonyms, which could lead to the exclusion of various publications. Another limitation of this study is how qualitative interpretations of the bibliometric data can be subjective. Another limitation which is a result of subjectivity is setting a certain threshold level for the occurrence of keywords in VOSviewer, as it leads to the exclusion of many publications. It must be reiterated that the threshold levels are a default setting of the VOSviewer software, and it is up to the researchers to adjust this level as they see fit. Lastly, a significant limitation of bibliometric analysis is how it is subject to time sensitivity – i.e., by the time this research is published, the number of papers which include the key terms will change.

Despite the limitations of this study and bibliometric analysis in general, significant due diligence has been performed to ensure that the quantitative measure the researcher seeks to introduce is yet to be developed.

6 Conclusion

The purpose of this research is to conduct a content and bibliometric analysis of the presence of a quantitative measure of the development hindering behavior of individuals and institutions within the context of socio-economic development, i.e., the 'Bad Behavior Index'. This study utilizes three methods for conducting this analysis which involves merging WOS and Scopus databases, the use of Scopus database alone with refined results, and the use of Scopus database without refining the results to exclude irrelevant fields. The findings of this study confirm the absence of such quantitative measure, which gives the researcher the greenlight to proceed with the development of the BBI. The practical contribution of this study

is how it showcases how one can conduct a content and bibliometric analysis of knowledge that is yet to exist, to facilitate for the creation of such knowledge. Moreover, this study showcases how one can merge and utilize more than one database when conducting bibliometric analysis which improves upon the current practice of utilizing a single database. The methods utilized for the bibliometric analysis are not without their shortcomings, as such it is recommended to supplement these methods with further analysis where possible. This includes manually reviewing the bibliometric data, reducing the threshold levels, including non-peer reviewed publications, including other publication types such as conference papers, conducting the analysis for different databases, and any other method which could expand the search results. With that said, there is only so much the researcher can do when attempting to accomplish a task such as identifying gaps in literature such as the presence or absence of a quantitative measure similar to the BBI. As such, the most important facet of the researcher's bibliometric efforts is due diligence, and that is to exhibit stringent effort when investigating the gaps in literature.

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