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## A Bibliometric Analysis of Poverty Female Entrepreneurship and social media in Developing countries: Mapping Research Trends and Knowledge Gaps

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### ABSTRACT

Women entrepreneurs encounter numerous obstacles as they embark on and oversee business ventures, particularly in developing countries where poverty exacerbates the challenges they confront. This bibliometric literature review seeks to elucidate the evolutionary trajectory of the research field, aiming to advance an in-depth understanding of the intricate connections between female entrepreneurship, poverty, and social media in developing nations. Despite the considerable attention given to female entrepreneurship in developed countries, there exists a conspicuous dearth of comprehensive literature addressing the specific context examined in this study. Therefore, this article not only discerns existing research gaps but also furnishes valuable recommendations for future studies, aiding scholars in broadening their insights into this pivotal subject matter. By highlighting the intersecting challenges of gender disparities, poverty, and the distinction between formal and informal sectors, this review contributes to the formulation of targeted interventions and strategies. These initiatives are designed to support the endeavors of women entrepreneurs and foster inclusive economic growth, thereby addressing the intricate issues faced by female entrepreneurs in developing regions.

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## 1. INTRODUCTION

Across the timeline, the concept of entrepreneurship has undergone a remarkable evolution, shaped by the changing social and economic landscapes [1]. Entrepreneurial practices have a history that predates the New Age, and their origins can be traced back to the early stages of human civilization [2]. Within this framework, distinguished economists such as Carl Menger, Richard Cantillon, Joseph Schumpeter, Israel Kirzner, Frank Knight and Adam Smith and Jean-Baptiste Say [3], were the pathfinders in the establishment and advancement of the field of entrepreneurship. Through their profound insights and prominent contributions, they have bestowed a lasting legacy upon the discipline, contributing significantly to its theoretical underpinnings and empirical exploration.

Throughout history, entrepreneurship has been predominantly associated with men, with notable male figures leading the way in business ventures and shaping economies. However, as we delve into the annals of history, we witness a paradigm shift; the emergence of female entrepreneurs who have defied societal norms and shattered barriers to make their mark in the entrepreneurial landscape.

The increase in female entrepreneurship rates gains more significance and strength as time progresses [4]. The journey of female entrepreneurship is marred by obstacles stemming from societal norms, formal institutions, cultural factors, and economic conditions, all of which collectively create formidable barriers hindering the initiation and growth of new enterprises. Comprehending the characteristics of female entrepreneurship holds significance for society, as it fuels discussions regarding gender equality and the augmentation of entrepreneurial potential within the community. This discussion assumes paramount importance in developing nations, where women must actively seek avenues to generate income and access the workforce, thereby facilitating progress and promoting economic enhancements [4]. It is acknowledged that female entrepreneurship can act as a driving force for transformation in developing nations [5]. This is because the expansion of enterprises owned by women plays a pivotal role in decreasing female unemployment rates, as female-owned businesses typically hire a higher proportion of women compared to businesses owned by men [5].

In this article, we embark on an insightful journey tracing the history of female entrepreneurship, with a particular focus on small businesses owned by women, illuminating the struggles, progress, and resounding triumphs of women who have revolutionized the entrepreneurial world. Guided by this premise, the objective of this study was to chronicle and analyze the evolution of female entrepreneurship research by identifying themes characteristic of different periods. To achieve this, a bibliometric review of existing literature was conducted, a method known for mapping research landscapes and pinpointing emerging themes and gaps [6], [7]. This study specifically concentrated on tracking research trends over time, utilizing the evolution of research topics as a guide.

The article utilizes Vosviewer software to analyze scholarly literature on the intersection of female entrepreneurship, poverty, and social media through advanced visualization techniques. It identifies key themes, influential authors, and emerging research areas within this domain by uncovering patterns and trends. The study enhances our understanding of how gender, economic empowerment, and digital platforms interact in addressing societal challenges.

The article's structure was divided into five distinct sections. In the second section, a theoretical framework was introduced, consisting of an in-depth presentation of the foundational SDT theory. Moving on to the third section, a succinct introduction to female entrepreneurship. The fourth section revealed then an exploration of social media use among female entrepreneurs. A detailed explanation of the methodological approach employed in the bibliometric analysis was provided in the fifth section. The sixth section then presented the research findings and offered interpretations of the results. To conclude the discourse, the last section encompassed final reflections, a discussion of limitations, and prospects for future research endeavors.

## 2. Theoretical framework

To define the theoretical framework, we aimed to utilize Self-Determination Theory (SDT) as a tool to guide our exploration within the empirical domain. SDT holds that "all individuals have natural, intrinsic, and constructive inclinations to build an ever more comprehensive and unified sense of self" [8]. Individuals perpetually strive to fulfill their three fundamental psychological needs: autonomy (exercising one's actions freely), competence (possessing the expertise and skills requisite for success in their domain), and relatedness (experiencing a sense of belonging and interpersonal connection).

SDT serves as a useful framework for grasping the social contextual factors that can either promote or impede the innate process of self-determination. It has been suggested that in developing countries, women who initiate entrepreneurial ventures often encounter enabling or constraining challenges stemming directly from gender-related issues and the societal roles assigned to women [5]. And that is because women entrepreneurs confront a greater array of socio-cultural challenges in comparison to their male counterparts [9].

The reason behind selecting this theory as the foundational framework lies in its applicability to female entrepreneurship from multiple facets:

- Autonomy: The imperative need for autonomy resonates notably with female entrepreneurship, given that numerous women struggle with cultural and societal constraints that curtail their decision-making autonomy and self-determination.
- Competence: As female entrepreneurs cultivate the proficiencies and capabilities necessary for effective business management, they enhance their feelings of competence and confidence in pursuing their objectives.
- Relatedness: Through the cultivation of supportive networks comprising peers and mentors, female entrepreneurs can bolster their sense of relatedness and establish deeper connections within the business community.

In the context of Morocco, can these three variables be effectively operationalized and integrated within existing frameworks and systems? [10]

### 3. Female entrepreneurship

In the following sections, some aspects related to Female Entrepreneurship are presented. This explanation enables the reader to know more about its evolution, challenges, and role of social media in empowering female entrepreneurship.

#### 3.1. The evolution of female entrepreneurship

Entrepreneurship is intrinsically tied to individuals who recognize and capitalize on opportunities, ultimately giving rise to structured economic endeavors that yield value for both themselves and society [11]. Schumpeter (1984) emphasized the crucial significance of entrepreneurship in driving economic progress and growth. As a result, he characterized entrepreneurship as a fundamental cornerstone for promoting economic vitality. This involves leveraging creative ideas and technical innovations, with support from a robust financial framework, to transform these concepts into innovations, whether they pertain to business or technological advancements.

Entrepreneurship goes beyond the boundaries of traditional academic disciplines and draws on a wide array of knowledge from areas like sociology, psychology, and administration. Embracing a multidisciplinary approach allows for a holistic grasp of the topic, as it examines it through various lenses. In Landström's (2020) analysis, entrepreneurship is categorized into three primary perspectives: 1) Entrepreneurship seen as a market function; 2) Entrepreneurial focus on the individual; 3) Entrepreneurship viewed as a dynamic process. These distinct approaches stem from various academic disciplines and shed light on different facets of the entrepreneurial phenomenon. Notably, Landström (2020) labels the first and second perspectives as the economic and behavioral paradigms, respectively. Historically, these two paradigms emerged as pioneering frameworks within the realm of entrepreneurship [12], [13].

The psychology of entrepreneurship encompasses three essential dimensions: innovation, risk-taking, and action. These dimensions relate to an entrepreneur's ability to creatively solve problems, their willingness to embrace uncertainty and challenging situations, and their perseverance, adaptability, and sense of responsibility, particularly in the face of failures [14]. Many of these traits are evident in the conduct of entrepreneurs, but various research studies suggest that certain managerial abilities are more commonly observed in female behavior [15]. For instance, Mendell's work in 1997 illustrates that women tend to approach each situation with consideration of its unique context, whereas men often assess domestic situations based on their internalized rules [16].

Researchers are examining female entrepreneurship to uncover its distinctive characteristics and to understand the perceived challenges it encounters [11]. Throughout history, women have faced the constraints of societal moralism, which have limited their access to higher positions within organizations and equal pay compared to men in similar roles. This historical context underscores the enduring challenges women have confronted, emphasizing the need to address gender-based disparities and promote a more equitable and inclusive work environment for women to reach their full potential [17]. The theory of gender relations, rooted in post-structuralism, underscores the existence of subtle yet impactful inequalities in the labor market, emphasizing that gender is a socially constructed concept with distinctions between male and female roles shaped by historical and linguistic factors, which should be considered alongside shared traits when examining women's roles in entrepreneurship [18].

During the early 1900s, women embarked on a journey towards achieving gender equality by actively engaging in social activism, which, in part, was facilitated by increased access to education and led to the acquisition of civil and political rights. By the 1970s, these social movements played a pivotal role in instigating substantial transformations in societal norms, ultimately reshaping gender roles within the workforce. As a result,

there was a notable rise in women's engagement in the labor market. Nevertheless, despite this considerable increase, women's participation continues to trail behind that of men [17].

The 1980s saw the rise of female entrepreneurship as a prominent subject of study. During this period, there was a noticeable increase in the quantitative analysis of female entrepreneurship, which provided insights into clear patterns and developments. This surge in research activity was driven by the growing number of women entering the workforce, as they shifted from being solely employees to taking on roles as business owners and entrepreneurs [19].

As per the GEM data for 2007, Female entrepreneurship has become a progressively significant component of the economic makeup in numerous nations and plays a pivotal role in driving economic growth, especially in low and middle-income countries [20].

As of 2021, women entrepreneurs are energetically engaged on a global scale, steering growth-oriented, highly inventive enterprises with a focus on both national and international markets. Remarkably, in upper-middle-income countries, women comprised approximately one-third of all entrepreneurs initiating high-growth businesses, contributing significantly to job creation [21].

### 3.2. The role of social media in female entrepreneurship

The advent of the Internet has ushered in a profound transformation in the realm of business transactions, unveiling unprecedented opportunities for aspiring entrepreneurs [22]. The emergence of social media has fundamentally transformed the way individuals interact with one another [10]. The internet's social media platforms have revolutionized the way businesses connect with fresh markets, suppliers, and clientele, facilitating instantaneous connections that were previously unattainable [23]. Social media has been recognized as a valuable asset, offering a multitude of advantages for enterprises [24]. Crucially, social media plays a vital role in strengthening connections with stakeholders, a particularly significant advantage for start-ups and small enterprises [25]. In doing so, entrepreneurs can refine their competitive edge efficiently and cost-effectively [26]. In their theoretical framework, [27] postulated that the utilization of social media by women entrepreneurs in emerging economies would amplify a woman's self-assurance and cultivate a broader social network, ultimately promoting female empowerment.

The literature also discusses the positive impact of technology when harnessed by women entrepreneurs. For instance, Constantinidis (2011) documented that the women who identified themselves as part of the category of 'women entrepreneurs' regarded Facebook as a valuable tool for striking a balance between networking and family commitments. Furthermore, networks predominantly composed of women were seen as more supportive of female entrepreneurs than those dominated by males or mixed-gender networks. These women entrepreneurs reported gaining both new clients and suppliers through their connections on Facebook. Hence, evidence suggests that social media can yield advantages for women entrepreneurs, particularly in regions with lower income levels [23]. Yaqoob conducted several interviews in Pakistan where women entrepreneurs confirmed that their usage of the platforms Facebook and WhatsApp have enabled them to advertise their products and reach new clients [29].

Nevertheless, the ability to obtain technology and acquire digital skills might pose a hindrance to entrepreneurship among individuals residing in impoverished conditions. This phenomenon is commonly denoted as the "digital divide," delineating the disparity between those who possess access to technology and digital competencies and those who lack such access [30]. To narrow the digital gap and tackle these obstacles, ensuring equitable participation in the digital economy for all individuals, governments and other entities may find it necessary to allocate resources towards programs and initiatives aimed at granting access to technology and offering training in digital competencies [31].

### 3.3. Challenges to female entrepreneurship in Developing countries

In the context of developing countries, the significance of female entrepreneurship is particularly pronounced in driving economic growth and poverty reduction. Women in these settings often bear primary responsibility for familial caregiving and providing sustenance, making their engagement in entrepreneurial activities crucial [32]. Women often take the lead in starting businesses. They are key to creating jobs, boosting economic activity, and sparking innovation.

However, they face formidable challenges, including limited access to financial resources, educational opportunities, and systemic gender disparities that impede their full integration into the global economy [10]. Furthermore, prevailing institutional frameworks and societal norms often reflect male-centric paradigms, highlighting the non-neutral nature of entrepreneurial environments [21].

Women still face persistent challenges when entering the workforce, advocating for equitable compensation, and establishing and expanding their businesses [33]. These obstacles are influenced by the multiple roles they assume in balancing professional and domestic obligations [34], compounded by limited support from

family members, particularly spouses[35]. These dynamics fuel ongoing discussions about one of the primary barriers to female entrepreneurship: the struggle to manage diverse daily responsibilities associated with traditional gender roles, such as caregiving and household management, while simultaneously pursuing entrepreneurial ambitions [34], [35].

Moreover, inadequate access to financing represents a significant obstacle for female entrepreneurs [35]. Gender-related disparities exacerbate this challenge, limiting women's access to financial, human, and social resources [36]. This impediment stems from biases suggesting that women entrepreneurs may struggle to efficiently leverage resources to achieve results compared to their male counterparts [19]. Additionally, concerns persist regarding the lack of social acknowledgment and acceptance of women's entrepreneurial endeavors, fostering feelings of apprehension and vulnerability to societal scrutiny and pressures [37].

In our previous work we highlighted certain studies that delve into the multifaceted realm of female entrepreneurship, each with a unique focus on understanding its impact and dynamics within distinct contexts. From Southeast Asia to Tunisia, rural Ghana, and the lower Punjab of Pakistan, researchers explore the intricate interplay between female entrepreneurship, economic growth, social development, and poverty alleviation. Through a combination of quantitative and qualitative methodologies, these studies aim to shed light on the challenges, opportunities, and transformative potential inherent in women's entrepreneurial endeavors across diverse geographical and socio-cultural landscapes.

Table 1: Summary table of case studies treating Female entrepreneurship [10]

Research object	Problematic	Methodology	Models	Explanatory Factors
-Title: The Impact of Female Entrepreneurship on Economic Growth in the Asean Countries: A Panel MM-QR Approach -Year: 2023 -Research site: Southeast Asia	How does the significance of female entrepreneurship impact economic growth in Southeast Asian countries, and what is the specific impact of each explanatory variable?	Quantitative research: The study employs empirical panel quantile regression using the Method of Moments Quantile Regression (MM-QR) approach with GDP per employed person.	The study utilizes panel data model with multiple dependent variables. The analysis employs MM-QR approach for panel fixed effects proposed by Machado & Santos Silva (2019) for the period from 1991 to 2021. The model uses seven independent variables to represent female entrepreneurship, along with seven control variables	- Female Entrepreneurship Indicator - Female Pay - Female Parenthood - Gender Development - Foreign direct investment - Gender Inequality - Female Workplace ...
-Title: Has female entrepreneurship been a formidable engine of economic and social development in Tunisia? -Year: 2021 -Research site: Tunisia	To what extent does female entrepreneurship contribute to economic and social development in Tunisia?	Quantitative research: The methodology adopted in this study involves constructing multiple regression models to identify correlations between the dependent and independent variables.	The model's data is limited to the period from 1980 to 2017. The study discusses variables related to economic growth, including the dependent variable: Economic growth rate, and independent variables such as women's entrepreneurship and human capital	- Female entrepreneurship - The human capital - Physical capital - Entrepreneurship - Financial development
-Title: Rural Poverty Alleviation Strategies and Social Capital Link Year: 2020 -Research site: Sekyere South District in Ghana	How can the utilization of social capital by rural women entrepreneurs alleviate rural poverty and potentially transform rural communities?	Quantitative research: The empirical analysis of data from a sample of 333 women entrepreneurs in the Agribusiness sector Ghana involved the application of SEM.	The structural model estimated through PLS bootstrapping indicates that social capital, social innovation, and women entrepreneurship growth have a significant impact on reducing rural poverty.	- Entrepreneurship growth - Poverty alleviation - Relational social capital - Social innovation -structural social capital
-Title: Emerging trend of Women entrepreneurship in Pakistan -Year: 2020 -Research site: lower Punjab of Pakistan	How do women navigate the execution of their entrepreneurial ventures in the face of cultural, social, and economic obstacles?	Qualitative research: The study utilizes the interpretive paradigm and Gioia Methodology proposed by Gioia, and his colleagues (2013	The study discusses the various economic, social, cultural, and technological factors that contribute to the creation of women's entrepreneurial ventures in developing countries such as Pakistan.	- Social and cultural problems -Individual characteristics of entrepreneur -cultural/religious values -strong social capital

Note. Reprinted from "Empowering Female Entrepreneurs in Developing Countries: A Comparative case study on The Impact of Social Media on Microenterprises and Poverty Alleviation," by S. Alloui and K. Chafik, 2023, IMCSM23 May, Volume XIX, Issue (1), p.246. Copyright (2023) by University of Belgrade, Technical Faculty in B.

#### 4. Research methodology: Bibliometric analysis

We adhered to a five-step methodology in our bibliometric literature analysis, which includes: identifying the most impactful studies, delineating the subject areas of research, and offering perspectives for ongoing research pursuits as well as guiding future research directions within the field [38].

In this section, we outline our methodology for acquiring and analyzing data on female entrepreneurship, poverty, and social media. Initially, we established appropriate combinations for search terms and conducted searches using Boolean operators in the Scopus database, resulting in the identification of relevant literature. We then discuss our sampling approach, which prioritized the Scopus database due to its comprehensive coverage of high-quality journals, and detail our search strategies. Subsequently, we present the outcomes of our initial search, including the distribution of search results across various keyword combinations. We further describe our data extraction method, which involved importing data into Endnote for cleaning and verification. Additionally, we elaborate on the utilization of Vosviewer software for bibliometric analysis, outlining the methods employed for analyzing keyword occurrence, journal citations, country distributions, and author co-authorship. Through meticulous examination and visualization of various aspects, we aimed to comprehensively explore the landscape of female entrepreneurship, poverty, and social media research.

##### 4.1. Defining the appropriate combinations for the search terms

We established the optimal combinations of search terms using Boolean operators to obtain results that would effectively structure our research question. Boolean operators such as OR, AND, and NOT are fundamental in search systems, ensuring accurate result generation according to Boolean logic principles [39]. These operators are essential for systematic searches, enabling users to precisely define the scope of their query. While AND and OR link separate concepts in a search string, NOT primarily serves to clarify or disambiguate the search parameters [39].

We collected our data on September 17, 2023. The keywords utilized for data acquisition encompassed "female entrepreneurship," "poverty," "developing countries," "social media," "formal sector," and "informal sector." In this pursuit, we deliberately employed the Boolean operator AND to refine our search parameters and enhance relevance. We explored five combinations of these keywords, all employing the AND operator.

- (1) "female AND entrepreneurship" AND "social AND media"
- (2) "female AND entrepreneurship" AND poverty
- (3) "female AND entrepreneurship" AND poverty AND "Formal sector"
- (4) "female AND entrepreneurship" AND poverty AND "Informal sector"
- (5) "female AND entrepreneurship" AND poverty AND "Developing countries"

##### 4.2. Sampling Methodology and Database Selection

Regarding the sampling approach, we utilized the Scopus database as our primary data source. This selection was based on the database's extensive inclusion of high-quality journals. As one of the most comprehensive bibliographic databases available, Scopus accurately reflects the citation counts [40].

By employing the "title, abstract, keywords" search function within the Scopus database, we gathered and stored "journal" articles (excluding conference papers, books, and book chapters) based on our defined search terms. Next, we needed to specify the subject areas of our research. It seemed interesting to analyze our data from articles in social sciences, Business, Management and Accounting, Economics, Econometrics and Finance, Humanities, Environmental Science, Computer Science, Decision Sciences and Multidisciplinary.

Our initial search endeavors yielded a combined total of 169 articles. Table 1 illustrates the distribution of search results for the five groups of keywords. The search results were saved in RIS format to encompass crucial paper details, such as paper title, authors' names and affiliations, abstract, keywords, and references.

Table 2. The initial search results

Search keywords	Search of results (number of papers)
"female AND entrepreneurship" AND "social AND media"	72
"female AND entrepreneurship" AND poverty	81
"female AND entrepreneurship" AND poverty AND "Informal sector"	5
"female AND entrepreneurship" AND poverty AND "Developing countries"	10
"female AND entrepreneurship" AND poverty AND "Formal sector"	1
Total	169

The table presents the initial search results based on different combinations of keywords related to female entrepreneurship, poverty, and various sectors. It's noteworthy that the number of papers retrieved for the "Informal sector" and "Formal sector" perspectives is notably low, with only 5 and 1 papers respectively. This indicates a potential gap in research within these areas. Moving forward, we may consider two approaches: either pursuing original research to address this gap and contribute to the understanding of informal and formal sector dynamics in relation to female entrepreneurship, or alternatively, focusing our efforts elsewhere given the limited existing literature on this topic.

### 4.3. Data processing and Analysis methodology

The RIS data was imported into the Endnote bibliography software, and within Endnote, we carried out the process of removing duplicate information and correcting errors within the papers. Moreover, we conducted specific manual verifications and evaluations for each article to ensure its relevance to the subject area. The final total number of articles is 152 articles.

After we cleaned the data and removed duplicates, we obtained a total of 152 articles in the field of female entrepreneurship, poverty, and social media research. The citation data of these documents were obtained from the Scopus collection, saved in "CSV" format, and then imported into the VOS viewer (Version 1.6.19) software.

The VOS viewer software creates and displays bibliometric maps that illustrate variations in distance, node size, and node density, using the co-citation and high-citation concepts from the literature. It assesses the research focus and prominent areas in the literature through methods like cluster visualization, overlay visualization, and density assessment [41] VOS viewer operates within a Java-based environment and can bring in scholarly material from Scopus in CSV format. When you click the "Create" button in VOS viewer, the software imports the literature, and users can then choose specific items and define thresholds to align with their analysis goals. In this study, we analyzed keyword occurrence, citations by journals and countries, and co-authorship by authors.

For keywords analysis, the Type of analysis was selected as Co-occurrence, and the Unit of analysis was selected as Keywords. For the analysis of scientific production by journals, the Type of analysis was selected as Citation, and the Unit of analysis was selected as Sources. For the analysis of scientific production by country, the Type of analysis was selected as Citation, and the Unit of analysis was selected as Countries. For the analysis of scientific production by authors, the Type of analysis was selected as Co-authorship, and the Unit of analysis was selected as Authors. A frequency threshold of 25 has been applied for all types of analysis. This threshold designates words with a high frequency and reveals significant research hotspots.

Our research underwent examination across various aspects such as years, journals, authors, countries, and keywords, all conducted using Microsoft Excel 2016 software. Furthermore, the analysis and visualization of journals, keywords, country distribution, and collaborative relationships were systematically carried out using VOS viewer software for bibliometric analysis.

Table 3. Data processing steps summary

Process steps	Results
Data imported into Endnote software for bibliography management	152 articles obtained; dataset enhanced
Duplicate information removed and errors corrected within papers	Improved dataset accuracy and integrity
Manual verifications and evaluations conducted for each article	Enhanced relevance and quality assurance
Citation data obtained from Scopus collection and saved in CSV format (Appendix A)	Comprehensive citation data extracted and formatted
Citation data imported into VOS viewer software	Citation data successfully integrated into VOS viewer
VOS viewer software used to create bibliometric maps	Bibliometric maps generated and visualized
Analysis of keyword occurrence, citations by journals and countries, and co-authorship by authors	In-depth analysis conducted across multiple dimensions
Application of a frequency threshold of 25 for all types of analysis	Threshold applied to filter significant data points
Research aspects examined using Microsoft Excel 2016 software (Appendix B)	Detailed examination of various research aspects using Excel
Analysis and visualization of journals, keywords, country distribution, and collaborative relationships using VOS viewer software	Comprehensive analysis and visualization of research elements using VOS viewer

## 5. Data statistics results and Discussions

In this section, it is explained the results of research and at the same time is given the comprehensive discussion. Results can be presented in figures, graphs, tables and others that make the reader understand easily [42], [43]. The discussion can be made in several sub-sections.

### 6.1. Year of publication, number of literatures

The analysis of 152 papers considered in our study reveals a notable upward trajectory in the field of female entrepreneurship, with the year of publication serving as a crucial indicator. This surge in annual publication count is a valuable gauge for tracking research trends in this specific domain. Through a meticulous examination of the data, our study unfolds a year-on-year plot illustrating the evolving publication trends in female entrepreneurship, poverty, and social media (Figure 1). Our investigation extends back to 1990, showcasing a significant trend since 2018, marked by a consistent annual increase in publications, with no fewer than 12 new papers emerging each year. Particularly noteworthy is the pinnacle reached in 2022, witnessing a peak of 29 publications, signifying a robust and escalating interest in these research themes.

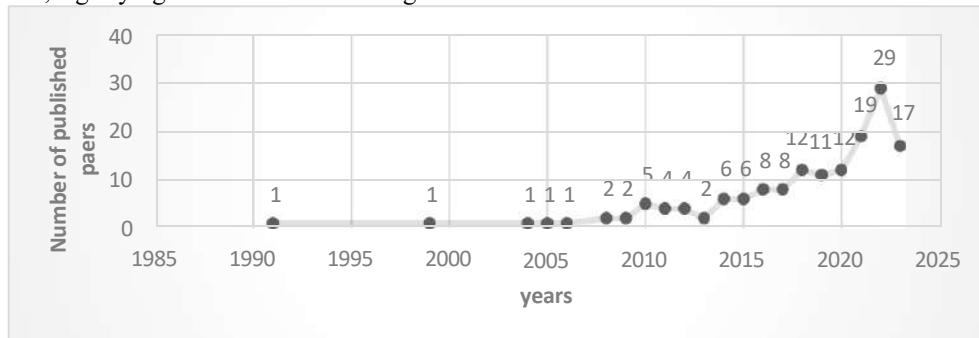


Figure 1. The number of publications over the years

### 6.2. The analysis of scientific production by keywords:

A total of 860 keywords were obtained. The precision and occurrence rate of keywords are crucial elements influencing the effectiveness of the co-occurrence method in pinpointing research focal points within the field [44]. To enhance the precision of the analysis outcomes.

We chose 3 as the minimum number of occurrences of a keyword, which means out of 860 keywords, 85 meet the threshold. Then a series of preprocessing steps were applied to the literature's keywords, which involved unifying singular and plural forms, full names, abbreviations, and synonyms. Also, common but analytically insignificant terms, such as "adult" and "human," were removed. The final step involved creating keyword co-occurrence network visualizations, which encompassed clustering maps, time-based overlays, and more.

Once the data is processed, the following figures display screenshots of various types of co-occurrence network visualizations: cluster view, density view, and overlay view of our retrieved data. These three figures reveal the co-occurrence of keywords using Vosviewer.

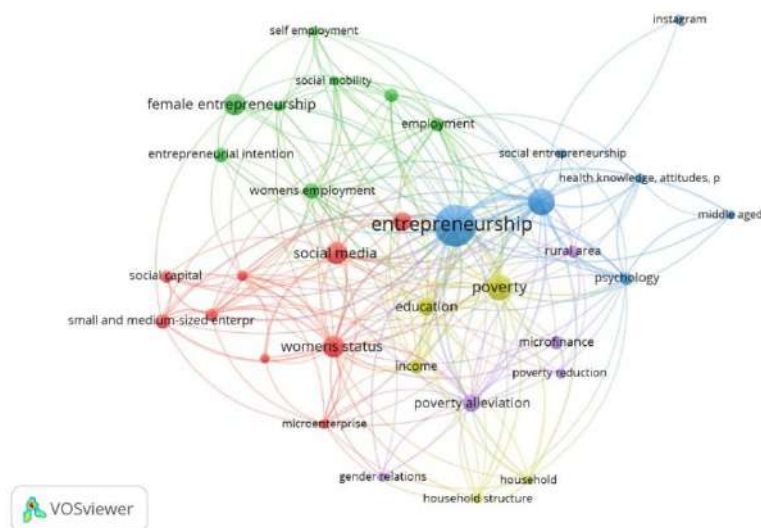


Figure 2. Cooccurrence network mapping of keywords related to female entrepreneurship, poverty and social media

The keywords in Figure 2 are indicated by default with circles. The larger the circle, the more significant the element. Additionally, colors are assigned to each group of elements, naming them as clusters.

At first glance, the map highlights Entrepreneurship as a central concern, as it serves as the key concept from which most authors commence their research. Overall, we have 34 items, 5 clusters, 228 links and total link strength of 444.

In the first cluster, the three main keywords are women status, social media and gender issues, each characterized by varying levels of total link strength, occurrences, average publication year, and citations. While "Gender Issue" represents a niche topic with the oldest average publication year yet the highest average citations per document, "Social Media" emerges as a prevalent theme with the most recent average publication year but comparatively lower average citations. Conversely, "Women's Status" stands out with both high total link strength and average citations, indicating its strong thematic focus and scholarly impact within the cluster. These insights illuminate the multidimensional nature of research within the cluster, highlighting key themes, their interconnectedness, and their relative scholarly contributions.

Table 4. first cluster summary

Label	Cluster	Total link strength	Occurrences	Avg. pub. Year	Avg. citations
Gender issue	1	24	5	2012	51
Social media	1	25	16	2021	11.125
Womens status	1	53	16	2018	28.3125

In the second cluster, the three keywords: developing countries, economic development and female entrepreneurship have the highest Link strength. The data highlights a substantial focus on "Female Entrepreneurship" within this cluster, evidenced by its higher occurrence rate and average publication year compared to other themes. However, the average citations for "Female Entrepreneurship" are comparatively lower, indicating a need for further validation and dissemination of research findings.

Table 5. second cluster summary

Label	Cluster	Total link strength	Occurrences	Avg. pub. Year	Avg. citations
Developing countries	2	14	4	2016	25
Economic development	2	19	6	2019	11
Female Entrepreneurship	2	11	16	2020	7.625

The third cluster includes three key themes: "Entrepreneurship," "Female," and "Psychology." Notably, "Entrepreneurship" emerges as the dominant focus within the cluster, with the highest total link strength and occurrences. "Female" garners substantial attention with a notable occurrence count, suggesting a significant emphasis on issues related to gender within entrepreneurial studies. Both "Entrepreneurship" and "Female" share a similar average publication year, which shows a concurrent emergence of research interest in these areas around 2017. Intriguingly, despite its lower occurrence count, "Psychology" exhibits a remarkably high average citation rate, hinting at the depth of scholarly interest and impact within this field.

Table 6. third cluster summary

Label	Cluster	Total link strength	Occurrences	Avg. Pub. Year	Avg. Citations
Entrepreneurship	3	120	54	2017	18.5556
Female	3	90	23	2017	16.5217
Psychology	3	32	5	2016	26.2

The 4 main keywords in the fourth cluster are: education, household, income and poverty. Despite relatively lower total link strength and occurrence counts compared to other clusters, each theme underscores significant research interest. "Education" and "Income" share identical total link strength values, suggesting comparable importance within the cluster, while "Household" lags slightly behind. Notably, "Household" boasts the highest average citations, indicating the potential depth of scholarly impact within this domain despite its fewer occurrences.

Table 7. fourth cluster summary

Label	Cluster	Total link strength	Occurrences	Avg. Pub. Year	Avg. Citations
Education	4	35	9	2017	21.1111
Household	4	18	3	2019	24.3333
Income	4	35	6	2016	23.6667
Poverty	4	81	22	2017	20.8182

The 3 main keywords in the last cluster are: microfinance, poverty alleviation and rural area. "Poverty alleviation" emerges as the most prevalent focus within the cluster, with the highest occurrence count, underscoring the significance of addressing poverty-related issues. While "Microfinance" and "Rural area" exhibit lower occurrences, they still play crucial roles in understanding economic dynamics, particularly in marginalized communities. Interestingly, despite its lower occurrence count, "Microfinance" boasts a notably high average citations rate, indicating its impact within scholarly discourse.

Table 8. fifth cluster summary

Label	Cluster	Total link strength	Occurrences	Avg. Pub. Year	Avg. Citations
Microfinance	5	12	6	2018	21.1667
Poverty alleviation	5	37	10	2016	21.1
Rural area	5	16	5	2016	11.8

The clustering analysis highlights psychology, education, and women's status as pivotal areas for future research. "Women's status" exhibits strong ties with gender issues and social media, while "psychology" is intertwined with entrepreneurship, indicating psychological influences on female entrepreneurship. Additionally, "education" emerges as crucial, emphasizing its impact on women's status, entrepreneurship, and poverty alleviation efforts. Understanding these intricate relationships is vital for advancing research on female entrepreneurship in developing countries, emphasizing the need for further exploration into the psychological dimensions, educational backgrounds, and socio-economic statuses affecting women's entrepreneurship.

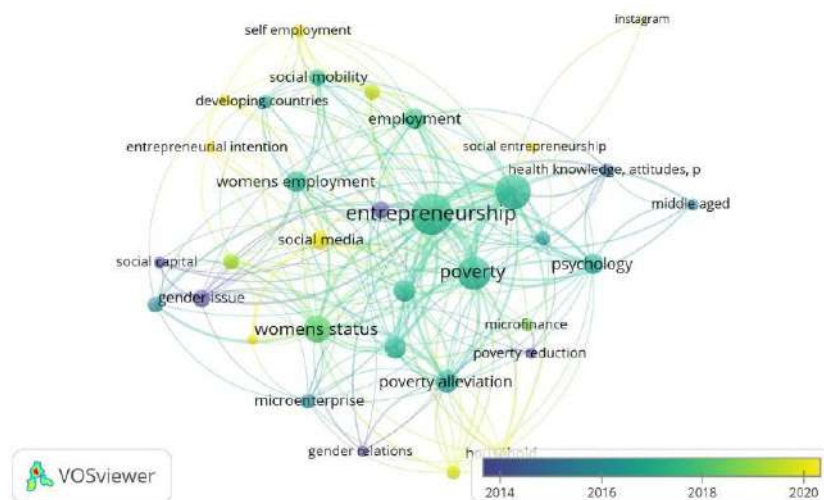


Figure 3. Temporal overlay visualization of the keywords over the years map

We overlaid the publication dates onto the keyword co-occurrence network in order to obtain a temporal overlay visualization map of keyword occurrences over time (Figure 3). Various colors represent the average year when keywords first appeared in the literature, allowing us to discern the research trends in the field's development. Presently, the latest research hotspots encompass studies on female entrepreneurship in conjunction with social media, developing countries, and social entrepreneurship.

### 6.3. The analysis of scientific production by keywords:

The preliminary data reveals that 152 papers have been collectively published by 9 journals. Interestingly, the highest number of publications (4 papers, 2.63% of the total documents) was from three journals: international journal of gender and entrepreneurship, journal of entrepreneurship in emerging economies, journal of sustainable tourism. Table 3 displays more details of these journals.

Table 2. The top 10 publishing journals contributing to female entrepreneurship, poverty and social

Source	Published papers	Percentage	Citation	Average citation per paper	Impact factor	h-index	Total link strength
International Journal of Gender and Entrepreneurship	4	2,63%	86	21,5	5.23	38	25
Journal of Entrepreneurship in Emerging Economies	4	2,63%	25	6,25	5.87	28	23
Journal of Sustainable Tourism	4	2,63%	17	4,25	13.72	127	21
Journal of African Business	3	1,97%	82	27,33	2.87	34	11
Technological Forecasting and Social Change	3	1,97%	37	12,33	13.64	155	10
Journal Women's Entrepreneurship and Education	3	1,97%	20	6,67	0.85	4	0
Heliyon	3	1,97%	16	5,33	4.45	69	1
Journal of Developmental Entrepreneurship	3	1,97%	16	5,33	1	30	0
Management Research Review	2	1,32%	115	57,5	3.76	65	0
Information Communication and Society	2	1,32%	104	52	4.86	101	5

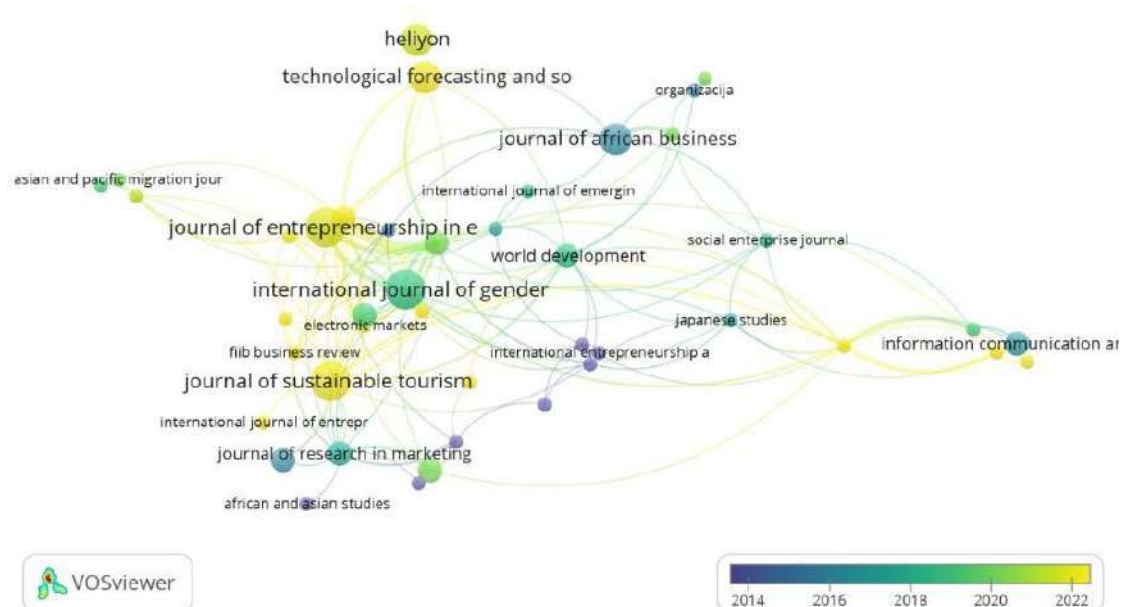


Figure 1: Links between Journals publishing about female entrepreneurship, poverty and social media over the years map

Table 2 outlines a comprehensive roster of distinguished journals that have showcased research articles addressing the intersections of female entrepreneurship, poverty, and social issues. Noteworthy among these are the International Journal of Gender and Entrepreneurship, the Journal of Entrepreneurship in Emerging Economies, and the Journal of Sustainable Tourism, each contributing four articles, collectively amassing an impressive 128 citations. What sets these journals apart is their remarkable total link strength, indicating substantial citations from publications featured in other journals, a correlation substantiated by the insightful Journal Links Map (refer to Figure 2). Particularly striking is the Journal of Sustainable Tourism, which boasts the highest impact factor among the three, with an impressive rating of 13.72.

When examining the average citations per document, three standout journals consistently produce impactful publications: Management Research Review (with an average of 57.5% citations per document), Information, Communication, and Society (52%), and Social Science and Medicine (52%). This metric serves as a pivotal gauge of the quality and influence of the publications featured in these esteemed journals.

#### 6.4. The analysis of scientific production by country:

The 152 number of documents were published from 58 countries. The highest number of publications (31 documents, 14.69% of the total documents) was from the United States of America (USA), followed by 24 documents (11.37%) from the United Kingdom, India is in the 3rd rank with 11 publications (5.21%). Subsequently, four countries published documents in the range of 7 and 10, and eight countries published documents in the range of 4 and 5. Furthermore, eight countries published three documents, fifteen countries published two documents, and twenty countries published one each. The total number of publications by adding the contributions from each country is 211, which is higher than 152. This suggests that there has been collaborative work between different countries. In total, 23 countries published at least three documents on female entrepreneurship, poverty, and social media. The statistics of these 23 countries are given in Table 3.

Table 3: Top 23 Contributing countries publishing at least 3 documents about female entrepreneurship, poverty and social media

Country	Documents	Percentage (%)	Citations	Average citations per document	Nominal GDP rank <sup>1</sup>	Total link strength
United States	31	14,69	1138	2,72	1	528
United Kingdom	24	11,37	878	2,11	6	232
India	11	5,21	68	0,97	5	68
Australia	10	4,74	296	0,88	13	440
South Africa	9	4,27	80	0,79	39	10
Spain	9	4,27	63	0,79	15	282
Malaysia	7	3,32	141	0,62	35	353
China	5	2,37	13	0,44	2	78
Russian Federation	5	2,37	1	0,44	11	0
Saudi Arabia	5	2,37	24	0,44	18	142
United Arab Emirates	5	2,37	72	0,44	33	142
Bangladesh	4	1,9	35	0,35	37	92
Canada	4	1,9	25	0,35	9	0
Chile	4	1,9	21	0,35	43	2
Germany			258	0,35		7
Colombia	3	1,42	21	0,26	46	17
Ghana	3	1,42	48	0,26	89	0
Indonesia		1,42	4	0,26		27
Netherlands	3	1,42	194	0,26	17	0
Nigeria	3	1,42	106	0,26	32	40
Thailand	3	1,42	35	0,26	27	187
Tunisia	3	1,42	5	0,26	92	5
Zimbabwe	3	1,42	3	0,26	110	0
Other 35 Countries	50	23,7	1307	4,39	-	-

<sup>1</sup>Nominal GDP Rank as per the International Monetary Fund (2023), World Economic Outlook database: April 2023

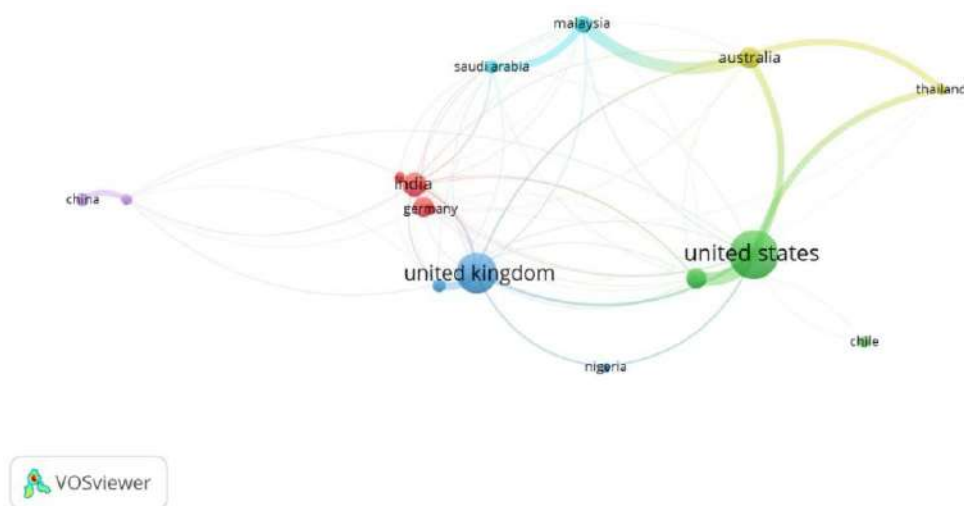


Figure 5. Country cooperation network on female entrepreneurship, poverty and social media. (N.B.: Countries that published at least more than three documents were considered)

Provide The inter-country cooperation in research on female entrepreneurship, poverty, and social media was analyzed using VOS viewer software, and the thicker the connecting line, the greater the number of country cooperation. The results show that the United States has established international cooperation with many countries, and the closest cooperation is with Australia, followed by Malaysia, Spain, and the United Kingdom.

The Total Link Strength (TLS) provides an estimation of the collaborative research of one country with the other (Table 3). The analysis of TLS suggested that the USA was by far the most superior country in terms of collaborative research with a TLS of 528. It was found that the USA had published documents with India, the United Kingdom, Australia, Thailand, Chile, Malaysia, Spain, Saudi Arabia, Nigeria, and Bangladesh. In the second position, Australia with a TLS of 440. Australia has published research documents with the USA, Thailand, Malaysia, Spain, South Africa, India, and the United Kingdom. With a TLS score of 353, Malaysia was in the third position in collaborative research. The researchers from Spain published documents in collaboration with researchers from the USA, Australia, Malaysia, Saudi Arabia, India, South Africa, the United Kingdom, and Chile. From the analysis of the TLS scores (Table 3) and the Country cooperation network map (Figure 2), it is evident that there is a robust research collaboration of most countries with the USA and Australia.

### 6.5. The analysis of authors of co-cited papers

The number of co-citations serves as an indicator of a publication's impact, prominence, and caliber [45]. However, [46] pointed out that the number of citations from others doesn't necessarily signify the quality of a publication; instead, it measures its visibility. Consequently, co-citations of papers can help pinpoint scholars and institutions that have made substantial contributions to the field or have maintained a prolonged presence in the field, among other things.

Table 4. *Top 10 authors of co-cited papers*

Document	Citations
Karlan d.; valdivia m. (2011)	349
Attanasio o.; augsburg b.; de haas r.; fitzsimons e.; harmgart h. (2015)	164
McClelland e.; swail j.; bell j.; ibbotson p. (2005)	127
Collins j.; low a. (2010)	125
Halkias d.; nwajiuba c.; harkiolakis n.; caracatsanis s.m. (2011)	106
Kobeissi n. (2010)	98
Duffy b.e.; pruchniewska u. (2017)	90
Pham t.; talavera o. (2018)	81
Ndubisi n.o.; iftikhar k. (2012)	77



Figure 6: Top 38 authors of co-cited papers in terms of cooperation density

Both Figure 6 and Table 4 show that Karlan d.; valdivia m. (2011) gathered the most citations throughout the years (349 citations) followed by Attanasio o.; augsburg b.; de haas r.; fitzsimons e.; harmgart h. (2015) (164 citations). And in the third place, we have Mcclelland e.; swail j.; bell j.; ibbotson p. (2005) with 127 citations.

## 6. CONCLUSION

The bibliometric investigation delves into the dynamic landscape at the crossroads of female entrepreneurship, poverty, and social media within developing nations, providing invaluable insights into this pivotal field. Bibliometric analysis proves to be a valuable approach for discerning the spatial and temporal dissemination, the structural organization of knowledge, and the progression of literature. This study involved the examination of literature on female entrepreneurship, social media, and poverty within the Scopus database. Utilizing the bibliometric visual analysis tool Vosviewer, the research was quantified through visual networks, overlay visualization on, and density visualization.

The results of the study found the United States is the first country in the research field of female entrepreneurship followed by Australia and Malaysia. The main keywords in each cluster were: female entrepreneurship, social media, education, and poverty alleviation. D Karlan and M Valdivia are the most frequently co-cited authors. The most cited journal is the International Journal of Gender and Entrepreneurship which published more than 4 papers on female entrepreneurship, poverty, and social media.

The clustering analysis underscores the importance of psychology, education, and women's status as critical research areas, understanding the nuanced interconnections among these factors is paramount for advancing scholarly knowledge in the field and devising targeted interventions to facilitate the empowerment of women entrepreneurs and poverty alleviation within socio-economic development frameworks of developing countries. The study also underscores a notable dearth of literature on the perspectives of the "Informal sector" and "Formal sector" in female entrepreneurship, prompting a strategic decision either to conduct original research to address this gap or to redirect focus based on the limited existing literature.

This comprehensive analysis stands as a resource for scholars and policymakers aspiring to broaden their understanding and contribute to the ongoing discourse on female entrepreneurship, poverty alleviation, and the transformative influence of social media in developing countries. Nevertheless, it's crucial to emphasize that the interpretation of the findings presented here is constrained by the fact that this study relies on a subset of documents found in the Scopus database. Additional research on female entrepreneurship, poverty, and social media may exist in unindexed publications beyond this database's scope. Anticipating that this initiative will act as inspiring

additional research, fostering collaboration, and leading to concrete actions in our unwavering commitment to achieving gender equality and advancing economic prosperity.

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## Appendix A: Citation data obtained from Scopus collection and saved in CSV format

A	B	C	D	E	F	G	H	I	J	K	L
Authors,"Author full names","Author(s) ID","Title","Year","Source title","Volume","Issue","Art. No.,"Page start","Page end","P											
Kobeissi N	Gender	Internatic	Ahl H., W	Almus M.	Appleton	Arenius P	Arenius P	Audretsch	Bardasi E.	Bartik T.J.	Basu A., C
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Meyer N.,	females	growth	intention	South Afr	Ajzen I., T	Al-ali A.H.	Arthur-Ai	Arthur-Ai	Azmi I.A.C	Barnett T.	Benzing C
Aparicio S	Audretsch	Noguera,	Urbano, U	5,72E+10	5,53E+10	23490718	Universita	Indiana U	Universita	Audretsch	Noguera I
Abdelwah	Soomro, U	Shah, Nai	Saraih, Ur	5,65E+10	3,71E+10	58519735	Centre of	College of	Faculty of	Soomro B	Shah N., C
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Jaafar N.J.	Alwazni, J	57215499	[Redes so	Alwazni J.	(c) access	Entreprer	Future or	Innovatio	Malaysia	Social Net	Women",
Alomar J.A	entreprer	Female er	Saudi Ara	TPB", ""	Alalwan A	Al-Dajani	Aleidi A.,	Alferaih A	AlMunaje	Alonso-G	Alryalat N
Pitt M.M.;	Khandker	McKernar	Latif, M. A	6,7E+09	7E+09	56211649	Khandker	McKernar	Latif M.A.	Banglade	Bias (Epid

## Appendix B: Analysis of countries, keywords, journals and authors data from Vosviewer via Microsoft Excel

country	quantity	percentage	citatio	Average c	total link	ic	label	x	y	clust	weightLink	weig	weigh	scoreAvg
54 united states	31	14,69	1138	36,71	635,00	207	entrepreneurship	0.2345	-0.0745	1	61	232	54	2017.2222
53 united kingdom	24	11,37	878	36,58	561,00	249	female	0.6081	-0.047	1	47	163	23	2017.0435
19 india	11	5,21	68	6,18	98,00	190	entrepreneur	-0.1997	-0.0886	2	57	158	27	2017.3333
1 australia	10	4,74	296	29,60	453,00	615	poverty	0.3463	-0.0275	1	50	144	22	2017.0455
46 south africa	9	4,27	80	8,89	18,00	302	gender	0.0783	-0.2393	2	46	111	29	2017.9655
47 spain	9	4,27	63	7,00	296,00	843	womens status	-0.2712	-0.1866	2	48	102	16	2018.0625
29 malaysia	7	3,32	141	20,14	364,00	365	humans	0.8427	0.431	1	34	97	12	2015.5
9 china	5	2,37	13	2,60	156,00	480	male	0.6335	0.3532	1	34	79	11	2015.3636
42 russian federation	5	2,37	1	0,20	2,00	170	economics	0.5923	0.2123	1	34	71	7	2013.7143
43 saudi arabia	5	2,37	24	4,80	155,00	616	poverty alleviation	-0.2084	-0.4456	2	34	67	10	2016.6
52 united arab emirates	5	2,37	72	14,40	348,00	172	education	-0.0103	-0.0402	3	36	61	9	
3 bangladesh	4	1,90	35	8,75	299,00	377	income	0.7426	0.0597	1	29	59	6	2016.8333
7 canada	4	1,90	25	6,25	-	841	womens employment	-0.1897	0.1331	2	38	57	8	
8 chile	4	1,90	21	5,25	2,00	635	psychology	0.9298	0.3346	1	31	56	5	2016.6
14 germany	4	1,90	258	64,50	8,00	187	empowerment	0.303	-0.3516	6	33	55	9	2020.4444
10 colombia	3	1,42	21	7,00	24,00	185	employment	0.1462	0.5514	1	32	50	6	2017.3333
15 ghana	3	1,42	48	16,00	-	722	social media	-0.1309	0.5545	4	29	44	16	2021.25
20 indonesia	3	1,42	4	1,33	262,00	310	gender issue	-0.0301	-0.5289	2	23	38	5	2012.2
30 netherlands	3	1,42	194	64,67	-	135	developing world	-0.7019	-0.0629	3	25	37	5	2018.8
32 nigeria	3	1,42	106	35,33	40,00	623	prevention and control	1.0181	0.1261	1	23	36	3	2017.3333
60 thailand	3	1,42	30	11,67	100,00	353	household	1.1010	0.2318	1	10	24	2	2010.6667

Source	Published papers	Percentage	Citation	Average citation per	Total link strength	ic	author	document	citatio	total link strength
management research review	2	1,32%	113	57,5	0	73	karlan d.; valdivia m.	1	349	0
information communication and society	2	1,32%	104	52	5	13	attanasio o.; augsburg b.; de haas r.; fitzsimons e.; harmgart h.	1	164	0
social science and medicine	2	1,32%	104	52	0	89	mclelland e.; swail j.; bell j.; libbotson p.	1	127	0
world development	2	1,32%	84	42	13	36	collins j.; low a.	1	125	0
journal of small business and enterprise development	2	1,32%	81	40,5	3	61	halkias d.; nwajuba c.; harkiolakis n.; caracatsanis s.m.	1	106	0
journal of research in marketing and entrepreneurship	2	1,32%	80	40	15	77	kobeissi n.	1	98	0
social media and society	2	1,32%	55	27,5	0	42	duffy b.e.; pruchniewska u.	1	90	0
journal of african business	3	1,97%	82	27,33	11	105	pham t.; talavera o.	1	81	0
international journal of gender and entrepreneurship	4	2,63%	86	21,5	25	96	ndubisi n.o.; iftikhar k.	1	77	0
journal of enterprising communities	2	1,32%	31	15,5	43	59	green e.p.; blattman c.; jamison j.; annan j.	1	72	0
sustainability (switzerland)	2	1,32%	25	12,5	7	20	bhuiyan m.f.; ivlevs a.	1	62	0
technological forecasting and social change	3	1,97%	37	12,33	10	107	pitt m.m.; khandker s.r.; mckernan s.m.; latif m.a.	1	62	0
journal women's entrepreneurship and education	3	1,97%	20	6,67	0	138	valdivia m.	1	60	0
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journal of developmental entrepreneurship	3	1,97%	16	5,33	0	54	geldhof g.j.; weiner m.; agans j.p.; mueller m.k.; lerner r.m.	1	45	0
journal of sustainable tourism	4	2,63%	17	4,25	21	87	mahmood s.; hussain j.; matlay h.z.	1	44	0
academy of entrepreneurship journal	2	1,32%	8	4	3	28	bogenhold d.	1	42	0
						119	rutashobya l.k.; allen i.s.; nilsson k.	1	42	0
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						51	blankson c.; fahim t.; shah n.; khandker s.	1	38	0