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A Bibliometric Analysis of Current Research on Life Insurance Lapsation

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Abstract

This paper aims to provide a comprehensive analysis of the existing literature on life insurance lapsation. This paper applied a bibliometric analysis based on Scopus databases from 1895 to November 2024. Based on the "article title, abstract, keywords" search results, this paper finalised 221 documents for further analysis. BiblioMagika was employed to generate citation metrics, OpenRefine was utilised to clean and harmonise the dataset, and VOSviewer was used for data visualisation. This paper presented the results using bibliometric indicators, particularly document and source types, subject areas, publication trajectory, highly cited documents, most productive authors, publication distribution by countries and institutions, and author keyword analysis. As a result, most articles were published in journals, primarily in the economics, econometrics, and finance fields. The number of publications has increased since the early years, especially after the 2000s. Most of the literature was authored by Anna Rita Bacinello and Mogens Steffensen and focused on studies conducted in the United States. The author keyword of "life insurance" emerged as the most frequently used term in the field of life insurance lapsation. Thus, the analysis of existing literature provides valuable insights for scholars and policymakers, serving as a foundation for future research.

Keywords: Life Insurance Lapsation, Bibliometric Analysis, BiblioMagika, OpenRefine, VOSviewer

Introduction

The life insurance industry serves as a foundation for financial stability and risk management (Richter & Wilson, 2020; Turgaeva et al., 2020). Life insurance ensures beneficiaries receive a payout upon the policyholder's unpredictable events, such as death, disability, or critical illness, providing financial support to cover living expenses, debts, and obligations, thereby helping families maintain stability during a challenging period. Additionally, life insurance also contributes to risk management by reducing reliance on emergency savings or external financial aid, ensuring a planned and reliable solution for unforeseen events.

Although life insurance plays an essential role, the issue of lapsation remains a significant concern in the life insurance industry (Kayarthakdka et al., 2023). Lapsation occurs when a policy is cancelled, terminated, or surrendered when the policyholders fail to pay the premium within the designated period (Lakshmi & Mohini, 2024). Cancellation of policies might hinder customer retention, financial stability, and long-term profitability for the insurance industry. For instance, the life insurance industry in the United States has steadily declined over the past decades. By 2023, approximately half of U.S. adults had life insurance, a significant decrease from 63% a decade earlier (Life Insurance Marketing and Research Association, 2023). Scott (2023) reported that 43% of consumers in the United Kingdom have decided to fully cancel certain insurance policies, according to data from the Bristol-based market research firm, Consumer Intelligence.

Since financial uncertainties worldwide have increased, exacerbated by recent global events such as the COVID-19 pandemic, the phenomenon of life insurance lapsation has attracted growing attention, highlighting the urgent need for comprehensive research to inform better policy design and consumer protection. Although numerous studies have explored individual aspects of lapsation, there remains a lack of a holistic overview that integrates publication trends, influential authors, institutions, and thematic focuses through bibliometric analysis. Therefore, this paper conducts a bibliometric analysis to examine document and source types, subject areas, current publication trends, highly cited works, leading authors, institutions, countries, and author keyword patterns, aiming to deepen understanding and provide a comprehensive perspective on life insurance lapsation.

The findings of this paper can provide academics, insurers, and policymakers with valuable insights to develop targeted interventions, improve customer retention strategies, and shape regulatory frameworks aimed at reducing lapsation and strengthening the financial stability of the life insurance sector. Moreover, by highlighting emerging trends, this study creates a solid foundation for future investigations that can drive innovation and support more effective policy development within the industry.

This paper is structured as follows: Section 2 provides a review of the existing literature, highlighting life insurance lapsation and previous scholars on life insurance lapsation. Section 3 explains the research methodology, including search strategy. Section 4 presents the results and discussions of this paper. Lastly, the next section summarises this paper, highlights its limitations and recommendations for future research, and discusses the implications of the findings.

Literature Review

Life Insurance Lapsation

Previous literature on life insurance lapsation has been conducted over nearly 13 decades. Life insurance lapsation is defined as the cancellation, termination, or surrender of a policy when the policyholder fails to pay the premium within the designated period (Lakshmi & Mohini, 2024). Reck et al. (2023) also defined lapsation as including surrender (where insured person stops the contract and receives the surrender value), pure lapse (termination of the contract without any surrender value payment) and transfer (cancellation of the contract with the surrender value moved to another insurance provider).

When a policy lapses, the insurance coverage is deactivated, and the policyholder forfeits all related benefits and protection. This forfeiture can result in significant financial consequences, including the loss of death benefits, disability coverage, and accumulated cash value, leading to increased financial stress, higher future premiums, and diminished long-term financial security for the policyholder and their beneficiaries.

Alluri and Mohini (2024) identified that life insurance lapsation is driven by policyholders' perceptions of insurance companies, which are influenced by their trust, interactions, and experiences within the insurance industry. When policyholders trust their insurer, they are more likely to continue paying premiums and keep their coverage active (Bhatia et al., 2024). However, if they perceive the insurer as unreliable, deceptive, or unresponsive to their needs, their trust is eroded, increasing the likelihood of lapsation as they may choose to cancel their policy or let it lapse.

Besides, interactions with insurance agents and customer service play an important role in shaping customer perceptions (Subashini & Velmurugan, 2016). If policyholders have positive, supportive interactions with agents who can clearly explain policy terms and respond to queries effectively, they are more likely to feel valued and maintain their coverage. However, poor or unclear interactions can lead to frustration and confusion, increasing the likelihood of lapsation rate.

Lastly, experiences with mis-selling or misunderstandings about policy terms can severely damage the relationship between the insurer and the policyholder (Karunarathna & Rasika, 2021). Mis-selling, where the policyholder is sold a product that does not meet their needs or expectations, leading to feelings of disloyalty and distrust, which ultimately result in lapsation. Lack of clarity in policy documents, misleading advertising, or pressure to purchase additional coverage also contribute to negative perceptions, driving policyholders to cancel or surrender their policies.

Previous Studies on Life Insurance Lapsation

Lapsation is a major challenge in the life insurance industry, with significant implications for insurance companies (Kayarthakdka et al., 2023). Additionally, life insurance lapsation has become a significant and interesting area of scholarly research due to its impact on reduced insurer profitability and customer retention (Eling & Kochanski, 2013; Srbinoski et al., 2020). Vidyavathi et al. (2022) examined the influence of demographic and household factors on lapse behaviour in the Indian life insurance market. A survey of 537 randomly selected policyholders was conducted between July and December 2021 using structured face-to-face interviews. The results revealed that age, marital status, and occupation significantly influence the decision to lapse a life insurance policy.

The study by Grover et al. (2021) was conducted to address the issue of high lapsation rates in the Indian sector by using predictive modelling to classify life insurance policies as either active or lapsed. Four techniques were applied: Cox Proportional Hazards model, Gompertz law of mortality, Naïve Bayesian model, and random forest technique, and evaluated their performance based on confusion matrix and misclassification's error rates. The results revealed that 54% of the policies were classified as lapsed, with key factors such as age, sum assured, policy term, occupation, and income influencing the lapsation decision.

Shamsuddin et al. (2022) conducted a bibliometric analysis, examining 178 documents from Scopus (1971-2021) to provide a comprehensive overview of life insurance lapsation studies. The study explored document type, publication and citation trend, most productive authors, highly cited documents, authors' co-citation network analysis, countries' co-authorship analysis, key sources co-occurrence analysis of author keywords, and emerging trend topics. The results revealed that journals from the United Kingdom dominate life insurance lapsation studies, while an author from the United States ranks first in terms of the co-authorship network's total link strength. The findings may assist researchers in defining their research objectives and identifying key aspects of insurance lapsation that should be explored to advance future studies.

While bibliometric analysis is common in other fields, its application to life insurance lapsation remains limited, highlighting the need for studies exploring key institutions and thematic patterns through co-occurrence analysis.

Methods

This paper collected all data from the Scopus databases as of 3rd November 2024. A bibliometric analysis was conducted, examining document and source types, subject areas, publication trajectory, highly cited documents, most productive authors, publication distribution by countries and institutions, and author keyword analysis. All documents related to the topic of life insurance lapsation were searched based on the field of "article title, abstract, keywords". The following query was used: TITLE-ABS-KEY(["life insurance" OR "life assurance" OR "life cover*" OR "family takaful"] AND ["laps*" OR "terminat*" OR "surrender*" OR "giv* up" OR "cancel*" OR "quit*" OR "withdraw*" OR "drop* out" OR "discontinue*" OR "cessation" OR "cease" OR "abandon*" OR "exit*" OR "leav*"]), yielding 481 documents without any filtering. The search string included the Boolean operators "OR" (contain either keyword) and "AND" (contain both keywords), and the asterisk (*) (represent any character group, including no character). After data screening on the article title, abstract, and keywords manually, 260 out of 481 documents were removed due to duplication and irrelevant content, leaving 221 documents for further analysis, as illustrated in Figure 1. Those documents were converted into a comma-separated value (CSV) format for analysis using BiblioMagika (Ahmi, 2024), while data cleaning and harmonisation were performed through OpenRefine (Mozzherin et al., 2024) and visual mapping was created using VOSviewer (Martins et al., 2024).

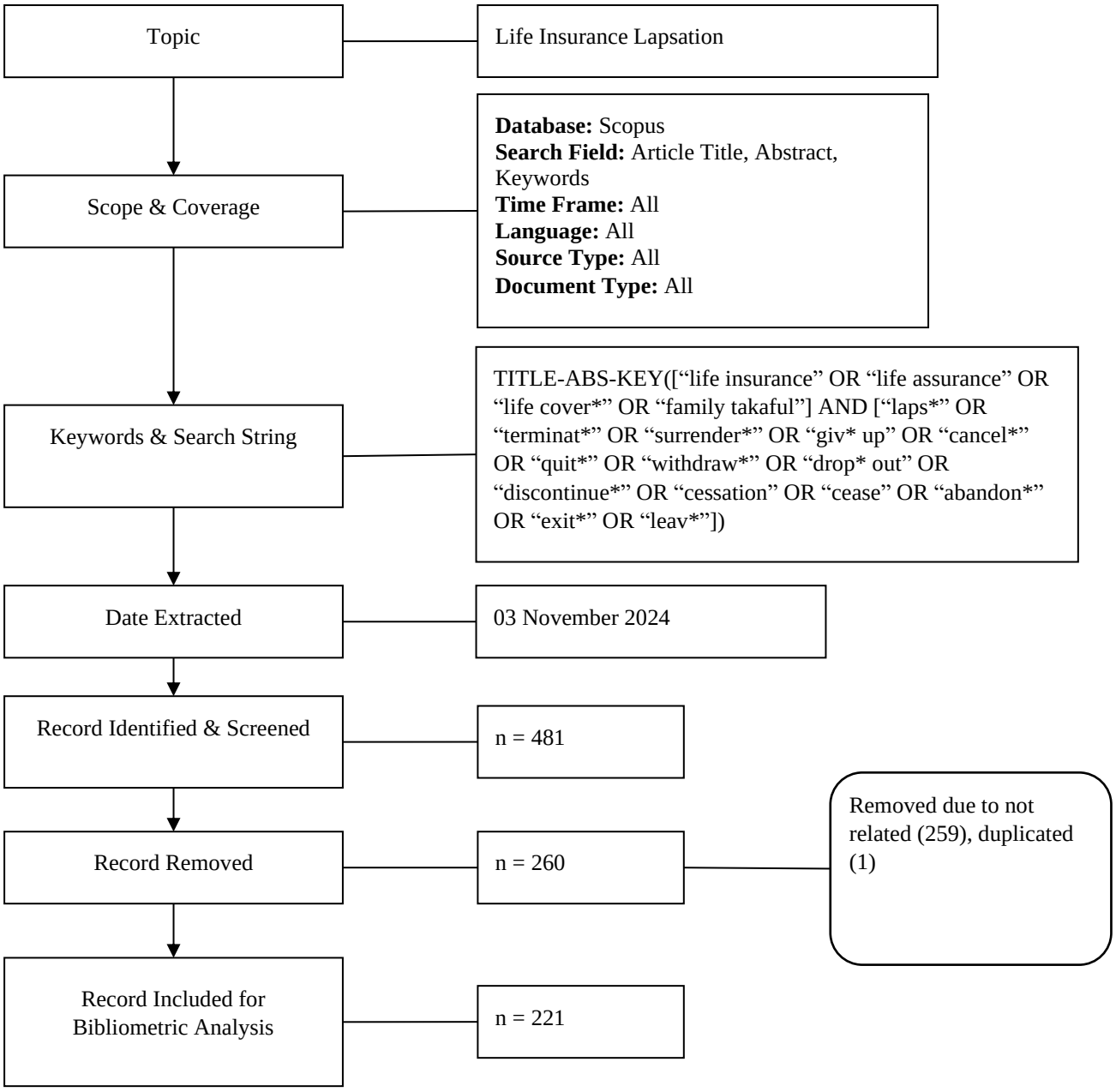

Figure 1. Flow Diagram of the Search Strategy

Results and Discussions

Document Attributes

The data extracted from the Scopus websites were examined based on document and source type. Table 1 displayed the various document types related to life insurance lapsation, such as articles, book chapters, conference papers, reviews, books, conference reviews, and notes. As shown in Table 1, articles were the most prevalent document type, comprising 185 (83.71%) of the total, followed by book chapters (n=13; 5.88%) and conference papers (n=13; 5.88%). Table 2 illustrated the classification of published documents from Scopus into five source types: journals, books, conference proceedings, book series, and trade journals. According to Table 2, journals were the most common source type, comprising 191 published documents (86.43%), followed by books (n=12; 5.43%) and conference proceedings (n=12; 5.43%).

Table 1
Document Type

Document Type	Total Publications	Percentage (%)
Articles	185	83.71
Book Chapters	13	5.88
Conference Papers	13	5.88
Reviews	6	2.71
Books	2	0.90
Conference Reviews	1	0.45
Notes	1	0.45
Total	**221**	**100.00**

Table 2
Source Type

Source Type	Total Publications	Percentage (%)
Journals	191	86.43
Books	12	5.43
Conference Proceedings	12	5.43
Book Series	5	2.26
Trade Journals	1	0.45
Total	**221**	**100.00**

Subject Area

This paper also analysed the published documents according to their subject area, as presented in Table 3. As shown in Table 3, most documents (137) were found in the field of economics, econometrics, and finance, followed by mathematics (86 documents) and business, management, and accounting (79 documents). It is important to note that the publications are categorised based on source title classification, meaning some source titles appear in multiple subject areas.

Table 3
Subject Area

Subject Area	Total Publications
Economics, Econometrics and Finance	137
Mathematics	86
Business, Management and Accounting	79
Decision Sciences	68
Computer Science	26
Engineering	14
Social Sciences	14
Medicine	5
Art and Humanities	4
Psychology	4
Materials Science	3
Physics and Astronomy	3
Multidisciplinary	2
Agricultural and Biological Sciences	1
Biochemistry, Genetics and Molecular Biology	1
Chemical Engineering	1
Earth and Planetary Sciences	1
Energy	1

Publication Trajectory

Table 4 presented an analysis of research productivity based on the number of documents produced per year from 1895 to November 2024. The number of publications has increased since the early years, especially after the 2000s. From 2004 to November 2024, publication output remained consistently high, but citation impact fluctuated, with fewer significant peaks in the more recent years.

Figure 2 illustrated the fluctuating trend in life insurance lapsation studies from 1895 to 2024, indicating the total number of publications and citations. A significant peak in citations occurred in 2003, reaching 295, which reflects the growing recognition and impact of life insurance lapsation within the academic community. Additionally, there has been increasing importance of understanding consumer behaviour in financial decision-making, particularly why policyholders lapse their life insurance policies. The highest number of publications was recorded in both 2014 and 2021, with 15 publications each, marking the peak of research activity during this period as depicted in Figure 2. This surge in publications reflects the increased interest in life insurance lapsation, driven by emerging trends in consumer behaviour, financial stability, and risk management. The COVID-19 pandemic in 2021 may have further stimulated research on how economic instability affects policyholder decisions regarding life insurance lapsation, driving an increase in publications.

Table 4
Publication by Year

Year	TP	NCA	NCP	TC	C/P	C/CP
1895	1	1	1	1	1.00	1.00
1953	1	1	0	0	0.00	0.00
1958	1	3	1	1	1.00	1.00
1963	1	1	0	0	0.00	0.00
1964	2	3	0	0	0.00	0.00
1971	1	1	1	2	2.00	2.00
1974	1	1	1	14	14.00	14.00
1976	2	2	2	3	1.50	1.50
1978	2	2	0	0	0.00	0.00
1979	1	1	1	4	4.00	4.00
1980	1	1	1	2	2.00	2.00
1981	1	1	0	0	0.00	0.00
1987	1	2	1	12	12.00	12.00
1990	1	1	1	52	52.00	52.00
1995	1	3	0	0	0.00	0.00
1996	2	3	2	134	67.00	67.00
1997	1	2	1	65	65.00	65.00
1998	1	0	0	0	0.00	0.00
1999	1	1	1	8	8.00	8.00
2000	2	3	1	228	114.00	228.00
2001	5	8	4	76	15.20	19.00
2002	2	2	2	31	15.50	15.50
2003	4	7	4	295	73.75	73.75
2004	1	1	1	12	12.00	12.00

2005	3	5	3	110	36.67	36.67
2006	6	14	5	49	8.17	9.80
2007	2	10	1	24	12.00	24.00
2008	10	24	9	94	9.40	10.44
2009	6	15	6	68	11.33	11.33
2010	7	10	4	92	13.14	23.00
2011	11	19	6	75	6.82	12.50
2012	8	19	6	108	13.50	18.00
2013	9	18	4	80	8.89	20.00
2014	15	41	13	178	11.87	13.69
2015	8	21	6	92	11.50	15.33
2016	10	26	8	92	9.20	11.50
2017	9	26	7	82	9.11	11.71
2018	10	27	10	93	9.30	9.30
2019	7	19	7	49	7.00	7.00
2020	11	26	10	49	4.45	4.90
2021	15	55	15	93	6.20	6.20
2022	12	27	7	35	2.92	5.00
2023	13	35	7	31	2.38	4.43
2024	12	36	2	4	0.33	2.00
Total	**221**	**524**	**162**	**2438**	**11.03**	**15.05**

*Notes: TP=total number of publications; NCA=number of contributing authors; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication

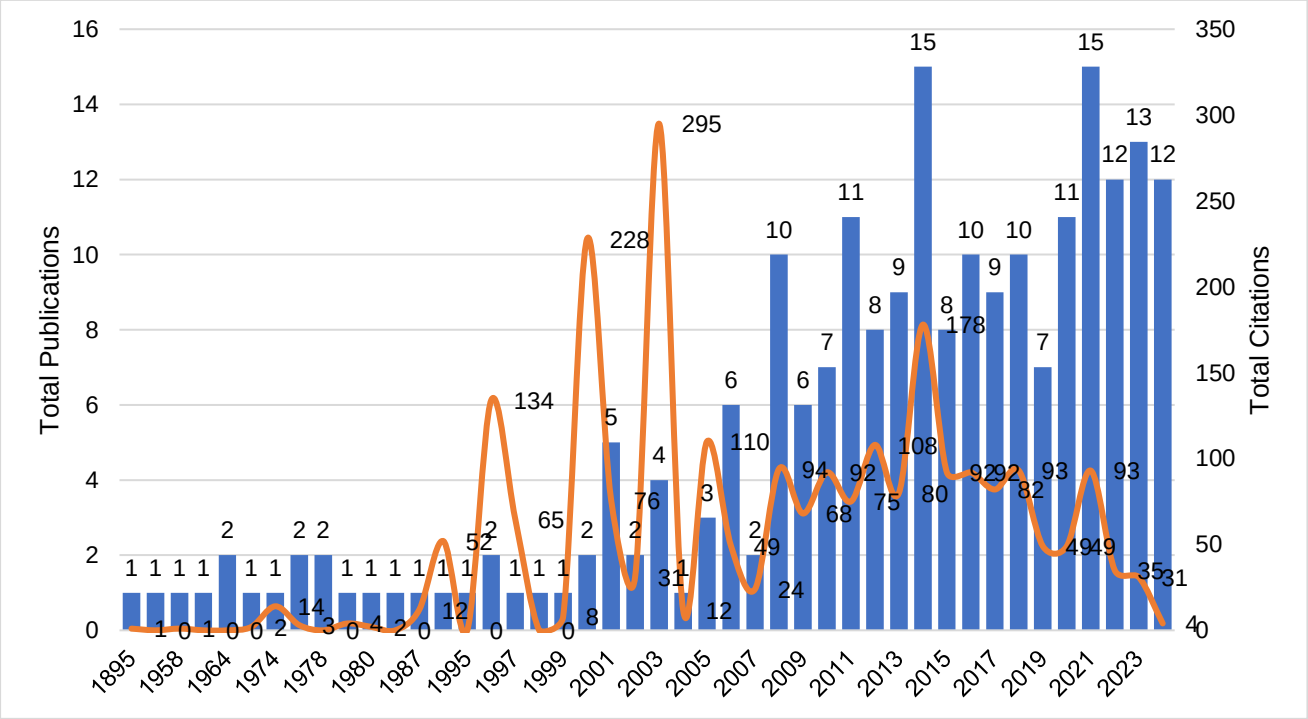

Figure 2. Total Publications and Citations by Year

Most Cited Documents

Table 5 stated the top 10 most cited documents from the Scopus database. The paper by Grosen and Jørgensen (2000), titled "Fair valuation of life insurance liabilities: The impact of interest rate guarantees, surrender options, and bonus policies", received the highest number of citations, with a total of 228 citations, with an average of 9.12 citations per year. The paper of Grosen and Jørgensen (2000) on life insurance lapsation is highly cited and may be seen as a leading expert in the field of insurance studies or consumer behaviour. Highly cited papers are often foundational, inspiring and shaping future research directions and methodologies.

Table 5
Top 10 Highly Cited Documents

No.	Authors	Title	Source Title	Cites	Cites per Year
1	Grosen and Jørgensen (2000)	Fair valuation of life insurance liabilities: The impact of interest rate guarantees, surrender options, and bonus policies	Insurance: Mathematics and Economics	228	9.12
2	Haberman and Renshaw (1996)	Generalized linear models and actuarial science	Journal of the Royal Statistical Society Series D: The Statistician	128	4.41
3	Hendel and Lizzeri (2003)	The role of commitment in dynamic contracts: Evidence from life insurance	Quarterly Journal of Economics	119	5.41
4	Bacinello (2003a)	Fair valuation of a guaranteed life insurance participating contract embedding a surrender option	Journal of Risk and Insurance	107	4.86
5	Siu (2005)	Fair valuation of participating policies with surrender options and regime switching	Insurance: Mathematics and Economics	68	3.40
6	Bacinello (2003b)	Pricing guaranteed life insurance participating policies with annual premiums and surrender option	North American Actuarial Journal	67	3.05
7	Grosen and Jørgensen (1997)	Valuation of early exercisable interest rate guarantees	Journal of Risk and Insurance	65	2.32
8	Liebenberg et al. (2012)	A dynamic analysis of the demand for life insurance	Journal of Risk and Insurance	56	4.31
9	Jensen et al. (2001)	A finite difference approach to the valuation of path dependent life insurance liabilities	GENEVA Papers on Risk and Insurance Theory	54	2.25
10	Outreville (1990)	Whole-life insurance lapse rates and the emergency fund hypothesis	Insurance Mathematics and Economics	52	1.49

Top 25 Most Productive Authors

Table 6 presented the top 25 most prolific authors in life insurance lapsation research. Anna Rita Bacinello and Mogens Steffensen were the leading contributors, each with 6 publications. Their highest number of publications indicated that they are influential authors in the field of

life insurance lapsation, playing a central role in shaping discussions and development within this topic. In terms of citations, Peter Løchte Jørgensen ranked first with 357 citations, followed by Anders Grosen with 347 citations, and Anna Rita Bacinello with 288 citations. Their work is frequently cited by other researchers, helping to establish their reputation and increase their influence within the academic community. Additionally, their findings and opinions are trusted by the academic community, leading to opportunities for collaborations, speaking engagements, and leadership roles.

Table 6
Top 25 Most Productive Authors

Author's Full Name	TP	NCP	TC	C/P	C/CP	*h*	*G*	*m*	PYS
Bacinello, Anna Rita	6	6	288	48.00	48.00	5	6	0.227	2003
Steffensen, Mogens	6	6	72	12.00	12.00	4	6	0.174	2002
Milhaud, Xavier	5	5	61	12.20	12.20	4	5	0.286	2011
Calidonio-Aguilar, Perla Rocio	4	3	7	1.75	2.33	2	2	0.118	2008
Jørgensen, Peter Løchte	4	4	357	89.25	89.25	4	4	0.143	1997
Schmeiser, Hato	4	4	64	16.00	16.00	3	4	0.176	2008
Tsai, Chenghsien Jason	4	3	13	3.25	4.33	2	3	0.154	2012
Baione, Fabio	3	3	13	4.33	4.33	2	3	0.105	2006
Buchardt, Kristian	3	3	57	19.00	19.00	3	3	0.273	2014
Carson, James M.	3	3	68	22.67	22.67	3	3	0.103	1996
Cheng, Chunli	3	3	21	7.00	7.00	2	3	0.286	2018
De Angelis, Paolo	3	3	13	4.33	4.33	2	3	0.105	2006
Eling, Martin	3	3	100	33.33	33.33	3	3	0.231	2012
Fang, Hanming	3	3	35	11.67	11.67	3	3	0.600	2020
Ghazali, Puspa Liza Binti	3	3	47	15.67	15.67	3	3	0.214	2011
Grosen, Anders	3	3	347	115.67	115.67	3	3	0.107	1997
Hilpert, Christian	3	3	13	4.33	4.33	3	3	0.273	2014
Huang, Fu-Wei	3	2	19	6.33	9.50	2	3	0.667	2022
Kiesenbauer, Dieter	3	3	88	29.33	29.33	3	3	0.231	2012
Li, Jing	3	3	34	11.33	11.33	3	3	0.273	2014
Lin, Jyh-Horng	3	2	19	6.33	9.50	2	3	0.667	2022
Loisel, Stéphane	3	3	34	11.33	11.33	3	3	0.214	2011
Mamat, Mustafa Bin	3	3	47	15.67	15.67	3	3	0.214	2011
Szimayer, Alexander	3	3	20	6.67	6.67	3	3	0.273	2014
Xu, Chunhui	3	2	3	1.00	1.50	1	1	0.059	2008

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

Distribution of Publications by Countries and Institutions

According to Figure 3, researchers from 45 countries have contributed to the field of life insurance lapsation based on publication counts. The United States emerged as the leading contributor with 42 publications, followed by Germany with 36 publications, and Italy with 19 publications. Countries with the most publications in life insurance lapsation studies are

regarded as leaders in guiding academic discussions and influencing global trends. Their influence often attracts funding, talent, and collaboration opportunities while shaping policies, industry practices, and public awareness related to the topic. Additionally, Table 7 displayed the top 25 most productive institutions based on their publications in life insurance lapsation studies. This paper revealed that a total of 229 institutions contributed to the research topic. Based on Table 7, the University of Copenhagen, Denmark, was the primary institution with 10 publications, followed by Aarhus University, Denmark, and the University of Ulm, Germany, both with 7 publications each. Institutions with the highest number of publications play a key role in training future researchers and scholars by offering advanced resources, mentorship, and opportunities. This helps to develop new experts who continue to advance this field and expand the institution's legacy of excellence.

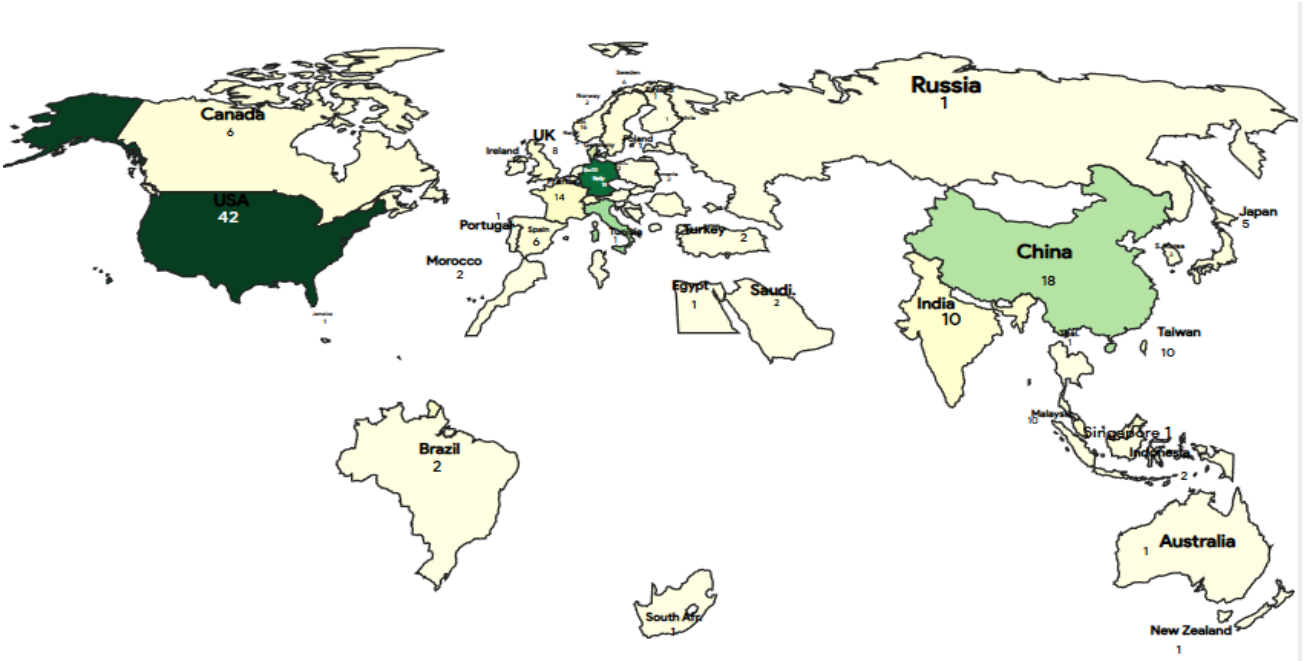

Figure 3. Worldwide Production of Life Insurance Lapsation Research

Table 7
Top 25 Most Productive Institutions

Institution	Country	TP	TC	NCP	C/P	C/CP	*H*	*g*	*m*	PYS
University of Copenhagen	Denmark	10	137	10	13.70	13.70	7	10	0.304	2002
Aarhus University	Denmark	7	451	7	64.43	64.43	6	7	0.214	1997
University of Ulm	Germany	7	152	7	21.71	21.71	5	7	0.385	2012
University of Lyon	France	6	65	6	10.83	10.83	4	6	0.286	2011
University of Pennsylvania	United States	6	75	6	12.50	12.50	5	6	0.278	2007
University of Trieste	Italy	6	288	6	48.00	48.00	5	6	0.227	2003
University of St. Gallen	Switzerland	6	151	6	25.17	25.17	5	6	0.294	2008
University of Hamburg	Germany	5	24	5	4.80	4.80	3	4	0.188	2009
University of Bonn	Germany	5	57	5	11.40	11.40	3	5	0.176	2008
National Chengchi University	Taiwan	4	13	3	3.25	4.33	2	3	0.154	2012

Chiba Institute of Technology	Japan	4	7	3	1.75	2.33	2	2	0.118	2008
Sapienza University of Rome	Italy	4	14	4	3.50	3.50	2	3	0.105	2006
Technical University of Munich	Germany	3	29	2	9.67	14.50	2	3	0.167	2013
Florida State University	United States	3	66	3	22.00	22.00	2	3	0.154	2012
Sun Yat-sen University	China	3	7	3	2.33	2.33	2	2	0.400	2020
Tamkang University	Taiwan	3	19	2	6.33	9.50	2	3	0.667	2022
Beihang University	China	3	1	1	0.33	1.00	1	1	0.083	2013
Temple University	United States	3	55	3	18.33	18.33	3	3	0.158	2006
Edlund A/S	Denmark	3	22	3	7.33	7.33	2	3	0.182	2014
Southwestern University of Finance and Economics	China	3	19	2	6.33	9.50	2	3	0.667	2022
CTBC Business School	Taiwan	3	19	2	6.33	9.50	2	3	0.667	2022
Universiti Malaysia Terengganu	Malaysia	3	33	3	11.00	11.00	3	3	0.214	2011
University of Mississippi	United States	3	89	3	29.67	29.67	3	3	0.231	2012
University of Waterloo	Canada	3	56	3	18.67	18.67	3	3	0.176	2008
University of North Carolina System	United States	2	12	2	6.00	6.00	2	2	0.222	2016

*Notes: TP=total number of publications; TC=total citations; NCP=number of cited publications; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; g=g-index; m=m-index, PYS= publication year start

Author Keywords Analysis

Figure 4 showed a network visualisation of co-occurrences analysis of author keywords generated using VOSviewer. This paper identified 409 author keywords from the selected documents. A minimum threshold of 4 occurrences was set for author keywords to be included in the visualisation, resulting in 31 author keywords meeting this criterion. The cluster analysis of author keywords in life insurance lapsation research, shown in Figure 4, identified four distinct clusters, each representing a thematic area within the field, with a minimum cluster size of 4.

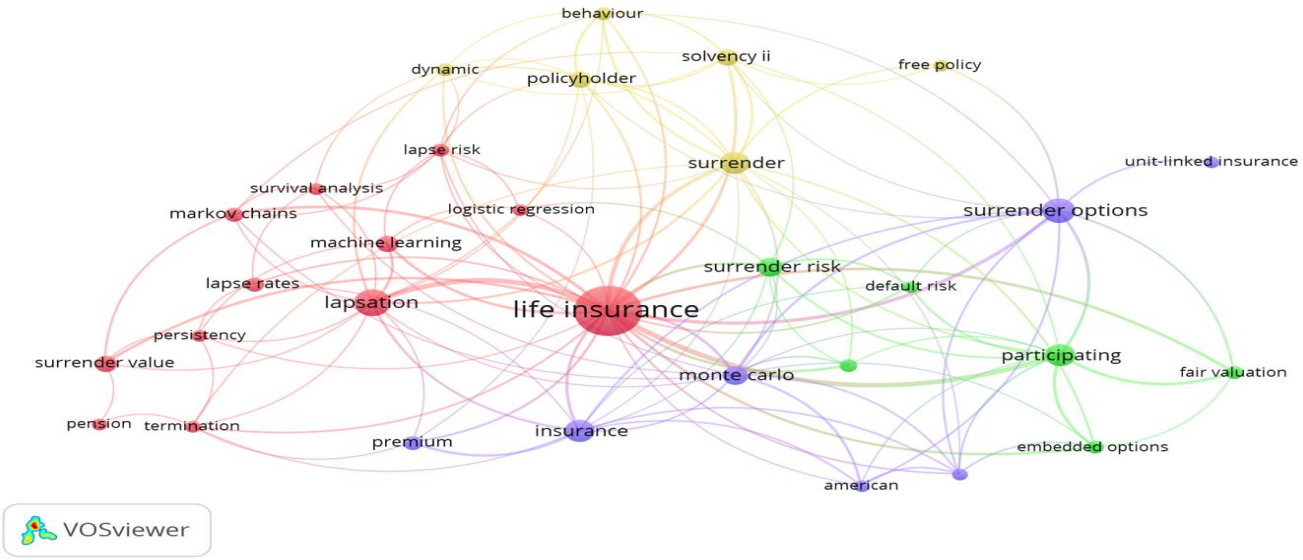

Figure 4. Co-occurrences Analysis of Author Keywords

Table 8
Author Keywords

Author Keywords	Cluster	Link	Total Link Strength	Occurrences	Theme
lapsation	1	14	35	19	Red cluster (Insurance lapse analysis)
lapse rates	1	4	5	6	
lapse risk	1	10	10	5	
life insurance	1	26	106	68	
logistic regression	1	4	4	4	
machine learning	1	5	10	7	
Markov chains	1	7	12	6	
Pension	1	2	2	4	
persistency	1	6	6	4	
surrender value	1	5	9	8	
survival analysis	1	6	6	4	
termination	1	7	8	4	
American	2	6	11	4	Blue cluster (Valuation of insurance products)
contingent claim valuation	2	8	15	4	
insurance	2	12	24	13	
Monte Carlo	2	14	25	10	
premium	2	5	10	6	
surrender options	2	13	30	17	
unit-linked insurance	2	1	2	4	
asset liability management	3	5	9	5	Green cluster (life insurance risk)
default risk	3	5	8	4	
embedded options	3	6	14	5	
fair valuation	3	4	13	5	
participating	3	12	39	14	
surrender risk	3	8	13	10	

behaviour	4	8	15	5	Yellow cluster (Policyholder behaviour in insurance)
dynamic	4	8	11	5	
free policy	4	3	5	4	
policyholder	4	9	15	7	
solvency II	4	10	17	8	
surrender	4	15	33	14	

Table 8 revealed that the red cluster mainly prioritises on the theme of insurance lapse analysis, encompassing keywords: “lapsation”, “lapse rates”, “lapse risk”, “life insurance”, “logistic regression”, “machine learning”, “Markov chains”, “pension”, “persistency”, “surrender value”, “survival analysis”, and “termination”. For example, the study by Vidyavathi et al. (2022) explored key aspects such as “lapsation”, “life insurance”, “persistency”, and “surrender value”, offering valuable insights into their impact on insurance lapse analysis. The high frequency and strong connections of terms such as “life insurance” and “lapsation” highlighted their significance in understanding insurance lapse analysis.

The blue cluster is characterised by author keywords related to the valuation of insurance products, with terms like “surrender options”, “Monte Carlo”, and “insurance” dominating this group. This aligns with the study by Bacinello et al. (2010), which compared numerical methods for pricing life insurance contracts with surrender options, considering mortality and financial risks.

Key terms such as “participating”, “surrender risk”, and “embedded options” dominate the green cluster, which is centred around the theme of life insurance risk. This is supported by Cheng and Li (2018) and Hieber et al. (2019), who examined life insurance risk, focusing on fair valuation and portfolio effects under early default regulation and risk management.
Lastly, the yellow cluster focuses specifically on the theme of policyholder behaviour in insurance. Key terms such as “dynamic”, “policyholder”, “behaviour”, and “surrender” highlighted the exploration of life insurance lapse in relation to policyholder behaviour (Barsotti et al., 2016). Additionally, the keywords of “free policy” and “Solvency II” also suggested the problem of the valuation of life insurance payments with policyholder behaviour.

In summary, the cluster analysis of author keywords identified four research themes: insurance lapse analysis, valuation of insurance products, life insurance risk, and policyholder behaviour in insurance. These clusters highlighted the diversity and depth of research in life insurance lapsation, covering various focus areas. This demonstrated how researchers study specific topics such as surrender options from multiple angles to better understand their complexities and real-world impacts. In the theme of “valuation of insurance products”, surrender options are essential because they represent a potential liability for insurers, as policyholders can choose to cash out their policies before the end of the term, which impacts the insurer’s financial obligations. The inclusion of surrender options in product pricing helps insurers anticipate the liabilities, adjust premiums accordingly, and ensure long-term profitability by accounting for the possibility of early policy terminations.

An example of the real-world impacts of life insurance lapsation can be observed during periods of economic uncertainty, such as the COVID-19 pandemic, which led to a peak in

research activity with 15 publications in 2021. During the COVID-19 pandemic period, many individuals faced financial strain due to job loss, illness, and economic disruption. The author keyword theme of "insurance lapse analysis" could help identify the specific economic factors (such as job loss, income reduction) contributing to lapsation rates during the pandemic.

The highly cited paper by Grosen and Jørgensen (2000) is also deeply connected to the themes of "valuation of insurance products" and "life insurance risk". They introduced a new methodology through a dynamic model utilising contingent claims analysis to separately value the components of participating life insurance policies such as risk-free bonds, bonus options, and surrender options. This innovative approach offered a novel way to assess the financial implications of these elements, enabling more accurate valuation and effective risk management in life insurance products. For instance, by valuing the surrender option separately, the model helps insurers predict the likelihood of policyholders terminating their policies early in response to changes in market conditions, such as decreasing interest rates. This allows insurers to adjust pricing, manage reserves, and reduce the risk of financial instability caused by lapsation, directly aligning with the themes of "valuation of insurance products" and "life insurance risk".

Conclusion

This paper conducted a bibliometric analysis to provide a comprehensive overview of life insurance lapsation research from 1895 to November 2024, highlighting a citation peak in 2003, possibly driven by the economic impact of the dot-com bubble burst, which may have led to increased lapsation rates. There was a significant rise in publications in 2014 and 2021, likely influenced by post-financial crisis recovery and the economic disruptions caused by the COVID-19 pandemic. Besides, this paper also revealed the most cited documents: "Fair valuation of life insurance liabilities: The impact of interest rate guarantees, surrender options, and bonus policies" by Grosen and Jørgensen (2000).

This paper identified Anna Rita Bacinello and Mogens Steffensen as the leading contributors to life insurance lapsation studies, particularly in the areas of policy valuation and surrender options. The United States, Germany, and Italy are the top countries shaping academic discussions and global trends, influencing both theoretical and practical aspects of lapsation research. The University of Copenhagen, Aarhus University, and University of Ulm are key institutions in advancing research in life insurance lapsation, providing resources, mentorship, and opportunities to train future scholars and strengthen their academic legacy. Additionally, cluster analysis of author keywords also identified four distinct research themes: insurance lapse analysis, valuation of insurance products, life insurance risk, and policyholder behaviour in insurance.

Limitations and Recommendations

Despite valuable insights offered by this paper, there are some limitations present. Firstly, this paper relied solely on the Scopus database. Although Scopus is one of the largest online databases for scholarly works, it does not perfectly include all available sources. It is recommended to involve additional databases, such as Web of Science, Google Scholar, or PubMed, to ensure a more comprehensive analysis and to capture a broader range of relevant literature.

Besides, it is discovered that most research on life insurance lapsation was published in the United States, Germany, and Italy, highlighting a gap in perspectives from diverse cultural, institutional, and economic backgrounds. Encouraging scholars from Asia, Africa, and Latin America to study life insurance lapsation would offer valuable insights into how cultural, economic, and institutional contexts shape lapsation behaviour. Expanding research to these regions can discover unique trends and patterns, enriching global understanding of the phenomenon.

Moreover, the dominance of publications from a few institutions, such as University of Copenhagen, Aarhus University, and University of Ulm, may limit the diversity of perspectives, theories, and methodologies in life insurance lapsation studies. Encouraging collaboration among researchers from a wider range of institutions can enhance the diversity of approaches and promote a more comprehensive understanding of the field through the integration of various insights.

Implications

This paper identifies gaps in the current literature, offering academics a roadmap for future research on underexplored aspects of life insurance lapsation, such as the role of digital transformation in insurance policy management or policyholder behaviour during economic crises. These areas of exploration can enable scholars to adopt innovative methodologies, develop new frameworks, and enhance knowledge in aspects that have not been thoroughly examined.

Besides, the findings enable the insurers to innovate their policies and customer engagement strategies, particularly by leveraging digital tools and data analytics to reduce lapsation rates and enhance customer retention. Insurers can invest in advanced digital solutions, such as AI-driven customer service platforms, personalised policy offerings, and predictive analytics, to proactively address lapsation risks. This approach would not only help insurers retain customers but also allow for the development of more tailored products that meet individual needs, ultimately fostering greater customer loyalty and improving financial stability in the long-term period.

In addition, the findings of this paper guide policymakers in creating or refining regulations that ensure stability in the insurance market, promote fair treatment of policyholders, and enable insurers to adapt to emerging challenges such as economic crises or technological disruptions. These measures are expected to enhance customer experience, build greater trust in the insurance industry, and provide improved financial security for policyholders.

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