



Uluslararası VİZYON Üniversitesi Yayınları

International VISION University Publications

SCIENTIFIC METHODOLOGY

A Comprehensive Guide to Writing Scientific Work For Students

First edition

CVETANKA VELKOSKA

North Macedonia – Gostivar, 2025

SCIENTIFIC METHODOLOGY
A Comprehensive Guide to Writing Scientific Work For students

Author:

Assoc. Prof. Dr. Cvetanka Velkoska

Editor:

Prof. Dr. Fadil Hoca – International Vision University,

Publisher:

International Vision University, Gostivar, North Macedonia

Reviewers:

Prof. Dr. Miroslav Drljača

Prof. Dr. Mite Tomov

Proofreader:

Assoc. Prof. Dr. Arafat Useini

Design:

Yekin Abaz

Place and Year: Gostivar, 2025

Print Run: 500

Printing House: Print Factory DOOEL Skopje

ISBN: 978-608-5094-11-0

Copyright: © 2025,

This book is dedicated to my esteemed Filip and Stefan. They are my
inspiration for my existence.

Table of contents

Preface

Acknowledgments

List of figures

List of tables

1. DEVELOPMENT OF KNOWLEDGE AND SCIENCE	15
1.1. Brief Historical Notes	15
1.2. Knowledge Creation	17
1.3. Knowledge Management	19
1.4. Creative and Innovative Thinking	21
1.5. Research in the Age of Society 5.0	25
1.6. University Engagement and Responsibility	29
1.6.1. The Concept of University Social Responsibility	29
1.6.2. Academic Excellence Initiatives	30
1.6.3. Global Academic Rankings	33
1.6.4. Planning Your Research Impact	34
1.7. Knowledge Production	36
1.8. The Access to Knowledge	38
1.9. Science	39
1.9.1. What Is a Theory?	39
1.9.2. What Is Science?	42
1.9.3. Scientific Discovery	45
1.9.4. Structure of Science	46
1.9.5. Stages of Acquiring Scientific Knowledge	51
1.9.6. Principles of Scientific Knowledge	52
1.9.7. Science in Modern Society	56
1.10. International Frascati Classification	58
2. RESEARCH AND SCIENTIFIC KNOWLEDGE	60
2.1. Scientific Reasoning	60
2.2. Scientific Writing	60
2.3. Scientific-Research Ability	64
2.4. Scientific Research	65
2.4.1. What is Scientific Research?	65
2.4.2. Why Conduct Research?	67
2.4.3. What is Necessary to Perform research?	68
2.4.4. Scientific Research Process	69
2.4.5. Criteria of Good Research	70

2.4.6.	Characteristics of Good Research	70
2.4.7.	Meaning of Research	71
2.4.8.	Significance of Research	72
3.	RESEARCH CONCEPTS	73
3.1.	Types of Research Concepts	73
3.2.	Triangulation in Research	74
3.3.	Types of Research	78
3.3.1.	Quantitative Research	84
3.3.2.	Qualitative Research	88
3.3.3.	Distinction Between Qualitative and Quantitative Research	91
3.3.4.	Survey, Case Study, and Progressive Case Study	94
3.4.	Research Approaches	95
4.	SCIENTIFIC RESEARCH METHODOLOGY	96
4.1.	Research Pyramid	96
4.2.	What is Methodology?	97
4.3.	Goal of Methodology	99
4.4.	Research Methods and Techniques	99
4.4.1.	Scientific Method	99
4.4.2.	Research Methods	100
4.4.3.	Research Techniques	102
5.	SCIENTIFIC RESEARCH PROCESS	104
5.1.	Steps of Research Process	104
5.2.	Formulating The Research Problem	106
5.2.1.	How to Develop Research Ideas?	106
5.2.2.	Formulation of Research Question	110
5.2.3.	The Nature of Research Question	114
5.2.4.	Basic Types of Research Questions	115
5.2.5.	Key Components of a Research Problem	117
5.3.	Conducting an Extensive Literature Review	117
5.4.	Hypothesis Testing in Research	122
5.5.	Preparation of Research Design	124
5.5.1.	What is Research Design?	124
5.5.2.	Need and Purpose of Research Design	126

5.5.3.	Characteristics of a Good Research Design	127
5.5.4.	Important Concepts Relating to Research Design	128
5.5.5.	Different Research Designs	128
5.6.	Determining Sample Design	133
5.6.1.	Types of Sampling	133
5.6.2.	Steps in Sample Design	138
5.6.3.	Characteristics of a Good Sample	141
5.7.	Collecting Data	143
5.7.1.	Methods of Collecting Data	143
5.7.2.	Measurement and scaling techniques	146
5.7.3.	Characteristics of Nominal, Ordinal, Interval and Ratio Data	146
5.8.	Analysis of Data	150
5.9.	Hypothesis Testing	154
5.10.	Generalizations and Interpretation	155
5.11.	Preparation of the Research Report	156
6.	SCIENTIFIC PUBLISHING	158
6.1.	Beginnings of Scientific Publications	158
6.2.	What is Scientific Paper?	158
6.3.	Types of Papers	159
6.4.	Author's Decision for the Right Journal	166
6.5.	Paid Access Versus Open Access Journals	168
6.6.	Journal Impact Factor	168
6.7.	Ethics in Scientific Publishing	170
6.8.	Digital Object Identifier (DOI) Number	172
6.9.	What is an ORCID?	173
7.	WRITING A SCIENTIFIC PAPER	174
7.1.	Introduction	174
7.2.	How to Write a Strong Scientific Paper	175
7.3.	Main Attributes of Well-written Papers	177
7.4.	Evidence-Based Advice for Papers	178
7.5.	Main Sections of a Scientific Article	181
7.6.	How to Write a Successful Article	185
7.7.	Writing Manuscript Structure	188

7.7.1.	Title	188
7.7.2.	Abstract	190
7.7.3.	Introduction	193
7.7.4.	Literature Review	196
7.7.5.	Methodology	206
7.7.6.	Results	211
7.7.7.	Discussion	213
7.7.8.	Conclusion	216
7.7.9.	References	218
7.7.10.	Citations	219
7.7.11.	Acknowledgments	210
7.7.12.	Supplemental Material	210
7.7.13.	Authors and Addresses	221
8.	PUBLISHING MANUSCRIPT	223
8.1.	Journals	223
8.2.	What is Copyright?	223
8.3.	Submitting the Manuscript	225
8.4.	Peer Review Process	237
8.5.	Citation Metrics	233
8.6.	Databases	235
8.7.	Plagiarism	238
8.8.	Open Science	240
9.	CONTRIBUTION OF ADVANCED TECHNOLOGIES	242
9.1.	Research and Machine Learning	242
9.2.	The use of AI in the Research Process	242
9.3.	Using Digital Services to Develop Scientific Papers	244

References

About Reviewers

About Author

Preface

Scientific Methodology: A Comprehensive Guide to Writing Scientific Work For students has been developed as a comprehensive and accessible guide for university students embarking on their journey into scientific work and academic writing. Its primary purpose is to assist students across disciplines in preparing manuscripts with a high likelihood of publication and, equally important, in ensuring that their work is clearly understood by readers. Because the expectations of scientific journals vary markedly among disciplines - and often even within the same field - it is not possible to offer universally applicable recommendations. Nevertheless, this book provides general principles, sound practices, and practical guidance that can help students produce rigorous, well-structured, and ethically responsible scholarly work.

Good scientific writing is fundamental to effective research communication. Regardless of the quality of the study itself, poorly written manuscripts risk being misunderstood, undervalued, or rejected. For this reason, particular emphasis is placed throughout the book on clarity, precision, coherence, and adherence to ethical standards in academic writing.

Written in a clear and student-friendly style, the book bridges theoretical knowledge and practical application. It aims not only to explain how to conduct research, but also to help students appreciate why research matters for the advancement of science, technology, and society. The nine chapters are designed to guide learners step-by-step through the conceptual and practical aspects of scientific work.

Chapter 1, **Development of Knowledge and Science**, examines the historical evolution of knowledge, the changing role of universities, and the nature of science in the contemporary era, including the context of Society 5.0. It introduces central themes such as knowledge creation, innovation, knowledge accessibility, and the social responsibilities of academic institutions.

Chapter 2, **Research and Scientific Knowledge**, presents foundational concepts of scientific reasoning, research, and writing, highlighting the essential criteria and characteristics of high-quality scholarly work.

Chapter 3, **Research Concepts**, introduces research paradigms, types, and approaches. It addresses the distinction between qualitative and quantitative methods and explains the role of triangulation in ensuring research validity.

Chapter 4, **Scientific Research Methodology**, clarifies the logic and structure of methodology, distinguishing between methods, techniques, and the overall methodological framework that guides scientific work.

Chapter 5, **Scientific Research Process**, outlines the stages of conducting research - from identifying and formulating a research problem to designing the study, collecting and analyzing data, testing hypotheses, and preparing the final report. This chapter serves as a practical roadmap for students undertaking their first independent research projects.

Chapters 6 and 7, **Scientific Publishing and Writing a Scientific Paper**, guide students through the publication process, journal selection, and the detailed components of a scientific article. These chapters underscore the importance of clarity, ethics, accuracy, and adherence to scholarly conventions in research communication.

Chapter 8, **Publishing Manuscript**, expands on topics such as copyright, peer review, plagiarism, citation metrics, academic databases, open access, and emerging practices in open science. It aims to equip students with the knowledge required to navigate the global publishing ecosystem responsibly.

Chapter 9, **Contribution of Advanced Technologies**, highlights the growing influence of artificial intelligence, machine learning, and digital tools in modern research and scientific writing. Students are encouraged to adopt innovative and efficient technologies that can enhance the quality and impact of their scholarly work.

Overall, **Scientific Research Methodology** provides students with both the theoretical foundations and practical competencies necessary to become confident, ethical, and effective researchers. By integrating conceptual discussions with real-world examples and contemporary perspectives, the book encourages intellectual curiosity, critical thinking, creativity, and social responsibility - core attributes of scientific progress. It prepares learners to design, conduct, and communicate their own research, to engage actively with the global scientific community, and to contribute meaningfully to the development of science in an era defined by innovation and digital transformation.

As the author, my intention has been to make scientific research approachable and to show students that research is not only a systematic process but also a creative and rewarding intellectual endeavor. This book focuses primarily on scientific work, with special attention to preparing and publishing scientific papers. For this reason, it can be effectively integrated into the teaching programs of many universities. The second edition, which is currently in preparation, will focus exclusively on research methods and techniques. The forthcoming edition aims to provide in-depth, methodologically rigorous treatment of the methods and techniques that underpin high-quality scientific work. The second edition will serve as a more detailed and practice-oriented companion to the

present book, offering students, young researchers, and educators a valuable reference for designing and conducting robust scientific studies. Readers are warmly invited to share suggestions, observations, or constructive comments that may contribute to the improvement of this book. Your feedback is highly appreciated and will play an important role in shaping future editions.

Author

Acknowledgments

I would like to express my profound gratitude to my colleagues within the academic community - both those known to me and those whose contributions I have encountered indirectly - whose dedication to scholarship and research continues to inspire me. I extend my sincere appreciation to Professor Miroslav Drljača for his trust, support, and steadfast encouragement throughout my academic journey; his guidance has been an invaluable source of motivation and confidence. I am likewise deeply grateful to Professor Mite Tomov, with whom I have had the privilege of collaborating on writing my early scientific papers. Our joint efforts have significantly contributed to my growth and professional development.

My appreciation also extends to the esteemed journal *Cogent Business & Management* for granting me the opportunity to serve as a reviewer. This experience has broadened my understanding of the scientific publishing process and further strengthened my commitment to upholding academic integrity and quality.

To my students - former, current, and prospective - I offer my heartfelt gratitude. Your curiosity, energy, dedication, and eagerness to grow continually inspire me to strive for academic excellence. Your commitment to acquiring comprehensive and contemporary knowledge motivates me not only in teaching and research but in every aspect of my professional life.

Finally, I extend my profound gratitude to my family and close friends. Your unwavering support, patience, and understanding have been a quiet yet powerful force behind all my endeavors. This book would not have been possible without your constant encouragement and belief in me.

Author

LIST OF FIGURES

Figure 1.	The Circle of Knowledge Creation – Development of Generic Knowledge	17
Figure 2.	Modes of Knowledge Creation	21
Figure 3.	The Value of Cycle: Knowledge Production and Knowledge Dissemination	36
Figure 4.	Archimedes’ Spiral of Discovery	45
Figure 5.	Structure of Scientific Knowledge	51
Figure 6.	Research Pyramid	97
Figure 7.	Ten Steps of the Research Process	106
Figure 8.	The Feasibility-Interest Diagram for Choosing Good Research Problems	110
Figure 9.	Development of the Research Question	111
Figure 10.	A Graphic Rating Scale	148
Figure 11.	Flow Diagram of the PRISMA Protocol	210
Figure 12.	Key Steps of a Systematic Review Process	210
Figure 13.	Flow Chart of the Peer Review Process - IJSEM	230
Figure 14.	Promoting Openness at Different Stages of the Research Process	240

LIST OF TABLES

Table 1.	Summary of Creative Thinking Methods	24
Table 2.	Knowledge Production in Publication	37
Table 3.	Representation in the Top 100 Highest-Ranking (Q1) Journals	38
Table 4.	Evolution of the Internet and the World Wide Web.	40
Table 5.	The Apparatus of Science	46
Table 6.	The Stages of Acquiring Scientific Knowledge	51
Table 7.	Quantitative and Qualitative Analysis within the Research Context	56
Table 8.	Using Reporting Verbs in Academic Writing	62
Table 9.	Overview of Research Concepts	75
Table 10.	Types of Triangulations	77
Table 11.	Comparative Summary of the Main Types of Research (Based on Purpose or Application).	79
Table 12.	Comparison of Basic Types of Research	85
Table 13.	Comparison Between Qualitative and Quantitative Research	92
Table 14.	The FINER MAPS Criteria	112
Table 15.	Types of Sources by Quality and Information Provided	120
Table 16.	Key Types of Information	121
Table 17.	Types of Research Design	125
Table 18.	Relationship Between Components and Parts of Research Design	125
Table 19.	Important Concepts in research design (with example)	130
Table 20.	Comparison of Research Studies and Research Designs	131
Table 21.	Three Types of Designs and Characteristics	132
Table 22.	Types of Probability and Non-Probability Sampling	135
Table 23.	Main Features of Each Measurement Scale	147
Table 24.	Characteristics of Nominal, Ordinal, Interval and Ratio Data	149
Table 25.	Important Guidelines for Key Sections of a Manuscript	184
Table 26.	Ten Key Rules for Writing a Successful Scientific Article	186
Table 27.	Structured vs Unstructured Abstract	192

Table 28.	Differences Between the Introduction Section in a Research Paper and in a Review Paper	195
Table 29.	Comparison Between Writing Literature Reviews for Quantitative and Qualitative Studies	199
Table 30.	Approaches to Literature Reviews	200
Table 31.	Application and Contribution of the Review Types	202
Table 32.	Types of Research Gaps	206
Table 33.	Advantages and Disadvantages of Different Research Methods	208
Table 34.	Key Threads from the “Lived-in” Editors’ Perspectives on the Desk Rejection Process	231
Table 35.	Overview of Databases	235
Table 36.	Digital Services and Software Used by Scholars in Scientific Paper Development	246

REFERENCES

- [1]. Camarinha-Matos, L. M. (2009). *Scientific research methodologies and techniques*, Unit 1: Introduction.
- [2]. Azgaldov, G. G., Kostin, A. V., & Omiste, A. E. P. (2015). *The ABC of Qualimetry, Toolkit for measuring the immeasurable*. Ridero.
- [3]. Gastel, B., & Day, R. A. (2016). *How to Write and Publish a Scientific Paper*. Santa Barbara, California: Greenwood.
- [4]. Tress, B., Tress, G., & Fry, G. *Defining concepts and the process of knowledge production in integrative research*. Chapter 2.
- [5]. Duran, C., Cetindere, A., & Sahan, O. (2014). An analysis on the relationship between total quality management practices and knowledge management: The case of Eskisehir. *Procedia - Social and Behavioral Sciences* 109, 65-77.
- [6]. Eldridge, S., Balubaid, M., & Barber, K. D. (2006). Using a knowledge management approach to support quality costing. *International Journal of Quality & Reliability Management*, 23(1).
- [7]. Mert, G., E., Şen, G., & Yilmaz, O. (2020). *DATA, INFORMATION AND KNOWLEDGE MANAGEMENT*, Nobel Publishing Group. Chapter 25, The future of knowledge management: WEB 4.0.
- [8]. Dew, J. R. FLASHES OF INSIGHT – The Many Pathways to Creativity and Innovation. Quality in Education Think Tank (QiETT) of the International Academy for Quality (IAQ).
- [9]. De Bono, E. (1992). *Serious creativity: Using the power of lateral thinking to create new ideas*. Harper Business.
- [10]. Wolf-Knuts, U. (2013). *APPROACHING METHODOLOGY*, Academia Scientiarum Fennica.
- [11]. Velkoska, C. (2024). *Quality Management* Publisher: International Vision University, Gostivar, North Macedonia.
- [12]. Velkoska, C. (2021). Sustainable quality – a challenge for gaining new knowledge for achieving a climate resilient future in the coming years. *Vision International Scientific Journal*, 6(2), pp. 69-89.
- [13]. Schoitsch, E. (2019). Beyond Smart Systems Creating a Society of the Future (5.0) Resolving Disruptive Changes and Social Challenges, IDIMT - 2019, Innovation and Transformation in a Digital World, 387-400.
- [14]. Troisi, O., Visvizi, A., & Grimaldi, M. (2024). Rethinking innovation through industry and society 5.0 paradigms: a multileveled approach for management and policymaking. *European Journal of Innovation Management*, 27(9), 22-51.
- [15]. Velkoska, C. & Nuredin, M. (2023). Quality assurance in the higher education in north macedonia: challenges and key trends, *Vision International Scientific Journal*, 8(1), 59-74.
- [16]. Cropley, D. H., Madeiros, K., & Demadzic, A. (2022). Creativity and Artificial Intelligence: The Integration of Human and Artificial Cognition, D. Henriksen, P. Mishra (Eds.), *Creative Provocations:*

- Speculations on the Future of Creativity, Technology & Learning, Chapter 2 (pp. 19-34). Cham, Switzerland: Springer.
- [17]. Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128–152.
- [18]. Zahra, S. A., & George, G. (2002). Absorptive capacity: Review, Reconceptualization, and extension. *Academy of Management Review*, 27(2), 185–203.
- [19]. Nahapiet J. & Ghoshal, S. (1998). Social Capital, Intellectual Capital, and the Organizational Advantage. *The Academy of Management Review* 23(2), 242-266.
- [20]. Chen, H.-C., Lin, T.-C., & Chen, Y.-H. (2025). The Impact of Social Capital and Community Empowerment on Regional Revitalization Practices: A Case Study on the Practice of University Social Responsibility Programs in Wanli and Jinshan Districts. *Sustainability*, 17, 4653.
- [21]. Tabish, SA, & Syed, N. (2015). Towards Establishing World-Class Universities: A Conceptual Approach. *International Journal of Science and Research (IJSR)*, 4(1), 614-633.
- [22]. Yudkevich, M., Altbach, P. G., & Salmi, J. (2023). *Academic Star Wars: excellence initiatives in global perspective*. Cambridge, Massachusetts : The MIT Press.
- [23]. Sreenan N, Hinrichs-Krapels S, Pollitt, A. et al. (2019). Impact by design: Planning your research impact in 7Cs, *Emerald Open Research*, 1(18).
- [24]. Cronin, M. A., Galvin, B. M., & George, E., et al. (2024). From a portfolio of journals to a system of knowledge production. *Academy of Management Discoveries*, 10(4), 513–520.
- [25]. Ekdale, B., Rinaldi, A., Ashfaquzzaman, M., Khanjani, M., Matanji, F., Stoldt, R., & Tully, M. (2022). Geographic Disparities in Knowledge Production: A Big Data Analysis of Peer-Reviewed Communication Publications from 1990 to 2019. *International Journal of Communication* 16, 2498–2525.
- [26]. Shofiyah, N., Jatmiko, B., Suprpto, N., Prahani, B. K., & Anggraeni D. M. (2025). The use of technology to scientific reasoning in science education: A bibliometric and content analysis of research papers. *Social Sciences & Humanities Open* 11, 101534.
- [27]. Consultores, B. (2021). Examples to develop the conclusions of your thesis.
- [28]. Miljevic, M. I. (2007). Metodologija naucnog rada, Filozofski fakultet, Univerzitet u Istocnom Sarajevu Pale.
- [29]. Kothari, C. R. (2004). *Research Methodology Methods & Techniques*. NEW AGE INTERNATIONAL (P) LIMITED PUBLISHERS.
- [30]. Kuzmanović, R. *METODOLOGIJA NAUČNO-ISTRAŽIVAČKOG RADA*. Panevropski Univerzitet “Apeiron.“

- [31]. Adamović, T, Ivić, M., & Vuković, V. (2017). *Metodologija i tehnologija izrade naučnih radova*. Univerzitet za poslovni inženjering i management, Banja Luka.
- [32]. Lalović, Z. Metodologija naučno-istraživačkog rada sa osnovama statistike.
- [33]. Jonker, J., & Pennink, B. (2010). *The Essence of Research Methodology (A Concise Guide for Master and PhD Students in Management Science)*. Springer-Verlag Berlin Heidelberg.
- [34]. Dale, B.G., Y.-Wu, P., Zairi, M. Williams, A.R.T., & Der Wiele, T. V. (2001). Total quality management and theory: An exploratory study of contribution. *Total Quality Management*, 12(4), 439-449.
- [35]. Peličić, D., Radunović, D., & Bokan, D. Methodology basis of scientific research. Review Article.
- [36]. Chew, J. A., Emmert, J. L., Klasing, K. C., Kogut, M., Fairchild, B., & Ali, M. (2025). Symposium: Essentials of scientific writing for publications. *Poultry Science*, 104.
- [37]. Chew, B.C. (2017). Reporting Verbs Used in an Academic Writing, Lecture Notes Distributed in Research Methods BTMP4103 at Universiti Teknikal Malaysia Melaka.
- [38]. van Niekerk, J., Delpport, P. M.J., & Sutherland, I. (2025). Addressing the use of generative AI in academic writing. *Computers and Education: Artificial Intelligence* 8.
- [39]. Yuan, W. R., & Zeng, Y. Q. (2017). Study of Methods to Improve the Counselors' Scientific Research. *Creative Education*, 8, 305-311.
- [40]. Ghanad, A. (2023). An Overview of Quantitative Research Methods. *International Journal of Multidisciplinary Research and Analysis*, 6(8), 3794-3803.
- [41]. Islam, M. (2023). The Importance of Research in the Advancement of Knowledge and Society. *International Research Journal of Basic and Clinical Studies*, 8(4), 1-3.
- [42]. Light, R.W. (2015) Research: Why and how to write a paper? *Revista Clinica Española*, 215(7), 401-404.
- [43]. Rosenkranz, S. K., Wang, S., & Hu, W. (2015). Motivating medical students to do research: a mixed methods study using Self-Determination Theory. *BMC Medical Education*, 15, 95.
- [44]. Coccia, M. (2018). Motivations of scientific research in society. *Journal of Social and Administrative Sciences*, 5(3).
- [45]. Kumar, R. (2005). *Research methodology – A step-by-step guide for beginners*. SAGE.
- [46]. Pandey, P., & Pandey, M. M. (2015). *RESEARCH METHODOLOGY: TOOLS AND TECHNIQUES*, Bridge Center.
- [47]. Bans-Akutey, A., & Tiimub, B.M. (2021). Triangulation in Research. *Academia Letters*, Article 3392.

- [48]. Barsalou, M., & Saraiva, P. Publishing a Research Paper. Quality in Education Think Tank (QiETT) of the International Academy for Quality (IAQ).
- [49]. Trochim, W. M. (2007). The Research Methods Knowledge Base.
- [50]. Denney, A. S., & Tewksbury, R. (2013). How to Write a Literature Review. *Journal of Criminal Justice Education*, 24(2), 218-234.
- [51]. Marquart, F. (2017). Methodological Rigor in Quantitative Research, The International Encyclopedia of Communication Research Methods. Jörg Matthes (General Editor), Christine S. Davis and Robert F. Potter (Associate Editors). Published 2017 by JohnWiley & Sons, Inc.
- [52]. Ecarnot, F., Seronde, M.-F., Chopard, R., Schiele, F., & Meneveau, N. (2015). Writing a scientific article: A step-by-step guide for beginners. *European Geriatric Medicine* 6, 573–579.
- [53]. Steenhuis, H.-J., & de Bruijn, E. J. (2006). Building theories from case study research: the progressive case study, Conference Paper.
- [54]. Berkeley, B. (2015). Pioneer and Complementary Research: The True Research Taxonomy. *Open Access Library Journal*, 2: e1130.
- [55]. Barsalou, M., & Saraiva, P., Writing a Research Paper. Quality in Education Think Tank (QiETT) of the International Academy for Quality (IAQ).
- [56]. Tabor, J. (2021). Ranking of management factors for safe maintenance system based on Grey Systems Theory. *PRODUCTION ENGINEERING ARCHIVES*, 27(3), 196-202.
- [57]. Alon, U. (2009). How To Choose a Good Scientific Problem. *Molecular Cell* 35.
- [58]. Taherdoost, H. (2022). A Guide to Evaluate Academic Sources to Develop Research Paper: Source Selection in Academic Writing. *Asian Review of Social Sciences*, 11(1), 54-58.
- [59]. Ratan, S.K., Anand, T., & Ratan, J. (2019). Formulation of research question – Stepwise approach. *J Indian Assoc Pediatr Surg* 24, 15-20.
- [60]. Elisa, J., & Raffaghelli, M. S. (2023). Exploring the social activity of open research data on ResearchGate: implications for the data literacy of researchers. *Online Information Review*, 47(1), 197-217.
- [61]. Aron, A., Coups E. J., & Aron, E. N. (2013). *Statistics for Psychology*. Sixth Edition, Pearson Education, Inc.
- [62]. LaPlacaa, P., Lindgreen, A., & Vanhammed, J. (2018). How to write really good articles for premier academic journals. *Industrial Marketing Management* 68, 202–209.
- [63]. Faryadi, Q. (2019). PhD Thesis Writing Process: A Systematic Approach - How to Write Your Methodology, Results and Conclusion. *Creative Education*, 10, 766-783.
- [64]. Creswell, J. W. (2009). *RESEARCH DESIGN Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE.

- [65]. Mthuli, S. A., Ruffin, F., & Singh, N. (2022) 'Define, Explain, Justify, Apply' (DEJA): An analytic tool for guiding qualitative research sample size, *International Journal of Social Research Methodology*, 25:6, 809-821.
- [66]. Okubo, Y., (1997). BIBLIOMETRIC INDICATORS AND ANALYSIS OF RESEARCH SYSTEMS: METHODS AND EXAMPLES, OECD Science, Technology and Industry Working Papers 1997/01.
- [67]. Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim. W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines, *Journal of Business Research*, 133, 285–296.
- [68]. Duffya, S. A., Anderson, J., & Barks, L., et. al. (2017). How to get your research published. *International Journal of Nursing Studies*, 66, A1–A5.
- [69]. Paul, J., & Criado, A. R. The art of writing literature review: What do we know and what do we need to know? *International Business Review*.
- [70]. Lockwood, C., dos Santos, K. B., & Pap, R. (2019). Practical Guidance for Knowledge Synthesis: Scoping Review Methods. *Asian Nursing Research* 13, 287-294.
- [71]. Shamseer, L., Moher, D., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *BMJ* 349.
- [72]. Van, W. B., & Banister, D. (2016). How to Write a Literature Review Paper? *Transport Reviews*, 36(2), 278-288.
- [73]. El-Omar, E. M., (2014). How to publish a scientific manuscript in a high-impact journal. *Advances in Digestive Medicine* 1, 105-109.
- [74]. Kim, S.G. (2023). Using ChatGPT for language editing in scientific articles. *Maxillofacial Plastic and Reconstructive Surgery*, 45(13).
- [75]. Pesämaa, O., Zwikael, O., Jr., J. F. H., & Huemann, M. (2021). Publishing quantitative papers with rigor and transparency. *International Journal of Project Management*, 39, 217–222.
- [76]. Roush, K. (2017). Writing Your Manuscript: Structure and Style. *AJN*, 117 (4).
- [77]. Sharma, R. K., & Ogle, H. L. (2022). Twelve tips for students who wish to write and publish, *Medical Teacher*, 44(4), 360-365.
- [78]. Martín, E. (2014). How to write a good article. *Current Sociology*, 62(7), 949–955.
- [79]. Sun, H., & Linton, J. D. (2014). Structuring papers for success: Making your paper more like a high impact publication than a desk reject. *Technovation* 34, 571–573.
- [80]. Busse, C & August, E. (2021). How to Write and Publish a Research Paper for a Peer-Reviewed Journal. *Journal of Cancer Education* 36, 909–913.

- [81]. Hyland, K. & Zou, H. (J.) (2022). Titles in research articles. *Journal of English for Academic Purposes*, 56.
- [82]. Lund, T. (2021). Research Problems and Hypotheses in Empirical Research. *Scandinavian Journal of Educational Research*, 66(7), 1183–1193.
- [83]. Taherdoost, H. (2022). How to Write an Effective Discussion in a Research Paper; a Guide to Writing the Discussion Section of a Research Article. *Open Access J Addict & Psychol* 5(2).
- [84]. Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research* 104 333–339.
- [85]. Rewhorn, S. (2018) Writing your successful literature review. *Journal of Geography in Higher Education*, 42(1), 143-147.
- [86]. van Riel, A., & Snyder, H. (2024). Enhancing the impact of literature reviews: guidelines for making meaningful contributions. *Spanish Journal of Marketing – ESIC*, 28(3), 250-265.
- [87]. Barataa, J., & Kayserb, I. (2023). Industry 5.0 – Past, Present, and Near Future. *Procedia Computer Science* 219, 778–788.
- [88]. Kearney, M. H., Challenges of finding and filling a gap in the literature, Wiley.
- [89]. Baako, I., Alhassan, H., & Gidisu, P. (2022). Understanding and spotting research gaps through a systematic literature review. *International Journal of Research and Innovation in Social Science (IJRISS)* VI(III).
- [90]. Coelhoa, P., Bessaa, C., Landeckb, J., & Silvaa, C. (2023). Industry 5.0: The Arising of a Concept. *Procedia Computer Science* 217, 1137–1144.
- [91]. Tablas-Mejia, I. (2021). Conclusion Section for Research Papers, San José State University Writing Center.
- [92]. Yan, J., & Ma, Q. (2024). Developing advanced citation skills: A mixed-methods approach to corpus technology training for novice researchers. *Journal of English for Academic Purposes* 72.
- [93]. Matos, S., & Junior, F. H. (2023). Repurposing management knowledge production in the Global South context, *RAUSP Management Journal*, 58(4), 258-265.
- [94]. Dwivedi, Y. K., Hughes, L., Cheung, C. M.K., et al. (2022). How to develop a quality research article and avoid a journal desk rejection. *International Journal of Information Management* 62.
- [95]. Chaitow, S. (2019). The life-cycle of your manuscript: From submission to publication. *Journal of Bodywork & Movement Therapies*, 23, 683- 689.
- [96]. Kosztyán, Z. T., Király, T., Csizmadia, T., Katona, A. I., & Vathy-Fogarassy, A. (2025). Automated research methodology classification using machine learning. *Engineering Applications of Artificial Intelligence* 156.

- [97]. Chub, J., Cowling, P., & Reed, D. (2022). Speeding up to keep up: exploring the use of AI in the research process. *AI & SOCIETY* 37:1439–1457.
- [98]. Christou, P. A. (2023). The Use of Artificial Intelligence (AI) in Qualitative Research for Theory Development. *The Qualitative Report*, 28(9), 2739-2755.
- [99]. Bolaños, F., Salatino, A., Osborne, F., & Motta, E. (2024). Artificial intelligence for literature reviews: opportunities and challenges. *Artificial Intelligence Review* 57:259.
- [100]. Brunetti, F., Bonfanti, A., Chiarini, A., & Vannucci, V. (2023). Digitalization and academic research: knowing of and using digital services and software to develop scientific papers. *The TQM Journal* 35 (5), 1135-1155.
- [101]. Panova, D. (2024). A Machine Learning Guided Path for Optimal Literature Review. *TEM Journal*, 13(1), 616-623.
- [102]. Acosta-Enrique, B. G., Ballesteros, M. A., Pérez, C. R. V., Jordan, O. H., Vergara, J. A. M., Acosta, R. M., Vargas, C. G. A. P., & Castillo, J. C. A. (2025). AI in academia: How do social influence, self-efficacy, and integrity influence researchers' use of AI models? *Social Sciences & Humanities*.
- [103]. Parti, K., & Szigeti, A. (2021). The Future of Interdisciplinary Research in the Digital Era: Obstacles and Perspectives of Collaboration in Social and Data Sciences – An Empirical Study. *Cogent Social Sciences*, 7(1), 1970880.