

ADAPTIVE BEHAVIOR RESEARCH: A SCOPUS-BASED BIBLIOMETRIC ANALYSIS (2016-2025)

Khairunnisa' Yussof ^{1*}
Dr Noraznira Abd Razak ²
Siti Musliha Mohd Idris ³

¹ Faculty of Business and Management, MARA University of Technology, Alor Gajah and 78000, Malacca, Malaysia (E-mail: khairunnisayussof@uitm.edu.my)

² Faculty of Business and Management, MARA University of Technology, Alor Gajah and 78000, Malacca, Malaysia (E-mail: noraznira@uitm.edu.my)

³ Faculty of Business and Management, MARA University of Technology, Alor Gajah and 78000, Malacca, Malaysia (E-mail: sitimusliha@uitm.edu.my)

*Corresponding author: khairunnisayussof@uitm.edu.my

Article history

Received date : 9-6-2026

Revised date : 10-6-2026

Accepted date : 25-7-2026

Published date : 1-8-2026

To cite this document:

Yussof, K., Abd Razak, N., & Mohd Idris, S. M. (2026). Adaptive behavior research: A Scopus-based bibliometric analysis (2016-2025). *International Journal of Accounting, Finance and Business (IJAFB)*, 11 (66), 323 - 333.

Abstract: *Adaptive behavior has gained recognition as a critical factor in understanding how individuals respond to changing environments, particularly in contexts of rapid technological advancement. However, research on adaptive behavior in technology-based contexts remains limited, especially when compared to the extensive literature on technology adoption and usage. Most studies focus on whether users adopt or utilize technology, paying less attention to how they cognitively and behaviorally adjust to technological changes, risks, and uncertainties over time. This gap hinders a deeper understanding of user responses beyond initial adoption, particularly in dynamic digital environments. This study addresses this gap by reviewing adaptive behavior literature from 2016 to 2025 within social science and business domains. Specifically, it examines (i) the most researched subject areas, (ii) the most cited works, and (iii) the countries producing academic publications. Using Scopus data, this bibliometric analysis employs exploratory, descriptive, and quantitative methods to map the development of adaptive behavior research. The findings highlight the interdisciplinary and cross-cutting nature of this field, emphasizing its relevance for understanding human interaction with evolving technologies.*

Keywords: *adaptive behavior, Scopus, subject area, author*

Introduction

Adaptive behavior has been increasingly recognized as a critical construct in understanding how individuals respond to changing environments, particularly in contexts characterized by rapid technological advancement. Despite its relevance, research on adaptive behavior remains relatively scarce when examined in relation to technology-based contexts, especially compared to the extensive body of literature focusing on technology adoption and actual usage behaviour. Most prior studies emphasize whether users adopt or use a technology, while paying limited attention to how users cognitively and behaviorally adapt to technological changes, risks, and uncertainties over time. This gap creates challenges for researchers seeking to understand user responses beyond initial adoption, particularly in dynamic digital environments.

The rapid growth of technology trends, coupled with the widespread use of smartphones, has accelerated the development and promotion of electronic payment systems. One prominent example is the electronic wallet (e-wallet), which has gained significant traction, particularly following the COVID-19 pandemic and the global push towards cashless transactions. While e-wallets offer convenience and efficiency, their usage also exposes users to various technological risks, including data privacy concerns, cybersecurity threats such as hacking and spamming, and misuse due to limited user knowledge or awareness. These risks may negatively affect user trust and confidence, potentially influencing how users adapt their behaviour when engaging with digital financial technologies.

Given the fragmented and interdisciplinary nature of adaptive behavior research, a systematic synthesis of existing literature is required to understand its intellectual structure, research trends, and dominant areas of focus. Bibliometric analysis is particularly suitable for addressing this need, as it enables the quantitative mapping of research output, influential studies, and thematic developments across disciplines. Accordingly, this study conducts a bibliometric analysis of adaptive behavior literature indexed in Scopus to identify key research trends, subject areas, and scholarly contributions. By doing so, the study provides a structured overview of adaptive behavior research and establishes a foundation for future investigations in technology-driven contexts, including digital payment systems such as e-wallets.

Literature Review

According to Schalock et al, (2021), adaptive behavior (AB) refers to behaviors performed in daily life that require practical, social, and cognitive skills possessed by an individual. Adaptive behavior occurs when individuals perceive risk and respond based on the knowledge they possess as well as the positive or negative feelings they experience (Maddox, 2023). Such behavioral responses are considered essential, as they form an integral part of everyday functioning in contemporary society (Boerman et al., 2021; Büchi et al., 2022). Effective adaptive behaviors are those that successfully reduce perceived threats or risks (Mehiriz & Gosselin, 2022).

Adaptive behavior frequently relates to the psychology, information and technology area. Adaptive behavior is shaped by a constellation of cognitive, emotional, and social factors. Risk perception, which involves assessments of severity and personal vulnerability, interacts with self-efficacy defined as an individual's belief in their ability to perform protective behaviors to influence both the likelihood and effectiveness of adaptive responses (Maddox, 2023). Collectively, these factors shape behavioral intentions and actions, particularly within technology-mediated and digital environments (Van Bavel et al., 2019). An adaptive behaviour is the outcome of the positive function of response-efficacy, self-efficacy, threat vulnerability

and threat severity, and the negative function of response cost (Rogers, 1983). Where most of the study focus on the learning disabilities. It sees the ability of individuals in understanding and cope with something new (Fidan, 2018). According to Stokes et al, (2008), when there is a new requirement, it will change the individual behavior in order to suit with it. A part of it, it is defined as the capability of the current system to adapt to technological and environmental changes. (Khanthachai et al, 1987), as well as the constant desire to adapt to technological change and innovations (Karsen et al., 2019).

The study of adaptive behavior within the social sciences offers valuable interdisciplinary insights by enhancing understanding of how individuals adjust to changing social, psychological, and environmental conditions. Traditionally, adaptive behavior has been conceptualized in psychology and social sciences as a set of cognitive, social, and practical skills that enable individuals to function effectively in everyday life and respond to perceived risks or challenges (Schalock et al., 2021). Empirical studies in these fields commonly examine adaptive behavior through surveys, experiments, or observational methods, focusing on factors such as risk perception, self-efficacy, emotional responses, and social norms, with findings highlighting the role of these factors in shaping individual coping strategies and behavioural outcomes (Maddox, 2023; Büchi et al., 2022).

In contrast, research in business and technology domains has predominantly approached user behaviour through adoption- and usage-based perspectives, emphasising intention, acceptance, and continued use of technologies rather than behavioural adaptation over time (Jamalova, 2021; Jung et al., 2020). While these studies provide valuable insights into technology uptake, they often overlook how users dynamically adjust their behaviours in response to evolving risks, trust concerns, and contextual changes in digital environments. By integrating the social science conceptualization of adaptive behavior into business and technology contexts, this study addresses a critical gap and contributes to a more comprehensive understanding of user behaviour, particularly in technology-mediated settings such as digital payment systems. Despite these established insights in psychology and social sciences, a systematic synthesis of adaptive behavior research remains limited in business and technology domains, underscoring the need for a bibliometric approach to map existing knowledge and inform future research directions.

Research Methodology

This study used the preferred reporting items for bibliometric analysis. There are a few stages or process involved. This is to ensure all the findings is a guided based on the limitation adjustment for the study. Identification, analyzing and interpreting all available evidence related to a specific research question can verbalized via the bibliometric analysis. To meet our research objectives and to address the research questions, we carried out a bibliometric analysis to study the adaptive behavior study within the subject area such social science and business, management, and accounting, computer science and economic, econometric and finance. From here, it could measure the most author, year and country that focus on adaptive behavior studies. This study is guided by the research question:

- i. What is the analysis result for the most subject area for adaptive behavior among the users?
- ii. What is the analysis result for the most cited paper and author?
- iii. What is the analysis result for the most country published?

The main purpose of this study is to explore the areas of past study in the context of adaptive behavior. the literature search, this study has used databases or digital libraries: Scopus. Scopus known as reliability source with high indexed by the Scholar. There are two (2) processes involved in the article selection in this study. The first process is the process of identifying the database to adaptive precaution behavior. The second is database screening and also the eligibility of an article according to the main objective.

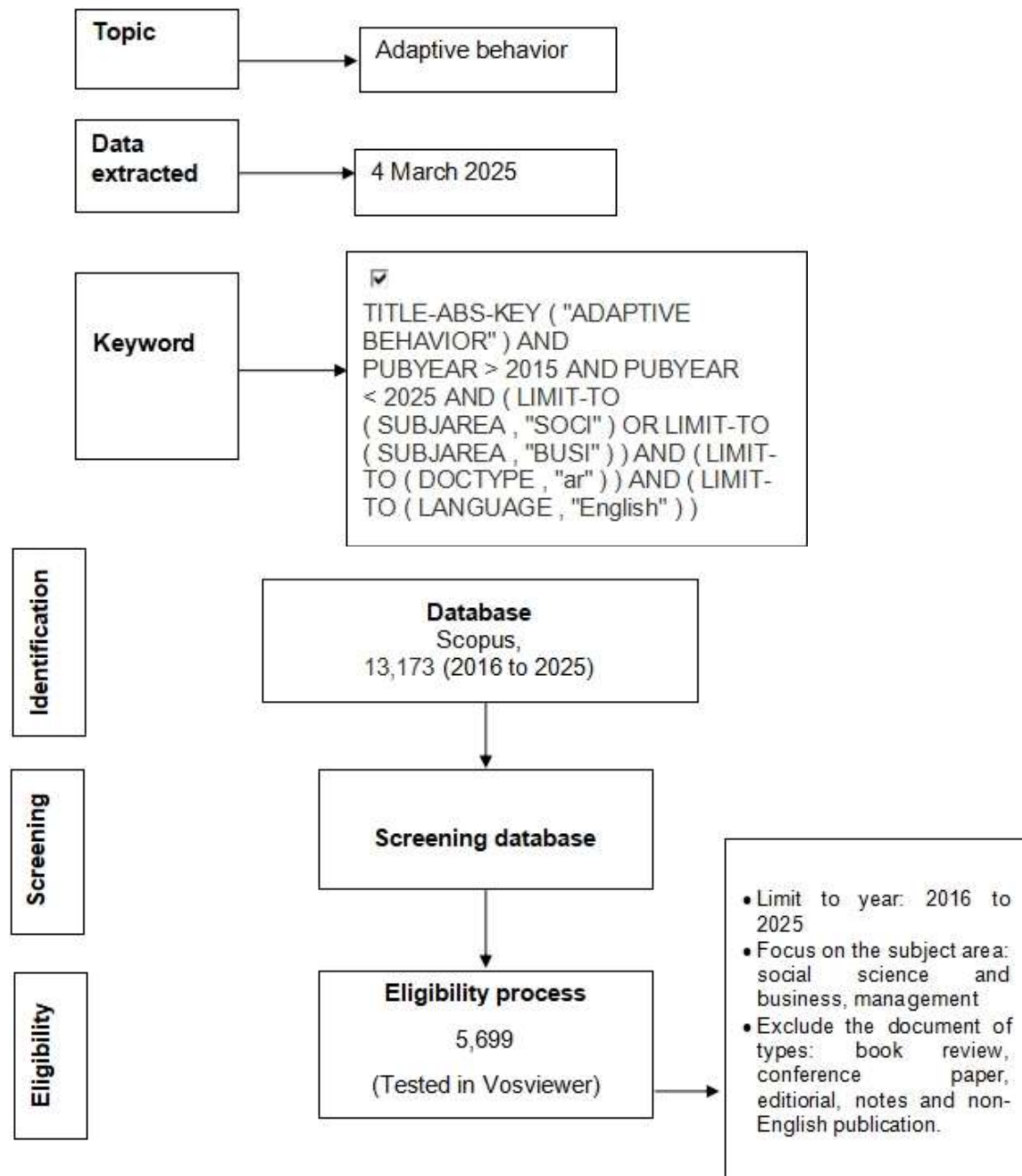


Figure 1: process of selecting the main articles

Result and Discussion

RQ1: Subject Area

Based on Table 1 showed the most subject area that had been focused using keyword “adaptive behavior”. The extracted data was from year 2016 to 2025 and resulted in total of 13,173 text file had been found through process identification After that, the researcher had been limiting the finding into specifically on social science and business, management which comprise 5,699 publications.

Table 1: The Subject Area Using Keyword Adaptive Behavior (2016 -2025)

Subject Area	Publication	Subject Area	Publication
Social Sciences	4817	Agricultural and Biological Sciences	142
Psychology	1773	Biochemistry, Genetics and Molecular Biology	81
Business, Management and Accounting	1196	Nursing	79
Arts and Humanities	950	Mathematics	38
Environmental Science	808	Multidisciplinary	27
Engineering	662	Pharmacology, Toxicology and Pharmaceutics	13
Computer Science	579	Chemical Engineering	7
Medicine	469	Physics and Astronomy	6
Health Professions	344	Materials Science	5
Energy	323	Dentistry	4
Economics, Econometrics and Finance	268	Veterinary	3
Neuroscience	235	Chemistry	2
Decision Sciences	188	Immunology and Microbiology	2
Earth and Planetary Sciences	152	Agricultural and Biological Sciences	142
Total			13,173

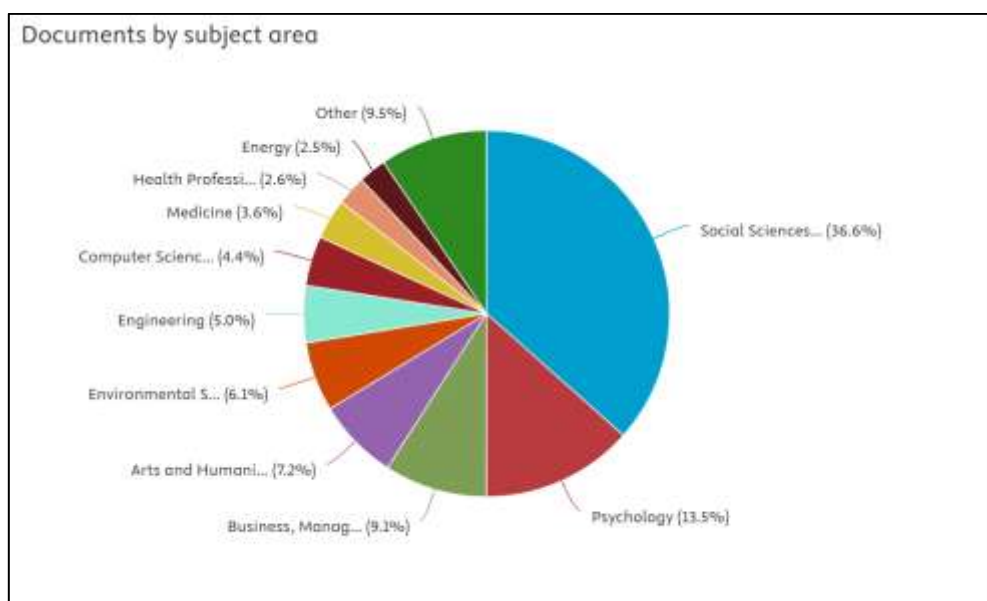


Figure 2: The Document by Area % (Scopus, 2025)

Figure 2 illustrates the distribution of adaptive behavior publications across subject areas, revealing a clear disciplinary concentration based on the scopus database. The dominance of Social Sciences (36.6%) and Psychology (13.5%) indicates that adaptive behavior has traditionally been conceptualised and investigated as a social cognitive construct, emphasising individual adjustment, coping mechanisms, and behavioural responses to environmental and social challenges. This finding aligns with established definitions of adaptive behavior in psychology, where emphasis is placed on cognitive, emotional, and social functioning in everyday life (Schalock et al., 2021). The strong representation of these fields suggests that adaptive behavior research remains grounded in theoretical and behavioural foundations rather than application-driven domains.

In contrast, the relatively smaller proportion of publications in Business and Management (9.1%), Computer Science (4.4%), and Engineering (5.0%) reflects the limited integration of adaptive behavior perspectives into technology- and organisation-focused research. This imbalance suggests that, while technological systems and digital platforms increasingly shape human behaviour, adaptive behavior has yet to be fully incorporated as a core analytical lens in business and technology studies, which continue to prioritise adoption, usage, and performance outcomes. The modest representation of Environmental Sciences (6.1%) and Health-related fields further highlights that adaptive behavior is often examined within specific risk or crisis contexts rather than as a continuous behavioural process across domains.

Taken together, these findings suggest that adaptive behavior research remains fragmented and discipline-specific, with limited cross-fertilisation between social sciences and applied fields such as business and technology. This disciplinary skew underscores the need to extend adaptive behavior research into business and social science contexts that address contemporary technological challenges, including digital payments and financial technologies. By synthesising research trends across subject areas, this study positions adaptive behavior as a critical yet underutilised construct for understanding user responses to risk, trust, and change in technology-mediated environments. The dominance of social science and psychological perspectives, coupled with limited representation from business and technology disciplines, highlights a critical opportunity to reconceptualise adaptive behavior as a dynamic construct relevant to digital and organisational contexts.

The VOSviewer software was employed to generate bibliometric visualisations of keyword co-occurrence networks. Bibliographic data were extracted from the Scopus database using the selected keywords and limited to publications between 2016 and 2025. Following data screening, the number of records was reduced from 13,173 to 5,699 to ensure relevance and consistency. A thesaurus file was applied to standardise keyword variations, remove duplicates, and correct spelling inconsistencies. Keyword co-occurrence maps were subsequently generated, where keywords are represented as nodes, with node size reflecting the frequency of occurrence. The distance between nodes indicates the strength of association, while connecting lines represent co-occurrence relationships. Colours were used to distinguish thematic clusters, thereby revealing the underlying structure of adaptive behavior research.

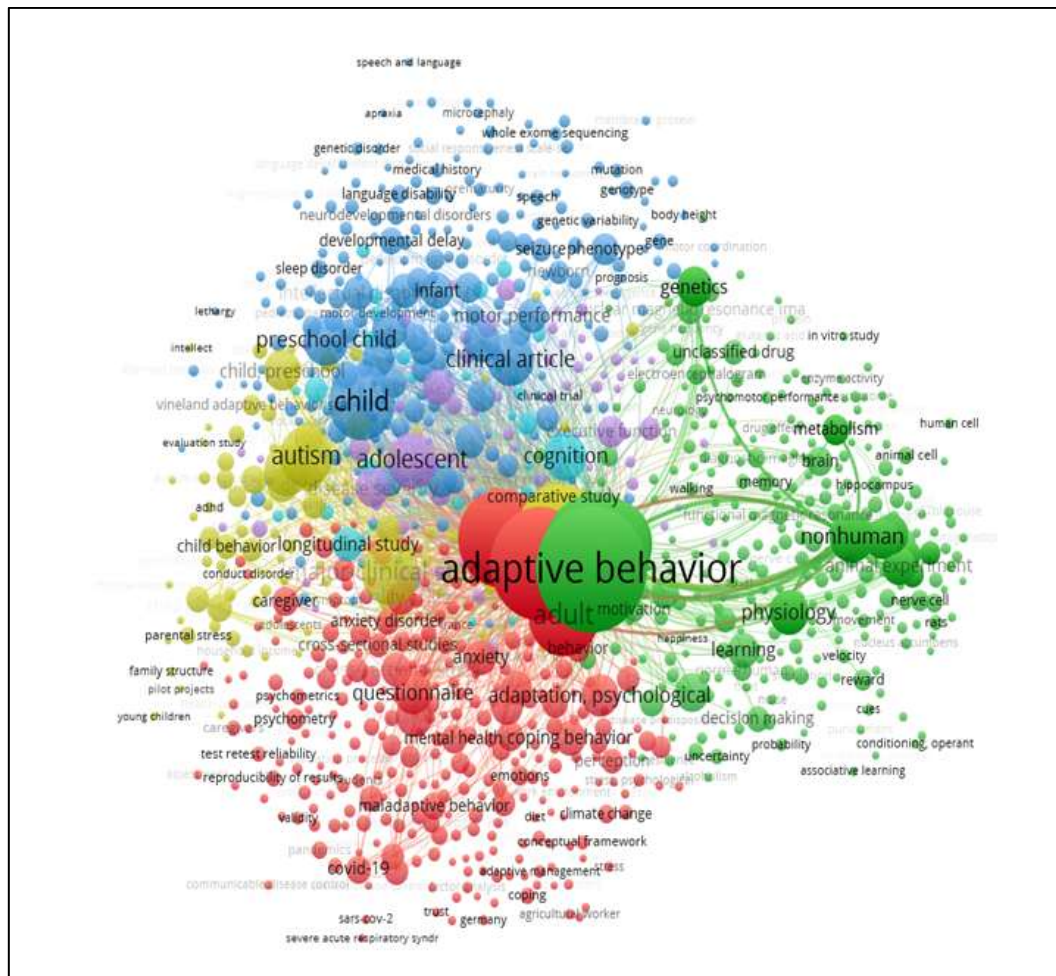


Figure 3: Text files from 2010 to 2025 (Scopus)

Figure 3 presents the keyword co-occurrence network of adaptive behavior research, revealing several distinct but interconnected thematic clusters. The central positioning and large node size of adaptive behavior indicate its role as a core concept linking multiple disciplinary perspectives. However, the surrounding clusters demonstrate that adaptive behavior research is conceptually fragmented and distributed across diverse domains rather than being anchored within a single unified framework.

The blue cluster, which includes keywords such as child, preschool child, infant, developmental delay, and autism, reflects a strong developmental and clinical psychology orientation. This cluster suggests that adaptive behavior has been extensively examined in relation to childhood development, neurodevelopmental disorders, and early-life functioning. Such findings are consistent with traditional psychological definitions of adaptive behavior, which emphasise social, practical, and cognitive functioning in daily life.

The red cluster is dominated by terms such as anxiety, questionnaire, psychometrics, coping behavior, mental health, and COVID-19. This cluster highlights a measurement- and mental-health-driven research stream, where adaptive behavior is frequently operationalised through self-report instruments and examined as a response to stress, uncertainty, and crisis contexts. The prominence of this cluster indicates that adaptive behavior is often investigated as a coping mechanism rather than a dynamic behavioural process in technology-mediated environments.

In contrast, the green cluster is characterised by keywords such as decision making, learning, reward, physiology, and nonhuman, reflecting experimental and biological approaches to adaptive behavior. This cluster suggests that adaptive behavior is also studied within controlled laboratory and animal-model settings, focusing on learning mechanisms and behavioural adaptation at a physiological or neurological level.

Notably, technology-related keywords such as mobile phone and decision making appear as relatively smaller and more peripheral nodes. This indicates that, although adaptive behavior has been examined in technologically relevant contexts, such studies remain limited in scope and are not yet central to the adaptive behavior research landscape. The comparatively smaller node size of these terms, when contrasted with dominant keywords such as human and psychology, further reinforces the underrepresentation of business and technology-oriented perspectives.

Overall, the VOSviewer analysis reveals that adaptive behavior research is heavily concentrated within psychology, health, and developmental domains, with limited integration into business, technology, and digital innovation contexts. Despite filtering for social science and business management, some psychology-related topics still appear, reflecting both the interdisciplinary nature of adaptive behavior research and the way VOSviewer clusters articles based on shared keywords and citations. The fragmented clustering pattern suggests that adaptive behavior is conceptualized differently across disciplines, with minimal cross-disciplinary synthesis. These findings highlight the need to reposition adaptive behavior within social science and business research, particularly in relation to emerging digital technologies such as e-wallets, where users must continuously adapt to risks, trust issues, and evolving technological environments. By mapping these keyword relationships, this study provides empirical evidence of existing research gaps and identifies opportunities for extending adaptive behavior research into technology-driven and applied domains.

RQ2: The Most Cited Author and Country

This research question analyzes three parameters: authors, the frequency of cite and H-index rank. It is essential to determine the authors who have demonstrated the highest level of scientific productivity in each discipline. Having more researchers involved in monitoring enhances the ability to notice and analyze the progress of a certain subject of study.

Table 2 presents the authors that demonstrated highest productivity by publishing a paper that was received with a Q1 rank. Q1 journals are positioned in the highest quartile in their respective fields, denoting exceptional research quality and stringent peer review procedures. Submitting articles to these publications elevates the researcher's standing and trustworthiness among their peers in the academic sphere. The most productive authors are Pinquart, Van Valkengoed; Steg, Kraus; Ribeiro-Soriano D.; Schüssler M, Kim J.; Zhou Y.; Schiavon S.; Raftery P.; Brager G. and Pappas I.O.; Kourouthanassis P.E.; Giannakos M.N.; Chrissikopoulos V.

Table 2: Document by author

Authors	Title	Year	Source title	Cited by	H index	Rank
Pinquart M.	Associations of parenting dimensions and styles with externalizing problems of children and adolescents: An updated meta-analysis	2017	Developmental Psychology	884	247	Q1
Van Valkengoed A.M.; Steg L.	Meta-analyses of factors motivating climate change adaptation behaviour	2019	Nature Climate Change	505	267	Q1
Kraus S.; Ribeiro-Soriano D.; Schüssler M.	Fuzzy-set qualitative comparative analysis (fsQCA) in entrepreneurship and innovation research – the rise of a method	2018	International Entrepreneurship and Management Journal	488	79	Q1
Kim J.; Zhou Y.; Schiavon S.; Raftery P.; Brager G.	Personal comfort models: Predicting individuals' thermal preference using occupant heating and cooling behavior and machine learning	2018	Building and Environment	369	205	Q1
Pappas I.O.; Kourouthanassis P.E.; Giannakos M.N.; Chrissikopoulos V.	Explaining online shopping behavior with fsQCA: The role of cognitive and affective perceptions	2016	Journal of Business Research	361	265	Q1

RQ3: The Analysis Result for The Most Country Published

RQ3 is about to identify the analysis result for the most country published. The results show that the United States is the first country by affiliation of its authors (1849). In second place is the China (694) and, in third place, United Kingdom (585), Australia (388) Canada (286), Germany (338), Netherlands (257), Italy (239), Spain (219), France (161). This demonstrates that several countries in southern Asia still have a deficiency in providing publications related to adaptive behavior. It can be inferred that this deficiency will hinder the efficiency of adaptive behavior in an in-depth way.

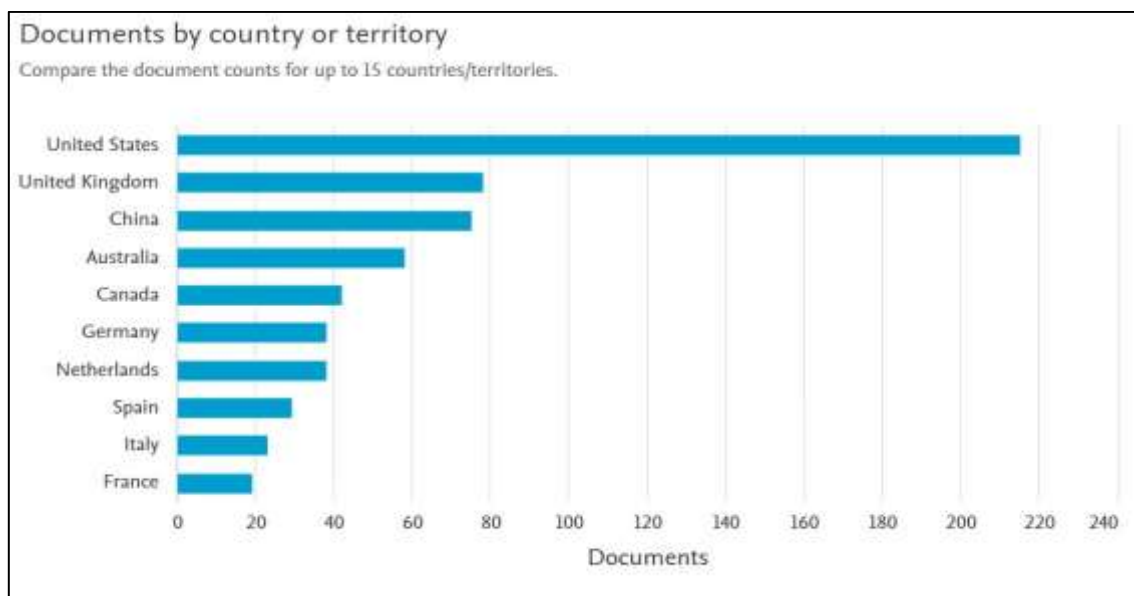


Figure 4: Documents by Country or Territory (Scopus data)

Besides, in a study by Akanfe et al., (2020), the United Kingdom, Malaysia, Canada, and the Philippines exhibit higher average scores in privacy risk management across the assessed dimensions. Nevertheless, these countries continue to experience notable vulnerabilities, particularly in relation to e-wallet-related scams and fraud (Sahi et al., 2022). This paradox suggests that even in environments with relatively stronger privacy frameworks, users are required to continuously adapt their behaviors to manage evolving digital risks. Such adaptation may involve heightened risk awareness, changes in usage patterns, or increased reliance on trust and security cues when engaging with digital financial services. These findings reinforce the relevance of adaptive behavior as a critical construct for understanding user responses to privacy risk in dynamic financial technology environments.

Conclusion

Although the database was intended to focus on business and social sciences, the inclusion of psychology and medical studies indicates limitations in the database's classification and filtering, which may introduce unrelated articles into the analysis. This bibliometric analysis reveals that adaptive behavior research is heavily concentrated in non-business domains, indicating a scarcity of studies on its application to digital financial transactions. Given the growing importance of digital technologies, further research is needed to understand how adaptive behavior influences users' trust, risk perception, and decision-making in financial technology contexts. Extending adaptive behavior research to business and social sciences offers valuable insights into organizational and community adaptation, while addressing gaps in the existing literature. By disseminating findings through high-impact journals, this research can contribute to a broader understanding and practical enhancement of adaptive behavior in increasingly technology-driven environments.

Acknowledgements

The authors gratefully acknowledge Universiti Teknologi MARA (UiTM) for providing institutional support necessary to successfully complete this research project.

References

- Akanfe, O., Valecha, R., & Rao, H. R. (2020). Assessing country-level privacy risk for digital payment systems. *Computers and Security*, 99, 102065. <https://doi.org/10.1016/j.cose.2020.102065>
- Boerman, S. C., Kruikemeier, S., & Zuiderveen Borgesius, F. J. (2021). Exploring Motivations for Online Privacy Protection Behavior: Insights From Panel Data. *Communication Research*, 48(7), 953–977. <https://doi.org/10.1177/0093650218800915>
- Büchi, M., Festic, N., & Latzer, M. (2022). The Chilling Effects of Digital Dataveillance: A Theoretical Model and an Empirical Research Agenda. *Big Data and Society*, 9(1). <https://doi.org/10.1177/20539517211065368>
- Fidan, T. (2018). Vocational Identity and Career Construction in Education.
- Jamalova, M. (2021). Social Influence and Smartphone Adoption in Collectivistic Country: Evidence From Azerbaijan. *Journal of Economic Sciences: Theory & ...*, 78(June), 66–85.
- Jung, J.-H., Kwon, E., & Kim, D. H. (2020). Mobile payment service usage: U.S. consumers' motivations and intentions. *Computers in Human Behavior Reports*, 1(January), 100008. <https://doi.org/10.1016/j.chbr.2020.100008>
- Karsen, M., Chandra, Y. U., & Juwitasary, H. (2019). Technological factors of mobile payment: A systematic literature review. *Procedia Computer Science*, 157, 489–498. <https://doi.org/10.1016/j.procs.2019.09.004>
- Khanthachai, N., Kanchana, T., Tawatchai, B., Chantana, N., & Anucha, A. (1987). *Technology and Skills in Thailand*. Thailand:
- Maddox, A. (2023). Adaptive behavior in digital environments: Cognitive responses to online threats. *Computers in Human Behavior*, 138(107021). <https://doi.org/https://doi.org/10.1016/j.chb.2022.107021>
- Mehiriz, K., & Gosselin, P. (2022). The Effect of Perceived Threats and Response Efficacy on Adaptation to Smog: An Instrumental Variables Design. *Risk Analysis*, 42(5), 1042–1055. <https://doi.org/10.1111/risa.13814>
- Rogers, R. W. (1983). Cognitive and physiological processes in fear-based attitude change: A revised theory of protection motivation. *Social Psychophysiology*, 153–176.
- Sahi, A. M., Khalid, H., Abbas, A. F., Zedan, K., Khatib, S. F. A., & Amosh, H. Al. (2022). The Research Trend of Security and Privacy in Digital Payment. *Informatics*, 9(2). <https://doi.org/10.3390/informatics9020032>
- Schalock, R. L., Luckasson, R., & Tassé, M. J. (2021). Intellectual disability: Definition, diagnosis, classification, and systems of supports. *American Association on Intellectual and Developmental Disabilities*, 12(June).
- Stokes, C. K., Joseph, B. L., Daniel, H. S., & Stephanie, D. S. (2008). An Adaptive Workforce as the Foundation for E-Collaboration. *Encyclopedia of E-collaboration*.
- Van Bavel, R., Rodríguez-Priego, N., Vila, J., & Briggs, P. (2019). Using protection motivation theory in the design of nudges to improve online security behavior. *International Journal of Human Computer Studies*, 123(November 2018), 29–39. <https://doi.org/10.1016/j.ijhcs.2018.11.003>