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TECHNOLOGY ACCEPTANCE MODEL ON SMARTPHONES APPLICATIONS: A BIBLIOMETRIC ANALYSIS

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Abstract

Technological developments in the last ten years affect individual behavior. A smartphone is one of the technologies accepted by consumers, so it is related to the Technology Acceptance Model (TAM) theory to test its effect on consumers. This study aims to determine the study of the adoption of TAM theory in the use of Smartphone applications from 2013-2022. The study of TAM theory on Smartphone applications are reviewed in terms of the number of articles per year, the author of the article, the number of citations, and the subject under study. The data taken in this study on the Scopus website is stored in the form of RIS. After that, the data is processed through Publish or Perish and Vos viewer. The results of the articles obtained from Scopus in 2013-2022 amounted to 235 documents, 4 clusters, and 148 items. The number of articles per year on Scopus discussing the adoption of TAM in smartphone applications in 2019 is at most 37, while 2013 has at least 8 documents. The impact of this research is to provide an overview of the development of research using the TAM for ten years.

Keywords: Bibliometric, Publish or perish, Smartphone applications, Technology acceptance model, Vos viewer.

1. Introduction

A smartphone is a communication tool that is very popular with individuals in various countries. Technological developments have resulted in many applications that can be used on smartphones. One of the impacts is changing consumer behavior. Smartphone users can install more than one application for needs or pleasure. This problem has made researchers interested in researching the impact of technology acceptance of smartphones on consumer behavior [1].

Smartphones as a multifunctional telecommunications tool to facilitate human life in all fields, such as business, education, health, and social. The positive side of using a smartphone is that it makes it easier to find information, facilitate communication, seek entertainment, and increase work productivity so smartphone users increase every year [2]. This development is strengthened by the Covid-19 pandemic so that work and other activities are carried out online using a smartphone. Studying the use of technology applications is an interesting topic, especially during the Covid-19 pandemic. Theory Acceptance Model (TAM) is widely applied in technology acceptance behavior research because of its simplicity and theoretical validity [3]. The TAM theory was developed based on the Theory of Reasoned Action (TRA) [4]. The TAM structure consists of two elements, namely perceived usefulness (PU) and perceived ease of use (PEU) [5], several studies on technology adoption concluded that TAM is valid in predicting individual acceptance of technology, but the two TAM elements do not fully explain behavior, intentions to use technology on smartphones [1].

Many studies use TAM theory, but most researchers use quantitative methods. This study is different from previous studies because it uses bibliometric analysis. This bibliometric research aims to determine the development of research on the use of TAM theory in smartphone applications. We answered by conducting a bibliometric analysis taken from the Scopus database.

2. Method

The method used in this research is the bibliometric method, this method has been carried out in various fields of science such as management studies [6]. Bibliometric analysis is an analysis that examines various research subjects that have been carried out and evaluates knowledge about certain research subjects, assessing scientific quality, and the influence of certain articles and sources [7]. Various techniques used in bibliometric analysis include citation analysis, document co-citation analysis, author co-citation analysis, word co-citation analysis, and textual analysis [8]. This study follows the bibliometric steps carried out by previous researchers [9-20], divided into five stages [8], including:

(i) Determine the initial keywords for the bibliometric research to be discussed, with the keywords "Technology Acceptance Model on Smartphone applications" on Scopus websites, because the articles obtained are of good quality.
(ii) Searching for articles on the Scopus website, more specifically journals from 2013-2022, obtained 235 documents on Scopus.
(iii) The articles that have been obtained are filtered into data to be reviewed, stored in the RIS data, then stored with the help of the Mendeley application. The data stored in Mendeley is then processed into the Vos viewer application.

(iv) The data that has been collected is stored in the form of RIS and Csv.

(v) The bibliometric analysis in this study uses the results from Scopus sites.

3. Results and Discussion

The results on the Scopus website with the keywords of "Technology Acceptance Model on Smartphones Applications" from 2013-2022 obtained 235 documents. Articles per year on Scopus have increased significantly from 2018-2020, but in 2021, it has decreased to 30 documents and in 2022 to 22 documents. Table 1 shows the number of articles per year from the Scopus database. The results from the Scopus database and documents based on the subject area of the keyword "Technology Acceptance Model on Smartphone Applications" for the last ten years are shown in Fig. 1. Of the top five based on the subject area, among others Computer Science with 114 documents (24.5%), Medicine with 59 (12.7%), Engineering with 58 (12.4%), Business, management, and accounting 46 (9.9%), Social sciences 44 (9.4%).

Table 1. Number of articles per year on scopus.

Year of Publication	Number of Publication
2013	8
2014	13
2015	21
2016	28
2017	14
2018	27
2019	35
2020	37
2021	30
2022	22

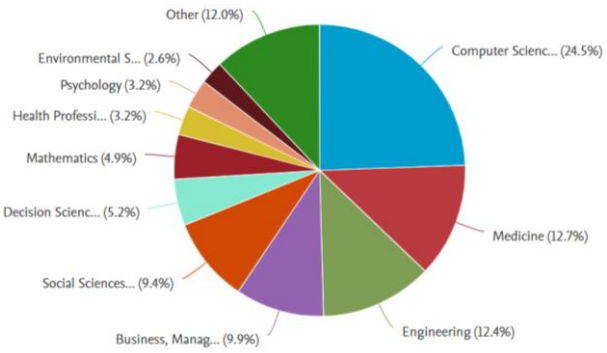

Fig. 1. Document by subject area.

A total of 235 documents that matched the research criteria were found using the Scopus website. Information is collected in the form of article metadata, which includes the author's name, title, year, journal name, publisher, number of citations, connection to the paper, and associated URL. In the Vos viewer examination of this study, several samples of published data are shown in Table 2. The top 10 articles with the most citations are used as data samples.

Table 3 describes the Document by Subject Area on Scopus consisting of ten disciplines including Computer Science, Medicine, Engineering, Business Management and Accounting, Social Science, Decision Science, Mathematics, Health Professions, Psychology, and Environmental science.

Table 2. Citation on scopus database.

No.	Authors	Title	Year	Cites
1	Shaikh and Karjaluoto	Mobile banking adoption: A literature review	2015	450
2	Anderson et al.	Mobile health apps to facilitate self-care: A qualitative study of user experiences	2016	234
3	Yuan et al.	Keep Using My Health Apps: Discover Users' Perception of Health and Fitness Apps with the UTAUT2 Model	2015	176
4	Tam et al.	Exploring the influential factors of continuance intention to use mobile Apps: Extending the expectation confirmation model	2020	142
5	Cho	The impact of post-adoption beliefs on the continued use of health apps	2016	139
6	Ma et al.	Personal and other factors affecting acceptance of smartphone technology by older Chinese adults	2016	121
7	Rafique et al.	Investigating the Acceptance of Mobile Library Applications with an Extended Technology Acceptance Model (TAM)	2020	103
8	Verkijika	Factors influencing the adoption of mobile commerce applications in Cameroon	2018	96
9	Kasilingam	Understanding the attitude and intention to use smartphone chatbots for shopping	2020	95
10	Jones and Hermens	Tailoring real-time physical activity coaching systems: a literature survey and model	2014	85

Table 3. A document by subject area.

Subject area	Document
Computer Science	114
Medicine	59
Engineering	58
Business, Management, and Accounting	46
Social Sciences	44
Decision Sciences	24
Mathematics	23
Health Professions	15
Psychology	15
Environmental science	12

3.4. Visualization using Vos viewer on the adoption of TAM theory on smartphone applications

Data obtained from Scopus computational mapping using Vos viewer, obtained 148 items in 4 clusters as follows (see Figs. 2):

(i) Cluster 1 (red) has 49 items namely ability, access, analysis, application, approach, augmented reality, behavior, case study, challenge, city, communication, context, development, device, difference, education, evaluation, experience, field, information, interest, knowledge, lack, level, mobile device, mobile technology, order, paper, perception, performance, perspective, point, process, regard, security, smartphone, smartphone, smartphone application, student, system, tablet, technology, time, type, usability, user, user acceptance, web, and work.

(ii) Cluster 2 (green) has 42 items namely acceptance, adoption, behavioral intention, condition, consumer, customer, design methodology app, determinant, developer, effort expectancy, facilitating condition, implication, influence, insight, intention, literature, mobile app, model, number, originality value, past, performance acceptance, popularity, practical implication, practitioner, present study, recommendation, researcher, respondent, risk, service, social influence, suggestion, term, theory, trust, understanding, unfield theory, usage, utaut, utaut2, and way.

(iii) Cluster 3 (blue) has 35 items namely addition, attitude, convenience, data, ease, effect, enjoyment, factor, hypothesis, impact, importance, methodology, mobile application, new technology, person, quality, question, questionnaire, relationship, research, research model, satisfaction, self-efficacy, sem, smartphone technology, smartphone user, structural equation model, study, survey, TAM, technology acceptance, total, use, usefulness, and variable.

(iv) Cluster 4 (yellow) has 22 items namely age, app, benefit, cost, effectiveness, evidence, functionality, gap, health, individual, interview, management, mhealth, mobile health, online survey, participant, patient, population, reason, role, smartphone app, and support.

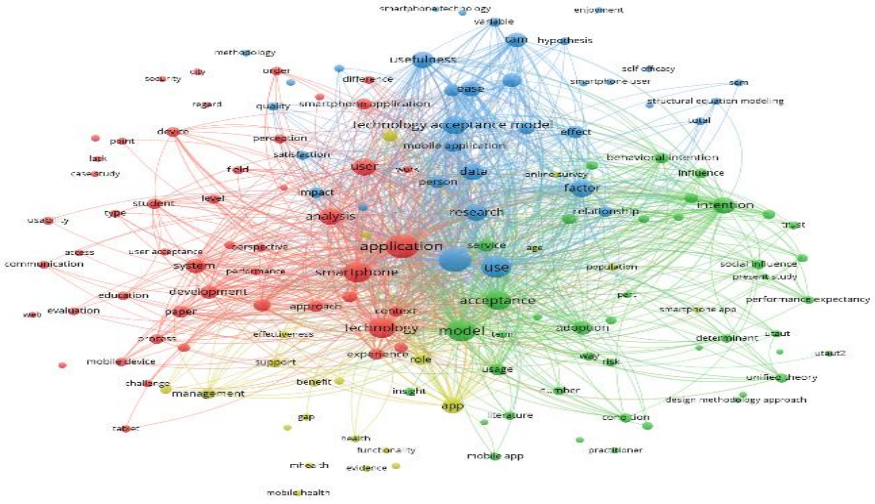

Fig. 2. Network visualization of TAM on smartphones application.

Figure 3, it can be seen that the bright yellow colour indicates that this theme has been widely studied over the last ten years. The themes that have been widely studied are application, smartphone, technology, model, acceptance, and service.

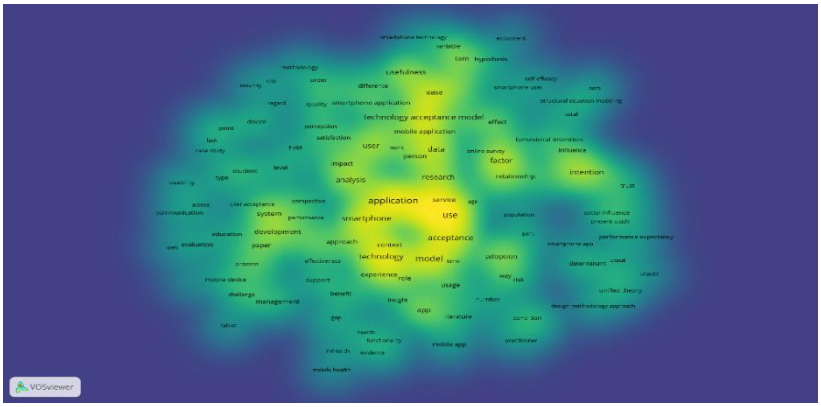

Fig. 3. Density visualization of TAM on smartphones application.

4. Conclusion

This study aims to perform a computational mapping analysis of the bibliometric information of research publications. The technology acceptance model is the publication theme chosen for this study. The articles used were obtained from Publish or Perish from the Scopus database. The title and abstract are one of the library information used in this study. The search results for 2013-2022 are 235, this still provides an opportunity for further research with the theme of TAM adoption in smartphone applications. The results of the study show that the technology acceptance model in smartphone applications has decreased from 2018 to 2022. Research based on the subject area of the Scopus database at least in the field of Environmental science discusses TAM at least, so research on technology acceptance models in smartphone applications still provides opportunities, especially in the field of Environmental science.

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