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The Influence of Education, Database and Technological Innovation on the Implementation of the Internet of Things

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Abstract: Analysis of the Determinants of the Influence of Education, Databases, and Technological Innovation on the Implementation of the Internet of Things is an analysis of published works in the subject of ESSB. In order to provide a basis for future research, this article aims to generate hypotheses about the correlation between variables. Academic databases such as Google Scholar, Mendeley, and others are part of the research object. This research utilizes a literature review strategy based on the use of publicly accessible electronic resources, such as e-books and journals. Descriptive qualitative analysis was used. The following are the findings of this analysis: 1) Education in the Implementation of the Internet of Things; 2) Database in Internet of Things Implementation Determination Analysis; 3) Technology Innovation in Internet of Things Implementation Determination Analysis.

Keyword: Education, Database, Technology Innovation, Internet of Things

INTRODUCTION

Undergraduate students, graduate students, and doctoral candidates are all required to complete a research project that culminates in a thesis, dissertation, or other form of academic writing. The same is true for faculty members, operational staff, and other researchers who are expected to actively engage in research and write scholarly works for publication in peer-reviewed publications. For students who will graduate from most higher education institutions in Indonesia, scientific papers are an important component of their study program. This applies to all academic levels, from writing a thesis, to a doctoral dissertation (Silitonga et al., 2017).

However, as is well known, many students and researchers experience difficulties when trying to find articles that support their scientific work. This applies regardless of whether they are looking for relevant past research, articles to help build theory, articles to investigate relationships between variables, or articles to help them formulate hypotheses. Therefore, this article also reviews the Influence of Education, Database, and Technological Innovation on the Implementation of the Internet of Things by reviewing references related to the ESSB domain (Widodo & Silitonga, 2017).

Referring to the background above, what needs to be discussed and written in the article discussed is to build a hypothesis in the research to be carried out, namely formulating: 1)

Education in the Implementation of the Internet of Things; 2) Database in the Analysis of Determining the Implementation of the Internet of Things; 3) Technological Innovation in the Analysis of Determining the Implementation of the Internet of Things.

METHOD

The method of writing a Literature Review article involves a Literature Review along with a Systematic Literature Review (SLR), then presented through a qualitative method. Sources of information are obtained online such as Mendeley, Google Scholar, and other academic support tools.

According to Kitchenham et al. (2009), a systematic literature review (SLR) involves finding, assessing and interpreting all relevant review materials to answer the established review question. It is essential to use literature review consistently in qualitative analysis, which is based on methodological principles. Researchers often turn to qualitative methods when conducting exploratory studies (Ali, H., & Limakrisna, 2013).

RESULTS AND DISCUSSION

As shown in Table 1, the formulation of the research hypotheses was based on a review of related articles describing the results of previous studies and comparing their similarities and differences with the design of this study.

Table 1. Relevant Research Results

No	Author (Year)	Results of Previous Research	Similarities with This Article	Differences with this Article	H
1	Shiddiqi, A. M., Ijtihadie, R. M., Ahmad, T., Wibisono, W., Anggoro, R., & Santos, B. J. (2020).	Using Internet and IoT Technology to Improve Education Quality	Education affects the Internet of Things	The Influence of Education, Database, and Technological Innovation on the Implementation of the Internet of Things	H1
2	Rikki, A., Nasyuha, A. H., Pasaribu, V. A., & Siagian, L. (2021)	Industrial Revolution 4.0 in Education "Internet of Things (IoT)"	Education affects the Internet of Things	The Influence of Education, Database, and Technological Innovation on the Implementation of the Internet of Things	H1
3	Siregar, U. K., Sitakar, T. A., Haramain, S., Lubis, Z. N. S., Nadhirah, U., & Yahfizham, Y. (2024)	Development of a database management system using My SQL	Database Implementation	The Influence of Education, Database, and Technological Innovation on the Implementation of the Internet of Things	H2
4	Agusdino, Z., & Basry, A. (2024).	Design of Warehouse Goods Inventory Information System Using Web-Based Average Method at CV. SEJATI STEEL TRUSS	Database Implementation	The Influence of Education, Database, and Technological Innovation on the Implementation of the Internet of Things	H2

5	Jange, B., Idie, D., Taufan, A., Pattiran, M., & Tindage, J. (2024).	The Role Of Technological Innovation In Improving Operational Efficiency In Economic Management: A Critical Review Of The Literature.	Application of Technological Innovation	The Influence of Education, Database, and Technological Innovation on the Implementation of the Internet of Things	H3
6	Maisharoh, T., & Ali, H. (2020).	Factors affecting Information Technology Infrastructure: Finance, IT Flexibility, and Organizational Performance	Application of Technological Innovation	The Influence of Education, Database, and Technological Innovation on the Implementation of the Internet of Things	H3

Regarding the context of the research, the conclusions of the article based on the methodology used include:

Internet of Things

Internet of Things (IoT) is a term that refers to the wider use of the internet, involving mobile computing and greater connectivity, which is then integrated into daily life. The concept of IoT is related to the Disruption of Things (DoT), which signifies the transformation of internet usage from the previous model that focused on the Internet of People to the M2M (Machine-to-Machine) Internet. Natsir, M., Rendra, D. B., & Anggara, A. D. Y. (2019).

IoT is a computing system in which interconnected devices, including mechanical and digital machines, objects, animals, or individuals are assigned unique identifiers. This system allows data transfer over a network with no need for direct interaction between people and people or people and computers. Rusnawati, R. D., & Hariyati, R. T. S. (2022).

The influencing aspects, signs, synthesis, or elements in IOT are Connectivity, Sensors, and QR Codes across all types and levels of organizations.

This IOT theme has been the focus of previous research and has received wide attention from previous researchers including Awal, H. (2019), Faiz, A., Soleh, B., Kurniawaty, I., & Purwati, P. (2021) and Nofrialdi, R., Saputra, E. B., & Saputra, F. (2023), (Nofrialdi et al., 2023).

Education

Education has various definitions from various perspectives, but in essence, the purpose of education is to educate and humanize humans. In a systems approach, education is seen as an integrated unit of various components that interact with each other in order to achieve the goal of education. Non-Reg, N. M. E. E., Non-Reg, N. H. E. E., & Uyun, A. S.

Aspects, signs, synthesis, or elements that influence education include factors that cause failure in developing values and character (moral & religious), including the focus of schools that are still centered on moral knowledge, but lack in teaching children to consistently apply moral actions in everyday life. Although the strengthening character education (PPK) program has been implemented in schools, it still has not reached the expected target.

This theme education has been the focus of previous research and has received extensive attention from previous researchers including Fadhli, M. (2017), Makkawaru, M. (2019), Shiddiqi, A. M., Ijtihadie, R. M., Ahmad, T., Wibisono, W., Anggoro, R., & Santos, B. J. (2020), Rikki, A., Nasyuha, A. H., Pasaribu, V. A., & Siagian, L. (2021) and Fardiansyah, H., Octavianus, S., Ahyani, H., Abduloh, A. Y., Sianturi, B. J., Hutagalung, H., & Rini, P. P. (2022).

Database

Nowadays, the use of information systems and databases is no longer unusual because databases are the main component for providing various kinds of information, be it in the fields of IT, law, social, psychology, management and other fields certainly require databases. However, there are many things that must be considered in designing a system that uses a database, for example in the selection of a Database Management System (DBMS). Siregar, U. K., Sitakar, T. A., Haramain, S., Lubis, Z. N. S., Nadhirah, U., & Yahfizham, Y. (2024)

A database is a set of interconnected data. Database system is a computerized system that aims to store a number of data to make it easier for users to get and update information as needed. Information stored in the database can be in the form of text or numbers. Agusdino, Z., & Basry, A. (2024).

The subject of Databases has been the subject of considerable scientific research in the past, as evidenced by the works of Siregar, U. K., Sitakar, T. A., Haramain, S., Lubis, Z. N. S., Nadhirah, U., & Yahfizham, Y. (2024) and Agusdino, Z., & Basry, A. (2024).

Technology Innovation

Innovations in hardware and software have had an impact on the operational efficiency of economic management work, which in turn has an impact on the way economic resources are managed in the country. In terms of economic management, technological innovation - especially in the field of hardware and software - has become an essential tool related to supporting operational efficiency. Jange, B., Idie, D., Taufan, A., Pattiran, M., & Tindage, J. (2024).

According to Maisharoh and Ali (2020), these technological innovations have substantial consequences for operational efficiency in the domain of economic management. Utilizing sophisticated hardware and software optimizes the administration of economic resources effectively. An illustration of how real-time monitoring of various forms of the economy can enable policy makers to immediately recognize threats and opportunities as well as focus resource allocation refers to optimal data collection (Ardiansyah, 2023), (Sembiring et al., 2019). Jange, B., Pattiran, M., Idie, D., Taufan, A., and Tindage, J. (2024).

The subject of technological innovation has been the subject of considerable scientific research in the past, as evidenced by the work of Maisharoh, T., & Ali, H. (2020) and Jange, B., Idie, D., Taufan, A., Pattiran, M., & Tindage, J. (2024).

Conceptual Framework

With reference to relevant research, problem formulation, and discourse, the conceptual framework of this article was created, as illustrated in Figure 1.

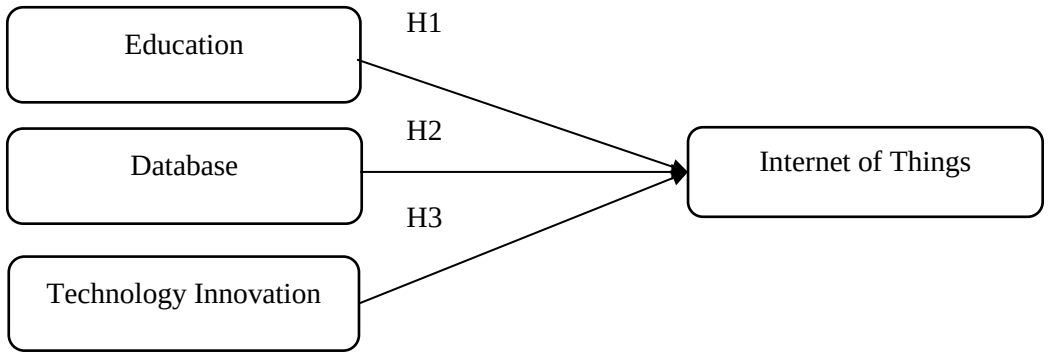

Figure 1. Conceptual Framework

CONCLUSION

Based on the above-mentioned objectives, findings, as well as discussion, the objective in the conclusion of the paper discussed is to formulate a hypothesis by including a foundation for future research:

1) Education in Internet of Things Implementation;
2) Database in Internet of Things Implementation Determination Analysis;
3) Technology Innovation in Internet of Things Implementation Determination Analysis.

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