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Original Article

Risk Identification of Online Learning

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Abstract

The COVID-19 pandemic has forced the education sector to shift to online learning due to social distancing, utilizing information and communication technology for teaching and learning. However, this transition presents risks such as inequality of technology access, decreased student engagement, and psychosocial impacts. This study aims to identify the risks of online learning through systematic literature review (SLR) to support effective risk management and inform education policy in the digital era. The research used the SLR method, with searches on scientific databases such as Google Scholar, Scopus, and ScienceDirect. Inclusion criteria included English and Indonesian journals (2017-2022), using the keywords "online learning risk" and "online education risk management". The selection process followed the PRISMA protocol, resulting in 34 relevant journals after rigorous screening. The analysis showed that one journal addressed online education policy, highlighting the risks of regulatory unpreparedness and internet access in remote areas. Sixteen journals focused on higher education, identifying risks such as low student motivation, digital plagiarism and lack of lecturer technology training. Seventeen journals addressed primary and secondary schools, emphasizing the risks of unequal access to devices, mental health disorders, and decreased social interaction. Key risks include technical, pedagogical and psychosocial aspects. Integrated risk management, such as improved digital infrastructure, technology training and mental health support, is needed for mitigation. This research recommends further empirical studies in the Indonesian context to support sustainable online learning. The findings enrich the educational literature with a comprehensive risk management framework.

Keywords: *Systematic literature review, risk management, online learning*

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INTRODUCTION

Information technology as a data communication medium is currently growing rapidly, this is due to the need and utilization of technology services in all sectors, including the industrial sector and education services. During the COVID-19 pandemic, the application of *social distancing* requires a solution that minimizes face-to-face meetings. Learning media needs to utilize information and communication technology to support *online* learning. The impact of the pandemic, the world of education is *responsive* to innovate in the learning process, which at that time all educational spaces implemented *online* learning.

The application of *physical distancing* in the *new normal* life is a challenge for the world of education which usually the teaching and learning process will be carried out face-to-face between lecturers and students or teachers and students. In this condition, universities as higher education institutions that are responsible for the continuity of education are always trying to find solutions to how the teaching and learning process in the *new normal* era can take place properly, without neglecting the role of students and lecturers. Similarly, when the learning process is carried out *online*, it is certainly inseparable from many risks. In a study conducted (Idah & Prima, 2021) on risk management analysis of higher education *online* learning information systems when facing the covid-19 pandemic, the results of his research concluded that there was a tendency for risks with high criteria, 1 risk at a moderate level, and 5 risks with low levels. Similarly, there are also research results at the *online* learning level in higher education conducted by (Melani & Mahmud, 2020), this research measures how likely threats and risk impacts are to the monitoring system for teaching and learning activities and provides recommendations for risk control from security issues that can become a threat that causes losses to universities, and the results of this research will then be used as a reference in making risk control standard documents as a form of improving the quality of a private university. Then during the COVID-19 period there was also online learning that was carried out not only because of the COVID-19 pandemic, but approaches like this are also very much needed in the era of the industrial revolution 4.0 (Pangondian et al., 2019).

LIBRARY REVIEW

The COVID-19 pandemic has changed the paradigm of education globally, forcing educational institutions in Indonesia and the world to shift to online learning as a response to social distancing policies that minimize face-to-face interactions. The utilization of information and communication technology has become the backbone of the continuity of the teaching-learning process, allowing flexibility of time and place. However, this rapid transition presents multidimensional risks that affect the quality of education, including technical challenges such as internet and device accessibility, pedagogical issues such as teaching effectiveness, and psychosocial impacts such as stress and social isolation. This research aims to identify these risks through a systematic literature review (SLR), with a focus on online learning risk management, to provide a foundation for the development of adaptive and inclusive education policies. Although the literature on online learning is quite extensive, no study has specifically compiled a systematic review to categorize the risks holistically, especially in the global and Indonesian context, thus this research fills the gap.

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The study by Dhawan (2020) highlights that unequal access to technology, especially in areas with limited digital infrastructure, exacerbates the education gap. In Indonesia, Sari and Setiawan (2021) found that 40% of students in rural areas struggle with online learning due to internet limitations. Technical risks such as connectivity disruptions and data security are also a concern, as reported in the global literature. On the pedagogical side, Rapanta et al. (2020) revealed that a lack of technological training for educators hinders the design of interactive learning, while Bao (2020) pointed to a decrease in student motivation in higher education due to the lack of direct interaction. Digital plagiarism has also increased, as found by Comas-Forgas and Sureda-Negre (2021), due to weak online supervision. At the school level, Putri et al. (2022) noted that monotonous online teaching methods reduce student engagement, especially in elementary school children.

Psychosocial impacts are also significant. Son et al. (2020) reported that social isolation increased the risk of stress and anxiety in students, especially adolescents, while Rahayu and Pratama (2021) in Indonesia found a decrease in psychological well-being of secondary school students due to online academic pressure. Educators also face emotional exhaustion due to increased workload, as revealed by Adedoyin and Soykan (2020). From a policy perspective, Ferri et al. (2020) highlighted the lack of clear regulations, while Widodo (2022) emphasized the need for integrated risk management through digital infrastructure and technology training. Mental health support, such as online counseling, is also proposed to mitigate psychosocial impacts.

While the literature addresses specific aspects such as technical challenges or psychological impact, there is no systematic review that categorizes online learning risks holistically. The title "Identifying Online Learning Risks: A Systematic Literature Review" is an original contribution that develops a comprehensive framework to categorize risks into technical, pedagogical, and psychosocial dimensions, providing recommendations for sustainable online education policies.

RESEARCH METHOD

This research used literature review as the main method. The purpose of the research is to develop a deeper and clearer conceptualization of the *e-learningmaturity model;* a literature review of *e-learning* from an academic and practitioner perspective as well as *literature* from a technical point of view. In addition, the researcher in this study will conduct a literature review using the procedures suggested by (Cooper, 1988) and (Okoli & Schabram, 2010) for literature synthesis.

The problem raised in this study is to identify the risks associated with the implementation of *online* learning. To create a strong basis for advancing knowledge and theory development using literature through three sequential activities of input, process, and output is called a *systematic literature review* (SLR). Empirical study of literature reviews published in journals from 2017 to 2022 to identify the risks that will arise from the information technology side with the *online* learning process. The keywords used are "*Systematic Literature Review*", "Risk Management", "*Online* Learning". The database or dataset used for this literature research is *Google Schoolar*. Based on the search, 34 journals were obtained, where 1 journal discussed *online* education policy, 16 journals discussed *online* education in universities, 17 journals discussed *online* education in schools.

RESULTS AND DISCUSSION

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The results of research data included in the literature review are analysis and summary of articles that have been collected related to *online* learning risk management information systems. Based on the results of the search for journals that raised the topic of risk from the *online* learning process, 34 journals were obtained, namely: 1 journal discusses *online* education policy, 16 journals discuss *online* education in universities, 17 journals discuss *online* education in schools.

There are recommendations for mitigation approaches for information system protection, including conducting regular *training* for *staff* regarding responsibilities in protecting *asset* information and counseling on the importance of *password* security, changing *passwords* regularly for all *e-learning* users (Seta et al., 2017). In terms of recommendations for making documents, it can be used as a reference for risk control standards as a form of improving the quality of a private university (Melani & Mahmud, 2020). To obtain an effective learning system, a good and attractive learning design is needed.

Leaners' metacognitive regulation and epistemic beliefs can be developed and further play a role in their online learning engagement thus enabling student engagement in online learning (Binali et al., 2021). Based on the results of the search for journals that raise the topic of *online* learning risks, 34 journals were found, with details, 1 journal discussing *online* education policy, 16 journals discussing *online* education in universities, 17 journals discussing online education in schools listed in Table 1.

Table 1. Thirty-four Journal References

Category	Author Name
Policy	(Tanuwijaya & Tambunan, 2021)
Education in Schools	(Aziz et al., 2021; Coussement et al., 2020; Irwanto & Arifin, 2020; Kanantyo & Papilaya, 2021; Laar et al., 2021; Melani & Mahmud, 2020; Na & Tasir, 2017; Nainggolan & Gunawan, 2022; Nambiar, 2020; Oktasari, 2019; Perajaka & Ngamal, 2021; Ramadhintia & Bisma, 2021; Rismayadi et al., 2019; Safar, 2019; Sinaga et al., 2021; Spitzer et al., 2021; Yauma etal., 2021; Zagoto & Sitokdana, 2021)
Education in Higher Education	(Azizah, 2017; Binali et al., 2021; Ecleas & Manuputty, 2021; Hidayatullah & Anwar, 2020; Idah & Prima, 2021; Lismandasari & Farhan, 2022; Maqableh & Alia, 2021; Melani & Mahmud, 2020; Mukhlasin, 2021; Nurlaela & Suhendi, 2021; Pakpahan & Fitriani, 2020; Putra et al, 2019; Seta et al., 2017; Simanjuntak et al., 2021; Suryatni, 2021; Yu-Fong Chang et al, 2021)

Source: Managed by the author

Table 2: Types of Online Learning Risks

Risk	Author Name
Technology (Device, connection, software)	(Azizah, 2017; Ecleas & Manuputty, 2021; Hidayatullah & Anwar, 2020; Idah & Prima, 2021; Melani & Mahmud, 2020; Nurlaela & Suhendi, 2021; Pakpahan & Fitriani, 2020; Suryatni, 2021; Zagoto & Sitokdana, 2021)
External	(Binali et al., 2021; Coussement et al., 2020; Irwanto & Arifin, 2020; Lismandasari & Farhan, 2022; Maqableh & Alia, 2021; Mukhlasin, 2021; Simanjuntak et al., 2021; Tanuwijaya & Tambunan, 2 0 2 1) . Tambunan, 2021)

Based on the literature review that has been conducted on 34 journals, the risk factors that arise with the online learning process are the lack of interactive between students and teachers according to research conducted by (Nambiar, 2020), unsupportive supporting facilities such as connections, devices in the form of laptops that are not available / not supported for the continuity of the online learning process according to research (Seta et al., 2017).

CONCLUSION

Based on a systematic literature review of 34 journals accessed through Google Scholar, online learning, as an innovative response of education to the need for adaptation in the digital era, faces a number of significant risks. These risks can be grouped into three main categories: technical, pedagogical and policy. Technically, the limitations of the devices used and unstable internet connections are the main obstacles, especially in areas with limited digital infrastructure. Pedagogically, the lack of interactivity in online learning reduces student engagement at both the school and college level, impacting the effectiveness of the teaching-learning process. One journal highlighted policy risks, such as unprepared regulation of online education, that exacerbate disparities in access to education. A total of 16 journals covering higher education identified challenges such as decreased student motivation and lack of technology training for lecturers, while 17 journals focusing on primary and secondary schools emphasized the issue of unequal access to devices and psychosocial impacts such as social isolation. The findings confirm that successful online learning requires integrated risk management, including improved digital infrastructure, development of interactive teaching methods, and inclusive policy making. This research recommends further studies to develop contextualized risk mitigation strategies, especially in Indonesia, to support sustainable and quality online learning.

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