



Material Quality and Student Perception: Key Factors in E-Learning Adoption

Dorojatun Prihandono^{1*}, Andhi Wijayanto¹, Dwi Cahyaningdyah¹, Kris Brantas Abiprayu¹

¹Department of Management, Faculty of Economics and Business,
Universitas Negeri Semarang

dprihandono@mail.unnes.ac.id

Abstract. The existing literature provides a solid foundation for understanding the relationship between material quality, perceived intention, and student capability to use e-learning platforms. However, there are still inconsistencies in the research, and there is a notable lack of studies specifically analyzing the adoption of e-learning platforms by business school students. This study aims to address this gap by examining the influence of material quality on perceived intention and student capability among business school students using e-learning platform. A quantitative approach was adopted, utilizing a causal research design. The sample consisted of 127 business school students with prior experience using e-learning platform called ELENA. Data were collected through a structured questionnaire and analyzed using SmartPLS, a software tool for partial least squares structural equation modeling [PLS-SEM]. The findings indicate that material quality significantly influences both perceived intention and student capability, highlighting the importance of high-quality e-learning materials in fostering positive student outcomes. This study contributes to the literature by providing insights into the factors that drive e-learning adoption in a business school context, offering practical implications for educators and e-learning platform developers aiming to enhance student engagement and learning effectiveness.

Keywords: Material Quality, Perceived Intention, Capability to Use, E-Learning

1 Introduction

E-learning, as an educational innovation, is expected to help improve the quality of education in response to the challenges of globalization in digital education. The use of media such as e-learning in the learning process is seen as an alternative to address

the issue of students' learning independence. Its utilization enables students to search for and study a broader range of knowledge on the internet, fostering creativity in their academic pursuits [1]. Technology plays a significant role in learning processes and daily lives. In recent years, e-learning technology has transformed teaching methods and student learning experiences [2]. The diffusion of ICT infrastructure in higher education has brought about important changes, not only in the pedagogical domain but also in administrative and organizational fields. The desired outcome of this transformation is increased student achievement and performance [3].

The rapid advancement of technology has transformed the educational landscape, with e-learning emerging as a prominent mode of instruction. E-learning, defined as the delivery of educational content and experiences through digital platforms, has gained widespread adoption due to its flexibility, accessibility, and potential to enhance learning outcomes [4]. However, the success of e-learning is heavily dependent on the quality of the material provided, as it directly influences the perceived intention and the students' capability to utilize the platform effectively. In the context of e-learning, material quality encompasses various aspects, including the design, content, interactivity, and overall user experience [5]. The material quality of e-learning can have a significant impact on the perceived intention of students to engage with the platform, as well as their ability to navigate and utilize the resources provided. Numerous studies have highlighted the importance of material quality in shaping the perceived usefulness, ease of use, and overall satisfaction of e-learning platforms [6]. The perceived intention to use e-learning platforms is a crucial factor in determining the overall success of the learning experience. When students perceive the material quality to be high, they are more likely to develop a positive attitude towards the platform and express a stronger intention to use it [7]. This, in turn, can lead to increased engagement, better learning outcomes, and higher levels of student satisfaction. Furthermore, the material quality of e-learning can also directly impact the students' capability to use the platform effectively. If the material is well-designed, intuitive, and engaging, students are more likely to navigate the platform with ease, access the necessary resources, and actively participate in the learning process [8]. Conversely, poor material quality can hinder the students' ability to utilize the e-learning platform, leading to frustration, disengagement, and potentially compromised learning outcomes.

The material quality of e-learning has been extensively studied in the literature, with researchers highlighting its multifaceted nature and its impact on various aspects of the learning experience. A research conducted a comprehensive review of the literature, identifying several key dimensions of material quality, including content, design, interactivity, and user experience [9]. The study found that these dimensions significantly influence the perceived intention to use e-learning platforms, as well as the students' actual usage and satisfaction. Previous research investigated the relationship between material quality and perceived intention in the context of online learning, found that the quality of the e-learning materials, in terms of content, design, and interactivity, had a direct and positive impact on the students' perceived intention to use the platform. The findings suggest that investing in high-quality e-learning materials can lead to increased student engagement and a more positive learning experience. Previous study examined the impact of material quality on the students'

capability to use e-learning platforms. These factors, in turn, influenced the students' actual usage and learning outcomes, highlighting the importance of material quality in shaping the students' ability to effectively utilize e-learning resources [10]. The model identifies system quality, information quality, and service quality as key determinants of user satisfaction and net benefits, which can be interpreted as the students' perceived intention and capability to use the e-learning platform, respectively [11]. This framework underscores the critical role of material quality in ensuring the overall effectiveness of e-learning initiatives. The existing literature provides a solid foundation for understanding the relationship between material quality, perceived intention, and student capability to use e-learning platforms. However, there are still inconsistencies in the research, and there is a notable lack of studies that specifically analyze the adoption of e-learning platforms by students in business schools. This gap in the literature highlights the need for further investigation into how business students perceive and utilize these platforms. The purpose of this study is to examine the influence of material quality on students' perceived intention to use e-learning platforms and their capability to effectively engage with these tools. By focusing on business school students, this research aims to address the existing gaps and provide a more nuanced understanding of the factors that drive e-learning adoption in this specific educational context.

2 Method

This study employs a quantitative approach to investigate the causal relationships among material quality, perceived intention, and student capability in using e-learning platforms. The research focuses on a sample of 127 business school students who have already utilized the e-learning platform ELENA. The sample was selected to ensure that participants had prior experience with the platform, thereby providing relevant insights into their perceptions and capabilities.

Data collection was carried out through a structured questionnaire designed to measure the key variables of interest. The questionnaire included items related to the quality of the e-learning materials, the students' perceived intention to continue using the platform, and their capability to effectively engage with the e-learning tools provided.

For data analysis, SmartPLS software was employed to conduct partial least squares structural equation modeling [PLS-SEM]. This method was chosen due to its suitability for handling complex relationships and its ability to model latent constructs [12]. The analysis aimed to test the hypothesized relationships between material quality, perceived intention, and student capability, as well as to evaluate the measurement and structural models for validity and reliability.

3 Result

The research findings elaborate on the results of validity tests, reliability tests, and tests for both direct and indirect effects. Based on the data testing results, the validity test

outcomes are presented in Table 1, indicating that all loading factors have met the criteria.

Table 1. Loading Factor

Indicator	Capability to Use	Material Quality	Perceived Intention
CU1	0.804		
CU2	0.721		
CU3	0.815		
CU4	0.765		
MQ1		0.840	
MQ2		0.777	
MQ3		0.872	
PI1			0.805
PI2			0.887
PI3			0.840

Table 2 presents the results of the reliability test, where both Cronbach's Alpha and Composite Reliability meet the established criteria. These results are further supported by the rho_A values, which also demonstrate the reliability of the tests.

Table 2. Reliability Test Result

Variable	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted [AVE]
Capability to Use	0.783	0.795	0.859	0.604
Material Quality	0.775	0.783	0.869	0.69
Perceived Intention	0.798	0.803	0.882	0.713

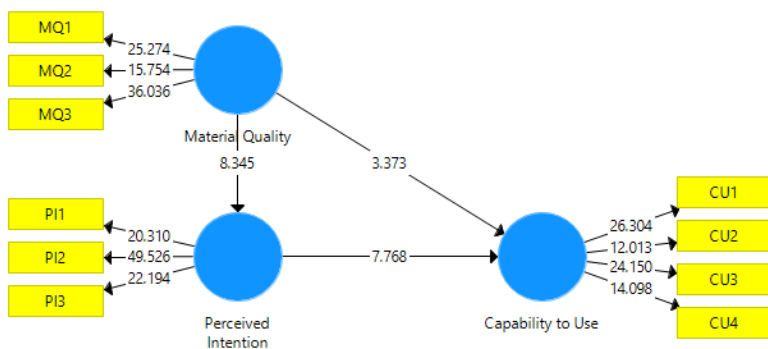


Figure 1. Research Result

Figure 1 illustrates that the results of the material quality test have a direct impact on perceived intention. Material quality also influences capability to use. Additionally, perceived intention affects capability to use. These findings are also presented in Table 3.

Table 3. Direct Effect Result

	Original Sample [O]	Sample Mean [M]	Standard Deviation [STDEV]	T Statistics [O/STDEV]	P Values
Material Quality → Capability to Use	0.282	0.277	0.083	3.373	0.001
Material Quality → Perceived Intention	0.579	0.585	0.069	8.345	0.000
Perceived Intention → Capability to Use	0.552	0.557	0.071	7.768	0.000

Table 4. Indirect Effect Result

	Original Sample [O]	Sample Mean [M]	Standard Deviation [STDEV]	T Statistics [O/STDEV]	P Values
Material Quality → Perceived Intention → Capability to Use	0.32	0.326	0.058	5.526	0.000

Table 4 indicates that there is an indirect effect, with material quality influencing capability to use through perceived intention. These results show that Perceived Intention partially mediates this relationship.

4 Discussion

The research result show material quality test have a direct impact on perceived intention. The rapid development of technology has transformed the way education is delivered, with the emergence of e-learning as a prominent mode of instruction. This shift towards digital learning has been driven by factors such as the need for flexibility, accessibility, and cost-effectiveness in education [13]. As e-learning continues to gain traction, understanding the factors that influence student perceived intention to use e-learning platforms has become a crucial area of research. One such factor is the material quality of the e-learning content, which encompasses aspects such as the relevance, accuracy, and presentation of the learning materials [14]. Studies have shown that the material quality of e-learning can have a significant impact on student engagement, satisfaction, and learning outcomes. High-quality e-learning materials that are well-designed, interactive, and tailored to the needs of the learners can foster a positive learning experience and increase the likelihood of students adopting and continuing to use the e-learning platform [15]. E-learning has become an integral part of higher education, offering numerous benefits to both students and educational institutions. It provides greater flexibility and accessibility, allowing students to access learning materials and participate in courses at their own pace and convenience. This is

particularly important for students with busy schedules, those living in remote areas, or individuals with disabilities who may face barriers to traditional classroom-based education [16]. Furthermore, e-learning has the potential to enhance the quality of education by providing more personalized and interactive learning experiences. Through the use of multimedia, simulations, and other digital tools, e-learning can cater to different learning styles and engage students more effectively. This can lead to improved knowledge retention, skill development, and overall learning outcomes.

The material quality of e-learning is a multifaceted construct, influenced by various factors that collectively contribute to the overall effectiveness of the learning experience. One of the primary factors is the relevance and accuracy of the content presented. Studies have shown that e-learning materials that are closely aligned with the course objectives and learners' needs are more likely to engage students and facilitate meaningful learning [17]. Additionally, the currency and reliability of the information provided are crucial, as outdated or inaccurate content can undermine the credibility of the e-learning platform and hinder the students' ability to acquire relevant knowledge. Another key factor in the material quality of e-learning is the instructional design. Effective e-learning materials should be designed with a clear pedagogical framework, incorporating principles of active learning, scaffolding, and formative assessment. The instructional design should also consider the diverse learning styles and preferences of the students, offering a range of multimedia elements, such as videos, animations, and interactive simulations, to cater to different cognitive preferences. The user-friendliness and accessibility of the e-learning materials are also essential components of material quality. E-learning platforms should be designed with intuitive navigation, clear instructions, and seamless integration of multimedia elements to minimize cognitive load and enhance the overall user experience [18]. Additionally, the materials should be accessible to students with diverse abilities, including those with physical, sensory, or cognitive disabilities, to ensure inclusive and equitable learning opportunities.

The material quality of e-learning has a direct impact on the students' capability to effectively utilize the e-learning platform and achieve their learning objectives. High-quality e-learning materials that are relevant, well-designed, and user-friendly can significantly enhance the students' engagement, motivation, and overall learning experience. When students are presented with materials that are tailored to their needs, they are more likely to actively participate, explore the content, and develop a deeper understanding of the subject matter. Conversely, e-learning materials that are poorly designed, lacking in relevant content, or difficult to navigate can hinder the students' ability to use the e-learning platform effectively. Studies have shown that students who struggle with the usability and accessibility of e-learning materials often experience frustration, disengagement, and reduced learning outcomes [19]. This can lead to a negative perception of the e-learning platform, undermining the students' confidence and willingness to engage with the learning materials in the future. The integration of multimedia elements in e-learning materials can also have a significant impact on the students' capability to use the platform. Multimedia-rich materials that are designed based on cognitive principles of learning can enhance information retention, facilitate deeper understanding, and improve the overall learning experience.

5 Conclusion

This study provides significant insights into the adoption of e-learning platforms by business school students, particularly through the lens of material quality's impact on perceived intention and student capability. The study confirms that material quality has a substantial influence on students' perceived intention to use e-learning platforms. High-quality materials enhance students' willingness and motivation to engage with the platform, suggesting that the better the quality of the materials, the more likely students are to perceive the platform as valuable and beneficial for their learning. The research also demonstrates a significant relationship between material quality and student capability. Quality materials not only attract students to the platform but also empower them by enhancing their ability to effectively use and benefit from the e-learning tools provided. Educators should focus on curating and developing content that meets high standards of quality, while developers should strive to create user-friendly and content-rich platforms that facilitate effective learning experiences.

1. Wati DNS, Indriyanti AD. Pengukuran Penerimaan Teknologi dan Pengaruh Kualitas E-Learning terhadap Efektivitas Pembelajaran pada Perguruan Tinggi Menggunakan Metode TAM dan Webqual. *J Emerg Inf*. ... 2021;02[03].
2. Fleming J, Becker K, Newton C. Factors for successful e-learning: does age matter? *Educ Train*. 2017;
3. Pham L, Limbu YB, Bui TK, Nguyen HT, Pham HT. Does e-learning service quality influence e-learning student satisfaction and loyalty? Evidence from Vietnam. *Int J Educ Technol High Educ*. 2019;16[1].
4. Lee MC. Explaining and predicting users' continuance intention toward e-learning: An extension of the expectation-confirmation model. *Comput Educ*. 2010;
5. Magano J, Alves M, Durão R, de Carvalho CV. Adoption and use of educational technology tools by marketing students. *Electron J e-Learning*. 2020;18[4].
6. Parlakkılıç A. E-learning readiness in medicine: Turkish family medicine [FM] physicians case. *Turkish Online J Educ Technol*. 2015;
7. Almenara JC, Marín-Díaz V, Sampedro-Requena BE. Technology acceptance model in higher education. *Rev Investig Educ*. 2018;36[2].
8. Niepel C, Burrus J, Greiff S, Lipnevich AA, Brenneman MW, Roberts RD. Students' beliefs and attitudes toward mathematics across time: A longitudinal examination of the theory of planned behavior. *Learn Individ Differ*. 2018;
9. Ubaidah S, Trisnamansyah S, Insan HS, Harahap N. Partnership Management Between Vocational Schools with the World of Business and Industry to Improve the Quality of Graduates Who Are Ready to Work. *Int J Nusantara Islam*. 2021;9[1].
10. Ossiannilsson E, Landgren L. Quality in e-learning - a conceptual framework based on experiences from three international benchmarking projects. *J Comput Assist Learn*. 2012;28[1].
11. Pradana F, Bachtiar FA, Priyambadha B. Penilaian Penerimaan Teknologi E-Learning Pemrograman berbasis Gamification dengan Metode Technology Acceptance Model [TAM]. *J Teknol Inf dan Ilmu Komput*. 2019;6[2].

12. Ali F. Hotel website quality, perceived flow, customer satisfaction and purchase intention. *J Hosp Tour Technol*. 2016;
13. Barry DS, Marzouk F, Chulak-Oglu K, Bennett D, Tierney P, O’Keeffe GW. Anatomy education for the YouTube generation. *Anat Sci Educ*. 2016;
14. Sukenda, Falahah, Lathanio F. Pengembangan Aplikasi Multimedia Pengenalan Pemanasan Global Dan Solusinya Menggunakan Pendekatan ADDIE. *Semin Nas Sist Inf Indones*. 2013;2.
15. Yondri S, Yondri S, Ganefri, Krismadinata, Nizwardi Jalinus, Sukardi. A New Syntax of Teaching Factory IR 4.0 Model in Vocational Education. *Int J Adv Sci Eng Inf Technol*. 2020;10[6].
16. Anthonysamy L. Continuance intention of IT professionals to telecommute post pandemic: A modified expectation confirmation model perspective. *Knowl Manag E-Learning*. 2022;14[4].
17. Naem J. How to better prepare students for e-learning and avoid common pitfalls: Online learning and its impacts. *J Aust New Zeal Student Serv Assoc*. 2011;[37].
18. Yue X, Wanglee W, Yin Y, Ye Y, Cai T. Environmental attitudes of Chinese students in higher education institutions. *J Educ e-Learning Res*. 2023;10[2].
19. Henderson M, Selwyn N, Finger G, Aston R. Students’ everyday engagement with digital technology in university: exploring patterns of use and ‘usefulness.’ *J High Educ Policy Manag*. 2015;

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

