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Information Technology and Its Impact on Modern Classroom Dynamics: A Computer Science Perspective

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ABSTRACT

The integration of Information Technology (IT) has significantly transformed modern education, particularly classroom dynamics, by enhancing accessibility to information and enabling personalized learning experiences. **This paper aims to explore** both the positive impacts and challenges of IT adoption in the classroom, focusing on the importance of Computer Science in shaping effective teaching practices. The study analyzes tools like **Learning Management Systems (LMS)**, simulation software, and data analysis platforms, which improve engagement between students and teachers but also highlight challenges such as the digital divide and less interactive learning. Understanding fundamental Computer Science concepts, including algorithms, programming, and networking, is key to developing innovative solutions that enhance classroom learning. **The results** show that while IT has revolutionized education by facilitating online learning and collaboration, it also presents challenges that must be addressed, such as access to resources and the need for more interactive learning experiences. To optimize IT's impact, the paper recommends continuous teacher training, better integration of technology with curricula, and improved access to devices and internet connectivity, ensuring a more inclusive and innovative learning environment in the digital age.

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1. INTRODUCTION

In the ever-evolving digital era, information technology has become one of the main driving forces transforming various aspects of human life, including education. Modern classroom dynamics have undergone significant changes in line with rapid advancements in Information Technology (IT) and Computer Science. Information technology, encompassing hardware, software, and communication networks, has created new opportunities and unique challenges for the education sector. In this context, computer science plays a central role in formulating and implementing technological solutions that influence how we learn, teach, and interact in the classroom.

The perspective of computer science helps us understand how IT profoundly impacts modern classroom dynamics. The integration of educational software, online learning management systems, collaborative applications, and digital resources has transformed the way education is accessed and delivered. In this context, the adoption of IT aligns closely with the Sustainable Development Goals (SDGs), particularly Goal 4:

Quality Education, by enhancing access to learning and fostering inclusivity and equity. By bridging the digital divide and ensuring equal access to advanced technological tools, institutions can make education accessible to all, regardless of geographical or socio-economic barriers. Additionally, the integration of IT supports the creation of lifelong learning opportunities, which is central to SDG 4.7, promoting education for sustainable development.

Furthermore, IT advancements enable data-driven educational approaches that enhance decision-making and resource allocation, contributing to SDG 9: Industry, Innovation, and Infrastructure, where innovation and resilient infrastructure are key to improving educational outcomes. By aligning educational strategies with the SDGs, institutions can help create a more sustainable and inclusive education system, empowering learners to succeed in a rapidly evolving digital world. Technologies such as virtual classrooms, digital whiteboards, and interactive learning platforms have become essential components of modern teaching, offering students flexibility in terms of time and location, thus facilitating lifelong learning [1].

The interaction between students and teachers, as well as peer-to-peer interaction, has undergone a significant transformation through communication and collaboration platforms supported by information technology. Online discussion forums, video conferencing tools, and social learning networks have made it possible for students to engage more actively with their peers and instructors, promoting a more dynamic and participatory learning environment. These platforms also support asynchronous learning, allowing students to access and revisit course materials at their own pace. However, while the positive impact of Information Technology on modern classroom dynamics is substantial, there are also challenges that need to be addressed. One of the main challenges is the digital divide, where unequal access to technology among students can exacerbate educational disparities [2]. In many parts of the world, students from lower socioeconomic backgrounds or rural areas may not have the same access to high-speed internet, devices, or the latest educational technologies, which hinders their ability to fully benefit from digital learning environments. This divide can result in unequal learning opportunities, creating a gap between students who have access to advanced technologies and those who do not.

Additionally, concerns regarding data security, privacy, and the psychological impact of technology exposure in educational environments must be considered. As educational institutions increasingly rely on digital platforms to store and process student data, ensuring the security and privacy of this sensitive information becomes critical [3]. There is also growing concern about the potential psychological effects of prolonged screen time and technology use, such as issues related to attention span, stress, and social isolation. It is crucial that we design educational technologies that not only enhance learning outcomes but also prioritize the well-being of students.

2. LITERATURE REVIEW

2.1. Utilization of Information Technology in Education

The utilization of IT in education has become a significant subject of interest in recent years [4]. IT includes hardware such as computers, tablets, and mobile devices, as well as software specifically designed for education [5]. Research findings indicate that the use of technology in learning can enhance accessibility and flexibility in education [6]. Online Learning Management Systems (LMS), e-learning platforms, and educational software have provided new opportunities for students to access learning materials from anywhere at any time. Furthermore, technology also enables the use of multimedia resources, which can enhance student engagement in the teaching and learning process.

2.2. Transformation of Classroom Interaction

The Computer Science approach to studying modern classroom dynamics has deepened our understanding of how technology influences interactions within the classroom [7]. Through the development of collaborative applications and communication platforms, interactions between students and teachers, as well as among peers, have undergone significant transformation. For example, online learning platforms allow students to participate in online discussions, share materials, and collaborate on group projects without being limited by geographical constraints [8].

2.3. Positive Impacts

In addition to facilitating better accessibility and interaction, Information Technology has also brought other positive impacts [9]. In the digital age, students have access to a variety of digital educational resources

such as e-books, instructional videos, and interactive simulations, which can enhance their understanding of course material [10]. Moreover, the use of technology in learning can help with more effective measurement and assessment, allowing educators to identify individual student needs and adjust their teaching approach accordingly.

2.4. Challenges in Implementing Information Technology

Despite its significant positive impact, the implementation of Information Technology in education also faces a number of challenges. One of the main challenges is the digital divide between students [11]. Students who lack access to devices or internet connections may fall behind in digital learning, which can exacerbate educational inequality [12]. Additionally, there are concerns regarding data security, privacy, and the psychological impact of technology exposure in the educational environment, which need to be addressed and resolved.

From a Computer Science perspective, ongoing research continues to examine how Information Technology affects modern classroom dynamics and seeks solutions to overcome the emerging challenges. This study not only provides insights into the impact of technology on learning but also helps design better educational strategies that are more responsive to the needs of students and society in general [13].

Research in the fields of Information Technology and Computer Science in the context of education has brought about significant transformations in how we learn and teach [14]. By understanding the associated impacts and challenges, we can work towards more effective and inclusive utilization of Information Technology to achieve better learning outcomes [15]. The continuous development of research in this field will be key to addressing the challenges that arise and designing education that is more responsive to societal needs [16].

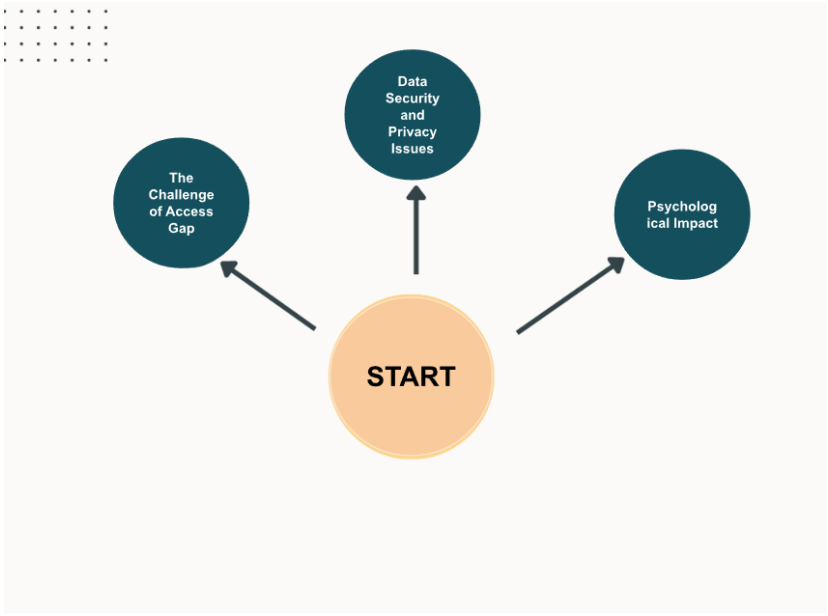

Figure 1. Flow of Research Challenges

Figure 1 illustrates three key challenges in the integration of IT into modern classroom dynamics. The first challenge is The Challenge of Access Gap, which relates to the digital divide. Many students from low-income backgrounds or remote areas lack access to advanced technological devices or high-speed internet. This gap can hinder their ability to fully engage in digital learning environments, exacerbating educational inequalities.

The second challenge is Data Security and Privacy Issues. As digital platforms are increasingly used in education, the security and privacy of student data become critical concerns. Educational institutions must implement strong security protocols to protect students personal data from potential breaches or unauthorized access. The third challenge is Psychological Impact, which pertains to the psychological effects of excessive technology use, such as prolonged screen time. This can lead to issues like reduced attention span, stress, and social isolation, highlighting the need for a balanced approach to technology usage in education.

2.5. Hypotheses

Based on the discussion and literature review above, we propose the following hypotheses:

- **Hypothesis 1 (H1):** There is a positive relationship between the use of Modern Classrooms (MC) and the Advancements in Information Technology (IA) [17]. This implies that the more advanced and integrated modern classrooms are in utilizing Information Technology, the greater the likelihood of development and improvement in information technology in the educational environment [18].
- **Hypothesis 2 (H2):** The implementation of Teaching Methodologies (TM) focused on the integration of Information Technology (IA) will increase the Effectiveness of Classroom Dynamics (CD) [19]. This implies that the use of technology in teaching methods can bring positive changes in how classrooms operate and interactions between students and teachers [20].
- **Hypothesis 3 (H3):** The utilization of Computer Science Techniques (CST) in Teaching will improve Efficiency in Classroom Management (CM) [21]. In this case, the use of computer science techniques in teaching can increase efficiency in class management and administration.
- **Hypothesis 4 (H4):** The integration of Information Technology (IA) in Modern Classrooms (MC) will have a positive impact on student learning outcomes [22]. This means that students who learn in modern classrooms that integrate information technology will have better learning outcomes [23].
- **Hypothesis 5 (H5):** The advancement of Information Technology (IA) will influence the Interaction Patterns of Students (SI) in the classroom. This implies that as information technology advances, the patterns of interaction between students in the classroom will become more diverse and sophisticated [24].

These hypotheses will be tested through research using scientific methods to identify whether the anticipated relationships truly exist and to what extent they impact classroom dynamics [1].

3. METHODOLOGY

Information about the research model, population, sample, data collection methods, and data analysis is described as follows [25]:

3.1. Research Model

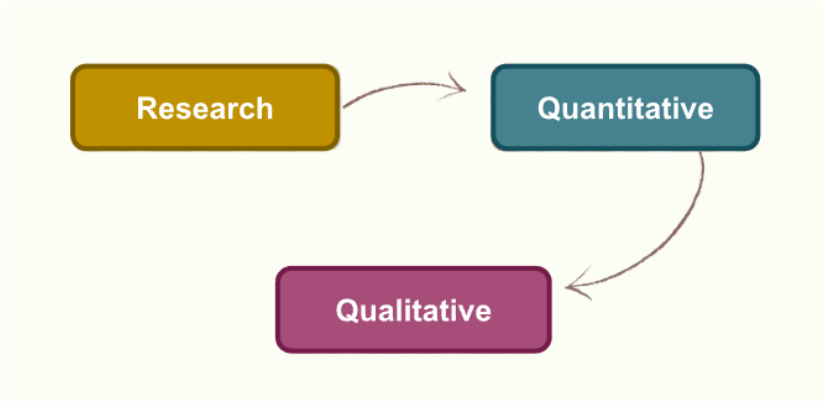

Figure 2. Research Framework

The nature of this study focuses on measuring place attachment, and a qualitative approach becomes less effective in evaluating the indicators of place attachment [26]. Therefore, the authors decided to apply a statistical method to accurately and objectively measure the target variables. This decision is primarily based on the fact that most similar studies also use a quantitative approach. In this context, a survey design becomes the most appropriate approach [27].

The quantitative study was carried out to obtain data through structured and objective observations and/or measurements, without any interference from value judgments or personal interpretations. The first step in this research is identifying relevant research topics, conducting a literature review to understand key concepts, administering a questionnaire survey, analyzing the collected data, and finally drawing conclusions [28].

This survey study focuses on exploring beliefs, opinions, characteristics, and past or present status of individuals, events, and phenomena through various statistical techniques [29]. Since the research aims to explore the perspectives of society, the questionnaire was distributed among a diverse group in terms of age and gender, with varied backgrounds. The questionnaire consists of four main sections that measure social attachment, emotional attachment, spatial attachment, and functional attachment [30].

The questions in the questionnaire were designed based on the theoretical framework of the study, field observations, and the local community understanding of the concept of place attachment. Respondents were asked to rate the effectiveness of algorithms based on their experience, which was then revealed through the questionnaire. The research participants included 120 respondents from various age groups. The data collection process involved observation and distribution of the questionnaire to respondents using a 5-point Likert scale. This method enables the researchers to gather diverse perspectives on place attachment from various groups of society and measure the effectiveness of the algorithms based on individual experiences with an objective and structured approach.

Table 1. Research Data Table

Factor	**Group**	**F** (%)
Gender	Male	10 (50%)
	Female	10 (50%)
Age	20-30 Years	5 (25%)
	31-40 Years	5 (25%)
	41-50 Years	5 (25%)
	51-60 Years	5 (25%)
Education	Junior High School or below	4 (20%)
	High School or equivalent	6 (30%)
	Diploma	5 (25%)
	Bachelor's (S1)	5 (25%)
City in Indonesia	Jakarta	6 (30%)
	Surabaya	4 (20%)
	Bandung	3 (15%)
	Yogyakarta	3 (15%)
	Semarang	4 (20%)

Table 1 presents data from 120 respondents representing diverse genders, age groups, educational backgrounds, and cities in Indonesia. Percentages are calculated based on the number of respondents in each group for each factor. The gender distribution is evenly split, with 50% male and 50% female respondents. The respondents are divided into four age groups, each contributing 25% to the total sample. Regarding education, the majority of respondents (30%) had a high school education, while the rest had varying levels of education, including diplomas and bachelor degrees. In terms of location, Jakarta had the highest number of respondents at 30%, followed by Surabaya at 20%, with the remaining respondents distributed across other cities like Bandung, Yogyakarta, and Semarang.

3.2. Data Analysis

This study adopts the Partial Least Square (PLS) method for data analysis. The selection of PLS is based on its efficiency in processing information and ease of interpreting the results, especially in complex models [31]. PLS is the right choice to address data analysis challenges in models with many interrelated variables. Additionally, PLS can be applied to both reflective and formative indicators for latent variables and has the capability to build predictive models.

Alongside PLS, Structural Equation Modeling (SEM) is also used as a statistical approach to analyze the linear relationships between independent and dependent variables. SEM is a powerful approach that com-

bines measurement models such as confirmatory factor analysis with structural models through simultaneous statistical testing. In this study, SEM is used to examine the relationships among variables in the proposed model [32].

For this analysis, the researchers used SmartPLS 4.0 software. The initial process involved transforming the data from a qualitative format to a quantitative format, in this case, as a CSV file. This enables the data to be processed more efficiently by the software. While the student license for SmartPLS has some limitations, the available features are sufficient for conducting effective data analysis.

The analysis is carried out in several stages. First, the construct validity of the measurement instruments used is evaluated. Data collected from e-learning users are analyzed using the outer model testing, which includes testing for convergent validity and discriminant validity. This is followed by inner model testing, which involves testing various parameters such as the coefficient of determination (R2), effect size (f2), predictive relevance (Q2), and T-test.

In this study, the focus variables include MC, IA, TM, CD, and Computer Science techniques (CST). The PLS-SEM method was chosen because it can handle the complexity of the model involving many variables and interactions between variables. Thus, this study aims to provide a deeper understanding of the factors influencing the data analysis results and potentially generate better solutions to the problems being studied.

4. RESULTS AND DISCUSSION

The results from the study illustrate the profound impact of IT on modern classroom dynamics. The integration of educational technologies, such as digital platforms, LMS, and communication tools, has transformed traditional teaching and learning methods. The findings suggest that IT advancements have created more interactive, flexible, and engaging educational environments, promoting collaboration between students and teachers. This shift aligns with the concepts of MC and CD, as discussed in the literature. The adoption of technologies has enabled students to access learning materials anytime and anywhere, facilitating a more personalized learning experience.

The data further demonstrates the significant role of IA in reshaping educational practices. Technological tools such as virtual classrooms, digital whiteboards, and online discussion forums have become integral components of teaching, offering new ways to engage students and improve learning outcomes. These tools support synchronous and asynchronous learning, ensuring that students can learn at their own pace, enhancing both their learning experience and academic performance. The integration of these technologies into modern classrooms has also addressed some of the challenges related to traditional teaching methods, particularly the limitations of time and space in physical classrooms.

Moreover, the study highlights the importance of Teaching Methodologies (TM) in leveraging IT to enhance the effectiveness of teaching. The use of innovative pedagogical approaches, such as flipped classrooms and project-based learning, has enabled educators to better engage students in the learning process. By incorporating digital resources into their teaching methods, educators can provide more diverse and interactive learning opportunities. This shift not only improves the quality of education but also supports the development of critical skills such as problem-solving, creativity, and collaboration, which are essential for students future success in a technology-driven world.

Additionally, the study points out the need for educational institutions to address the digital divide, as unequal access to technology remains a significant challenge. Students from disadvantaged backgrounds or rural areas may face difficulties in accessing advanced technologies, limiting their ability to fully benefit from digital learning environments. The findings suggest that institutions must take proactive measures to ensure equitable access to technology, ensuring that all students have the opportunity to succeed. Addressing this gap is crucial for achieving the Sustainable Development Goals (SDGs), particularly SDG 4: Quality Education, which aims to provide inclusive and equitable education for all.

The study discusses the potential challenges posed by IT integration, particularly concerning data security, privacy issues, and the psychological impact of prolonged screen time. As educational institutions increasingly rely on digital platforms to store and process student data, the need for robust security measures is critical. Furthermore, the study emphasizes the importance of considering the mental health implications of technology use, particularly among younger students. The findings suggest that while IT offers numerous benefits, its implementation must be carefully managed to ensure that students well-being is not compromised.

4.1. Operational Definitions of Variables

The concept of MC and the significant role that positive adoption of technology plays in shaping educational systems. One of the key areas where this technology integration has a major impact is in credential verification. The use of digital technologies can enhance the trustworthiness and accessibility of academic records, ensuring that certificates, degrees, and qualifications are accurately recorded and easily accessible. This digital approach minimizes the risks of fraud and allows students and institutions to verify credentials in a secure and efficient manner, which is crucial in an increasingly globalized and mobile academic environment.

Table 2. Operational Definitions of Variables

Variable	Operational Definition
Modern classrooms (MC)	A concept operationalized in this study as a learning space equipped with the latest technology, including hardware (such as computers, tablets, projectors) and educational software (such as e-learning platforms, online learning applications).
IT advancements (IA)	A concept operationalized in this study as developments or advancements in Information Technology (IT).
Teaching methodologies (TM)	A concept operationalized in this study as the approaches or methods used by educators in delivering teaching content to students.
Classroom dynamics (CD)	A concept operationalized in this study as the dynamics or interactions that occur in the classroom between teachers and students, as well as among students. This concept encompasses various aspects of classroom interaction, including communication, participation, responsiveness, and collaboration in the learning process.
Computer Science techniques (CST)	A concept operationalized in this study as various techniques, tools, and methods from Computer Science used in the context of education. This includes the application of computing principles, programming, data analysis, and information processing in teaching and learning.

In the context of MC, positive adoption of technology has the potential to significantly influence various aspects of educational systems. One of the key impacts is on credential verification, where the integration of digital technologies can enhance the trustworthiness and accessibility of academic records. Educational institutions are increasingly utilizing digital platforms to verify academic credentials, ensuring that certificates, degrees, and qualifications are accurately recorded and easily accessible. This digital approach minimizes the risks of fraud and allows students and institutions to verify credentials in a secure and efficient manner, which is particularly important in an increasingly globalized and mobile academic environment.

The use of digital certificates has become a vital part of this transformation. Digital certificates offer a more secure and convenient alternative to traditional paper-based credentials. With the advent of blockchain and other secure technologies, the validity of these certificates can be easily confirmed, and they can be seamlessly integrated into various LMS. This not only saves time but also reduces administrative costs associated with manual verification processes. Moreover, digital certificates have the potential to be universally accepted, providing students with a portable form of credentialing that can be used across borders, enhancing their employability and academic progression.

Furthermore, the advancements in Information Technology (IA) are positively related to digital certificates, security considerations, and the overall adoption by educational institutions. As educational institutions increasingly rely on technology to streamline administrative functions, the adoption of digital certificates becomes more aligned with the progress of IT. Institutions that embrace these advancements can offer students a more efficient and secure learning experience. For instance, IT innovations such as cloud computing, encryption, and secure authentication protocols contribute to the widespread use of digital certificates, ensuring that credentials are not only verified but also protected against potential misuse or unauthorized access.

Additionally, Teaching Methodologies (TM) have a direct impact on security considerations and the adoption rate by educational institutions. Modern teaching methods increasingly incorporate digital tools and platforms, and with this shift, institutions must ensure that proper security measures are in place. For example, the integration of online learning platforms, digital textbooks, and multimedia content requires robust security protocols to protect sensitive student data. Effective teaching methodologies that integrate technology must

also prioritize cybersecurity, ensuring that teachers and students can interact with digital content in a safe and secure environment. This not only protects student privacy but also fosters trust in the institution commitment to maintaining a secure learning environment.

Enhanced security considerations (CD) play a crucial role in encouraging higher adoption rates by educational institutions. As institutions embrace digital learning tools, the importance of safeguarding sensitive data becomes paramount. By implementing enhanced security measures, such as end-to-end encryption, multi-factor authentication, and advanced identity verification methods, institutions can mitigate risks associated with data breaches and cyberattacks. This, in turn, builds confidence among students, faculty, and staff, encouraging them to fully engage with digital platforms. When institutions prioritize security, they signal to stakeholders that their personal information is protected, thereby fostering a positive reputation and encouraging further adoption of digital tools and technologies.

Finally, Computer Science Techniques (CST) can significantly influence the adoption rate of educational technologies within institutions. The application of computer science principles in the development of educational technologies ensures that these tools are not only functional but also scalable, efficient, and secure. Innovations such as machine learning, artificial intelligence, and data analytics can be applied to enhance the learning experience by providing personalized learning paths, real-time feedback, and automated administrative processes. By incorporating these cutting-edge techniques into educational systems, institutions can optimize both the teaching and learning processes, leading to greater efficiency and effectiveness in achieving educational outcomes. As institutions continue to adopt and implement these technologies, the positive impact on both teaching methodologies and student engagement becomes more apparent, reinforcing the importance of computer science in the modern classroom.

4.2. Conceptual Model

Based on the relationships between the research variables described above, the conceptual model illustrates how modern classrooms, IT advancements, teaching methodologies, classroom dynamics, and computer science techniques interact to influence educational outcomes, security considerations, and the adoption rate of technology by educational institutions, guiding effective learning strategies.

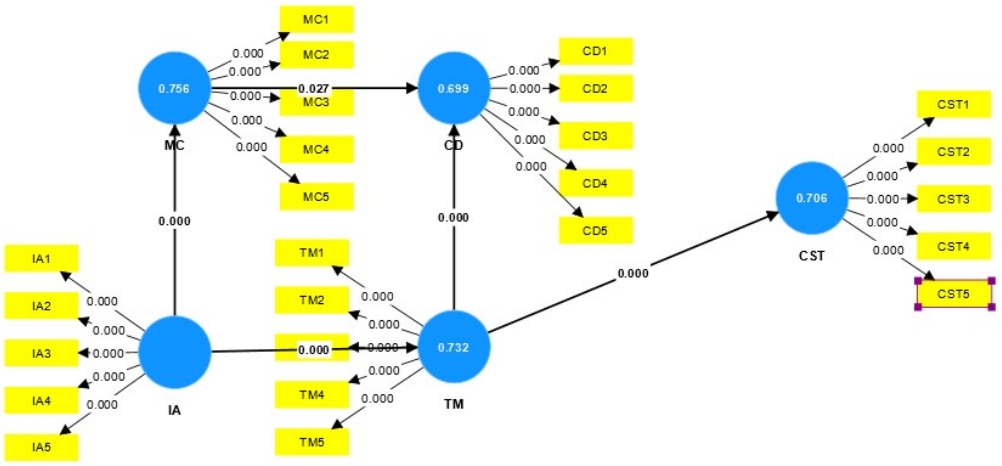

Figure 3. Conceptual Model

Figure 3 illustrates the Conceptual Model showing the relationships between the research variables discussed in the article. The model demonstrates how various factors MC, IA, TM, CD, and CST interact to influence educational outcomes, security considerations, and the adoption rate of technology by educational institutions. These interactions are represented through path coefficients, reflecting how each factor influences the others, with some paths showing stronger relationships while others demonstrate weaker or negligible effects. The model serves to guide effective learning strategies by highlighting the interplay of these variables in shaping educational environments.

4.3. Path Coefficient Test Results

The path coefficients reflect the degree of significance of the relationship between constructs in the structural model or in hypothesis testing. This testing phase was performed using a one-tailed approach, where the significance of the hypothesis is considered met if the variable being tested has a T-statistic value exceeding the significance threshold of 1.96, or if the T-statistic value is greater than or equal to 1.96 and the P-value is $\leq$ 0.05.

Table 3. Path Coefficient Test Results

Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (OSTDEV)	P values
IA $\rightarrow$ MC	0.87	0.864	0.042	20.598	0.000
IA $\rightarrow$ TM	0.855	0.852	0.039	21.856	0.000
MC $\rightarrow$ CD	0.226	0.229	0.118	1.92	0.027
TM $\rightarrow$ CD	0.639	0.637	0.100	6.378	0.000
TM $\rightarrow$ CST	0.84	0.843	0.053	15.884	0.000

The path coefficients reflect the degree of significance of the relationship between constructs in the structural model or in hypothesis testing. This testing phase was performed using a one-tailed approach, where the significance of the hypothesis is considered met if the variable being tested has a T-statistic value exceeding the significance threshold of 1.96, or if the T-statistic value $\geq$ 1.96 and the P-value $\leq$ 0.05.

Additionally, it is shown that the autonomy variable has a positive impact on intrinsic motivation. This is indicated by the T-statistic value exceeding 1.96 and a P-value of 0.000, which suggests a significant positive influence of autonomy on intrinsic motivation.

Regarding the effect of autonomy on retention, the initial results show that the original coefficient value of autonomy on retention is -0.199, indicating a negative effect of autonomy on retention. Furthermore, the T-statistic value is below 1.96 and the P-value is 0.078 (greater than 0.05), which suggests that the effect of autonomy on retention is negative and lacks statistical significance.

5. MANAGERIAL IMPLICATIONS

Integrating Information Technology (IT) into modern classroom dynamics has significant implications for management. The findings emphasize the importance of adopting advanced technologies in educational settings, leading to improved accessibility, engagement, and personalized learning experiences. From a managerial perspective, educational institutions must prioritize the training of educators to effectively use IT tools, ensuring they can maximize the potential of platforms like Learning Management Systems (LMS) and digital resources. Additionally, managers should focus on bridging the digital divide, ensuring equitable access to technology for all students, regardless of their socio-economic status or geographic location.

Moreover, managing data security and privacy concerns is critical. As institutions increasingly store and process student data digitally, there must be robust security measures to protect sensitive information from potential breaches. Educational leaders should implement strict policies and invest in technologies that safeguard privacy while promoting digital literacy among students and staff. Lastly, recognizing the psychological impact of prolonged screen time is essential. Managers should encourage a balanced approach to technology use, integrating it in a way that promotes well-being and does not lead to negative side effects like stress or social isolation. By addressing these implications, managers can create a more effective, inclusive, and sustainable digital learning environment.

6. CONCLUSION

Based on the analysis results, it is evident that positive adoption of Modern Classrooms (MC) can have a positive impact on several aspects, including credential verification, the use of digital certificates, security considerations, and the adoption rate by educational institutions. Similarly, advancements in Information Technology (IT advancements) are also positively correlated with the use of digital certificates, security considerations, and adoption by educational institutions. The use of Teaching Methodologies (TM) also positively affects security considerations and the adoption rate by educational institutions. Additionally, it was found that

an increase in security considerations (CD) can drive higher adoption rates by educational institutions. Meanwhile, Computer Science techniques (CST) can have a positive influence on the adoption rate by educational institutions.

Moreover, it was found that the autonomy variable has a significant positive impact on intrinsic motivation. This is evidenced by the T-statistic value exceeding the significance threshold (1.96) and a very low P-value (0.000 or less than 0.05), indicating a significant positive influence of autonomy on intrinsic motivation.

However, in the context of retention, the preliminary results show that autonomy has a negative impact on retention, though this effect is not statistically significant. This is indicated by the negative coefficient value (-0.199), suggesting a negative influence, and the T-statistic value being below the significance threshold (1.96), with a P-value greater than 0.05. The results of this analysis provide valuable insights into how factors such as Information Technology, Teaching Methodologies, security considerations, and autonomy can influence modern classroom dynamics and intrinsic student motivation within the context of education.

7. DECLARATIONS

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7.2. Author Contributions

Conceptualization: KK and MH; Methodology: GB; Software: AA; Validation: KK; Formal Analysis: GB and AA; Investigation: MH; Resources: MH; Data Curation: KK; Writing Original Draft Preparation: KK, MH, and SH; Writing Review and Editing: GB, AA, and SH; Visualization: MH; All authors, KK, MH, GB, AA, and SH have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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7.5. Declaration of Conflicting Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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