Integrating Technology In Teaching Operations Management: A Review Of Current Practices & Future

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KEYWORDS

ABSTRACT

This study provides a briefing on the current practices and issues regarding technology adoption in Operations Management education. More specifically, using Secondary Research and the Interpretive Paradigm, it integrates data from the literature to examine the e-learning tools necessary for understanding and enhancing student participation. Research findings identify the advantages and challenges of technology, underscore appropriate training, proper implementation of Pedagogical Models, and reduction of Digital Gaps to improve Operations Management education. This study addresses the use of Digital Media in managerial schooling, focussing on its transformative potential and limits.

It emphasizes how technology improves education and student engagement. This technique details the methods used to assess the experiences of teaching professionals and students using e-learning technology. The main findings imply that although technology improves student involvement and academic performance, many issues remain. Insufficient instruction for educators and digital disparities are issues.

Technology integration in education requires professional growth and long-term strategy, as discussed. From the researcher's standpoint, the findings' generalisability across educational environments is also a concern. The report concludes by emphasizing the promise of technology-enhanced learning and the necessity to overcome its barriers. Faculty resistance to reform and infrastructural challenges are among these issues.

According to the results, technology integration into operational oversight education requires a determined effort to create a friendly and stimulating educational setting. This ensures that every learner has equitable access to effective teaching methods and learning experiences

Introduction

This study provides an overview of the current and future technology use trends in Operations Management Education. It offers a snapshot of current practices in learner-centered education and the extent to which they contribute to improving education results. Since the paper operates with secondary data to examine the practices of integrating technology into instruction, it focuses on the trends and issues. Moreover, it describes the possible developments that can enhance the educational strategies linked to the Operations Management field to serve as directions for the educators and institutions that want to develop their teaching to meet the technology evolution rate.

This study seeks to establish current practices and future trends in using technology when teaching Operations Management. Due to current advancements in technology, it becomes crucial to know how it supports Operations Management teaching methodology. The background shows a transition to using innovative technologies in the learning context to support practical approaches to teaching. The method entails a bibliography, cases, and a self-survey regarding the current technologies educators use in lessons.

Studying the impact of technology in education, research findings show that technology enhances student learning with an emphasis on simulation and online that enhances collaboration and real-time problem-solving. The discussion emphasizes the areas of faculty development and curriculum readiness to optimize the usage of such advancements. In the Conclusion section, the value of constant evolution in delivery techniques is highlighted for Operations Management learning and for mapping out how existing and new technologies will be deployed so that technologies are harmonized into the delivery system.

The primary purpose of this study is to undergo appropriate re-tooling in line with the technology-centered employment market for students. Further research involving specific technological applications in teaching and learning is also recommended to enhance the most effective practice model.

Background

Technology applications within Teaching-Learning Environments and Operations Management have recently received considerable attention. The study is intended to address integration by first reviewing related literature and analyzing current practices. The studies discussed below indicate that e-learning technologies constitute a valuable tool to improve teaching outcomes and increase student interest in various subjects, including Logistics and Management. According to Sułkowski *et al.*, (2022), e-learning has to play a vast part in teaching logistics since technology can enhance learning experiences. This leads to the foundation for a similar implementation of such technologies within Operations Management.

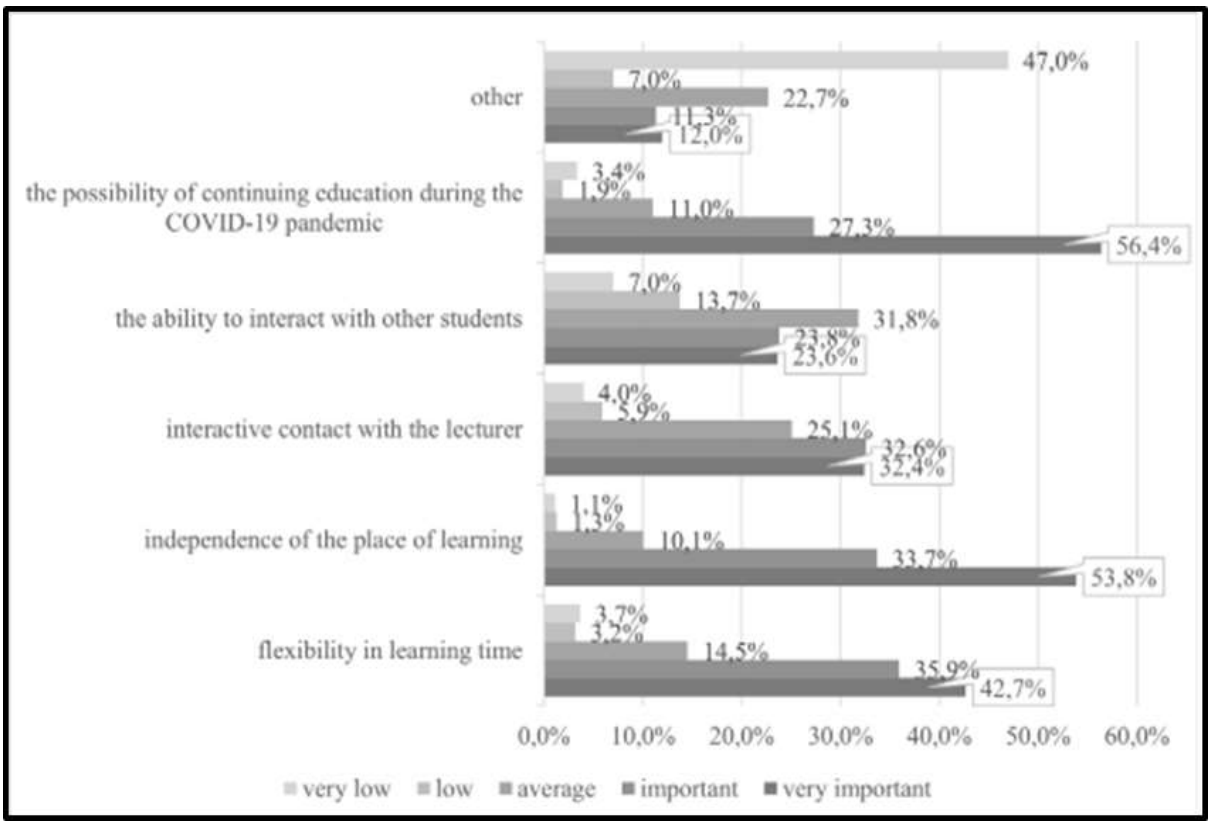

Figure 1: Importance of e-Learning

(Source: Sułkowski *et al.*, 2022)

Similarly, this research examines the prospects and dilemmas of technology use in higher learning institutions in Lesotho, as unfolded by Turugare and Rudhumbu (2020). The authors' evidence suggests that all stated claims show that ICT improves learning outcomes, but challenges like pillars and change resistance must be overcome. This coincides with the current study's research line, which aims to evaluate not only the advantages of using technology in teaching Operations Management but also the difficulties a tutor is likely to encounter. In addition, Cho *et al.*, (2020) shed light on how classroom management and discipline have transformed with technology. Therefore, the evidence that using technology can enhance classroom environment and behavior posits that it is plausible to elicit the same in Operations Management Education. Analyzing these above-mentioned dimensions of technology in education, the study aims to identify relationships and conclusions for teaching Operations Management.

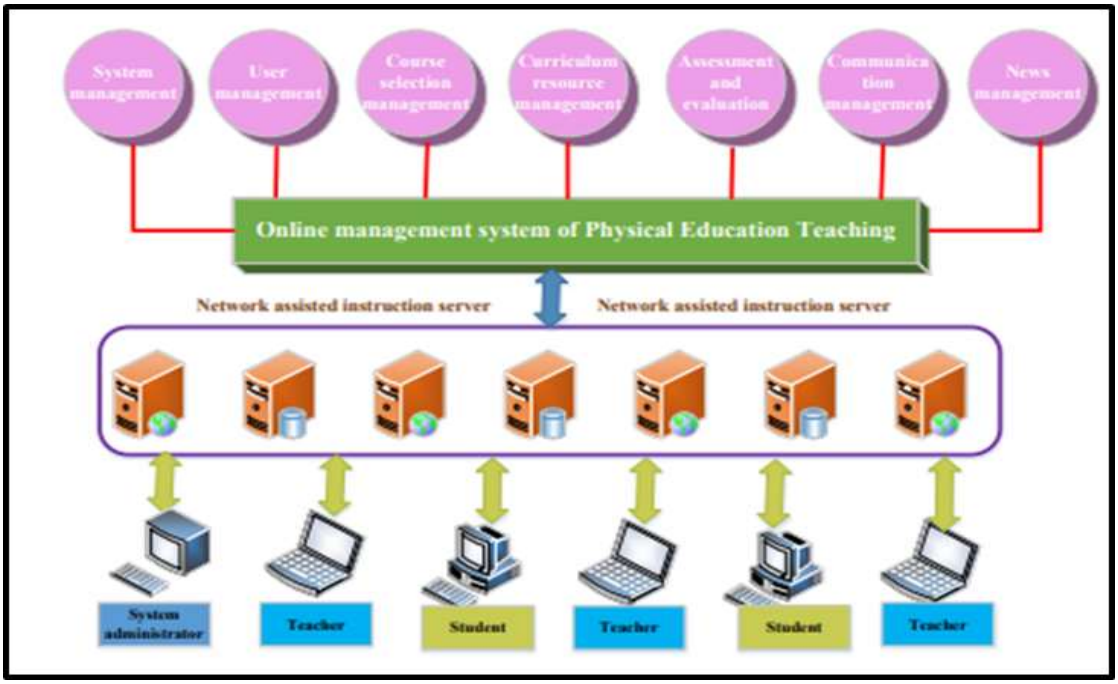

Figure 2: Function Design of Network-aided Teaching System for Physical Education

(Source: Li *et al.*, 2021)

The subject of Vlachopoulos and Makri (2021) is the views of online tutors on quality teaching in online higher education. Their research has shown a necessity for a pedagogical framework that includes the causes of technology. This perspective is crucial to the current study as it underlines the need to ensure a match between Educational Technology and Pedagogy Interventions to increase learners' performance on Operations Management skills.

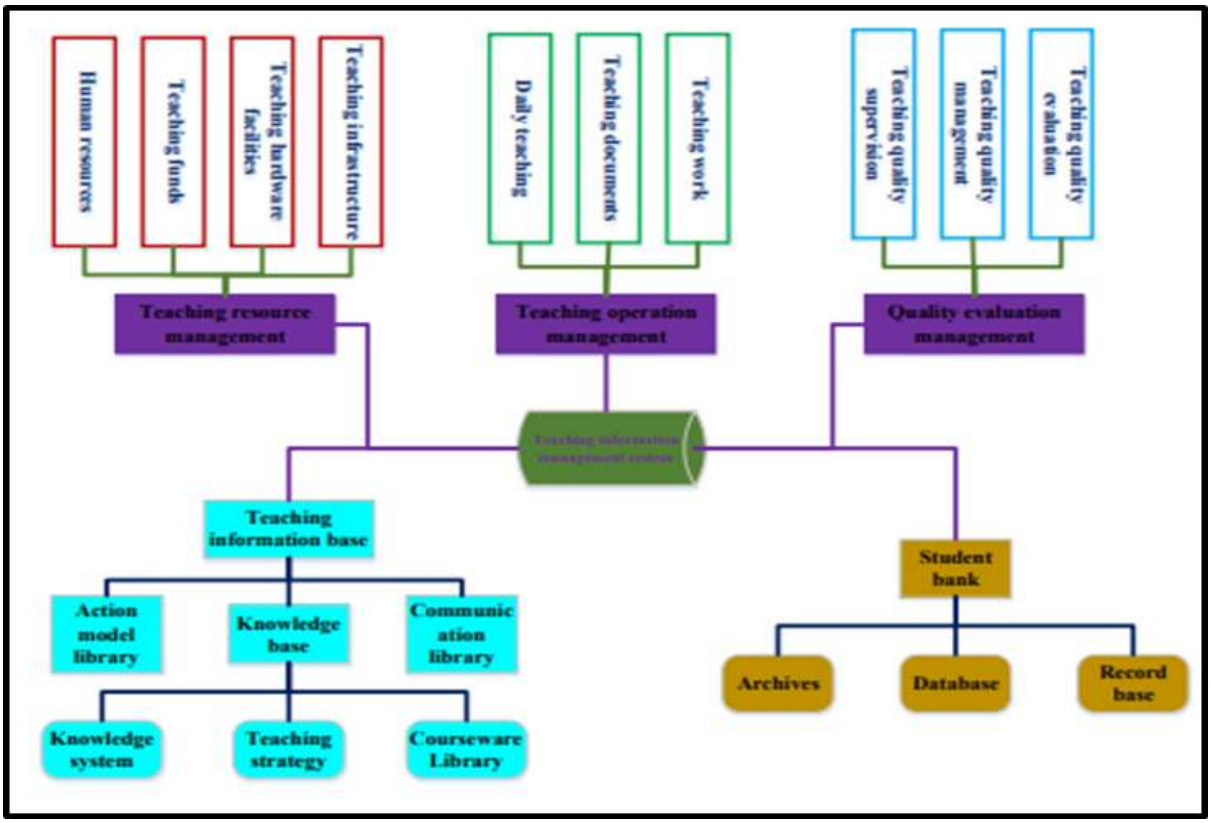

Figure 3: Overall Structure of the Online Teaching Process

(Source: Li *et al.*, 2021)

Okoye *et al.*, (2023) continue the discussion of the effects of digital technologies in higher education by placing more emphasis on Latin America. From their results, they establish the underlying digital environment characterized by reach, barriers, and bottleneck elements. This research underpins the idea of this study that although there is evidence of technological potentiality for change in Operations Management Education, significant systems barriers have to be addressed to unlock the potential for change.

Finally, Li *et al.*, (2021) have described the planning of teaching using Computer-Aided Teaching tools, which may help to develop a Corporate Teaching System for College Students. In addition, Chan (2023) has called for a proper policy framework in Artificial Intelligence (AI) to be adopted in education practice. Both of these works provide an adequate background to the current status of using technology in education, as well as the opportunities and threats discussed in the present paper. The current research aspires to enhance these efforts by reviewing the existing practices and antecedent trends for technology implementation in teaching Operations Management.

The rationale for exploring technology's impact on learning is found in the possible massive changes that technology brings to the teaching processes and, as a result, to the students. The study attempts to identify how these technologies affect learning activities, problem-solving, and performance outcomes, which generally become relevant as more educational institutions embrace technology (Mdhlalose and Mlambo, 2023). There is an urgency here to improve the methods that teachers use in the classroom and improve the conditions in which students can achieve success with distractions and dependence on technology. Therefore, this assessment includes different learning environments and technologies, which creates a wide range of views for learners and teachers. Understanding various characteristics of technology integration in classroom teaching and learning processes allows for determining the best strategies that may foster these processes.

However, some concerns might draw attention. Possible issues are students' distractions, the general decline of skills such as writing and critical thinking skills, and the chances of cheating, which are considerable doubts regarding the role of using technology in educational settings (Schlebusch, Bhebhe and Schlebusch, 2024). Further, where there is inequality in acquiring technology, some failures may be attributed to disparities in learning results. These challenges must be met to foster environments for all learners that are both welcoming and productive, using technology that enables students to meet the challenges of a dynamically changing world.

Methods

The study uses a Secondary Research Descriptive Approach whereby the researcher reviews the literature to assess how technology might be used for teaching Operations Management. Carrying an Interpretive Paradigm, the research aims to explain the self-perceived perceptions and experiences shared concerning technology in learning environments because of the multifaceted process of this integration. The study includes a literature review of research articles, case studies, and papers presenting technology use in Operations Management education. The data requirement for this research mainly uses Secondary Qualitative Data, which enables the researcher to obtain more descriptive information on current practices, issues, and developments.

This literature review process involved searching academic databases like Google Scholar, JSTOR, and educational technology journals to get as diverse as possible sources reviewed. Some of the identified studies are evaluated on the topic, discussing general issues regarding the efficacy of e-learning tools, dilemmas of educators, and successful practices of using technologies. However, in Qualitative Research, the differences and patterns are looked for. Thus, through integrating the observed Qualitative Data, the study wants to establish the patterns, trends, and gaps in the literature. In addition, the Interpretive Approach enhances comprehension of the social factors and personal backgrounds that characterize the incorporation of technology in Operations Management learning. Based on the interpretations of educators and students, the analysis can provide a detailed account of how technology tools support teaching and learning processes.

In conclusion, this methodology offers a sound approach to mapping the challenges and possibilities of introducing technology into Operations Management within the complex relationship between theory, practice, structural innovations, and expanding educational learning opportunities. Through the effective use of Qualitative Secondary Data, the research intends to add insight for educators and institutions that wish to better understand how current-day teaching management styles must be altered accordingly.

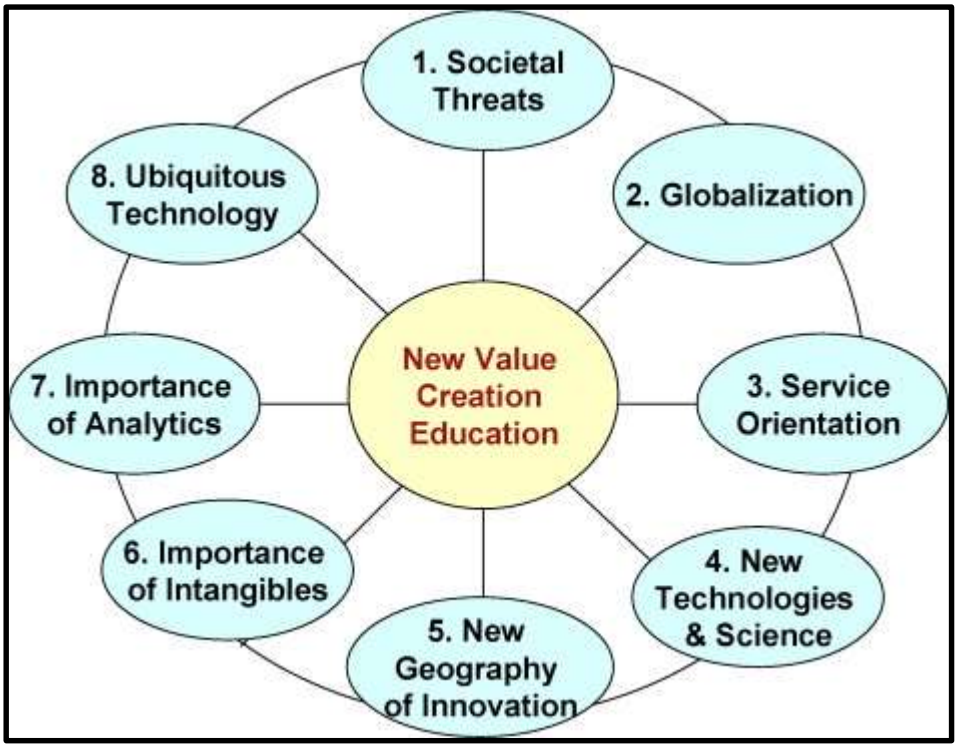

Figure 4: Factors of Effective Teaching in Student Education System

(Source: Horwitch and Stohr, 2019)

A systematic strategy is utilized to examine the inclusion of technology in Business Administration instruction. This study emphasizes sample selection, data collection, and statistical analysis. Operations Management (OM) scholars and teachers from economically challenged nations are prioritized for sample selection. Participants must have taught Operations Management throughout the COVID-19 pandemic and be lecturers or professors. Additionally, they must have participated in the epidemic (Tortorella *et al.*, 2021). Two main elements determine sample selection. Participants are asked an initial survey questionnaire to establish whether they taught within the specified time. The survey has three primary components for convenience. The survey begins with demographic data collection. Location, educational background, division, and university connection are included. The second part examines how Business and Engineering Management classes use 88 teaching methods based on academic research and learning organization data. Each teaching strategy is rated on a five-point Likert scale from "not utilized" (1) to "utterly utilized" (5). It goes from "not utilized" (1) to "absolutely utilized" (5). The third component uses a similar Likert scale to assess the adoption of fourteen ICTs (Heim & Peng, 2022). A panel of academics pretested the questionnaire to optimize its visual appeal and authenticity.

It has been noticed that 285 management of operations researchers and lecturers received an email with an online questionnaire (Netland *et al.*, 2020). The data collection procedure began then. Following up for a week afterward, the first email boosts response rates. The acceptance percentage was 28.4%, with 81 of 97 responses valid. The given response rate exceeds the minimum. This section summarises the sample's population trends, focussing on nations, educational institutions, and pupils. Cronbach's alpha ratings of 0.832 and 0.843 indicate strong reliability in responses on instructional

techniques and ICTs (Tortorella *et al.,* 2021). This research found reliable teaching methodologies and ICT deployment. For non-response bias analysis, Levene's and t-tests are utilised. These experiments show that the first and last performers are not statistically different. These tests assess selection and method imbalance.

Each questionnaire section's questions are randomly assigned. This reduces variance in common procedures. Participants' responses are also guaranteed to be anonymous, preventing improper or inappropriate solutions. Harman's Single-Factor Test and Confirmation Factor Analysis, or CFA, are used to find and disprove frequent procedure variation. Two different research initiatives employ hierarchical clustering for data clustering. In the first investigation, Ward's method determines the optimal cluster number. This is done utilizing 88 teaching methods under study. The dendrogram divides teaching strategies into "lowly adopted teaching procedures" and "highly embraced teaching activities" (Angelopoulos *et al.,* 2023). These groups show adoption levels. The fourteen technologies related to Information and Communication are clustered by adoption and usage using a similar method.

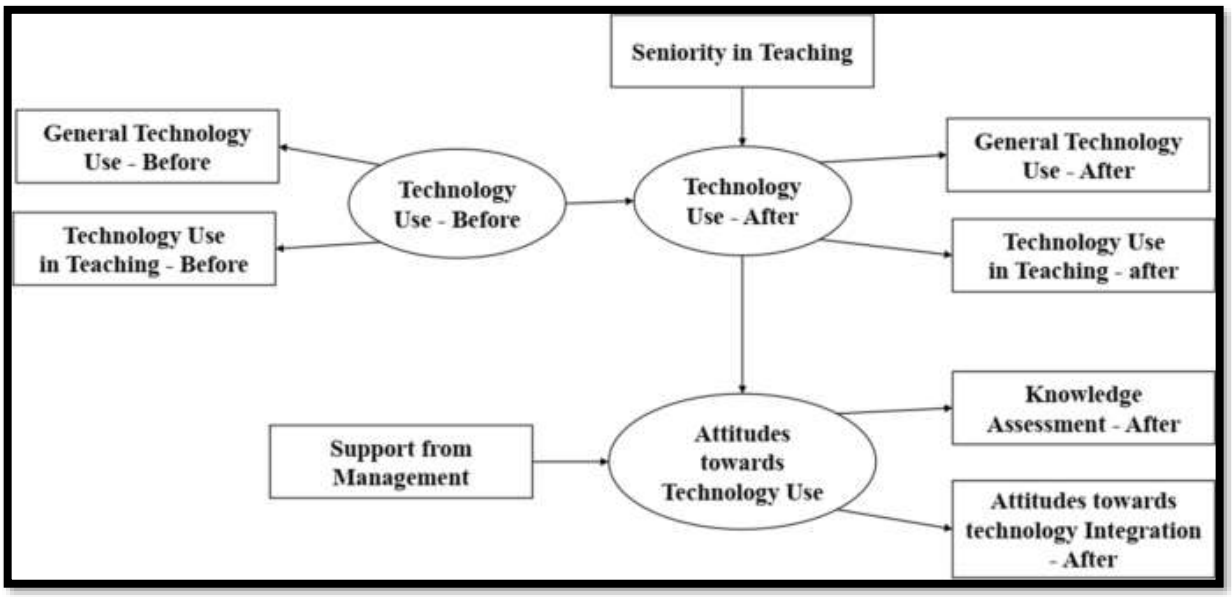

Figure 5: Systematic Design of Technology Integration in Teaching Operations

(Source: Peled and Perzon, 2021)

Hypothesis: This study used a descriptive design to establish factors that can support students' competency in using technology in education within higher education facilities. Exploratory Research involves the study of variables focused on describing phenomena by identifying their characteristics (Wilson, Ritzhaupt, and Cheng, 2020). For this reason, this research targeted first-year university students primarily due to the observed barriers to technological access and use among disadvantaged students.

This study used probability sampling methods to select samples and reduce sampling biases. Cluster sampling was initially used to categorize students into groups; then, simple random sampling was used to select students from each group comprehensively. According to Krejcie and Morgan's sample size formula, it was deemed reasonable to use a student sample of 368 (Akram *et al.,* 2021). Quantitative Data was gathered through a semi-structured questionnaire developed, which was self-completed and hand-delivered by the researcher. The questionnaire comprised 40 questions across ten sections, each framed based on constructs derived from the CBAAM model (Faloye & Faniran, 2023). Participants' responses were measured on a five-point Likert scale, and the survey instrument was piloted to ensure the clarity and reliability of the questions. The data collected was recorded in Microsoft Excel and later transferred to SPSS for screening and analysis as needed.

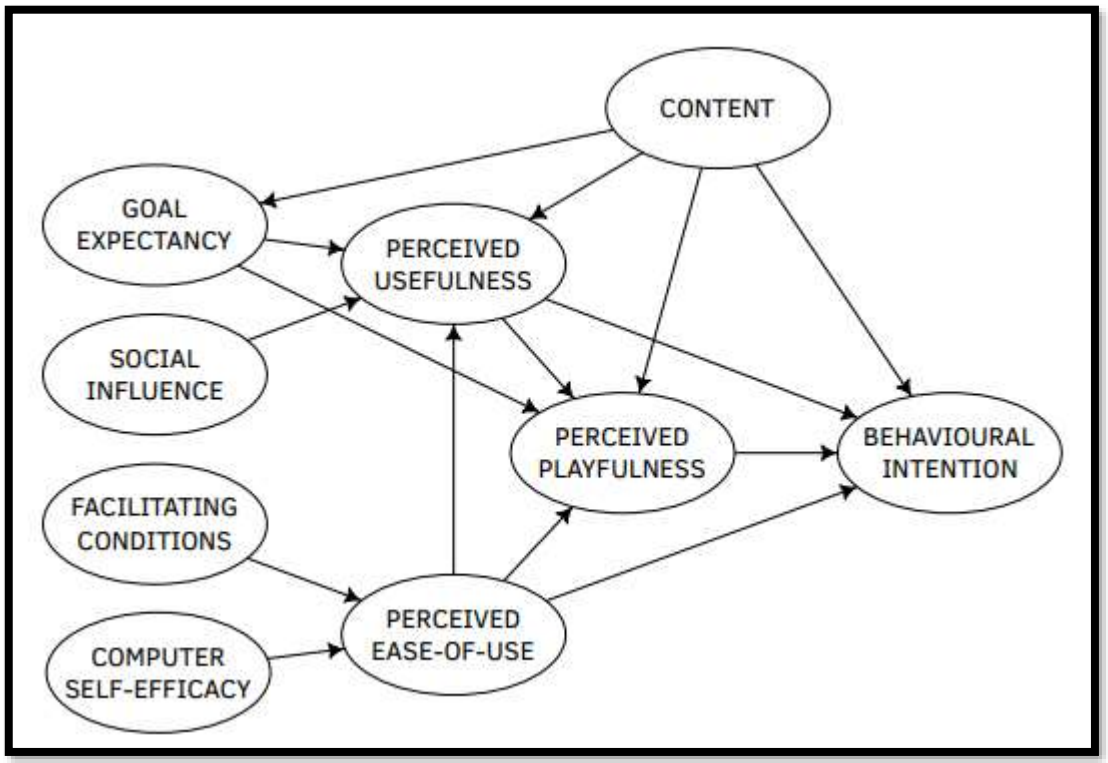

Figure 6: CBAAM Model Framework

(Source: Faloye and Faniran, 2023)

As reported by Faloye and Faniran (2023), the Computer-Based Assessment Acceptance Model or CBAAM is selected for this study because the identified technological use competencies relate to CBAAM's measures of IT usage. The CBAAM model synthesizes elements from three main technology adoption models: three theoretical frameworks, which are the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Theory of Planned Behaviour (TPB). Some of the constructs incorporated into the CBAAM model include; social influence, facilitating conditions, computer self-efficacy, perceived ease-of-use, perceived usefulness, perceived playfulness, and behavioral intention. Also, goal expectancy and content as separate components of intent have been included in the CBAAM model to estimate some factors that influence the intention of using CBA in assessment among students (Fütterer *et al.*, 2024). In this research, more emphasis was placed on the facilitating condition and computer self-efficacy factors of CBAAM. Enabling conditions were applied to assess students' experiences with the contextual resources, with the aid of which they received the support of staff and gained the technical help necessary to organize the technology's practical usage. Computer self-efficacy captured the level of experienced abilities of the assessed students when using the computers with or without help. This focus enabled the understanding of the theoretical concepts that contribute to perceived ease of use and students' behavioral intention regarding the utilization of technology for learning.

As stated by Peled and Perzon (2021), the TAM recognizes two key concepts that underlie perceived behavior: perceived usefulness which is defined as the level to which a person believes a technological application aids in work performance, and perceived ease of use, the level to which the technology is perceived as easy to use. The UTAUT has six constructs: performance expectancy, which refers to the perceived benefits in performance; effort expectancy, which refers to the perceived ease of use of the technology in question; social influence, facilitating conditions; attitude toward the technology; and perceived behavioral control or how likely one is to use the technology. The TPB measures attitude (temporary or permanent internalized evaluation), subjective norm (expectation to perform or not to perform a specific behavior), and perceived control (perceived self-efficiency to perform a given behavior). Using social influence, the CBAAM captures facilitating conditions, computer self-

efficacy, computer confidence, perceived ease of use, usefulness, playfulness, behavioral intention to use the application, expected goal outcomes, and content relevance (Fütterer *et al.*, 2024). These factors determine participation in computer-based assessments.

The data analysis uses Wilks' lambda test and a Multivariate Analysis of Variance (MANOVA) to determine if adoption levels vary by institution, department, and professor. We evaluate fourteen MANOVA models with dependent variables limited to well-known instructional strategies and ICTs. The MANOVA results are reliable since their presumptions of normality, consistency, and uniformity are correct (Angelopoulos *et al.,* 2023). The next step is to apply partial correlational analyses to examine the relationships between the most prevalent instructional methodologies and ICTs, considering contextual factors from significant MANOVA designs (Müller & Wulf, 2020). The entirety of these relationships will be assessed to determine their significance. Using variance inflation factors (VIF), multiple linearity can be established. Every single one of the results from this calculation is fewer than five, indicating no multicollinearity issues. This technique ensures comprehensive research into using technology in managerial teaching throughout the pandemic (Vilalta-Perdomo *et al.,* 2022). In addition, it provides insights on effective developing country methodologies and instruments.

Results

The present study's findings thus provide an understanding of the integration of technology that provides upside to operations in teaching management but the downside that faculty experiences. Several significant conclusions can be highlighted upon analyzing loyalties in the line of the reviewed literature. Firstly, the infusion of e-learning tools and technologies has been found effective when used to support students' learning in Operations Management. In line with these views, previous literature by Sułkowski *et al.,* (2022) and Vlachopoulos and Makri (2021) predict that active learning exhibited by using simulations and completing collaboration technologies affords students opportunities to apply concepts in real-life situations. Apart from enhancing knowledge, as it were, this hands-on approach also helps students solve this type of problem, which may be encountered in the real world. Second, the research discovers and highlights critical challenges of technology integration. Other barriers include poor infrastructural facilities, inadequate training of instructors, and poor acceptance of change by faculty and students.

Turugare and Rudhumbu (2020) pointed out that if the technology is not supported and resourced appropriately, the digital possibility for effective learning might not transpire. There is also the issue of digital literacy division because not all students have access to a device needed for lessons. In addition, the research highlights an insufficient focus on the instructional use of technology, as teaching goals correspond to technological instruments. Cho *et al.,* (2020) agree with the proponents of the source by confirming that proper management of students and the classroom setting is vital when implementing technology in the classroom. It means that technology integration is not best seen as the solution but as a part of the large picture of education strategy. Summing up, the findings highlight the opportunities that technology brings to learning Operations Management while recognizing that issues must be solved. Thus, synthesizing these results, the study offers meaningful knowledge that can facilitate further practices and the elaboration of educational policy.

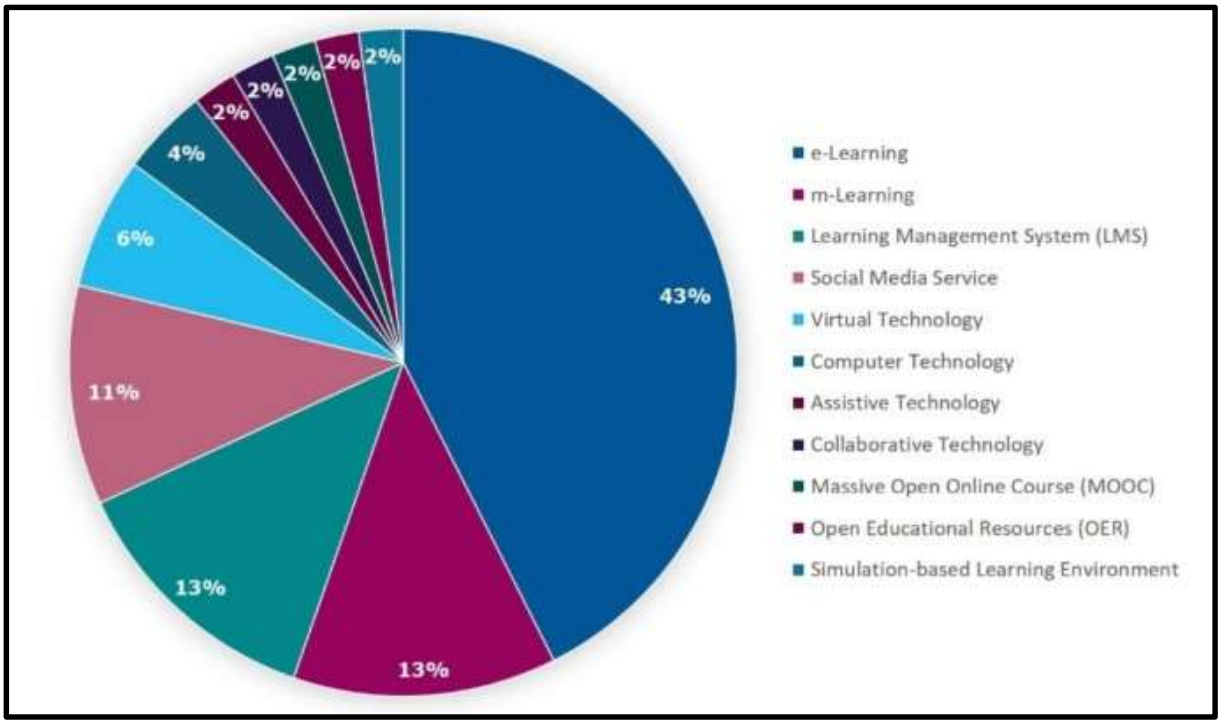

Figure 7: Consequences of Adopting Teaching Operations Management System

(Source: Granić, 2022)

The study found much variability in Instructional Methodologies and ICTs used in Managerial Operations. Two teaching strategies were found: one with a modest acceptance and one with a significant incorporation, as both have distinct traits. Common approaches like investigations and class assignments were predicted to succeed since they have been proven beneficial. However, despite the challenges of distance learning, chalkboard lectures and practical activities were remarkably popular (Tortorella *et al.,* 2021). This illustrates that teachers were adapting classroom practices to the remote setting required by the outbreak.

In the same way, the adoption of ICT (Information and Communication Technology) showed that websites, WhatsApp, and email were employed extensively. At the same time, Artificial Intelligence (AI) and Augmented Reality were used less (Timotheou *et al.*, 2022). This tendency was seen in ICT adoption. The need for more equipment and financial obstacles at universities in developing countries may explain the slow adoption of modern technologies. These organizations have financial challenges, unqualified personnel, and poor Internet connections, especially in rural and semi-urban locations. Some regions face these issues more than others. As per the propagation of Innovation Theory, new technologies' compatibility with their surroundings is a significant component in their acceptance by the public (Timotheou *et al.,* 2022). The research found no significant effect of contextual factors like institution administration and size on instructional techniques or ICT use.

However, topic content and teacher skills had a more significant impact. For instance, instructors teaching Quantitative and Qualitative Analysis Methods use WhatsApp and the Intranet more. Surprisingly to them, less experienced teachers were more open to different teaching techniques than their more knowledgeable peers. Institutional Theory, which holds that experienced educators encounter social constraints that restrict their innovation ability, may explain this. The study illustrates that some teaching approaches and ICTs work well together. WhatsApp has the most vital links to teaching methods, including presentations by learners and reading tests. However, some instructional strategies did not link significantly with ICTs, indicating that digital technology was constrained in Object-focused Learning (OM) education (Essila *et al.*, 2020). A lack of integration reveals that ICTs, or Information and Communication Technology, must be used more widely to strengthen managerial education's resistance to disruptive events like the pandemic.

The study found that Object-focused Learning (OM) in developing countries continues to be in its infancy with ICTs and novel teaching methods. This predicament is primarily caused by infrastructure and resource constraints. Institutions must address the ICT access and assistance deficit, particularly among towns and villages, to ensure equitable and prosperous digital device collaboration. OM education may be more adaptable by encouraging modern ICTs and helping new instructors find different educational approaches (Pu & Zhang, 2020). The research indicated that teacher experience and topic matter affected OM education teaching approaches and ICTs. Infrastructural shortages hindered contemporary ICTs in underdeveloped nations. Thus, unskilled educators have to use several methods to utilize these technologies. Some ICTs and instructional methodologies created synergy, but only partially.

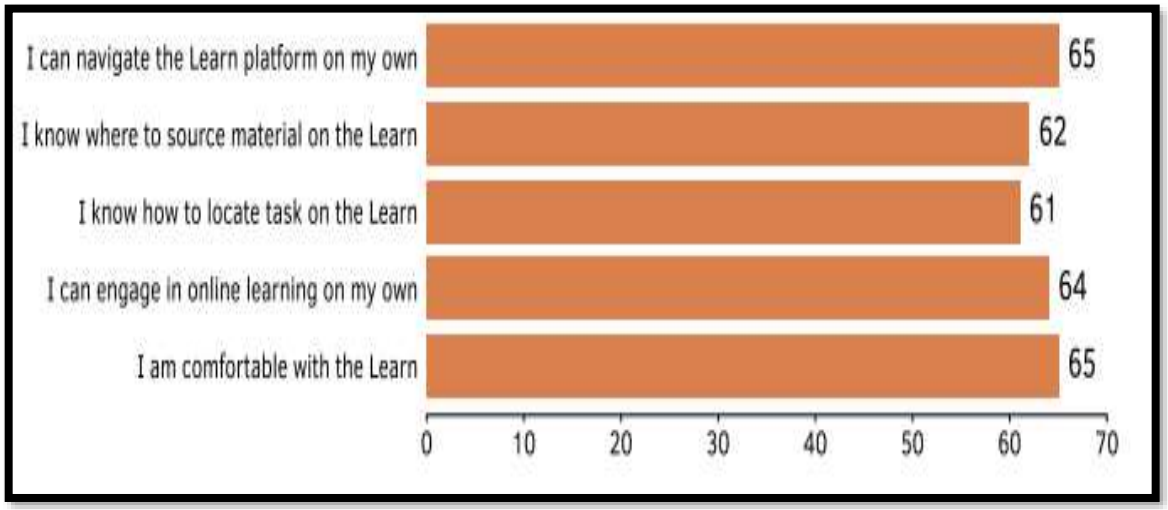

Figure 8: Student Engagement in Online Teaching Technology

(Source: Faloye and Faniran, 2023)

The above findings highlighted several research outcomes for students' Educational Technology competence and confidence, particularly computer self-efficacy and facilitating conditions. Based on the highest Cronbach alpha coefficient for both constructs, the internal consistency of the questionnaire was determined by the reliability of the data (Christopoulos and Sprangers, 2021). Descriptive statistics supported by inferential statistics in the form of chi-square tests also revealed a significant relationship between facilitation condition and computer self-efficacy that points to the level of technological support county students encounter available technological resources as the major determinant of their level of computer literacy and competence in an e-learning environment. The findings revealed that most students had high proficiency in adopting the e-learning platform and believed they had acquired insight into computer usage before joining the university. Nonetheless, a minority of participants, mainly undergraduates who had minimal prior contact with technology, had poor technical proficiency, some of whom even stated difficulties and computer phobia. These results support previous work, which indicates that prior experience enhances initial technical proficiency and self-perceived capability, emphasizing the value of early computer use.

As per the viewpoint of Christopoulos and Sprangers, (2021), the analysis also pointed out that students who owned computers before joining the university have less difficulty when employing Education Technology and Learning Interfaces on their own. While the remainder of the students who did not use computers before also claimed that they had challenges adapting to using computers, they pointed to factors such as unfamiliarity and computer anxiety were some of the reasons for this. The pre-and post-test results revealed that for those students who had not previously used any form of technology, the university technology's reactions filled the skills gap in their self-efficacy, which increased throughout the academic year. This outcome underlines the need to offer technological support and materials for facilitating learning in educational establishments to address the problem of

the digital divide. In general, the study's findings indicate that students' facilitating conditions and past technological experience are positive antecedents of the successful adoption of educational technologies, creating an increased parity for students in access to technological tools for education.

Discussion

The Discussion section of the study reiterates that technology will remain central in changing Operations Management education and, at the same time, recognizes the challenges that arise when incorporating technology. The study establishes noteworthy insights signifying that while the application of e-learning tools and other new technology increases student motivation and learning achievement, several limitations require consideration to optimize the achievement of the desired results.

Several significant topics are widely discussed within the text; one of the topics is the need to invest more in the training of educators. Faculty response indicated that most must be more confident and have adequate skills to adopt new technology interventions in their classroom instruction. Hence, implementation could be more consistent and might be less effective. As marked earlier, professional development activities have to be designed to impart the necessary skills and attitudes to incorporate technologies into the teaching and learning process (Akram *et al.,* 2021).

Furthermore, the discussion raises the question of constructing an adequate and broad conception of technology-enhanced teaching and learning that fits the envisaged educational goals and needs. For institutions to become responsive to the use of technologies in education, they need to plan and construct focused strategies that illustrate both the technology implementation and the fact that such technologies fit the existing curricula and pedagogical methods. As with any universal application of technology in education, the underlying strategies and approaches should be balanced to ensure that the process does not become an oppressive hindrance of the media but rather a helpful aid in learning. However, the study also admits that the dynamics of using new technologies for learning are still experiencing the issue of digital inequalities, hence making education inequalities more pronounced. According to Okoye *et al.,* (2023), technology makes inclusive education essential to all students. This paper argues that technology integration entails immense potential for Operations Management education, but a collective effort must be made to approach the challenges to help achieve this goal.

As reported by Teo *et al.,* (2023), the analysis reveals several limitations of studying the integration of technology in the teaching of Operations Management. First, the research of one type of institution and its graduates may not easily apply to any other kind of institution and its learners in general. However, the study is limited temporally to a single point in time, thus giving no dynamic or longitudinal perspective on emergent trends or the embracing influences of technology on Operations Management education (Kim, 2023). This study could be extended to offer a detailed look at how the content region and teaching pedagogy transform with time. There is an over-dependence on Likert-based responses while limiting how the methodology can better understand the respondents' views. Interviews or focus group data collected from teachers supplemented with survey data could provide a more detailed, qualitative outlook on the technology used in the learning environment (Zhang, 2023). In addition, regarding the extent to which geographic factors or the economic climate of institutions affect teaching practices, the analysis fails to study the above factors. For instance, variations in regional emphasis on service and manufacturing may influence the implementation of tools. Extending the study beyond the particular type of educational programs with the help of which the sample was compiled can give an idea of how technology paves the way for new requirements of educators and practitioners in Operations Management in a much broader context.

The future recommendations also entail focused training processes for educators to improve their skills in using technologies and to develop proper teaching abilities. Institutions should create institution-specific professional development workshops that specifically target the use of e-learning tools in teaching (Wilson, Ritzhaupt, and Cheng, 2020). Moreover, significant investments in the institutional environment are necessary to give each learner equal opportunities to use social technologies. Here lies the digital divide. Working with industrial stakeholders can assist in matching

what is taught in learning institutions with the market expectations and needs, enhancing the learning process. In addition, longitudinal studies will offer a chance to examine the changing nature of technology in education and its consequent improvements. Finally, coupled with the teachings of competitive innovation and versatility among its faculties and learners, embracing the technologically integrated learning environments would be much easier.

Conclusion

The study suggests that using technology in Operations Management Education is a promising and effective way to improve the teaching and learning process. This study shows that students are eager to utilize e-learning tools and perform practical online assignments efficiently. However, for these technologies to work as planned, some important emerging issues must be resolved first. Obstacles in its implementation include a lack of preparation of educators, a lack of structures in instances where infrastructure is a concern, and issues of the digital divide which are likely to discourage an equal adoption of technology in the classroom. The research implies a need to develop broad training activities planned to enhance the pedagogical competence of faculty members and enable them to foster the use of technologies in learning.

Furthermore, there needs to be an effective model for how the technological tools support student learning needs and instructional objectives regarding a pedagogical approach to their integration into the classroom. Hence, the work complements prior literature by pinpointing the need for research to expose the social contexts informing technology use in learning. To ensure that Operations Management curricula are vastly improved, the challenges discussed should be addressed, together with creating an environment for educational institutions to use technology. In sum, the present study provides useful implications for educators and policymakers regarding how to adapt technology-enhanced learning environments to maximize their opportunities while minimizing the potential threats in doing so to provide a fair and efficient learning process.

According to the study, introducing technology into Operations Management Education has pros and cons. Simulations and participative innovations in e-learning tools help students grasp and utilize concepts in real life. Allowing kids to learn actively does this. Other challenges must be addressed before blending can become effective. Inadequate educator training, facilities, and pupils and employees' unwillingness to change contribute to these difficulties. The study shows that teaching techniques and ICTs differ significantly. Even though online learning is growing, chalkboard lectures are still popular. Due to funding restrictions, recent advances like Artificial Intelligence (AI) are limited in developing countries. This situation remains despite the widespread use of the Internet and messaging applications. The findings indicate that contextual factors like teacher expertise and topic content affect technology use. Consequently, learning institutions must tackle technological competence inequalities and help teachers embrace new pedagogical methods to provide a more flexible learning environment.

References

1. Akram, H., Yingxiu, Y., Al-Adwan, A.S. and Alkhalifah, A. (2021). Technology Integration in Higher Education During COVID-19: An Assessment of Online Teaching Competencies Through Technological Pedagogical Content Knowledge Model. *Frontiers in Psychology*, [online] 12(1), pp.1–11. doi:https://doi.org/10.3389/fpsyg.2021.736522.
2. Angelopoulos, S., Bendoly, E., Fransoo, J.J., Hoberg, K., Ou, C.X. and Tenhiälä, A. (2023). Digital Transformation in Operations management: Fundamental Change through Agency Reversal. *Journal of Operations Management*, [online] 69(6), pp.876–889. doi:https://doi.org/10.1002/joom.1271.
3. Chan, C.K.Y., 2023. A comprehensive AI policy education framework for university teaching and learning. International journal of educational technology in higher education, 20(1), p.38.

4. Cho, V., Mansfield, K.C. and Claughton, J., 2020. The past and future technology in classroom management and school discipline: A systematic review. Teaching and Teacher Education, 90, p.103037.
5. Christopoulos, A. and Sprangers, P. (2021). Integration of educational technology during the Covid-19 pandemic: An analysis of teacher and student receptions. *Cogent Education*, [online] 8(1), p.1964690. doi:https://doi.org/10.1080/2331186x.2021.1964690.
6. Essila, J.C., Alhourani, F. and Motwani, J. (2020). Using Concept Maps in Teaching Operations Management Courses. *Decision Sciences Journal of Innovative Education*, [online] 19(1), pp.15–39. doi:https://doi.org/10.1111/dsji.12228.
7. Faloye, S.T. and Faniran, V. (2023). Integrating technology in teaching and learning practices: students' competencies. *South African Computer Journal*, [online] 35(1), pp.1–14. doi:https://doi.org/10.18489/sacj.v35i1.1111.
8. Fütterer, T., Backfisch, I. and Lachner, A. (2024). Teachers' trajectories of technology integration during participation in an online professional development program. *Zeitschrift für Erziehungswissenschaft*, [online] 27(3), pp.769–801. doi:https://doi.org/10.1007/s11618-024-01251-6.
9. Granić, A. (2022). Educational Technology Adoption: A systematic review. *Education and Information Technologies*, [online] 27, pp.9725–9744. doi:https://doi.org/10.1007/s10639-022-10951-7.
10. Hai, N.T., Huy, D.T.N., Hoa, N.T. and Thang, T.D., 2021. Educational perspectives on differences between management case study and economic & finance case study teaching in universities. Design engineering, 7, pp.12022-12034.
11. Heim, G.R. and Peng, X. (David) (2022). Introduction to the special issue on 'Technology management in a global context: From enterprise systems to technology disrupting operations and supply chains'. *Journal of Operations Management*, [online] 68(6-7), pp.536–559. doi:https://doi.org/10.1002/joom.1216.
12. Horwitch, M. and Stohr, E.A. (2019). Transforming technology management education: Value creation-learning in the early twenty-first century. *Journal of Engineering and Technology Management*, [online] 29(4), pp.489–507. doi:https://doi.org/10.1016/j.jengtecman.2012.07.003.
13. Kim, B. (2023). Convergent Effects of Teaching on the Managers' Way of Thinking and Decision-making in Operations Management. *SSRN Electronic Journal*, [online] pp.1–46. doi:https://doi.org/10.2139/ssrn.4405449.
14. Li, H., Zhang, H. and Zhao, Y., 2021. Design of computer-aided teaching network management system for college physical education. Computer-Aided Design and Applications, 18(S4), pp.152-162.
15. Mdhlalose, D. and Mlambo, G. (2023). Integration of Technology in Education and its Impact on Learning and Teaching. *Asian journal of education and social studies*, [online] 47(2), pp.54–63. doi:https://doi.org/10.9734/ajess/2023/v47i21021.
16. Müller, F.A. and Wulf, T. (2020). Technology-supported management education: a systematic review of antecedents of learning effectiveness. *International Journal of Educational Technology in Higher Education*, [online] 17(1), pp.1–17. doi:https://doi.org/10.1186/s41239-020-00226-x.
17. Netland, T.H., Flaeschner, O., Maghazei, O. and Brown, K. (2020). Teaching Operations Management With Virtual Reality: Bringing the Factory to the Students. *Journal of Management Education*, [online] 44(3), pp.313–341. doi:https://doi.org/10.1177/1052562919892028.
18. Okoye, K., Hussein, H., Arrona-Palacios, A., Quintero, H.N., Ortega, L.O.P., Sanchez, A.L., Ortiz, E.A., Escamilla, J. and Hosseini, S., 2023. Impact of digital technologies upon teaching and learning in higher education in Latin America: an outlook on the reach, barriers, and bottlenecks. Education and Information Technologies, 28(2), pp.2291-2360.
19. Peled, Y. and Perzon, S. (2021). Systemic model for technology integration in teaching. *Education and Information Technologies*, [online] 27, pp.2661–2675. doi:https://doi.org/10.1007/s10639-021-10694-x.

20. Pu, M. and Zhang, Y. (2020). Research on the Optimization of Teaching Operation Management Process in Colleges and Universities Based on IE. *Proceedings of the 2020 4th International Conference on E-Education, E-Business and E-Technology*, [online] 13, pp.37–42. doi:https://doi.org/10.1145/3404649.3404658.
21. Schlebusch, G., Bhebhe, S. and Schlebusch, L. (2024). Technology Integration in Teacher Education Practices in Two Southern African Universities. *Open Education Studies*, [online] 6(1), pp.1–11. doi:https://doi.org/10.1515/edu-2022-0223.
22. Sułkowski, Ł., Kolasińska-Morawska, K., Buła, P., Seliga, R. and Morawski, P., 2022. E-learning: technology in teaching logistics. International Journal of Contemporary Management, 58(4), pp.28-36.
23. Teo, C.-C., Wang, X., Tan, S.C. and Wen, J. (2023). Enhancing critical thinking in operations management education: a framework with visual-based mapping for interdisciplinary and systems thinking. *Higher Education Pedagogies* , [online] 8(1), pp.1–24. doi:https://doi.org/10.1080/23752696.2023.2216388.
24. Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S.V., Giannoutsou, N., Cachia, R., Monés, A.M. and Ioannou, A. (2022). Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. *Education and Information Technologies*, [online] 28(28), pp.6695–6726. doi:https://doi.org/10.1007/s10639-022-11431-8.
25. Tortorella, G.L., Narayanamurthy, G., Sunder M, V. and Cauchick-Miguel, P.A. (2021). Operations Management teaching practices and information technologies adoption in emerging economies during COVID-19 outbreak. *Technological Forecasting and Social Change*, [online] 171, p.120996. doi:https://doi.org/10.1016/j.techfore.2021.120996.
26. Turugare, M. and Rudhumbu, N., 2020. Integrating technology in teaching and learning in universities in Lesotho: Opportunities and challenges. Education and Information Technologies, 25(5), pp.3593-3612.
27. Vilalta-Perdomo, E., Michel-Villarreal, R. and Thierry-Aguilera, R. (2022). Integrating Industry 4.0 in Higher Education Using Challenge-Based Learning: An Intervention in Operations Management. *Education Sciences*, [online] 12(10), p.663. doi:https://doi.org/10.3390/educsci12100663.
28. Vlachopoulos, D. and Makri, A., 2021. Quality teaching in online higher education: The perspectives of 250 online tutors on technology and pedagogy. International Journal of Emerging Technologies in Learning (iJET), 16(6), pp.40-56.
29. Wilson, M.L., Ritzhaupt, A.D. and Cheng, L. (2020). The impact of teacher education courses for technology integration on pre-service teacher knowledge: A meta-analysis study. *Computers & Education*, [online] 156, p.103941. doi:https://doi.org/10.1016/j.compedu.2020.103941.
30. Zhang, Y. (2023). Teaching Reform of Management Operations Research Course Based on Digital Empowerment and the Integration of Arts and Science. *Open Journal of Social Sciences*, [online] 11(05), pp.8–17. doi:https://doi.org/10.4236/jss.2023.115002.