JIKAP

JURNAL INFORMASI DAN KOMUNIKASI ADMINISTRASI PERKANTORAN

JIKAP

Jurnal Informasi dan Komunikasi Administrasi Perkantoran
Volume 9, Nomor 6, November 2025

Merdeka curriculum implementation barriers: a case study at SMK Wikarya Karanganyar

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Abstrak

Kurikulum Merdeka dirancang untuk memberikan pembelajaran fleksibel dan berpusat pada siswa, namun dalam penerapannya masih ditemui berbagai hambatan di sekolah sehingga diperlukan kajian mendalam mengenai tantangan serta strategi implementasinya. Penelitian ini bertujuan untuk mengetahui bentuk kesulitan yang dialami guru di SMK Wikarya Karanganyar dan strategi yang digunakan guru untuk mengatasi kesulitan dalam implementasi Kurikulum Merdeka Belajar di SMK Wikarya Karanganyar. Penelitian ini menggunakan metode kualitatif dengan pendekatan studi kasus. Sumber data penelitian ini meliputi informan, observasi dan analisis dokumen. Teknik pengambilan sampel dilakukan dengan purposive sampling. Pengumpulan data dilakukan dengan wawancara, observasi, dan analisis dokumen. Teknik uji validitas data menggunakan triangulasi sumber dan teknik. Teknik analisis data menggunakan model interaktif. Hasil penelitian menunjukan bahwa bentuk kesulitan yang dialami guru di SMK Wikarya Karanganyar dalam menerapkan Kurikulum Merdeka Belajar yaitu kurangnya pemahaman terhadap kurikulum, kesiapan siswa yang belum optimal, keterbatasan sarana dan prasarana, perbedaan karakter dan kemampuan siswa, serta kesulitan dalam penyusunan administrasi pembelajaran. Strateginya antara lain penyesuaian metode mengajar dengan kondisi kelas, kolaborasi dengan sesama guru, pemanfaatan teknologi dan sumber belajar alternatif, asesmen berkelanjutan dan refleksi diri, serta dukungan pelatihan dari pihak sekolah.

Kata kunci: asesmen; strategi pembelajaran; tantangan guru

Abstract

The Merdeka Curriculum was designed to provide flexible, student-centered learning; however, its implementation in schools continues to encounter various challenges, necessitating comprehensive examination of both obstacles and implementation strategies. This study investigated the difficulties experienced by teachers at SMK Wikarya Karanganyar and the strategies they employed to overcome barriers in implementing the Merdeka Curriculum. Using a qualitative case study approach, data were collected through interviews with 22 participants (1 principal, 1 vice principal for curriculum affairs, 5 department heads, and 15 teachers), classroom observations,

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and document analysis. Participants were selected through purposive sampling. Data validity was ensured through source and technique triangulation, while analysis employed an interactive model. Findings revealed five primary challenges: limited curriculum understanding, insufficient student readiness, inadequate facilities and infrastructure, diverse student characteristics and abilities, and difficulties in preparing instructional administration. Teachers employed several strategies to address these challenges: adapting teaching methods to classroom conditions, collaborating with colleagues, utilizing technology and alternative learning resources, conducting continuous assessments and self-reflection, and participating in school-supported training programs. These findings contribute to theoretical understanding of curriculum implementation challenges and provide practical implications for professional development, infrastructure support, and policy development in vocational education settings.

Keywords: assessment; learning strategy; teacher challenges

Introduction

Education represents a critical factor in determining human resource quality and national development. Within education systems, curriculum serves as an educational framework encompassing learning objectives and instructional activities implemented in schools (Purba et al., 2021). Indonesian curricula undergo planned updates aligned with technological and societal advancement (Fitriyah & Wardani, 2022).

The Merdeka Curriculum represents an instructional design providing opportunities for students to learn in relaxed, comfortable, enjoyable, and pressure-free environments (Yuniar & Umami, 2023). The curriculum was designed with greater simplicity and flexibility to help teachers focus on essential content while encouraging students to become more active according to their interests and talents (Sasmita & Darmansyah, 2022). The success of the Merdeka Curriculum depends on readiness across all school personnel, from teachers to principals. Teacher readiness in implementing the Merdeka Curriculum constitutes an integral factor as a key implementation component (Suhantyo et al., 2023).

Curriculum development clearly impacts teachers' instructional processes, as teachers must create enjoyable learning experiences enabling students to understand material accurately and effectively. However, not all teachers successfully achieve this goal; many encounter obstacles in current curriculum development. Based on preliminary observations, the researchers found that the majority of teachers experienced significant difficulties implementing the Merdeka Curriculum in their teaching processes. These difficulties generally occurred in planning, implementation, and evaluation aspects. These initial findings indicate a gap between expectations for Merdeka Curriculum implementation and the reality teachers face in practice.

Curriculum implementation is strongly influenced by teachers' management capabilities. When a curriculum lacks support due to limited teacher competencies, it cannot function effectively as an educational instrument. Therefore, teacher involvement in curriculum practice is essential, as teachers represent the primary element determining student learning quality. Teacher professional competence is necessary to facilitate independent student learning and develop multiple intelligences (Kompetensi Guru dan Kurikulum Merdeka Belajar, 2023). This demonstrates that teachers play central roles in curriculum implementation, making teacher readiness an integral factor influencing Merdeka Curriculum success (Suhantyo et al., 2023).

From a curriculum implementation theory perspective, Fullan (2007) emphasized that implementation success is influenced by interactions among three main components: curriculum innovation characteristics, teacher capacity as implementers, and educational environment support. This theory aligns with Ornstein and Hunkins' (2018) perspective, which asserts that curriculum implementation involves not merely applying documents but also transforming teaching practices influenced by teacher competencies, attitudes, and involvement. Consequently, limitations in understanding, readiness, and facility support directly impact implementation quality.

Several previous studies reinforce the existence of Merdeka Curriculum implementation barriers. Dewi et al. (2024) demonstrated that teachers faced challenges in learning planning, implementation, and evaluation aspects, including limited curriculum understanding, insufficient learning resources, and minimal infrastructure. Windayanti et al. (2023) confirmed that teacher problems included difficulties analyzing Learning Outcomes (CP), formulating Learning Objectives (TP), developing Learning Objective Pathways (ATP) and teaching modules, and limitations in using technology and instructional media. Furthermore, Rosjanah and Kiptiyah (2024) found weaknesses in the planning phase, where teachers did not consistently create teaching modules and diagnostic assessments. Teachers also had not fully implemented project-based learning, while the main barrier remained teachers' low readiness in skills and competencies.

Observations revealed that teachers tended to encounter obstacles in three main aspects: learning planning, where teaching module content often did not align with classroom implementation; implementation, where teachers struggled to adapt teaching strategies to diverse student characteristics and facility limitations such as projectors and computers; and evaluation, which remained limited to end-of-chapter tests without consistent use of diagnostic or formative assessments. Additionally, researchers obtained direct testimonies from teachers acknowledging difficulties adjusting to new curriculum demands. Notably, SMK Wikarya Karanganyar possesses unique characteristics as a vocational school with heterogeneous student backgrounds in both academic ability and socioeconomic status. The school also serves as a School Field Introduction (PLP) implementation site, providing opportunities to examine Merdeka Curriculum implementation more closely in real contexts. The combination of new curriculum implementation, facility limitations, and complex student needs makes this school both relevant and strategic for investigation.

Based on this background, the researchers conducted this study titled: "Analysis of Barriers to Implementing the Merdeka Curriculum (Case Study of Teachers at SMK Wikarya Karanganyar)." This research aimed to identify the forms of difficulties experienced by teachers at SMK Wikarya Karanganyar in implementing the Merdeka Curriculum and to examine strategies teachers employed to overcome difficulties in Merdeka Curriculum implementation at SMK Wikarya Karanganyar.

Research Methods

This study employed a qualitative descriptive method with a single case study approach, conducted at SMK Wikarya Karanganyar, located on Jalan Ngalian, Jungke, Karanganyar District, Karanganyar Regency, Central Java. The school was selected because it had implemented the Merdeka Curriculum and served as the researchers' School Field Introduction (PLP) implementation site. Data collection occurred from October 2024 to July 2025.

The research focused on one location: SMK Wikarya Karanganyar. This case study aimed to understand teachers' barriers and strategies in implementing the Merdeka Curriculum. The research proposition underlying this study was that teachers faced barriers in learning planning, implementation, and evaluation while simultaneously developing specific strategies to overcome these barriers. The units of analysis were the experiences of teachers, the principal, the vice principal for curriculum affairs, and department heads in the Merdeka Curriculum implementation process at SMK Wikarya Karanganyar.

Research data included all information obtained from informants serving as respondents, as well as information found in various documents, both statistical and other forms, used for research purposes. Primary data included information from interviews and observations conducted by researchers. Secondary data comprised survey or observation results, teaching modules, and

curriculum documents. Primary data sources were obtained through interviews with teachers, department heads, the vice principal for curriculum affairs, and the principal. Secondary data sources were obtained through teaching modules used by teachers and curriculum documents from the vice principal for curriculum affairs and the administrative office at SMK Wikarya Karanganyar.

Sampling employed purposive sampling, aimed at selecting informants with qualifications and relevant experience to answer formulated research questions. Participants involved in this research comprised four categories: the principal, vice principal for curriculum affairs, department heads, and teachers at SMK Wikarya Karanganyar. The principal served as key informant 1 due to policy-making roles, the vice principal for curriculum affairs as key informant 2 due to responsibility for technical curriculum implementation, department heads as key informant 3 as departmental representatives, and teachers as key informant 4 due to direct involvement in learning processes.

Overall, 22 informants were interviewed, comprising 1 principal, 1 vice principal for curriculum affairs, 5 department heads, and 15 teachers. This number was established to ensure all key actors in curriculum implementation were represented and to ensure varied perspectives. Teacher selection considered specific criteria such as teaching experience length, understanding of the Merdeka Curriculum, and involvement in teaching module development and learning implementation. The number 22 was considered adequate because obtained data reached saturation—the condition when information emerging in interviews became repetitive and added no new findings. Thus, purposive sampling in this research provided in-depth, relevant, and representative data according to research focus.

Data collection employed interviews, observations, and document analysis. Interviews in qualitative research enable researchers to investigate information in depth from respondents. In this study, semi-structured interviews were conducted with teachers involved in Merdeka Curriculum implementation. Observations enabled researchers to directly observe learning processes occurring in classrooms. In this study, researchers conducted participatory observation, where researchers not only observed but also participated in learning activities. Document analysis involved researchers collecting documents related to Merdeka Curriculum implementation, including teaching modules used by teachers and curriculum documents, which were then analyzed.

Data validity employed source and technique triangulation. Source triangulation was conducted to test data reliability by comparing and verifying collected information from different sources. In this context, source triangulation was applied to collect similar data from multiple sources, including teachers, department heads, the vice principal handling curriculum, and the principal of SMK Wikarya Karanganyar. Technique triangulation was implemented to test data reliability by re-verifying information from similar sources using different methods. For example, if data were obtained from observation, those data were confirmed through interviews and documentation.

Data analysis employed an interactive model: data collection, data reduction, data presentation, and conclusion drawing. Data collection was conducted through observation, interviews, and document analysis. Data reduction was defined as the stage of selecting collected data. Data presentation was conducted to facilitate data viewing and understanding. Conclusion drawing represented the final stage in data analysis. The research procedure in this study followed preparation, data collection, data analysis, and report writing conducted by researchers.

Results and Discussion

Research Results

Teachers' difficulties in implementing the Merdeka Curriculum stem from limited understanding of the curriculum's basic concepts and implementation. Many teachers, especially recent graduates, lack adequate preparation regarding the Merdeka Curriculum because they did not fully study this material during their university education. Additionally, some teachers believe that curricula do not differ significantly, hindering adaptation to new approaches. Differences in technology use capabilities also present distinct problems, although technology integration

constitutes an important part of Merdeka Curriculum implementation. Teachers also tend to use teaching modules without adjusting them to class characteristics, and learning processes remain unidirectional without encouraging active student participation.

Other challenges emerge from differences in student character and abilities. Not all students possess readiness for independent learning or can recognize their own interests and potential. Some students even misinterpret "merdeka" (independent) as unlimited freedom rather than responsible freedom. Dependence on teachers remains very high. Student activities in learning tend to be passive, and they are not yet accustomed to participating in project-based learning. Consequently, implementation of gradual and reflective learning strategies has not been optimally demonstrated, either in practice or in learning documents.

Facility and infrastructure factors also influence curriculum implementation success. Limitations in learning aids such as LCD projectors, computers, internet access, and practice rooms restrict teachers' scope in implementing contextual and innovative learning. As a private school, SMK Wikarya Karanganyar faces budgetary challenges, resulting in uneven facility provision. This condition causes teachers to rely more heavily on conventional methods and has not fully integrated technology into teaching and learning processes.

The Merdeka Curriculum requires teachers to conduct differentiated learning—adjusting approaches to individual student needs, interests, and abilities. However, in implementation, this strategy still encounters obstacles. Large student numbers, limited time, and uneven teacher readiness represent primary causes. Teachers still employ uniform methods for entire classes, while teaching tools do not fully support diverse learning practices according to student needs.

Additionally, administrative burden presents distinct challenges. Teachers must compile various documents such as Learning Objective Pathways (ATP), Learning Outcomes (CP), teaching modules, and formative and summative assessments. These requirements demand considerable time and energy, while teachers must also focus on classroom teaching and learning processes. Consequently, some teachers only complete learning documents as formalities without truly adjusting them to actual field conditions.

To address these various challenges, teachers at SMK Wikarya Karanganyar attempt to adjust learning methods to actual classroom conditions. The approaches employed are not fixed to single models but remain flexible according to learning situations and student characteristics. Teachers combine methods such as lectures, discussions, direct practice, and question-and-answer sessions to deliver material more effectively. Nevertheless, in learning documents, written strategies often remain general and have not been specifically adjusted to student characteristics.

Collaborative approaches are also implemented as efforts to strengthen teachers' understanding of the Merdeka Curriculum. Teachers share experiences through informal discussion forums, learning communities, and internal workshop activities. Through this collaboration, they jointly develop teaching tools and seek solutions to obstacles faced in classrooms. Schools also facilitate by providing time and space for collaborative activities, although implementation still requires more systematic organization.

Technology use and alternative learning resources are also maximally utilized by teachers. With existing facility limitations, teachers take initiative to use personal devices such as laptops or phones to support learning activities. Online learning resources, instructional videos, and digital libraries are utilized to supplement materials not yet available in physical form. This strategy not only supports learning processes but also encourages students to become more independent in seeking information.

As part of continuous evaluation, teachers implement formative assessment routinely and conduct self-reflection on learning processes. Teachers monitor student development not only from

final grades but also from activities, involvement, and participation in learning processes. Assessment results are used to improve teaching approaches and serve as bases for designing subsequent learning. Feedback to students is also provided directly so they understand the learning processes they undergo.

Efforts to increase understanding of the Merdeka Curriculum are also conducted through training and guidance. Teachers participate in socialization and technical guidance organized by education offices or other partner institutions. At the school level, training remains limited and has not reached all teachers, but these activities constitute important initial steps for increasing readiness in implementing the curriculum. With continuous and systematic training support, teachers are expected to implement the Merdeka Curriculum more effectively and contextually.

Discussion

The Merdeka Curriculum at SMK Wikarya Karanganyar faces various challenges, one being teachers' limited curriculum understanding. Many teachers experience difficulties understanding the Merdeka Curriculum's basic concepts and philosophy, especially regarding teaching module development, learning outcomes (CP), and assessment. This results from minimal technical training received and different approaches compared to previous curricula. Teachers unaccustomed to curriculum flexibility and autonomy feel confused in independently developing teaching tools. According to Sumarmi (2023), these difficulties include CP analysis, ATP development, and learning strategy determination. Additionally, Sasmita and Darmansyah (2022) added that facility limitations and teachers' ability to adapt to technology also contribute to low understanding of the new curriculum. These difficulties demonstrate that teachers have not fully understood comprehensive curriculum structure, which is crucial for adjusting learning outcomes to classroom conditions.

Student readiness also constitutes an important factor in Merdeka Curriculum implementation success. Although this curriculum emphasizes active student roles, many students at SMK Wikarya Karanganyar still demonstrate high teacher dependence and are not yet accustomed to learning independence. Suherman (2023) stated that the Merdeka Curriculum aims to create enjoyable and deep learning; however, students unaccustomed to independent learning will struggle to follow this system. Asiah and Nurenik (2024) added that students require gradual guidance to adapt to more flexible and challenging learning demands.

Facility and infrastructure limitations constitute primary barriers in Merdeka Curriculum implementation at SMK Wikarya Karanganyar. Facilities such as computers, internet, and presentation equipment are not evenly available across all classrooms. Teachers experience difficulties implementing project-based learning due to insufficient supporting tools and media for interactive and contextual learning activities. This aligns with Asiah and Nurenik's (2024) opinion that the availability of space for teacher and student creativity in learning processes is strongly influenced by adequate facility availability. Complete facilities enable teachers to implement innovative methods and help students become more active in learning processes.

Differences in student character and abilities also present challenges in Merdeka Curriculum implementation. Although this curriculum was designed to develop independent, creative, and reflective learners, many students at SMK Wikarya Karanganyar still demonstrate passive attitudes. Kemendikbudristek (2022) explained that the Merdeka Curriculum was designed to develop independent, creative, and reflective learners. However, this has not been fully achieved because many students are not yet accustomed to activity-based learning systems relying on independence and personal responsibility. Rosjanah and Kiptiyah (2024) stated that student characteristics lacking

independence and minimal habituation to active learning models constitute barriers in implementing learning strategies according to the Merdeka Curriculum. Thus, students' lack of psychological and cognitive readiness becomes an obstacle requiring resolution in Merdeka Curriculum implementation.

In the Merdeka Curriculum, teachers must compile various learning documents such as ATP, CP, teaching modules, and learning evaluations. Unfortunately, this administrative burden often consumes teachers' time and reduces their focus on classroom learning processes. Teachers feel that administrative demands are not proportional to available time and support. Sumarmi (2023) explained that teachers face high workloads because they must complete many administrative documents alongside teaching duties. This results in some teachers only completing documents as formalities without considering substance and relationships with learning needs. Tyack and Cuban (2020) mentioned that curriculum changes often create administrative pressure making teachers difficult to adapt optimally. Collaboration and systematic support are necessary to reduce this burden and ensure teachers focus on learning substance.

Teachers adjust teaching methods to classroom situations. Teachers do not rely on single approaches but use variations such as lectures, discussions, practice, and question-and-answer sessions, depending on student readiness and enthusiasm that day. Hennilawati et al. (2023) stated that relevant learning methods in the Merdeka Curriculum include Problem-Based Learning, experiments, peer teaching, and contextual learning enabling students to actively think critically and skillfully solve problems. This demonstrates that teachers must be able to read classroom situations and adjust approaches used to match student dynamics. Sibagariang et al. (2021) also stated that contextual learning approaches enable students to understand material more meaningfully because they align with their experiences. By considering various learning styles and student backgrounds, teachers can create more effective and inclusive learning experiences.

Teachers conduct collaboration in the form of learning communities or informal discussions with colleagues. Through these activities, teachers share best practices, jointly develop teaching tools, and discuss solutions to classroom learning obstacles. Tyack and Cuban (2020) explained that curriculum changes often encounter resistance, and teacher collaboration constitutes an important step in overcoming these barriers. With the presence of experience-sharing spaces and professional cooperation, teachers can jointly understand and implement curriculum changes effectively.

To overcome physical facility limitations such as books and learning equipment, teachers utilize technology such as the internet, personal laptops, and digital learning platforms to support learning processes. Teachers also encourage students to independently use libraries and online learning resources. Direktorat Jenderal Guru dan Tenaga Kependidikan (2023) emphasized the importance of developing innovative and contextual learning strategies, including technology utilization as part of digital transformation in education. By utilizing technology and alternative learning resources, teachers not only adapt to limitations but also foster student independence in seeking and processing information.

Teachers conduct formative assessment routinely through assignments, exercises, and observation of student activities. Additionally, teachers reflect on learning processes to improve teaching approaches and methods used. Muttaqin et al. (2024) explained that assessment in the Merdeka Curriculum is categorized into diagnostic, formative, and summative assessment, each aiming to understand student conditions before, during, and after learning. Through these assessments and reflection, teachers can identify weaknesses and successes in learning processes and immediately make necessary adjustments.

Teachers also participate in training from both education offices and schools. This training helps teachers understand Merdeka Curriculum structure, teaching tool development, and

appropriate learning approaches. Direktorat Jenderal Guru dan Tenaga Kependidikan (2023) emphasized that teacher training and professional development must be adjusted to Merdeka Curriculum principles to support contextual and innovative learning. With training, teachers are better prepared to understand new curriculum structure and can develop teaching tools appropriate to student characteristics and school conditions.

Conclusion

Based on study results, the implementation of the Merdeka Curriculum at SMK Wikarya Karanganyar faces various forms of difficulties experienced by teachers in the implementation process: limited curriculum understanding, suboptimal student readiness, facility and infrastructure limitations, diverse student characteristics and abilities, and difficulties in learning administration preparation. Strategies teachers employ to overcome difficulties include adapting teaching methods to classroom conditions, collaborating with fellow teachers, utilizing technology and alternative learning resources, conducting continuous assessment and self-reflection, and obtaining support and training from schools. Theoretically, these findings strengthen Mulyasa's (2021) perspective on curriculum functions, align with Tyack and Cuban's (2020) views regarding resistance in curriculum change, and support Kemendikbudristek's (2022) concepts regarding teachers' active roles, training, and flexible school policies. Practically, this research implies the need for teacher training programs more relevant to Merdeka Curriculum challenges, increased facility and infrastructure support and continuous mentoring from schools and government, and encouragement for teachers to continuously innovate and collaborate to create more optimal learning aligned with Pancasila Student Profile objectives.

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Service quality and perceived value effects on e-canteen customer loyalty

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Abstrak

Penelitian ini bertujuan untuk: (1) mengetahui pengaruh kualitas pelayanan terhadap loyalitas pelanggan, (2) mengetahui pengaruh perceived value terhadap loyalitas pelanggan, dan (3) mengetahui pengaruh kualitas pelayanan dan perceived value secara bersama-sama terhadap loyalitas pelanggan. Penelitian ini menggunakan pendekatan kuantitatif. Data diperoleh dari 270 responden melalui teknik incidental sampling, menggunakan kuesioner skala Ala Likert 1–4. Uji validitas dilakukan dengan korelasi Product Moment Pearson, *sedangkan reliabilitas diuji menggunakan nilai* Cronbach's Alpha. *Analisis data menggunakan regresi linear berganda dengan bantuan SPSS versi 26. Hasil penelitian menunjukkan bahwa: (1) kualitas pelayanan berpengaruh positif dan signifikan terhadap loyalitas pelanggan, yang dibuktikan oleh nilai signifikansi 0,000 dan t =15,554 > t-tabel = 1,9689, (2) perceived value berpengaruh positif dan signifikan, dengan signifikansi 0,000 dan t =12,068 > t-tabel = 1,9689, dan (3) secara simultan, keduanya berpengaruh positif dan signifikan dengan F = 271,071 > F-tabel = 3,03 dan signifikansi 0,000. Nilai koefisien determinasi (R²) sebesar 0,670 menunjukkan kontribusi variabel independen sebesar 67% terhadap loyalitas pelanggan.*

Kata kunci: evaluasi layanan; kuantitatif; komitmen konsumen; persepsi manfaat

Abstract

This study aimed to: (1) determine the effect of service quality on customer loyalty, (2) examine the effect of perceived value on customer loyalty, and (3) assess the simultaneous effects of service quality and perceived value on customer loyalty. Employing a quantitative approach, data were collected from 270 respondents through incidental sampling using a 1–4 Likert scale questionnaire. Validity was assessed using Pearson's Product-Moment correlation, while reliability was tested using Cronbach's alpha. Data analysis employed multiple linear regression using SPSS version 26. Results indicated that: (1) service quality exerted a positive and significant effect on customer loyalty, evidenced by a significance value of .000 and t = 15.554 > t-table = 1.969; (2) perceived value demonstrated a positive and significant effect, with significance = 0.000 and t = 12.068 > t-table = 1.969; and (3) simultaneously, both variables exhibited positive and significant effects with F = 271.071 > F-table =

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3.03 and significance = .000. The coefficient of determination (R^2) of .670 indicated that independent variables contributed 67% to customer loyalty variance.

Introduction

Information technology advancement has brought significant changes across various life aspects, including consumer patterns that increasingly favor instant and practical approaches (Utami, 2022). One manifestation of this transformation is the emergence of e-canteens as alternatives for fulfilling consumption needs in school environments. E-canteens represent online food and beverage ordering applications enabling users to view, select, and order menu items through web platforms (Khairunnisa et al., 2023). Their presence demonstrates that digitalization has penetrated educational settings previously considered conventional.

Khairunnisa et al. (2023) explained that e-canteen usage enhances break time efficiency, reduces crowds, and provides flexibility in selecting menus according to preferences. This system addresses conventional canteen weaknesses that frequently generate long queues and diminish customer satisfaction. Compared to manual systems, e-canteens offer more flexible and efficient services, reflecting technology's contribution to improving comfort and quality of life.

E-canteen success is measured not only by revenue but also by capacity to build customer loyalty. According to Kotler and Keller (2016), customer loyalty represents deeply held commitment to continue purchasing and supporting preferred products or services in the future, despite situational influences and marketing efforts potentially causing customer switching. Loyalty constitutes an important factor determining service sustainability, as loyal customers will continue using services consistently. Therefore, e-canteen managers must develop strategies focusing not only on profitability but also on customer satisfaction and engagement.

Concurrent with rapid technological development, SMK Negeri 1 Surakarta continuously adapts to increasingly modern student needs. One innovative step undertaken involves developing a digital canteen service (e-canteen) named Tukuyo. This application was designed not only to facilitate food ordering and reduce canteen queues but also to function as entrepreneurship learning media, where students can practice online buying and selling processes in controlled environments.

In its development, Tukuyo faces sales instability. Data from the last three months indicate significant customer decline, from 650 users in August to approximately 100 users in September and October. This decline is suspected to relate to low customer loyalty, reflected in minimal repeat purchases and weak service attachment. Low loyalty levels potentially decrease purchase intention and reduce regular customer numbers, ultimately impacting sales volume reduction.

Preliminary survey results of 30 Tukuyo customers indicated that 56.7% (17 respondents) used the service only 1–2 times, reflecting relatively low customer loyalty levels. Approximately 26.7% (8 respondents) used the service 3–5 times, while only 13.3% (4 respondents) made purchases more than five times. These findings demonstrate that only a small proportion of customers possess high loyalty. Additionally, 60% (18 respondents) expressed dissatisfaction with services, while only 40% (12 respondents) felt satisfied. According to Cuong and Khoi (2019), satisfaction constitutes a primary loyalty formation factor. Therefore, high dissatisfaction with Tukuyo e-canteen services potentially reinforces low customer loyalty levels.

Customer loyalty is influenced by various factors, including perceived value, trust, relational relationships, switching costs, and reliability (Hasan, as cited in Putri & Utomo, 2017). Additionally, positive company image, service quality, and customer satisfaction also contribute to loyalty

formation (Bloemer et al., as cited in Tahuman, 2016). This research focused on two main variables: service quality and perceived value, as both are considered to have direct influence on customer loyalty. Service quality reflects the extent to which services meet customer expectations, while perceived value refers to customer assessments of benefits received compared to sacrifices made. Customer loyalty indicators in this research refer to Kotler and Keller's (2016) perspective, encompassing: (1) repeat purchase, (2) retention, and (3) referrals.

One factor suspected to influence low customer loyalty toward Tukuyo e-canteen is dissatisfaction with service quality, such as delivery delays and inadequate staff responsiveness. This dissatisfaction can decrease customer attachment, especially when services do not meet expectations and generate feelings of being undervalued. Based on observations, this dissatisfaction is influenced by human resources involved in Tukuyo management: grades 10 and 11 students from various expertise programs including MPLB, PM, AKL, and DKV. Management conducted rotationally by students from different backgrounds potentially generates inconsistency in delivered service quality.

According to Tjiptono (2019), service quality represents efforts to meet consumer needs and desires appropriately to balance customer expectations. Rasyid (2017) added that service quality is assessed as good when customer perceptions align with expectations, and conversely will be considered poor when misalignment occurs. Therefore, service provider consistency in meeting customer expectations becomes key in service quality assessment. Consistent with this, Makanyeza and Chikazhe (2017) stated that continuous service quality improvement contributes positively to customer loyalty, where better services increase the likelihood of customers remaining loyal to those services. Indicators used to measure service quality in this research refer to five dimensions in SERVQUAL theory developed by Zeithaml et al. (as cited in Listiyono, 2015): (1) reliability, (2) responsiveness, (3) assurance, (4) empathy, and (5) tangibles.

Research conducted by Putra and Sugiyono (2022) demonstrated that service quality exerted positive and significant effects on Shopee-Food customer loyalty among STIESIA Surabaya students. These findings confirm that service quality plays important roles in forming customer loyalty, as optimal services can encourage customers to continue using services. Similar results were found in research by Pitaloka and Wati (2023), stating that service quality exerted positive and significant effects on Go-Food customer loyalty among Universitas Jenderal Achmad Yani Yogyakarta students.

Besides service quality, perceived value is also suspected to play roles in forming customer loyalty toward Tukuyo e-canteen. As a teaching factory, Tukuyo not only provides consumption services but also adds value through educational experiences for students involved in its management. This value potentially enhances customer perceptions of received benefits. According to Kotler and Keller (2016), perceived value represents the difference between customer-perceived benefits and incurred costs compared to alternatives. In Tukuyo's context, if customers feel that obtained benefits, both functionally and socially, exceed financial costs and time, then services will be assessed as high value and tend to encourage loyalty. Indicators used to measure perceived value in this research refer to Sweeney and Soutar's (2001) perspective, encompassing: (1) emotional value, (2) social value, (3) quality/performance value, and (4) price/value for money.

Hasan (as cited in Putri & Utomo, 2017) stated that perceived value plays important roles in forming customer loyalty. Customers feeling they obtain value commensurate with incurred costs tend to demonstrate loyal behavior, such as repeat purchases. Research by Chrissy and Mbouw (2019) proved that perceived value exerted positive and significant effects on Grab-Food customer loyalty in Jakarta. Similar findings were also presented by Erdiansyah (2021), demonstrating that perceived value exerted positive and significant effects on Grab-Food customer loyalty in Jakarta and surrounding areas. These results indicate that positive customer perceptions of service benefits received compared to sacrifices made can encourage sustainable loyalty formation.

Based on this background, researchers intended to examine this issue further through research titled "The Effect of Service Quality and Perceived Value on E-Canteen Tukuyo Customer Loyalty at SMK Negeri 1 Surakarta." This research was designed to address several problems emerging in e-canteen service management, particularly those related to customer loyalty. Therefore, research problems focused on three main areas: (1) whether service quality affects Tukuyo e-canteen

customer loyalty at SMK Negeri 1 Surakarta, (2) whether perceived value affects Tukuyo e-canteen customer loyalty at SMK Negeri 1 Surakarta, and (3) whether service quality and perceived value simultaneously affect Tukuyo e-canteen customer loyalty at SMK Negeri 1 Surakarta. Based on these formulations, this research aimed to: (1) determine service quality effects on Tukuyo e-canteen customer loyalty at SMK Negeri 1 Surakarta, (2) examine perceived value effects on Tukuyo e-canteen customer loyalty at SMK Negeri 1 Surakarta, and (3) assess service quality and perceived value effects on Tukuyo e-canteen customer loyalty at SMK Negeri 1 Surakarta.

This research is expected to contribute theoretically and practically. Theoretically, research results are expected to enrich literature in marketing management and human resource management fields, particularly regarding customer loyalty, service quality, and perceived value. Practically, this research is expected to provide input for Tukuyo e-canteen managers in enhancing customer loyalty, serve as reference for Office Administration Education study programs, and become reference for subsequent research examining factors influencing customer loyalty in technology-based entrepreneurship contexts in school environments.

Research Methods

This research was conducted at SMK Negeri 1 Surakarta, considering real problems related to customer loyalty, demonstrated by significant customer decline of Tukuyo e-canteen from 650 customers in August 2024 to approximately 100 customers in September and October 2024. This condition indicates low customer loyalty levels toward services. Location selection was also based on no similar previous research, availability of relevant data, and official support and permission from the school. This research was conducted from title submission through research report writing, occurring during November 2024 to July 2025.

This research employed a quantitative approach with two independent variables—service quality and perceived value—and one dependent variable: customer loyalty. Service quality was defined as service provider efforts to meet or exceed customer expectations, reflected in respondent assessment scores. Service quality indicators in this research refer to five SERVQUAL dimensions developed by Zeithaml et al. (as cited in Listiyono, 2015): (1) reliability, (2) responsiveness, (3) assurance, (4) empathy, and (5) tangibles. Perceived value was defined as customer perceptions of benefits obtained from products or services compared to sacrifices made, including paid costs, reflected in respondent assessment scores. Perceived value indicators in this research refer to Sweeney and Soutar's (2001) perspective, encompassing: (1) emotional value, (2) social value, (3) quality/performance value, and (4) price/value for money. Customer loyalty was defined as customer commitment to continue purchasing products or using services, also reflected in respondent assessment scores. Customer loyalty indicators in this research refer to Kotler and Keller's (2016) perspective, encompassing: (1) repeat purchase, (2) retention, and (3) referrals.

The research population included all Tukuyo e-canteen customers at SMK Negeri 1 Surakarta during August to October 2024, totaling 835 people based on management data. Sample size was determined using Slovin's formula with 5% error level, yielding 270 respondents. This sample size was considered adequate based on Roscoe's criteria (as cited in Sugiyono, 2023), stating that appropriate sample sizes for research range from 30 to 500 respondents. The sampling technique employed was incidental sampling, a method based on chance, where accidentally encountered respondents can become samples if meeting criteria as data sources (Sugiyono, 2023). This technique was selected because it enabled researchers to obtain data directly from customers who had used Tukuyo e-canteen services. Data collection was conducted over one week through closed questionnaire distribution consisting of statements with fixed answer choices, so respondents only needed to select answers most appropriate to their experiences.

This research was implemented considering scientific research ethics principles. Before data collection, researchers obtained official permission from the school as authorized authority. Each respondent received explanations regarding research purposes and procedures before completing questionnaires. Researchers also guaranteed respondent data confidentiality and ensured that all collected data were used only for academic purposes and not misused in any form.

Research instruments were structured as questionnaires with 1–4 Likert scales. Even-scale usage was intended to avoid neutral choices, thereby encouraging respondents to provide firmer answers to each statement. This scale is considered capable of representing respondent attitude tendencies more explicitly and reducing ambiguity in data interpretation. According to Ibnu Hadjar (as cited in Sujarweni, 2025), research instrument quality is determined by validity and reliability levels. Therefore, instruments in this research were tested for validity using Pearson's Product-Moment correlation formula, correlating item scores against total scores (Sembiring et al., 2024), and tested on 30 Tukuyo e-canteen service users. r-table values at 5% significance level of .361 were used as references in determining item validity. Meanwhile, reliability testing was conducted on all statement items using Cronbach's alpha values. Instruments were declared reliable if Cronbach's alpha values > .6 (Sujarweni, 2025). All validity and reliability testing processes were conducted using IBM SPSS version 26 software.

According to Sugiyono (2023), data analysis represents processes conducted after data collection from respondents, including grouping, tabulation, data presentation, and statistical calculation to answer problem formulations and test hypotheses. In this research, data analysis included data tabulation preparation, classical assumption tests (normality, linearity, multicollinearity, and heteroscedasticity), and hypothesis testing using multiple linear regression analysis, partial test (t-test), simultaneous test (F-test), coefficient of determination (R^2), and effective contribution and relative contribution analysis.

Research implementation stages comprehensively included: (1) preparation, (2) research proposal development, (3) research instrument development, (4) data collection, (5) data analysis, and (6) research report preparation. All stages were designed systematically to ensure research processes proceeded logically, consistently, and according to established objectives.

Results and Discussion

Research Results

Validity test results indicated that all items in the customer loyalty variable (Y) possessed r-value > .361, thus declared valid. Reliability testing of this variable yielded Cronbach's alpha value of .857 > .6, indicating reliable instruments. For the service quality variable (X_1), of 20 items developed, 17 items were declared valid with r-values > .361, and reliability value of .913 > .6. Meanwhile, for the perceived value variable (X_2), of 11 statement items tested, 10 items were declared valid, with reliability value of .776 > .361. Based on these results, all research instruments were declared valid and reliable for use in further analysis.

After instrument testing met requirements, data analysis was conducted on 270 respondents who were Tukuyo e-canteen customers at SMK Negeri 1 Surakarta. Data were collected through questionnaires and analyzed using IBM SPSS version 26 software. Results from this processing provided descriptive statistics overview of each researched variable, detailed as follows:

Based on Table 1, descriptive analysis results demonstrated that the customer loyalty variable (Y) possessed mean value of 32.06, median of 32.00, and mode of 32, with minimum score of 28 and maximum of 38, and standard deviation of 1.481. Most respondents (63.7%) fell within score interval 32–33, with frequency of 172 respondents. The service quality variable (X_1) showed mean value of 54.81, median of 55.00, and mode of 53, with minimum score of 43 and maximum of 68 and standard deviation of 5.245. Approximately 22.6% of respondents fell within score interval 55–57, with frequency of 61 respondents. Meanwhile, the perceived value variable (X_2) possessed mean value of 33.97, median of 34.00, and mode of 36, with minimum score of 26 and maximum of 40 and standard deviation of 3.113. The majority of respondents (23.3%) provided perceived value assessments in range 36–37, with frequency of 63 respondents.

Table 1
Descriptive Statistics Results

	Customer Loyalty	Service Quality	Perceived Value
Valid	270	270	270
Missing	0	0	0
Mean	32.06	54.81	33.97
Median	32.00	55.00	34.00
Mode	32	53[a]	36
Std. Deviation	1.481	5.245	3.113
Variance	2.194	27.507	9.690
Range	10	25	14
Minimum	28	43	26
Maximum	38	68	40
Sum	8655	14799	9171

Source: Data processed by researchers (2025)

Before hypothesis testing, prerequisite tests were first conducted to ensure data met classical linear regression assumptions. Normality testing using Kolmogorov-Smirnov method yielded significance value of .200 (> .05), indicating normally distributed data. Linearity testing through Test for Linearity showed Deviation from Linearity significance values of .095 for service quality and .167 for perceived value, both greater than .05, indicating linear relationships between independent and dependent variables.

Furthermore, multicollinearity test results indicated Tolerance values of .916 (> .10) and Variance Inflation Factor (VIF) values of 1.092 (< 10.00) for both independent variables, thus concluding no multicollinearity symptoms occurred. Heteroscedasticity testing using Glejser method also showed adequate results, with significance values of .498 for service quality and .103 for perceived value, both greater than .05. Thus, all classical assumptions were fulfilled, and regression models were declared appropriate for hypothesis testing.

After all prerequisites were fulfilled, hypothesis testing was conducted to determine service quality and perceived value effects on customer loyalty, both partially and simultaneously. Testing was conducted through multiple linear regression analysis, t-test, F-test, and calculation of determination coefficient and contribution of each independent variable.

Based on multiple linear regression analysis results, the following regression equation was obtained:

$$\hat{Y} = 16.046 + 0.161X_1 + 0.211X_2$$

This equation demonstrates that each one-point increase in the service quality variable (X_1) will increase customer loyalty (Y) by 0.161, and each one-point increase in the perceived value variable (X_2) will increase customer loyalty by 0.211, assuming other variables remain constant.

Table 2
Partial Test Results (t-test)

Coefficients[a]		
	t_{value}	Sig.
(Constant)	23.097	.000
Service Quality	15.554	.000
Perceived Value	12.068	.000

Source: Data processed by researchers (2025)

Based on Table 2, t-test results indicated that both independent variables significantly affected customer loyalty. Service quality possessed significance value of < .001 and t = 15.554, while perceived value possessed significance value of < .001 and t = 12.068. Both t-values exceeded

t-table of 1.969, thus concluding that service quality and perceived value partially exerted positive and significant effects on customer loyalty.

Table 3
Simultaneous Test Results (F-test)

ANOVA[a]		
	F	Sig.
Regression	271.071	.000[b]

Source: Data processed by researchers (2025)

Based on Table 3, test results indicated F = 271.071 > F-table = 3.03, with significance of < .001. This demonstrates that service quality and perceived value simultaneously exerted positive and significant effects on customer loyalty.

Table 4
Coefficient of Determination Results

Model Summary			
R	R Square	Adjusted R Square	Std. Error of the Estimate
.819[a]	.670	.668	.854

Source: Data processed by researchers (2025)

Based on Table 4, the coefficient of determination (R^2) value of .670 was obtained. This value resulted from squaring the correlation coefficient (R) of .819, namely $.819 \times .819 = .670$. This means service quality and perceived value variables simultaneously exerted 67% influence on customer loyalty variables. The remainder, 33% (100% - 67%), was possibly influenced by other variables not examined in this research.

Table 5
Correlation and Regression Analysis Results

Variable	Regression Coefficient (Beta)	Correlation Coefficient	R^2
Service Quality	0,571	0,700	0,670
Perceived Value	0,443	0,609	0,670

Source: Data processed by researchers (2025)

Effective contribution and relative contribution calculations were conducted based on values listed in Table 5.

Table 6
Effective Contribution Calculation Results

Variable	Effective Contribution SE (X)% = Beta x Correlation Coefficient x 100%
Service Quality	0,571 x 0,700 x 100% = 40%
Perceived Value	0,443 x 0,609 x 100% = 27%
Total	67%

Source: Data processed by researchers (2025)

Based on calculations in Table 6, the following conclusions were obtained: (1) Service quality effective contribution to customer loyalty was 40%. (2) Perceived value effective contribution to customer loyalty was 27%.

Table 7
Relative Contribution Calculation Results

Variable	Relative Contribution $SR\,(X)\% = \dfrac{SE\,(X)\%}{R^2}$
Service Quality	$\dfrac{40\%}{67\%} = 59{,}7\%$
Perceived Value	$\dfrac{27\%}{67\%} = 40{,}3\%$
Total	100%

Source: Data processed by researchers (2025)

Based on calculations in Table 7, the following conclusions were obtained: (1) Service quality relative contribution to customer loyalty was 59.7%. (2) Perceived value relative contribution to customer loyalty was 40.3%.

Overall, these findings confirm that service quality and perceived value constitute key factors in forming customer loyalty toward Tukuyo e-canteen services at SMK Negeri 1 Surakarta. Therefore, improving both aspects must become primary focus in Tukuyo e-canteen management to create long-term customer attachment.

Discussion

Research results demonstrated that service quality exerted positive and significant effects on Tukuyo e-canteen customer loyalty at SMK Negeri 1 Surakarta, with $t = 15.554 > $ t-table $= 1.969$ and significance of $< .001$. These findings are supported by SERVQUAL theory presented by Zeithaml et al. (as cited in Listiyono, 2015), stating that reliability, responsiveness, assurance, empathy, and tangibles dimensions play important roles in forming service perceptions. These results align with research by Damayanti and Nisa (2023) and Rusminah et al. (2023), concluding that service quality exerted positive and significant effects on Shopee-Food and Go-Food customer loyalty. These findings indicate that higher delivered service quality generates higher formed customer loyalty. This is consistent with Bloemer et al.'s opinion (as cited in Tahuman, 2016), stating that customer loyalty forms from several factors, one being received customer service quality.

Furthermore, research results also demonstrated that perceived value exerted positive and significant effects on Tukuyo e-canteen customer loyalty at SMK Negeri 1 Surakarta, with $t = 12.068 > $ t-table $= 1.969$ and significance of $< .001$. This indicates that higher customer-perceived benefits compared to incurred sacrifices generate higher formed loyalty. These results align with research by Zarkasyi et al. (2023) and Khasanah et al. (2023), concluding that perceived value exerted positive and significant effects on Go-Food and Shopee-Food customer loyalty. These results are consistent with Hasan's opinion (as cited in Putri & Utomo, 2017), stating that perceived value represents one of primary factors in forming customer loyalty.

Simultaneously, this research demonstrated that service quality and perceived value exerted positive and significant effects on customer loyalty, with $F = 271.071 > $ F-table $= 3.03$ and significance of $< .001$. The coefficient of determination (R^2) value of $.670$ indicated that both independent variables contributed 67% to customer loyalty, while the remaining 33% was influenced by other variables outside this research. The largest effective contribution came from service quality at 40%, while perceived value contributed 27%. Relatively, service quality contributed 59.7%, while perceived value contributed 40.3%.

Thus, this research emphasizes the importance of improving service quality and creating customer-perceived value in building loyalty, particularly in education-based services such as Tukuyo e-canteen services. Therefore, service managers must prioritize improving service

consistency, strengthening human resource competencies, and optimizing customer perceptions of provided benefits.

Conclusion

Research results demonstrated that service quality exerted positive and significant effects on Tukuyo e-canteen customer loyalty at SMK Negeri 1 Surakarta. This was evidenced through t-test with t = 15.554 > t-table = 1.969 and significance of < .001. These findings are supported by SERVQUAL (Service Quality) theory presented by Zeithaml et al. (as cited in Listiyono, 2015), stating that service quality consists of five main dimensions: reliability, responsiveness, assurance, empathy, and tangibles. This aligns with Jazuli et al.'s (2020) statement that SERVQUAL models are effective in identifying gaps between customer expectations and received services. Additionally, perceived value exerted positive and significant effects on Tukuyo e-canteen customer loyalty at SMK Negeri 1 Surakarta, with t = 12.068 > t-table = 1.969 and significance of < .001. These findings are supported by Perceived Value theory presented by Sweeney and Soutar (2001), explaining that customer value perceptions form from two main components: obtained benefits and sacrificed costs. When customers perceive that received benefits are commensurate with or exceed incurred sacrifices, loyalty tends to form. This aligns with Suratman's opinion (as cited in Rohanah, 2022), stating that perceived value plays important roles in building customer loyalty, satisfaction, and trust.

Simultaneously, both variables proved to exert positive and significant effects on Tukuyo e-canteen customer loyalty at SMK Negeri 1 Surakarta, as demonstrated by F-test results with F = 271.071 > F-table = 3.03 and significance of < .001. The coefficient of determination (R^2) value of .670 indicated that 67% of customer loyalty variation can be explained by service quality and perceived value, while the remaining 33% was influenced by other factors outside the research. Based on effective contribution analysis, service quality contributed 40% and perceived value contributed 27%, while relatively, service quality contributed 59.7% and perceived value contributed 40.3%.

This research was limited to two independent variables—service quality and perceived value—as factors influencing customer loyalty, thus not yet encompassing other variables potentially affecting customer loyalty. Research findings demonstrated that both variables contributed substantially to forming Tukuyo e-canteen customer loyalty; therefore, improving service quality and perceived value must become primary focus for service managers. Additionally, this research was conducted only in the e-canteen context at SMK Negeri 1 Surakarta; thus, research results possess limitations regarding generalization. Obtained findings may not fully represent conditions in other schools with different characteristics, organizational cultures, or canteen management systems. Therefore, subsequent research is expected to expand variable scope by considering other factors potentially influencing customer loyalty, such as company image, customer trust, and customer satisfaction. These factors possess important contributions in customer loyalty formation; thus, subsequent research is expected to provide more comprehensive and in-depth descriptions.

Several recommendations for Tukuyo e-canteen managers at SMK Negeri 1 Surakarta include increasing delivery staff numbers during high-order periods to facilitate distribution and enhance customer trust, improving price alignment with product and service quality through ingredient quality improvement, presentation, and consistent quality standard implementation, and providing suggestion boxes as communication media so complaints can be handled quickly. Additionally, continuous promotion must be conducted to increase attractiveness while simultaneously strengthening customer loyalty.

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Peer environment and self-motivation influence on students' learning behavior

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Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh lingkungan pergaulan dan motivasi diri terhadap perilaku belajar mahasiswa Program Studi Pendidikan Administrasi Perkantoran FKIP UNS. Penelitian ini menggunakan pendekatan kuantitatif dengan metode survei dan teknik analisis regresi linier berganda. Sampel berjumlah 170 mahasiswa aktif dari angkatan 2021 hingga 2023 yang diambil dengan teknik proportionate stratified random sampling. Instrumen pengumpulan data berupa angket tertutup menggunakan skala Likert yang telah diuji validitas dan reliabilitasnya. Hasil penelitian menunjukkan bahwa lingkungan pergaulan dan motivasi diri berpengaruh secara positif dan signifikan terhadap perilaku belajar mahasiswa, baik secara parsial maupun simultan. Hasil penelitian menunjukkan bahwa lingkungan pergaulan dan motivasi diri bepengaruh secara positif dan signifikan terhadap perilaku belajar mahasiswa, baik secara parsial maupun simultan. Secara parsial, lingkungan pergaulan (X1) memiliki pengaruh signifikan terhadap perilaku belajar dengan nilai t hitung sebesar 2,959 dan signifikansi 0,004 (< 0,05), sedangkan motivasi diri (X2) juga berpengaruh signifikan dengan t hitung sebesar 2,130 dan signifikansi 0,035 (< 0,05). Secara simultan, kedua variabel bebas tersebut memberikan pengaruh signifikan terhadap perilaku belajar mahasiswa dengan nilai F hitung sebesar 8,715, signifikansi 0,000 (< 0,05), dan nilai R Square sebesar 0,095, yang berarti 9,5% perubahan perilaku belajar mahasiswa dapat dijelaskan oleh lingkungan pergaulan dan motivasi diri. Dari kontribusi relatif, lingkungan pergaulan memberikan pengaruh lebih besar yaitu sebesar 62,82%, sementara motivasi diri sebesar 37,18%.

Kata kunci: interaksi sosial; kinerja akademik; mahasiswa sarjana; pendidikan tinggi; regresi linier berganda

Abstract

This study examines the influence of peer environment and self-motivation on the learning behavior of students in the Office Administration Education Study Program, Faculty of Teacher Training and Education, Universitas Sebelas Maret. A quantitative approach was employed using survey methodology and multiple linear regression analysis. The sample comprised 170 active students from the 2021 to 2023 cohorts,

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selected through proportionate stratified random sampling. Data were collected using a validated and reliable closed-ended questionnaire based on a five-point Likert scale. The results demonstrate that both peer environment and self-motivation exert positive and significant influences on students' learning behavior, both individually and collectively. Partial analysis revealed that peer environment (X1) significantly influences learning behavior (t = 2.959, p = .004), while self-motivation (X2) also demonstrates significant influence (t = 2.130, p = .035). Simultaneous analysis indicated that both independent variables significantly affect learning behavior (F = 8.715, p < .001). The coefficient of determination (R^2 = .095) indicates that 9.5% of the variance in learning behavior can be explained by peer environment and self-motivation. Regarding relative contribution, peer environment accounts for a larger proportion of influence (62.82%), while self-motivation contributes 37.18%.

Introduction

The quality of education constitutes a critical factor in determining a nation's competitiveness in the globalization era. Within this context, students' learning behavior represents a primary determinant of academic success and individual preparedness for entering the workforce. Learning behavior encompasses not only how students acquire knowledge and skills but also reflects attitudes, motivation, and strategies employed in the learning process. However, preliminary findings from the Office Administration Education Study Program at the Faculty of Teacher Training and Education, Universitas Sebelas Maret, indicate that students' learning behavior remains suboptimal. Students tend to study only immediately before examinations, demonstrate limited focus during instruction, complete assignments close to deadlines, frequently plagiarize content from the internet, and exhibit low reading habits. These observations underscore the urgency of identifying factors that influence their learning behavior more comprehensively.

Previous research has examined students' learning behavior by highlighting the influence of learning environments, instructional methods, or internal factors such as self-efficacy. Research by Hutagalung (2021) found that students' passive learning behavior is influenced by negative peer environments and inadequate supervision. Meanwhile, Wiyono and Riyani (2019) concluded that campus environment and motivation affect students' learning behavior. However, limited research has specifically examined the simultaneous influence of peer environment and self-motivation within the context of the Office Administration Education Study Program at FKIP UNS. This represents a research gap that the present study aims to address. By examining these two factors simultaneously, this research seeks to generate new insights regarding their influence on students' learning behavior within a context that has been minimally explored.

By understanding the influence of peer environment and self-motivation on learning behavior, this study aims to provide strategic recommendations for faculty members and program administrators in creating supportive learning environments and cultivating students' intrinsic motivation. This is essential for promoting the development of positive learning characteristics to produce competent graduates capable of competing in the professional workforce.

Theoretically, learning behavior is defined as the totality of actions or activities undertaken by individuals to acquire knowledge, skills, attitudes, or specific values (Santrock, 2011). Peer environment encompasses students' interactions with peers, faculty, and the academic community, which influence their thought patterns and academic behavior (Syah, 2006). According to

Vygotsky's (1978) social learning theory, social interaction plays a crucial role in individual cognitive development, as students learn through observation and dialogue with more knowledgeable individuals. Self-motivation is defined as internal drive to engage in activities for personal reasons, such as satisfaction or interest in the activity itself (Waruwu, 2017). Students with high self-motivation tend to be more focused, organized, and persistent in confronting academic challenges (Schunk et al., 2008). Research by Ali (2010) and Wiyono and Riyani (2019) also demonstrates that motivation positively influences learning behavior.

Research Methods

This study was conducted at the Office Administration Education Study Program, Faculty of Teacher Training and Education, Universitas Sebelas Maret, from May to June 2025, following instrument validation and approval from the study program administration. The research employed a quantitative design with an associative approach. Associative research aims to determine the influence between two or more variables. This study examined two independent variables (peer environment and self-motivation) and one dependent variable (students' learning behavior). The relationships among these three variables were tested statistically to determine the extent to which peer environment and self-motivation influence learning behavior.

The study population consisted of all active students in the Office Administration Education Study Program from the 2021, 2022, and 2023 cohorts, totaling 243 students. A sample of 170 students was selected using proportionate stratified random sampling based on the number of students in each cohort. Sample size determination employed the Yamane (1967) formula:

$$n = \frac{N}{1 + N \cdot e^2}$$

where n represents sample size, N represents population size, and e represents the tolerable margin of error. This technique ensured that the sample proportion reflected population characteristics proportionally.

Data collection employed a closed-ended questionnaire utilizing a five-point Likert scale. The instrument was developed based on indicators for each variable and underwent content validity assessment by experts, followed by empirical validity and reliability testing using IBM SPSS Statistics version 26. All items demonstrated acceptable validity and reliability, with Cronbach's alpha coefficients exceeding 0,70.

Prior to data analysis, prerequisite assumption tests were conducted, including normality, multicollinearity, and heteroscedasticity tests. After confirming that the data satisfied prerequisite assumptions, multiple linear regression analysis was performed to determine the influence of peer environment and self-motivation on students' learning behavior. All analytical procedures were conducted using IBM SPSS Statistics version 26.

Results and Discussion

Research Results

Based on data collected from 170 student respondents in the Office Administration Education Study Program at FKIP Universitas Sebelas Maret, descriptive statistics revealed the following characteristics. The peer environment variable (X1) demonstrated a mean of 39.58 (SD = 4.78), median of 39.00, and mode of 35. The self-motivation variable (X2) exhibited a mean of 38.48 (SD = 3.50), median of 39.00, and mode of 41. The learning behavior variable (Y) showed a mean of 31.98 (SD = 3.99), median of 31.00, and mode of 30. The proximity of mean and median values across all three variables indicates relatively normal distribution and adequate dispersion of the data.

Table 1
Descriptive Statistics of Research Variables

Variabel	Mean	Median	Mode	Standard Deviations
Peer Environment (X1)	39,58	39,00	35	4,778
Self-Motivation (X2)	38,48	39,00	41	3,498
Learning Behavior (Y)	31,98	31,00	30	3,993

Table 1 demonstrates that all three variables exhibit mean and median values in close proximity, with standard deviations that are not excessively large, indicating adequate data dispersion and a tendency toward normal distribution. This strengthens the validity foundation for employing parametric analysis techniques in this study.

Prerequisite assumption test results indicated that the data satisfied the requirements for regression analysis. The normality test using the Kolmogorov-Smirnov procedure yielded a significance value of .200 ($p > .05$), indicating that residuals were normally distributed. Linearity test results demonstrated that the relationship between peer environment (X1) and learning behavior (Y) exhibited a deviation from linearity significance of .127 ($p > .05$), while the relationship between self-motivation (X2) and learning behavior showed a significance of .158 ($p > .05$), thus both satisfied the linearity assumption. Additionally, the multicollinearity test indicated tolerance values of .940 ($> .10$) and variance inflation factor values of 1.064 (< 10) for both independent variables, signifying absence of multicollinearity symptoms.

Table 2
Results of Assumption Tests

Test Type	Result	Criterion
Normality (Kolmogorov-Smirnov)	Signifikansi = 0,200	> 0,05
Linearity X1 → Y	Deviation from Linearity = 0,127	> 0,05
Linearity X2 → Y	Deviation from Linearity = 0,158	> 0,05
Multicollinearity	Tolerance = 0,940; VIF = 1,064	Tolerance > 0,10; VIF < 10
Heteroscedasticity (Glejser)	Sig. X1 = 0,004; Sig. X2 = 0,017	< 0,05

Table 2 demonstrates that residuals are normally distributed and relationships between variables are linear. No multicollinearity was detected. However, symptoms of heteroscedasticity were identified based on the Glejser test, indicating unequal variance of residuals in the regression model.

Hypothesis testing was conducted through multiple linear regression analysis. Partial test results indicated that peer environment (X1) exerts a positive and significant influence on students' learning behavior, with a t value of 2.959 exceeding the critical t value of 1.974 and significance of .004 ($p < .05$). Self-motivation (X2) also demonstrates a positive and significant influence on learning behavior, with $t = 2.130 > 1.974$ and $p = .035$. Simultaneous analysis revealed that both independent variables significantly influence learning behavior, with an F value of 8.715 exceeding the critical F value of 3.05 and significance < .001. The coefficient of determination (R^2) of .095 indicates that 9.5% of variance in students' learning behavior can be explained by peer environment and self-motivation, while the remaining 90.5% is explained by factors outside this research model.

The effective contribution from peer environment is 5.94% and from self-motivation is 3.52%, while the relative contributions are 62.82% and 37.18%, respectively.

Table 3
Results of Multiple Linear Regression Hypothesis Testing

Independent Variable	t Count	t Table	Significance
Peer Environment (X1)	2,959	1,974	0,004
Self-Motivation (X2)	2,130	1,974	0,035

Table 3 demonstrates that both peer environment and self-motivation individually exert positive and significant influences on students' learning behavior. Specifically, improvements in peer environment and self-motivation correspond with enhanced learning behavior.

Table 4
Results of Simultaneous F-Test

F Count	F Table	Significance
8,715	3,05	0,000

Table 4 demonstrates that both independent variables collectively exert a significant influence on learning behavior. This indicates that the regression model is appropriate for prediction and interpretation of relationships among variables.

Table 5
Coefficient of Determination and Variable Contributions

Statistic	Value
R²	0,095
Effective Contribution X1	5,94%
Effective Contribution X2	3,52%
Relative Contribution X1	62,82%
Relative Contribution X2	37,18%

Table 5 indicates that the R² value of .095 demonstrates that 9.5% of variance in learning behavior can be explained by peer environment and self-motivation. Peer environment contributes a larger relative proportion compared to self-motivation; however, both exert meaningful influences in shaping learning behavior.

Discussion

The influence of peer environment on students' learning behavior demonstrates positive and significant results (t = 2.959, p = .004), consistent with research by Hutagalung (2021), which identified peer environment as playing an important role in shaping students' academic behavior. This finding reinforces Vygotsky's (1978) social learning theory, which emphasizes the importance of social interaction in individual cognitive development. The beta coefficient of .225 indicates that each one-unit increase in peer environment corresponds with a .225-unit increase in learning behavior. The relative contribution of peer environment at 62.82% of the total influence from both independent variables demonstrates the dominance of external factors in this research context. This differs from several previous studies that found internal factors to be more dominant but aligns with characteristics of students who are still adjusting to the university academic environment.

Self-motivation demonstrates a positive and significant influence on students' learning behavior (t = 2.130, p = .035), supporting research by Ali (2010) and Schunk et al. (2008), which identified it as an important factor in academic success. The beta coefficient of .162 indicates that each one-unit increase in self-motivation corresponds with a .162-unit increase in learning behavior. Although significant, the relative contribution of self-motivation constitutes only 37.18% of the total influence from both independent variables, lower than peer environment. This finding differs from research by Waruwu (2017), which identified intrinsic motivation as the dominant factor in learning behavior. This discrepancy may be explained by characteristics of students in the Office Administration Education Study Program, who are more responsive to social environmental influences in shaping academic behavior, considering that the administrator profession requires abilities to interact and adapt within dynamic work environments.

The simultaneous influence of peer environment and self-motivation on students' learning behavior demonstrates significant results (F = 8.715, p < .001) with a contribution of 9.5% (R² = .095), indicating that both variables collectively exert a meaningful influence, although relatively modest. This finding differs from research by Wiyono and Riyani (2019), which identified larger contributions from environmental and motivational factors. The modest R² value indicates that 90.5% of variance in students' learning behavior is explained by other factors not examined in this study, such as learning styles, prior academic ability, learning facilities, or family socioeconomic conditions. These results provide important implications that students' learning behavior constitutes a complex phenomenon influenced by multiple factors. Nevertheless, the significance of the simultaneous influence demonstrates that the combination of positive peer environment and high self-motivation continues to provide meaningful contributions to enhancing the learning behavior of students in the Office Administration Education Study Program at FKIP UNS.

Conclusion

Based on research conducted with 170 students in the Office Administration Education Study Program at FKIP UNS, findings indicate that peer environment and self-motivation exert positive and significant influences on students' learning behavior, both individually and collectively. Regression analysis results demonstrate that both variables explain 9.5% of variance in students' learning behavior, while the remainder is influenced by factors not examined in this study. Peer environment provides a larger relative contribution compared to self-motivation in shaping learning behavior.

This study has limitations regarding the scope of independent variables, which encompasses only two factors, as well as the duration of research implementation, which occurred over two months from May to June 2025, thus not capturing longitudinal changes in students' learning behavior. Additionally, utilization of closed-ended questionnaires may constrain exploration of more in-depth respondent responses. Therefore, future research should consider additional variables such as learning styles, family support, and psychological factors, as well as employ varied data collection methods to obtain more comprehensive and in-depth models for explaining students' learning behavior.

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Students' perceptions of teacher competence and learning interest influence on archival management outcomes

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Abstrak

Hasil belajar siswa dapat dipengaruhi oleh beberapa seperti minat belajar dan persepsi siswa terhadap kompetensi profesional yang dimiliki guru. Penelitian ini bertujuan untuk mengetahui : (1) pengaruh persepsi siswa tentang kompetensi profesional guru terhadap hasil belajar mata pelajaran Pengelolaan Kearsipan, (2) pengaruh minat belajar terhadap hasil belajar mata pelajaran Pengelolaan Kearsipan, (3) pengaruh persepsi siswa tentang kompetensi profesional guru dan minat belajar terhadap hasil belajar mata pelajaran Pengelolaan Kearsipan. Populasi dalam penelitian ini adalah siswa kelas XI MPLB SMK Negeri 6 Surakarta. Penelitian ini merupakan penelitian kuantitatif dengan pendekatan kausalitas. Sampel penelitian diperoleh menggunakan teknik Convenience Sampling. Metode pengumpulan data menggunakan metode survei. Teknik analisis data dalam penelitian ini menggunakan teknik analisis regresi linear berganda. Penelitian menunjukkan bahwa terdapat pengaruh negatif antara persepsi siswa tentang kompetensi profesional guru terhadap hasil belajar mata pelajaran pengelolaan kearsipan ($t_{hitung} > t_{tabel}$ yaitu -3,076 > 1,990), terdapat pengaruh yang positif signifikan antara minat belajar terhadap hasil belajar mata pelajaran pengelolaan kearsipan ($t_{hitung} > t_{tabel}$ yaitu 5,990 > 1,990), secara simultan kedua variabel bebas berpengaruh positif terhadap hasil belajar ($F_{hitung} > F_{tabel}$ yaitu 19.575 > 3,11 dengan nilai signifikansi 0,000 > 0,05). Nilai R square sebesar 0,326, artinya persepsi siswa tentang kompetensi profesional guru dan minat belajar mempengaruhi hasil belajar sebesar 32,6%.

Kata kunci: hasil akademik; kearsipan; keprofesionalan pendidik; peserta didik

Abstract

Students' learning outcomes are influenced by various factors, including learning interest and students' perceptions of teachers' professional competence. This study examined: (1) the influence of students' perceptions of teachers' professional competence on learning outcomes in Archival Management, (2) the influence of learning interest on learning outcomes in Archival Management, and (3) the combined influence of students' perceptions of teachers' professional competence and learning

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interest on learning outcomes in Archival Management. The population comprised Grade XI MPLB students at SMK Negeri 6 Surakarta. This quantitative study employed a causal approach, with samples obtained through convenience sampling. Data were collected via survey methods and analyzed using multiple linear regression analysis. Results indicated a significant negative influence of students' perceptions of teachers' professional competence on learning outcomes (t = -3.076, p = .003), a significant positive influence of learning interest on learning outcomes (t = 5.990, p < .001), and a significant combined positive influence of both independent variables on learning outcomes (F = 19.575, p < .001). The coefficient of determination (R² = .326) revealed that students' perceptions of teachers' professional competence and learning interest collectively explained 32.6% of the variance in learning outcomes.

Introduction

Education plays an integral role in human development from birth throughout life, serving not merely as a conduit for knowledge transmission but as a foundation for acquiring meaningful skills essential for individual growth. Education represents a guiding light that assists individuals in determining their life's direction, purpose, and meaning (Nasution, 2014). Nugroho and Sudarma (2017) emphasized that education serves a critical function in achieving Indonesia's national aspirations of establishing prosperity for all citizens and fostering improved nation-building. According to the 2022 Programme for International Student Assessment (PISA) study on global secondary education systems, Indonesia ranked 66th among 81 countries, indicating considerable room for improvement relative to other nations (Syafaruddin, 2024).

Enhancing educational quality and standards necessitates comprehensive evaluation and analysis from multiple perspectives. One critical approach to improving educational quality in schools involves elevating student learning outcomes (Nugroho & Sudarma, 2017). Purbiyanto and Rustiana (2018) defined learning outcomes as changes or achievements students attain following the learning process. Student learning outcomes are influenced by various factors, broadly categorized as external and internal factors (Sawawa et al., 2018). One influential factor affecting student learning outcomes is students' perceptions of teacher competence. Students' perceptions of teachers' professional competence refer to students' views regarding their teachers' mastery of subject matter, which enables teachers to assist students in meeting learning competency standards (Hartaji, 2018). As educational professionals, teachers must fulfill and comprehend competency standards for their profession. However, in current practice, many teachers have not fully actualized their roles as professional educators.

Student learning success is not determined by a single factor; various other factors play significant roles, with learning interest being particularly important (Cahyani et al., 2020). Learning interest represents students' intrinsic desire to focus their thoughts and attention on mastering knowledge and understanding concepts (Ndraha et al., 2022). Learning interest plays a crucial role in enhancing student engagement, motivating students to seek, understand, explore, and absorb material taught by teachers. This motivation encourages students to study more diligently, achieve better comprehension, and complete assignments thoroughly, thereby maximizing learning outcomes. Conversely, when students' learning interest is low, their learning outcomes tend to decline (Marti'in, 2019). According to Rusmiati (2017), students' learning interest does not emerge spontaneously but is influenced by factors including motivation, attention, learning materials, and

teacher attitudes. Students' learning interest must be continuously cultivated to ensure classroom learning processes achieve intended objectives, enabling students to deeply understand subject matter without perceiving learning activities as burdensome.

Based on preliminary observations at SMK Negeri 6 Surakarta, several problems were identified. Most students perceived the learning atmosphere as monotonous and tense. Students felt that teachers were unable to create an engaging classroom environment, delivering material that students found difficult to comprehend. Additionally, most students experienced tension during classroom learning because teachers frequently posed questions beyond students' abilities. These circumstances discouraged students from actively participating in learning and fostered negative perceptions of teachers teaching Archival Management. Another identified problem was students' lack of interest in Archival Management content, indicating low student interest in this subject. Furthermore, students' quiz scores and daily test results remained suboptimal, demonstrating that student learning outcomes in Archival Management were not maximized and students had not adequately mastered the subject matter.

Research Methods

This study was conducted at SMK Negeri 6 Surakarta, located at Jalan L.U. Adi Sucipto No. 38, Kerten, Laweyan District, Surakarta City, Central Java Province, postal code 57143, in April 2025. SMK Negeri 6 Surakarta was selected as the research site because the school environment effectively supports research concerning teacher-student interactions and enables measurement of students' perceptions of teachers' professional competence and learning interest. Furthermore, SMK Negeri 6 Surakarta provides administrative support conducive to efficient data collection processes.

The study population consisted of all Grade XI students in the Office Management and Business Services (MPLB) program at SMK Negeri 6 Surakarta for the 2024/2025 academic year, totaling 106 students. The sample size was determined using the Slovin formula with a 5% margin of error, yielding a sample of 84 students from the total population of 106 students. The sampling technique employed was convenience sampling. This study utilized learning outcomes in Archival Management as the dependent variable, specifically focusing on students' daily test scores. The study was grounded in Edward Lee Thorndike's connectionism learning theory, which posits that learning outcomes represent responses emerging from the interaction between students' perceptions (stimulus) and students' readiness (learning interest).

Data collection represents a process that assists researchers in gathering necessary data to support research. This study employed several data collection techniques: observation, questionnaire/survey distribution, and document analysis. The observation conducted in this study was direct or participative observation, where the researcher actively participated in the observation process. The distributed questionnaire employed a closed-ended format using a modified 4-point Likert scale with four response categories (strongly disagree, disagree, agree, strongly agree) to facilitate respondent completion. The modified 4-point Likert scale was utilized to minimize data loss associated with the limitations of neutral response options (Alfaridzi & Budiani, 2021). Documents collected for data acquisition included student grade records, student enrollment data, and other relevant documents supporting research at SMK Negeri 6 Surakarta.

The validity testing method employed Pearson Product Moment correlation at a 5% significance level, analyzed using IBM SPSS Statistics 25. Validity test results indicated that of 40 questionnaire items for students' perceptions of teachers' professional competence (X_1) and learning interest (X_2), 36 items were valid and 4 items were invalid. The four invalid items were numbers 7, 32, 36, and 40. These items were deemed invalid because their calculated r values were smaller than the critical r value at a 5% significance level, which could result in questionnaire failure to comprehensively and accurately measure construct instruments, leading to inappropriate research result interpretations. These four invalid items were eliminated and excluded because they were adequately represented by existing instruments within their respective indicators. For reliability testing, Cronbach's Alpha reliability analysis was employed using IBM SPSS Statistics 25. Reliability test results demonstrated that research instruments were reliable, with values of .904 for

students' perceptions of teachers' professional competence (X_1) and .898 for learning interest (X_2), both exceeding the threshold of .60.

Data analysis was conducted following complete data collection. Data analysis in this study comprised descriptive statistics, classical assumption tests, and hypothesis testing. Classical assumption tests included normality testing using the Kolmogorov-Smirnov method, linearity testing using ANOVA, multicollinearity testing, and heteroscedasticity testing using the Glejser method. Hypothesis testing included t-tests, F-tests, multiple linear regression analysis, coefficient of determination (R^2) testing, and calculation of effective and relative contributions. All data analyses were performed using IBM SPSS Statistics 25. The research hypotheses to be tested were: H_1: Students' perceptions of teachers' professional competence influence learning outcomes in Archival Management for Grade XI MPLB students at SMK Negeri 6 Surakarta. H_2: Learning interest influences learning outcomes in Archival Management for Grade XI MPLB students at SMK Negeri 6 Surakarta. H_3: Students' perceptions of teachers' professional competence and learning interest collectively influence learning outcomes in Archival Management for Grade XI MPLB students at SMK Negeri 6 Surakarta.

Results and Discussion

Research Results

This study comprised three variables: two independent variables and one dependent variable. The independent variables were students' perceptions of teachers' professional competence (X_1) and learning interest (X_2), while the dependent variable (Y) was learning outcomes in Archival Management. Data for independent variables (X_1 and X_2) were obtained by distributing questionnaires to 84 Grade XI MPLB students at SMK Negeri 6 Surakarta, whereas dependent variable (Y) data were obtained from students' daily test scores. Prior to hypothesis testing, classical assumption tests were conducted. Normality testing using the Kolmogorov-Smirnov method revealed a significance value (2-tailed) of .200, indicating normally distributed data. Linearity testing showed significance values of .331 for X_1 to Y and .343 for X_2 to Y, both exceeding .05, confirming linear relationships between independent variables (X) and the dependent variable (Y). Multicollinearity test results indicated tolerance values of .952 for both X_1 and X_2 (greater than .10), and VIF values of 1.050 (less than 10), confirming no multicollinearity among independent variables. Heteroscedasticity testing yielded significance values of .199 for X_1 and .081 for X_2, both exceeding .05, indicating no heteroscedasticity problems. Based on classical assumption test results, hypothesis testing proceeded.

Multiple linear regression analysis yielded the equation: $Y = 46.921 - 0.362X_1 + 0.931X_2$. These results indicated that when both students' perceptions of teachers' professional competence and learning interest equal zero, learning outcomes in Archival Management equal 46.921. The regression coefficient for students' perceptions of teachers' professional competence (X_1) of -0.362 indicated that each one-point change in X_1 resulted in a 0.362-point decrease in Archival Management learning outcomes (Y). The regression coefficient for learning interest (X_2) of 0.931 indicated that each one-point change in X_2 resulted in a 0.931-point increase in Archival Management learning outcomes (Y). The t-test revealed that X_1 yielded t = -3.076. Because the absolute t value exceeded the critical t value (3.076 > 1.990) with p = .003 (p < .05), results confirmed a significant negative influence of students' perceptions of teachers' professional competence on Archival Management learning outcomes. For X_2, t = 5.990. Because the t value exceeded the critical t value (5.990 > 1.990) with p < .001 (p < .05), results confirmed a significant positive influence of learning interest on Archival Management learning outcomes.

The F-test yielded p < .001 with F = 19.575, exceeding the critical F value of 3.11. Based on these results, students' perceptions of teachers' professional competence (X_1) and learning interest (X_2) collectively demonstrated a significant positive influence on Archival Management learning outcomes (Y). The coefficient of determination revealed R^2 = .326, indicating that students'

perceptions of teachers' professional competence and learning interest collectively explained 32.6% of the variance in Archival Management learning outcomes.

Effective contribution represents the magnitude of direct influence from an independent variable (X) on the dependent variable (Y). Effective contribution calculations revealed that students' perceptions of teachers' professional competence (X_1) contributed 4.8% to Archival Management learning outcomes (Y), while learning interest (X_2) contributed 27.8%. The total effective contribution equaled 32.6%. Relative contribution results indicated that students' perceptions of teachers' professional competence (X_1) accounted for 14.6% of Archival Management learning outcomes (Y), while learning interest (X_2) accounted for 85.4%, totaling 100%.

Discussion

The first hypothesis posited that students' perceptions of teachers' professional competence influence Archival Management learning outcomes for Grade XI MPLB students at SMK Negeri 6 Surakarta. First hypothesis testing results indicated that H_0 was rejected and H_1 was accepted, though findings contradicted the original hypothesis. This was evidenced by negative values in multiple linear regression analysis and t-test results. The regression coefficient for students' perceptions of teachers' professional competence (X_1) was -0.362, and the t-test yielded t = -3.076 (greater than the critical value of 1.990) with p = .003. The negative coefficient indicated an inverse relationship between students' perceptions of teachers' professional competence and learning outcomes. Higher positive perceptions of teachers' professional competence did not guarantee improved student learning outcomes in Archival Management. These findings contradicted Firdaus's (2020) assertion that when students' perceptions of teachers' professional competence improve positively, student learning outcomes increase; conversely, when perceptions become negative, learning outcomes decline. The negative influence of students' perceptions of teachers' professional competence on learning outcomes occurred because students considered teachers professionally competent based on formal certification, yet teachers had not utilized digital technology in instruction, whereas students expected Archival Management to be taught using digital technology.

The second hypothesis posited that learning interest influences Archival Management learning outcomes for Grade XI students at SMK Negeri 6 Surakarta. Second hypothesis testing results confirmed that H_0 was rejected and H_2 was accepted, evidenced by multiple linear regression analysis and t-test results. The regression coefficient for learning interest (X_2) was 0.931, and the t-test yielded t = 5.990 (exceeding the critical value of 1.990) with p < .001. Based on these data, learning interest demonstrated a significant positive influence on Archival Management learning outcomes. Therefore, when students' learning interest increases, their learning outcomes also increase. These findings align with research conducted by Hikmah et al. (2022), which confirmed that learning interest positively influences student learning outcomes. Prastika (2020) explained in their research that students with high learning interest can effectively participate in learning, thereby producing optimal performance in learning activities.

The third hypothesis posited that students' perceptions of teachers' professional competence and learning interest collectively influence Archival Management learning outcomes. Third hypothesis testing results confirmed that H_0 was rejected and H_3 was accepted, evidenced by multiple linear regression analysis and F-test results. The constant value was 46.921, and the F-test yielded F = 19.575, exceeding the critical F value of 3.11 for N = 84, with p < .001. Based on these results, students' perceptions of teachers' professional competence and learning interest collectively demonstrated a significant positive influence on Archival Management learning outcomes. These findings align with research conducted by Rahman et al. (2023), which indicated that students' perceptions of teachers' professional competence and learning interest collectively exert significant positive influences on student learning outcomes. Additional research supporting these findings includes Muti'ah's (2016) study, which confirmed that students' perceptions of teachers' professional competence and learning interest collectively exert substantial influences on student learning outcomes.

Conclusion

Based on research findings, the following conclusions were drawn: (1) students' perceptions of teachers' professional competence exerted a significant negative influence on Archival Management learning outcomes, (2) learning interest exerted a significant positive influence on Archival Management learning outcomes, and (3) students' perceptions of teachers' professional competence and learning interest collectively exerted a significant positive influence on Archival Management learning outcomes. These findings demonstrate that at SMK Negeri 6 Surakarta, student learning outcomes were predominantly influenced by learning interest, with a relative contribution of 85.4%, while students' perceptions of teachers' professional competence contributed 14.6% to learning outcomes. This study has limitations that may inform future research. Recommendations for the principal of SMK Negeri 6 Surakarta include providing support for teachers to employ more creative and innovative instructional approaches beyond content mastery. Principals should offer training programs, workshops, or mentorship programs focused on integrating digital technology in instruction and establish recognition systems for students' positive learning behaviors. Recommendations for teachers at SMK Negeri 6 Surakarta emphasize better understanding of students' characteristics and learning needs, implementing teaching methods integrating technological developments and creative approaches. Teachers should explore digital technologies and various software applications supporting subject matter, particularly for practice-based subjects. Students are encouraged to manage perceptions of teachers objectively while maintaining focus on subject matter, even when personal perceptions of teachers are not entirely positive. Students should also maintain their learning interest by sustaining positive attitudes, such as attentively following teachers' material explanations and maintaining diligence in studying. Given this study's limitations in variable selection and research scope, future researchers should expand investigations by incorporating additional variables potentially influencing student learning outcomes, such as learning motivation, school facilities, teachers' instructional strategies, students' psychological factors, peer factors, and others. Future researchers are advised to conduct similar studies at different educational levels, such as junior high schools, senior high schools, or universities, to generate more diverse findings and enable comparisons across educational levels.

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The influence of digital literacy and self-efficacy on students' critical thinking abilities

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Abstrak

Kemampuan berpikir kritis merupakan keterampilan penting abad ke-21, namun pada praktiknya siswa SMK masih cenderung rendah karena lebih fokus menghafal materi daripada menganalisis, mengevaluasi, atau memecahkan masalah. Penelitian ini bertujuan untuk menguji pengaruh literasi digital dan self efficacy terhadap kemampuan berpikir kritis siswa kelas X Program Keahlian Manajemen Perkantoran dan Layanan Bisnis (MPLB) SMK Negeri 6 Surakarta, baik secara simultan maupun parsial. Penelitian ini menggunakan pendekatan kuantitatif kausalitas dengan desain korelasional. Sampel berjumlah 85 siswa dari populasi 108 siswa dengan teknik proportional random sampling. Data dikumpulkan melalui angket dan dianalisis dengan regresi linier berganda menggunakan IBM SPSS versi 26. Hasil penelitian menunjukkan bahwa: (1) literasi digital berpengaruh positif dan signifikan terhadap kemampuan berpikir kritis (t_{hitung} 4,708 > t_{tabel} 1,663; sig. = 0,000 < 0,05); (2) self efficacy juga berpengaruh positif dan signifikan (t_{hitung} 3,402 > t_{tabel} 1,66; sig. = 0,001 < 0,05); (3) secara simultan, keduanya berpengaruh signifikan terhadap kemampuan berpikir kritis (F_{hitung} 38,847 > F_{tabel} 3,11; sig. = 0,000 < 0,05). Persamaan regresinya yakni $\hat{Y}$= 20,423+0,530 X1+0,383 X2. Nilai koefisien determinasi (R^2) sebesar 0,487. Sumbangan efektif literasi digital sebesar 29,26% dan self efficacy sebesar 19,41%. Sumbangan relatif literasi digital sebesar 60,07% dan self efficacy sebesar 39,86%. Temuan ini menunjukkan perlunya sekolah meningkatkan fasilitas literasi digital, membiasakan pembelajaran berbasis analisis, serta menumbuhkan kepercayaan diri siswa melalui pendampingan akademik.

Kata kunci : berpikir tingkat tinggi; kepercayaan diri; kuantitatif; literasi teknologi

Abstract

Critical thinking ability is an essential 21st-century skill; however, in practice, vocational high school students still tend to demonstrate low levels, as they focus more on memorizing material rather than analyzing, evaluating, or solving problems. This study aims to examine the influence of digital literacy and self-efficacy on the critical thinking ability of Grade X students in the Office Management and Business Services (MPLB) Program at SMK Negeri 6 Surakarta, both simultaneously and partially. This study uses a causality quantitative approach with a correlational design. The sample

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comprised 85 students from a population of 108 students using proportional random sampling technique. Data were collected through questionnaires and analyzed using multiple linear regression with IBM SPSS version 26. The results showed that: (1) digital literacy has a positive and significant effect on critical thinking skills (t = 4.708, p < .001); (2) self-efficacy also has a positive and significant effect (t = 3.402, p = .001); (3) simultaneously, both have a significant effect on critical thinking skills (F = 38.847, p < .001). The regression equation is $\hat{Y} = 20.423 + 0.530X_1 + 0.383X_2$. The coefficient of determination (R^2 = .487) means that digital literacy and self-efficacy influence critical thinking skills by 48.7%. The effective contribution of digital literacy is 29.26% and self-efficacy is 19.41%. The relative contribution of digital literacy is 60.07% and self-efficacy is 39.86%. These findings indicate the necessity for schools to enhance digital literacy facilities, promote analysis-based learning, and foster students' self-confidence through academic mentoring.

Keywords: cognitive skills; self-confidence; technology literacy; 21st-century learning

Introduction

Education serves as the primary foundation for developing high-quality generations capable of adapting to evolving circumstances and confronting global challenges. The competencies required in the 21st century encompass critical thinking, communication, collaboration, and creativity (4C), representing fundamental skills or life competencies that students must possess in the Industry 4.0 era (Hamdani et al., 2023). Among these four elements, critical thinking constitutes one of the core competencies students must develop. Students' critical thinking ability represents a conscious cognitive process involving careful observation, comprehension, and thorough analysis of concepts within learning contexts (Arif et al., 2022). Critical thinking ability refers to higher-order thinking skills involving systematic processes to analyze, evaluate, and synthesize information from multiple sources objectively and consistently.

The importance of critical thinking is further emphasized by Ariadila et al. (2023), who asserted that critical thinking skills are crucial in education because they help students enhance learning capabilities, solve problems, and make more informed decisions. In contemporary education systems, frameworks must support the development of skills, knowledge, and attitudes necessary for success in modern education. Success indicators include students' critical thinking abilities and problem-solving capabilities (Martinez & Tinoca, 2022). According to Glaser's perspective, critical thinking represents an individual's capacity to reason deeply about problem resolution by analyzing issues to seek knowledge or truth based on factual evidence (Fauzan et al., 2021). Consequently, critical thinking constitutes the primary foundation supporting student success in complex modern educational contexts.

Data from the 2022 Programme for International Student Assessment (PISA) indicated that Indonesia ranked 69th among 81 countries, with average scores of 359 for reading, 366 for mathematics, and 383 for science. Based on Computer-Based National Assessment (ANBK) evaluation results, many vocational school students demonstrated limitations in higher-order thinking abilities. Vocational school students' average scores on literacy indicators, encompassing skills in analyzing, evaluating, and reflecting on information, reached only 55 on a 100-point scale, below the minimum competency standard (SKM) of 70 established by the Ministry of Education, Culture, Research, and Technology.

Problems related to students' critical thinking abilities frequently emerge in school learning implementation, including at vocational schools. This is particularly evident among Grade X MPLB students at SMK Negeri 6 Surakarta. A preliminary study through perception questionnaire distribution was conducted with 24 students, revealing that students' critical thinking abilities in learning remained low. This was reflected in students' limited capacity to analyze, evaluate, and propose solutions to problems presented during learning. Many students focused solely on memorizing material without attempting to comprehend concepts deeply. Furthermore, most students tended to be passive in providing responses or asking questions during learning. Selection of Grade X as the research focus was based on the consideration that students at this level remain in the initial stages of vocational learning, making it essential to develop critical thinking abilities early as a foundation for subsequent educational levels.

Based on preliminary study results with 24 students, analytical ability data revealed that 25% of students were unable to quickly comprehend main problems in situations, while 62.5% demonstrated limited capability. Regarding problem-solving ability, 25% of students were unable to provide logical solutions, with 66.7% indicating limited capability. For the ability to distinguish facts from opinions, 29.2% of students were unable to differentiate facts from opinions when analyzing information, while 54.2% showed limited capability. Evaluation ability data indicated that 25% of students were unable to consider various perspectives before making decisions, with 54.2% demonstrating limited capability. Additionally, for conclusion-drawing ability, 37.5% of students were unable to draw accurate conclusions based on available data, while 50% showed limited capability.

Various factors can enhance students' critical thinking abilities, one being digital literacy. Digital literacy is considered important because it provides technical and cognitive skills enabling students to filter valid information, analyze data, and integrate knowledge from multiple sources. Digital literacy was selected because technological developments have made it a primary skill directly influencing students' abilities to filter, analyze, and process information as the foundation for critical thinking. The importance of digital literacy in supporting critical thinking abilities is reinforced by Wulandari et al. (2023), who stated that with rapidly developing digitalization across various life aspects, digital literacy has become one of the essential external factors in enhancing students' critical thinking abilities. Furthermore, low digital literacy can also hinder critical thinking ability development. This is supported by Wendratama et al. (2020), who stated that low critical thinking results from low digital literacy participation among communities in using digital media.

To enhance an individual's capability in finding information suited to needs and formulating effective strategies, individuals must possess digital literacy. According to Naufal (2021), three factors influence digital literacy: (1) functional skills; (2) communication and interaction; and (3) critical thinking. Four indicators articulated by Paul Gilster (1997, as cited in Fauzi & Usmeldi, 2022) include: (1) Internet searching, encompassing the ability to conduct information searches on the internet using search engines; (2) hypertextual navigation, including knowledge about hypertext and hyperlinks and their functions; (3) content evaluation, encompassing the ability to distinguish between display and information content, specifically users' perceptions in understanding webpage displays; and (4) knowledge assembly, encompassing the ability to construct knowledge and build information collections obtained from various sources.

Meanwhile, self-efficacy can also influence students' critical thinking abilities. Self-efficacy was selected because self-confidence plays an important role in determining students' motivation, persistence, and success in confronting academic challenges. Individuals with low self-efficacy tend to exhibit avoidance attitudes toward tasks and demonstrate lower engagement in work (Fida et al., 2025). Conversely, high self-efficacy plays an important role in enhancing critical thinking abilities, particularly in analyzing information, making logical decisions, and solving problems independently (Sariningsih & Purwasih, 2017). This indicates that self-efficacy not only influences students' confidence in confronting intellectual challenges but also maintains a close relationship with critical thinking abilities.

Self-efficacy is influenced by various interrelated factors. According to Bandura (1997), self-efficacy is influenced by four factors: (1) mastery experience; (2) vicarious learning from observing others; (3) verbal persuasion; and (4) physiological and emotional conditions. The self-efficacy

indicators employed in this study, according to Bandura (1997), include: (1) magnitude; (2) strength; and (3) generality.

According to Ariadila et al. (2023), individuals possessing strong critical thinking abilities tend to be more capable of making informed decisions, identifying problems accurately, and solving problems more effectively. The critical thinking ability indicators employed in this study, according to Ennis (2011), include: (1) elementary clarification; (2) basic support for decisions; (3) inference; (4) advanced clarification; and (5) supposition and integration.

Students lacking adequate digital literacy will experience difficulty accessing, understanding, and evaluating information effectively, preventing them from utilizing technology to support learning processes. Additionally, low self-efficacy can cause students to lack confidence in confronting learning challenges and applying critical thinking skills. Consequently, students' critical thinking abilities remain low, impacting their limited capacity to analyze problems, make logical decisions, and solve problems effectively. Therefore, conducting further research regarding the influence of digital literacy and self-efficacy on students' critical thinking abilities is essential to identify appropriate solutions for enhancing both factors and supporting students' critical thinking ability development.

Based on the problem background, this study aimed to address several key questions: (1) Does digital literacy influence the critical thinking abilities of Grade X MPLB students at SMK Negeri 6 Surakarta?; (2) Does self-efficacy influence the critical thinking abilities of Grade X MPLB students at SMK Negeri 6 Surakarta?; and (3) Do digital literacy and self-efficacy collectively influence the critical thinking abilities of Grade X MPLB students at SMK Negeri 6 Surakarta?

Metode Penelitian

The method used in this study is causality with a quantitative approach. The independent variables in this study are digital literacy and self-efficacy, while the dependent variable of this study is critical thinking ability. The population of this study is all Grade X students in the Office Management and Business Services (MPLB) Skills Program at SMK Negeri 6 Surakarta for the 2024/2025 Academic Year, divided into 3 classes with a total of 108 students.

The sampling technique used is probability sampling with proportional random sampling type. Probability sampling is a sampling method that provides equal opportunities and chances for each member or element in the population to be selected as a sample. Determination of the sample size refers to the Slovin formula.

$$ni = \frac{Ni}{N} x\, n$$

The following are the sample calculation results obtained for each class, yielding a total sample of 85 students.

$$n1 = \frac{36}{108} \, x \, 85 = 28$$

$$n2 = \frac{36}{108} \, x \, 85 = 28$$

$$n3 = \frac{36}{108} \, x \, 85 = 29$$

This study uses closed-ended questionnaires using a Likert scale of 1-5, where answers are already available so respondents only need to choose the options provided. The selection of the Likert scale to measure critical thinking abilities through respondent perceptions is because this approach allows assessment of critical thinking dispositions such as beliefs, attitudes, and reflective habits that cannot be measured directly through written tests or essays. Data collection time was carried out in April 2025. Questionnaire distribution was carried out directly in each class under researcher supervision. Before filling out, respondents were given a brief explanation of the purpose and procedure for filling out the questionnaire.

Data analysis in this study uses SPSS Statistics version 26 software. The research procedure begins with data tabulation by entering the data obtained into tables to facilitate data processing. Then continued with data conversion and conducting prerequisite analysis tests which include normality, linearity, multicollinearity, and heteroscedasticity tests. Next, hypothesis testing is conducted consisting of partial significance test (t-test), simultaneous significance test (F-test), multiple linear regression analysis, coefficient of determination analysis (R^2), and calculation of effective and relative contributions.

In conducting research, data plays an important role in determining results and testing the truth of the proposed hypothesis. Therefore, the use of appropriate research instruments is very important, which is characterized by meeting the criteria of validity and reliability. In this study, validity and reliability tests were conducted through instrument trials on 23 Grade X Office Management and Business Services (MPLB) students at SMK Negeri 6, who are the remaining population in this study. From the validity test on the three variables, the following results were obtained: for the critical thinking ability variable, 16 statements were valid and 2 were not valid; for the digital literacy variable, 13 statements were valid and 2 were not valid; and for the self-efficacy variable, all 10 statements were valid. Reliability tests were then conducted on valid statements in each variable, producing the following reliability values: .937 for critical thinking ability (> .60), .926 for digital literacy, and .839 for self-efficacy (> .60). Based on these results, it can be concluded that the research instruments used are valid and reliable.

Results and Discussion

Research Results

Based on descriptive data analysis of the critical thinking ability variable from 85 respondents with 16 statement items measured using a Likert scale of 1-5, a maximum score of 69, minimum score of 23, M = 58.11 was obtained, showing that students' critical thinking abilities are in the medium-high category; Mdn = 58.00 shows that the level of students' critical thinking abilities is in the middle position in the data distribution with most students having scores in quite good ranges; mode = 60 is higher than the median and mean, which means there are some students with low scores that lower the average even though the scores are high; SD = 7.475; and score range = 46 indicates a large variation among students, most students are quite good but some are very low (score 23). The total score from the critical thinking ability variable based on the data obtained is 4,939. From these results, it can be known that critical thinking abilities can still be improved, especially for students with low scores. Meanwhile, the digital literacy variable with 13 statement items obtained a maximum score of 59, minimum score of 17, M = 45.94 approaching the maximum value of 59, showing that students' digital literacy levels are relatively high but not evenly distributed; Mdn = 46.00 shows that most students' digital literacy abilities are at medium to upper levels; mode = 43 approaches the mean and median, which means the data distribution is quite normal or shows that the majority of students have digital literacy at medium to upper ranges; SD = 6.411; and score range = 42. The total overall score from this variable is 3,905. From these results, it can be known that the level of digital literacy is already quite good, but can still be improved, especially for students who have scores far below average. Next, the self-efficacy variable with 10 statement items obtained a maximum score of 49, minimum score of 12, M = 34.78 almost the same as the median, showing a symmetrical data distribution so there is no group of students that dominates too high or too low; Mdn = 34.00 means most students are at medium self-efficacy levels; mode = 34 has the same value as the median, which means the majority of students are at medium levels; SD = 6.417; and score range = 37 shows significant variation among students. The total overall score from this variable is 2,956. From these results, it can be known that students' self-efficacy levels are not yet too high and can be a focus of development.

The prerequisite tests used in this study include normality, linearity, multicollinearity, and heteroscedasticity tests. The normality test results show that the Asymp. Sig (2-tailed) value of .20 > .05 indicates that the data are normally distributed. The linearity test between digital literacy (X_1) and critical thinking ability (Y) shows a Deviation from Linearity of .081 > .05, so the relationship

between the digital literacy variable and the critical thinking ability variable can be said to be linear. Likewise, the linearity test of self-efficacy (X_2) on critical thinking ability (Y) shows a Deviation from Linearity value of .080 > .05, so it can be concluded that there is a linear relationship between self-efficacy and critical thinking ability.

The multicollinearity test results show that the Tolerance value is .671 > .10 and the VIF value is 1.49 < 10. Therefore, it can be concluded that there is no multicollinearity between independent variables. The heteroscedasticity test was conducted through Spearman-rho correlation, with significance values of .500 for the digital literacy variable and .601 for self-efficacy. These values are > .05, indicating no symptoms of heteroscedasticity in this study.

Table 1
t-Test Results

Model	t-Test	Sig.
(Constant)	4.660	.000
Digital Literacy	4.708	.000
Self-Efficacy	3.402	.001

Source: Data processed by researchers (2025)

Based on Table 1 above, the t-test was conducted to determine the partial influence of independent variables on the dependent variable. It is known that the significance value for digital literacy (X_1) is p < .001 and t = 4.708, which is greater than the critical t value of 1.663 at α = .05 with df = 82 (n - k - 1 or 85 - 2 - 1). Therefore, H_0 is rejected, and it can be concluded that digital literacy (X_1) partially has a significant effect on critical thinking ability (Y).

Next, it is known that the significance value for self-efficacy (X_2) is p = .001 and t = 3.402, which is greater than the critical t value of 1.663 at α = .05 with df = 82 (n - k - 1 or 85 - 2 - 1). Therefore, H_0 is rejected, and it can be concluded that self-efficacy (X_2) partially has a significant effect on critical thinking ability (Y).

Table 2
F-Test Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2283.750	2	1141.875	38.847	.000
Residual	2410.297	82	29.394		
Total	4694.047	84			

Source: Data processed by researchers (2025)

Based on Table 2 above, it is known that the significance value is p < .001, which is less than .05. While the F value is 38.847, which shows that F > critical F. The critical F value is 3.11 (df_1 = 2, df_2 = 82, α = .05). Thus, H_0 is rejected, and it can be concluded that there is a significant simultaneous effect between digital literacy and self-efficacy on the critical thinking ability of Grade X Office Management and Business Services (MPLB) students at SMK Negeri 6 Surakarta.

Table 3
Multiple Linear Regression Analysis Results

Model	B	Std. Error	Beta
(Constant)	20.423	4.382	
Digital Literacy	.530	.113	.455
Self Efficacy	.383	.113	.329

Source: Data processed by researchers (2025)

From Table 3 above, the multiple linear regression equation obtained in this study is:
$$\hat{Y} = 20{,}423 + 0{,}530\ X_1 + 0{,}383\ X_2$$

Based on the multiple linear regression equation above, it can be interpreted as follows: (1) The constant of 20.423 mathematically shows that if the values of the digital literacy variable (X_1) and self-efficacy variable (X_2) are equal to 0, then the value of the critical thinking ability variable (Y) has a value of 20.423; (2) The regression coefficient of the digital literacy variable (X_1) has a value of 0.530, which mathematically shows that if the digital literacy variable (X_1) is increased by one unit and the self-efficacy variable (X_2) is assumed to be 0, it will cause an increase in the critical thinking ability variable (Y) of 0.530; (3) The regression coefficient of the self-efficacy variable (X_2) has a value of 0.383, which mathematically shows that if the self-efficacy variable (X_2) is increased by one unit and the digital literacy variable (X_1) is assumed to be 0, it will cause an increase in the critical thinking ability variable (Y) of 0.383.

Table 4
Coefficient of Determination Analysis Results

R	R Square	Adjusted R Square	Std. Error of the Estimate
.698[a]	.487	.474	5.422

Source: Data processed by researchers (2025)

Based on Table 4 above, it can be known that the coefficient of determination (R^2) value of .487 shows that 48.7% of the critical thinking ability variable is influenced by the digital literacy and self-efficacy variables, while the remaining 51.3% is influenced by other factors or variables not included in this study.

Table 5
Effective Contribution Calculation Results

Variable	Effective Contribution (Beta × Correlation Coefficient × 100%)
Digital Literacy (X_1)	0,455 x 0,643 x 100% = 29,26%
Self Efficacy (X_2)	0,329 x 0,590 x 100% = 19,41%
Total	48,7%

Source: Data processed by researchers (2025)

Based on Table 5 above, the calculation of the effective contribution of both independent variables equals the R^2 value. The effective contribution of digital literacy (X_1) to critical thinking ability (Y) is 29.26%, while the effective contribution of self-efficacy (X_2) to critical thinking ability (Y) is 19.41%.

Table 6
Relative Contribution Calculation Results

Variable	Relative Contribution
Digital Literacy (X_1)	60.07%
Self-Efficacy (X_2)	39.86%
Total	100%

Source: Data processed by researchers (2025)

Based on Table 6 above, the total relative contribution of both independent variables is 100% or equal to 1. The relative contribution of digital literacy (X_1) to critical thinking ability (Y) is 60.07%, and the relative contribution of self-efficacy (X_2) to critical thinking ability is 39.86%.

Discussion

The Influence of Digital Literacy on Critical Thinking Abilities of Grade X Students at SMK Negeri 6 Surakarta

Research results show that digital literacy has a positive and significant effect on the critical thinking abilities of Grade X students in the Office Management and Business Services (MPLB) Skills Program at SMK Negeri 6 Surakarta. This is shown by the t-test results that obtained a significance value of $p < .001$ and a t value of $4.708 >$ critical t of 1.663, which means the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. Thus, it can be concluded that digital literacy (X_1) makes a significant contribution to improving students' critical thinking abilities (Y).

Based on data obtained from 85 respondents through questionnaire completion, it is known that the statement item with the highest score is item number 1 with a total score of 341. The statement reads "I always search for information through the internet." These results show that the majority of students actively use the internet as the main source of information search, which is one of the important indicators in digital literacy. This is supported by research results from Prasetyawan and Krismayani (2019), who found that the internet (Google) is the most popular site as the main place to search for information.

Meanwhile, the statement item with the lowest total score is item number 5 with a total score of 248, which reads "I understand the function and workings of hypertext in an article." This finding indicates that some students still do not optimally understand the basic concept of hypertext, which is a component in navigation and understanding digital information structures. Supported by the study of Wu et al. (2021), which highlights that technical understanding of hypertext is still not evenly distributed among users, especially in terms of digital navigation structure and function. These findings are interesting because the lowest statement item is in a positive statement. This finding is important to note because it shows a gap between daily technology use and conceptual and functional understanding of that technology.

Students who have good digital literacy will be better able to access and evaluate various information sources critically. This strengthens their ability to draw conclusions, design problem solutions, and make rational decisions. This research is in line with previous research results such as those stated by Nasrikin et al. (2023), which states that digital literacy significantly influences students' critical thinking abilities. Research by Cahyani et al. (2024) and Nugraha and Normansyah (2024) also confirms that digital literacy plays an important role in encouraging students to be actively and critically involved in technology-based learning processes.

The Influence of Self-Efficacy on Critical Thinking Abilities of Grade X Students at SMK Negeri 6 Surakarta

Analysis results in this study show that self-efficacy has a positive and significant effect on the critical thinking abilities of Grade X students in the Office Management and Business Services (MPLB) Skills Program at SMK Negeri 6 Surakarta. This is proven through the t-test, which shows a significance value of $p = .001$ and a t value of $3.402 >$ critical t of 1.989. Therefore, the null hypothesis (H_0) is rejected and the second hypothesis (H_2) is declared accepted, which shows that self-efficacy (X_2) significantly affects students' critical thinking abilities (Y).

Based on data obtained from 85 respondents through questionnaire completion, it is known that the statement item that obtained the highest score is item number 6 with a total score of 347. The statement reads "I keep trying and do not give up even if I fail." These results show that most students have high persistence and fighting spirit in facing learning challenges. Supported by the study of Wu et al. (2022), which identified that students with high levels of grit (persistence) show better academic achievement.

Meanwhile, the statement item with the lowest total score is item number 1 with a total score of 251, which reads "I am confident in doing difficult tasks." This finding shows that some students still experience doubt in facing complex academic challenges. Supported by research results from Ferdyansyah et al. (2020), which show that students with low self-efficacy tend to avoid learning tasks that are considered difficult. In addition, there is a finding of the statement "I do not dare to try

again after experiencing failure" with a fairly high total score reaching 325. This statement is negative because it shows a fear of trying again after failing. However, this finding actually shows doubt or a low tendency of students' courage in facing failure. This can be an indication that although students have confidence in their abilities, there are still mental barriers in managing failure.

Individuals with high levels of self-efficacy tend to be better able to manage fear of failure and remain focused on analyzing information deeply. This is in line with the opinion of Fu et al. (2023), who stated that high self-efficacy tends to use higher-level learning strategies, which ultimately improve critical thinking abilities. The results of this study are also reinforced by the findings of Salea and Soetjiningsih (2022) and Sukma and Priatna (2021), which state that self-efficacy has a significant positive relationship with critical thinking abilities. Students who have confidence in their abilities tend to be more persistent, not easily discouraged, and able to see challenges as opportunities to learn.

The Influence of Digital Literacy and Self-Efficacy Together on Critical Thinking Abilities of Grade X MPLB Students at SMK Negeri 6 Surakarta

Analysis results in this study show that digital literacy and self-efficacy simultaneously have a significant effect on the critical thinking abilities of Grade X students in the Office Management and Business Services (MPLB) Skills Program at SMK Negeri 6 Surakarta. This is proven through the F-test which shows a significance value of $p < .001$ and an F value of $38.847 >$ critical F of 3.11. Based on these results, the third hypothesis (H_3) is accepted. This means that digital literacy (X_1) and self-efficacy (X_2) together provide a significant influence on improving critical thinking abilities (Y).

Based on data obtained from 85 respondents through questionnaire completion, it is known that the statement item with the highest score is item number 6 with a total score of 345, which reads "I compare information from various sources before making decisions." These results show that most students are accustomed to conducting analysis and evaluation processes on the information they receive before making decisions. Supported by research by Apriyanti et al. (2024), which emphasizes the importance of critical reading in the decision-making process. Through critical reading, individuals can gather various perspectives and data before making decisions. Meanwhile, the statement item with the lowest total score is item number 11 with a total score of 214, which reads "I am accustomed to drawing conclusions based on personal knowledge that I have." These results show that there are still many students who have not gotten used to building conclusions based on integration between personal experience and newly acquired knowledge, but only based on the knowledge they have. Supported by Hasanuddin's (2020) view on the importance of prior knowledge in learning, which includes experiences and attitudes already possessed by individuals that are used to construct new knowledge and experiences. This shows that integration between personal knowledge and new information is important in the learning process.

The findings in this study are in line with previous research findings that show that the application of information technology in the learning process can expand students' access to relevant information while increasing critical thinking capacity (Nasrikin et al., 2023; Nugraha & Normansyah, 2024). Meanwhile, self-efficacy enables students to build persistence and confidence to complete tasks that demand critical thinking abilities, as explained by Salea and Soetjiningsih (2022). However, there has been no previous research that examines digital literacy and self-efficacy together on critical thinking abilities.

Conclusion

Based on the research results, data analysis, and discussion that have been carried out, the following conclusions were obtained: (1) There is a positive and significant effect of digital literacy on the critical thinking abilities of Grade X Office Management and Business Services (MPLB) students at SMK Negeri 6 Surakarta. This is shown through the t-test with a significance value of the digital literacy variable of $p < .001$ and $t = 4.708 >$ critical t of 1.663. Therefore, it can be concluded that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) in this study is accepted, so that digital literacy partially has a significant effect on critical thinking abilities; (2)

There is a positive and significant effect of self-efficacy on the critical thinking abilities of Grade X Office Management and Business Services (MPLB) students at SMK Negeri 6 Surakarta. This is proven by the t-test results which show a significance value on the self-efficacy variable of $p = .001$ and $t = 3.402 >$ critical t of 1.663. Thus, the null hypothesis (H$_0$) is rejected and the alternative hypothesis (H$_2$) is accepted, which means self-efficacy partially provides a significant influence on students' critical thinking abilities; (3) There is a positive and significant effect of digital literacy and self-efficacy together on the critical thinking abilities of Grade X Office Management and Business Services (MPLB) students at SMK Negeri 6 Surakarta. This is shown through the F-test results with a significance value of $p < .001$ and $F = 38.847 >$ critical F of 3.11. Therefore, the null hypothesis (H$_0$) is rejected and the alternative hypothesis (H$_3$) is accepted, which means both independent variables together significantly affect the dependent variable.

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Career planning and adversity quotient on the work readiness of PAP FKIP UNS students

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Abstract

Kesiapan kerja mahasiswa menjadi aspek krusial yang perlu dipersiapkan dengan baik setelah menyelesaikan pendidikan di perguruan tinggi. Penelitian ini bertujuan untuk mengetahui: 1) ada tidaknya pengaruh parsial antara perencanaan karir terhadap kesiapan kerja mahasiswa Pendidikan Administrasi Perkantoran FKIP UNS, 2) ada tidaknya pengaruh parsial antara adversity quotient terhadap kesiapan kerja mahasiswa Pendidikan Administrasi Perkantoran FKIP UNS, dan 3) ada tidaknya pengaruh simultan antara perencanaan karir dan adversity quotient secara bersama-sama terhadap kesiapan kerja mahasiswa Pendidikan Administrasi Perkantoran FKIP UNS. Metode yang digunakan dalam penelitian ini adalah metode korelasional dengan pendekatan kuantitatif. Hasil temuan menunjukkan: 1) Terdapat pengaruh yang positif dan signifikan antara perencanaan karir terhadap kesiapan kerja mahasiswa Pendidikan Administrasi Perkantoran FKIP UNS ditunjukkan melalui nilai signifikansi sebesar 0,000, 2) Terdapat pengaruh yang positif dan signifikan antara adversity quotient terhadap kesiapan kerja mahasiswa Pendidikan Administrasi Perkantoran FKIP UNS dengan nilai signifikansi sebesar 0,039, dan 3) Terdapat pengaruh yang positif dan signifikan perencanaan karir dan adversity quotient secara bersama-sama terhadap kesiapan kerja mahasiswa Pendidikan Administrasi Perkantoran FKIP UNS dengan nilai signifikansi F sebesar 0,000. Hasil penelitian menunjukkan bahwa perencanaan karir dan adversity quotient berpengaruh terhadap kesiapan kerja.

Kata kunci: kesiapan karir; strategi karir; daya juang

Abstract

Student work readiness is a crucial aspect that requires adequate preparation before entering the workforce after completing higher education. This study examines: (1) the partial effect of career planning on the work readiness of Office Administration Education students at FKIP UNS, (2) the partial effect of adversity quotient on work readiness, and (3) the simultaneous effect of career planning and adversity quotient on work readiness. A correlational method with a quantitative approach was employed. The findings indicate: (1) career planning had a positive and significant

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effect on work readiness (significance value = 0.000, p < .05), (2) adversity quotient had a positive and significant effect on work readiness (significance value = 0.039, p < .05), and (3) career planning and adversity quotient jointly had a positive and significant effect on work readiness (F significance value = 0.000, p < .05). These results demonstrate that career planning and adversity quotient significantly influence work readiness among Office Administration Education students.

Introduction

Education is widely recognized as the most effective means of improving human quality. This perspective aligns with research findings by Basuki et al. (2023), which demonstrate that the quality of human resources is significantly influenced by the education individuals receive. Higher education, in particular, is believed to produce superior human resources. As noted by Fajar et al. (2021), higher education is expected to develop critical thinking skills and foster behavioral awareness among students as integral components of the learning process.

Student work readiness represents a crucial aspect that requires careful preparation before graduation from higher education institutions. According to Wiharja et al. (2020), work readiness reflects the self-development process through which students master knowledge, attitudes, and skills that align with workforce requirements. However, current evidence suggests that student work readiness levels remain relatively low (Pertiwi & Raihana, 2023). Contributing factors include procrastination in task completion, difficulty adapting to changes, diminished confidence when accepting responsibilities, lack of self-belief in personal abilities, and inability to achieve self-acceptance. These findings are corroborated by Safitri and Syofyan (2023), who reported that the majority of students lack adequate work readiness.

Work readiness is influenced by multiple factors. Azky and Mulyana (2024) categorize these factors into two primary domains: internal and external. Internal factors originate within the individual and encompass career planning, adversity quotient, self-efficacy, psychological capital, internship or field work practice experience, soft skills, motivation to enter the workforce, and managerial competencies. External factors include social support from the surrounding environment. Career planning represents one internal factor that contributes significantly to work readiness. Latif et al. (2017) demonstrated that comprehensive career planning enhances students' workforce readiness and supports career success. As explained by Sutrino (as cited in Ardini & Rosmila, 2021), career planning constitutes an individual process through which career objectives and pathways are determined, thereby minimizing errors in career selection. Additionally, adversity quotient plays an important role in work readiness. Basuki et al. (2023) found that adversity quotient exerts a positive and significant effect on student work readiness. Jasak et al. (2020) noted that resilience reflects individual confidence in confronting obstacles. According to Stoltz (as cited in Violinda et al., 2023), students require resilience to navigate various challenges and demonstrate readiness to address future problems.

Students enrolled in the Office Administration Education Study Program at FKIP Universitas Sebelas Maret (UNS), class of 2021, gained practical work experience through participation in the MBKM Internship program. This program provided opportunities for students to complete internships across various agencies, including companies, organizations, and government institutions for extended periods, enabling direct learning from workplace practices. Research by Fajar et al. (2021) indicates that students who actively participate in internship activities generally demonstrate higher work readiness and establish career direction before graduation. However, work

readiness data for Office Administration Education students from the Faculty of Teacher Training and Education at UNS, class of 2021, analyzed by Indrawati and Sawiji (2025), reveal suboptimal levels. The data indicate low work readiness across several dimensions: career management skills, with 70% of students lacking clear post-graduation career plans; knowledge, with 60% of students expressing insufficient confidence in their knowledge and skills for workforce entry; and personal circumstances, with 70% of students unprepared to face workforce challenges and uncertainties. The finding that 70% of FKIP UNS Office Administration Education students lack defined career plans reflects challenges in career planning among graduates. According to Baiti et al. (2017), students require guidance to explore their interests and talents in alignment with future expectations and aspirations. Conversely, Rachmady and Aprilia (as cited in Dewantari & Soetjiningsih, 2022) noted that employment-related anxiety can diminish resilience and adversity quotient. Among FKIP UNS Office Administration Education students, class of 2021, 70% reported unpreparedness for workforce challenges and uncertainties, indicating potentially low adversity quotient levels. When students possess limited resilience or adversity quotient, they tend to experience reduced confidence in confronting workforce challenges, such as adapting to professional environments.

Investigating the influence of career planning and adversity quotient on work readiness among Office Administration Education students at FKIP UNS holds significant relevance. Although these factors are widely acknowledged as important contributors to work readiness, no previous research has specifically examined the relationship between career planning, adversity quotient, and work readiness within this student population. Therefore, conducting this research is essential. The study findings are expected to provide a foundation for the study program to formulate policies and design targeted programs that optimally prepare students for workforce entry. This study aims to determine: (1) whether career planning partially influences the work readiness of FKIP UNS Office Administration Education students, (2) whether adversity quotient partially influences work readiness, and (3) whether career planning and adversity quotient jointly influence work readiness.

Research Methods

This research was conducted at the Office Administration Education Study Program, Faculty of Teacher Training and Education, Sebelas Maret University, located at Jalan Ir. Sutami No. 36, Kentingan, Jebres, Surakarta, Central Java. The research period extended from October 2024 to June 2025, encompassing preparation, research implementation, results report preparation, and thesis examination and revision.

This study employed a correlational method with a quantitative approach. The quantitative approach was selected to facilitate knowledge acquisition through numerical data analysis (Kasiram, as cited in Gofur, 2019). This approach was utilized because the research collected numerical data and tested hypotheses regarding the influence of independent variables career planning (X1) and adversity quotient (X2) on the dependent variable of work readiness (Y) among FKIP UNS Office Administration Education students.

The study population comprised all students from the 2021 cohort of the FKIP UNS Office Administration Education Study Program, totaling 81 individuals. Because the population consisted of fewer than 100 members, the entire population served as the sample. Complete population sampling was selected to enhance the precision and accuracy of research findings.

The sampling technique employed was nonprobability sampling, defined as a technique that does not provide equal opportunity for every population element or member to be selected as a sample (Sugiyono, 2019). Specifically, this study applied saturated sampling, a technique that includes all population members as samples. This approach ensures comprehensive representation of all population elements, such that the data obtained accurately reflect population characteristics without omission.

Data collection was conducted using questionnaires. A questionnaire is a data collection technique that involves presenting a set of written questions or statements to respondents for completion (Sugiyono, 2019). This study utilized a closed questionnaire format, wherein questions included predetermined response options provided by the researcher, requiring respondents only to

select answers that best described their perspectives or circumstances. The Likert scale served as the measurement scale, ranging from 1 (lowest) to 5 (highest). The Likert scale measures attitudes, opinions, and perceptions of individuals or groups regarding social phenomena (Sugiyono, 2019).

Instrument validation incorporated two essential components: validity and reliability testing. The validity test assessed the extent to which research instruments measured their intended constructs, employing a 5% significance level. Instruments were considered valid when rcalculated > rtable, and invalid when rcalculated < rtable. Instrument validity was tested using the Pearson Product Moment correlation method, which correlated each item score with the total instrument score using SPSS version 26. Reliability testing assessed instrument consistency and measurement accuracy. Cronbach's alpha coefficient served as the reliability measure, with values exceeding 0.60 indicating reliable instruments and values below 0.60 indicating unreliable instruments.

Career planning represents a strategic process through which individuals evaluate personal skills, interests, motivations, and characteristics to identify suitable career directions. Career planning variable indicators followed Zlate's framework (as cited in Supriyatin et al., 2024), encompassing: (1) self-assessment, (2) exploring opportunities, (3) making decisions and setting goals, (4) planning, and (5) pursuit of achievement. Adversity quotient constitutes an individual's intelligence or capacity to confront and overcome challenges, difficulties, and problems. Adversity quotient variable indicators followed Stoltz's framework (as cited in Risma, 2016), including: (1) self-control the degree of control over problem-causing events or self-management during problem encounters; (2) origin and recognition the ability to identify problem causes and personal responsibility awareness; (3) reach the extent to which difficulties affect various life aspects; and (4) endurance individual resilience in facing prolonged difficulties. Work readiness reflects an individual's capacity to meet job demands optimally through harmonization of physical, mental, and experiential maturity. Work readiness variable indicators followed Murdayati's framework (as cited in Pratiwi et al., 2022), comprising: (1) physical and mental condition, (2) objective logical considerations, (3) ability to work with others, (4) attitude of responsibility, (5) critical thinking, and (6) willingness to advance and persevere. Data analysis in quantitative research encompasses data processing and presentation, computational descriptions, and hypothesis testing analysis (Sofwatillah et al., 2024). This study employed multiple regression analysis to examine multiple independent variables' effects on the dependent variable using SPSS version 26.

Results and Discussion

Research results

Instrument validation was conducted through validity and reliability testing. Validity test results indicated 12 valid statements for the career planning variable, 11 valid statements for the adversity quotient variable, and 15 valid statements for the work readiness variable. Reliability testing assessed the extent to which instruments provided consistent and accurate measurements. Cronbach's alpha coefficient was used to measure reliability, with values exceeding 0.60 indicating reliable instruments and values below 0.60 indicating unreliable instruments. Reliability test results demonstrated that Cronbach's alpha values for career planning (X_1), adversity quotient (X_2), and work readiness (Y) were 0.815, 0.736, and 0.781, respectively. Because all three values exceeded 0.60, all study instruments were deemed reliable.

Following instrument validation, prerequisite analysis tests were performed, including normality, linearity, and multicollinearity tests. The normality test employed the Kolmogorov-Smirnov method, yielding a significance value of 0.200, which exceeded the 0.05 threshold. Therefore, the data were normally distributed. The linearity test assessed whether linear relationships existed between independent and dependent variables. Results indicated that the significance value for the relationship between career planning (X_1) and work readiness (Y) was 0.217 ($p > .05$), confirming a linear relationship. Similarly, the significance value between adversity quotient (X_2)

and work readiness (Y) was 0.776 (p > .05), also indicating a linear relationship. The multicollinearity test determined whether correlations existed between independent variables in the regression model. Analysis revealed Variance Inflation Factor (VIF) values of 1.532 < 10 and tolerance values of 0.653 > 0.01 for both career planning and adversity quotient variables, confirming no multicollinearity problems.

Hypothesis testing utilized several analytical techniques: t-tests, F-tests, multiple regression analysis, and coefficient of determination (R^2) analysis. The t-test assessed each independent variable's partial influence on the dependent variable, evaluating whether individual independent variables in the regression model exerted significant effects on the dependent variable. Table 1 presents a summary of t-test resultsInstrument validation was conducted through validity and reliability testing. Validity test results indicated 12 valid statements for the career planning variable, 11 valid statements for the adversity quotient variable, and 15 valid statements for the work readiness variable. Reliability testing assessed the extent to which instruments provided consistent and accurate measurements. Cronbach's alpha coefficient was used to measure reliability, with values exceeding 0.60 indicating reliable instruments and values below 0.60 indicating unreliable instruments. Reliability test results demonstrated that Cronbach's alpha values for career planning (X_1), adversity quotient (X_2), and work readiness (Y) were 0.815, 0.736, and 0.781, respectively. Because all three values exceeded 0.60, all study instruments were deemed reliable.

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Table 1

Test Results t

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
(Constant)	17.045	4.786		3.561	.001
Career Planning	.709	.118	.584	6.025	.000
Adversity Quotient	.250	.119	.204	2.103	.039

Analysis results indicated that the significance value for career planning (X_1) was 0.000 (p < .05), demonstrating that career planning partially exerted a significant effect on work readiness (Y). The significance value for adversity quotient (X_2) was 0.039 (p < .05), indicating that adversity quotient also partially exerted a significant effect on work readiness. To determine whether both independent variables simultaneously influenced the dependent variable in the regression model, the F-test was employed. Table 2 presents F-test results:

Table 2
F Test Results

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2183.846	2	1091.923	42.624	.000b
Residual	1998.154	78	25.617		
Total	4182.000	80			

The F-test significance value of 0.000 (p < .05) indicated rejection of the null hypothesis (H_0) and acceptance of the alternative hypothesis (H_3). Thus, career planning (X_1) and adversity quotient (X_2) simultaneously exerted a significant influence on work readiness (Y) among FKIP UNS Office Administration Education students. To quantify the influence magnitude of both independent variables on the dependent variable, multiple linear regression analysis was conducted using the following formula:

$$\hat{Y} = \alpha + b_1 x_1 + b_2 x_2 + e$$
$$\hat{Y} = 17{,}045 + 0{,}709 x_1 + 0{,}250 x_2 + e$$

Information:
$\hat{Y}$: Job Readiness
α : Constant
b_1, b_1 : Partial regression coefficient
X_1 : Career Planning
X_2 : *Adversity Quotient*
e : Error term

The multiple linear regression equation interpretation follows: (1) The constant value of 17.045 indicates that when career planning (X_1) and adversity quotient (X_2) equal zero, work readiness (Y) equals 17.045. Without career planning and adversity quotient contributions, the baseline work readiness score is 17.045. (2) The career planning regression coefficient of 0.709 signifies that each one-unit increase in career planning, holding other independent variables constant, results in a 0.709-unit increase in student work readiness. (3) The adversity quotient regression coefficient of 0.250 indicates that each one-unit increase in adversity quotient, holding other independent variables constant, results in a 0.250-unit increase in student work readiness.

Coefficient of determination (R^2) analysis followed. The R^2 coefficient measures the extent to which independent variables explain dependent variable variation within a model. Table 3 presents R^2 analysis results:

Table 3
Results of Determination Coefficient Analysis (R^2)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.723a	.522	.510	5.061

The R^2 coefficient value of 0.522 (52.2%) indicates that career planning (X_1) and adversity quotient (X_2) jointly explained 52.2% of work readiness (Y) variance. The remaining 47.8% is attributable to factors not examined in this study.

Discussion

Based on t-test analysis results, career planning (X_1) partially exerted a significant influence on work readiness (Y) among FKIP UNS Office Administration Education students, evidenced by a significance value of 0.000 (p < .05) and a calculated t value of 6.025, exceeding the critical t value of 1.990. Data collection results revealed that the career planning indicator with the highest score was the "Exploring opportunities" sub-indicator, totaling 349 points, indicating strong positive agreement with the statement "I am open to a wide range of career paths and not fixated on just one job option." Through career exploration, individuals obtain information from diverse sources and align profession choices with personal characteristics, avoiding fixation on single work types. Despite majority findings demonstrating student openness to seeking opportunities, the "Planning" sub-indicator achieved the lowest score of 239, associated with the statement "I have the ability to identify potential obstacles and make a plan to overcome them." This indicates that although most students demonstrate openness to various career paths, their detailed planning abilities, particularly in identifying obstacles and developing coping strategies, require enhancement.

Additionally, t-test analysis results demonstrated that adversity quotient (X_2) partially exerted a significant influence on work readiness (Y) among FKIP UNS Office Administration Education students, indicated by a significance value of 0.039 (p < .05) and a calculated t value of 2.103, exceeding the critical t value of 1.990. Data collection findings revealed that the "Endurance" sub-indicator achieved the highest total score of 329, with the statement "I am able to accept all my shortcomings with a realistic attitude" receiving the highest score. These findings demonstrate that most FKIP UNS Office Administration Education students possess adequate endurance levels, particularly in realistic self-acceptance. Conversely, the "Self-control" sub-indicator recorded the lowest total score of 219, with a small percentage of students agreeing or strongly agreeing with the statement "I panic when the deadline is approaching." Research by Triana et al. (2025) identified effective time management strategies, including to-do lists, task prioritization, and weekly evaluations, which help reduce panic feelings and improve focus and work efficiency. Proper time management enables individuals to avoid excessive deadline-related pressure and maintain mental health.

Based on F-test analysis, career planning (X_1) and adversity quotient (X_2) simultaneously exerted a significant effect on work readiness (Y) among FKIP UNS Office Administration Education students, indicated by an F significance value of 0.000 (p < .05). Multiple linear regression analysis, expressed through the equation $\hat{Y} = 17.045 + 0.709X1 + 0.250X2$, revealed career planning and adversity quotient regression coefficients of 0.709 and 0.250, respectively. These coefficients indicate that each one-unit increase in career planning score corresponds to a 0.709-unit increase in student work readiness score, assuming other variables remain constant. Similarly, each one-unit increase in adversity quotient score results in a 0.250-unit increase in work readiness. Coefficient of determination calculations revealed that career planning and adversity quotient variables contributed 52.2% to student work readiness variance. Career planning contributed 41.11% effectively, while adversity quotient contributed 11.1% effectively. Relative contribution calculations showed career planning contributed 78.76%, while adversity quotient contributed 21.42%. These findings indicate that career planning variables exert more dominant influence on student work readiness than adversity quotient variables.

Conclusion

This study yields the following conclusions: (1) Career planning exerts a positive and significant influence on work readiness among FKIP UNS Office Administration Education students, demonstrated by a significance value of 0.000 (p < .05) and a calculated t value of 6.025 exceeding the critical t value of 1.990; (2) Adversity quotient exerts a positive and significant influence on work readiness among FKIP UNS Office Administration Education students, evidenced by a significance value of 0.039 (p < .05) and a calculated t value of 2.103 exceeding the critical t value of 1.990; and (3) Career planning and adversity quotient jointly exert a positive and significant influence on work readiness among FKIP UNS Office Administration Education students, confirmed by an F significance value of 0.000 (p < .05). This study has limitations

regarding the generalizability of results to broader student populations; findings remain context-specific and provide material for future research evaluation to produce enhanced results. Recommendations for the Office Administration Education Study Program Head at FKIP UNS include developing and implementing systematic career development programs, such as seminars, workshops, or career guidance integrated into the curriculum. Lecturers are encouraged to design learning activities incorporating career planning material and adversity quotient strengthening into course topics. For example, lecturers can integrate career exploration activities into relevant courses through assignments such as preparing short-term and long-term career plans, job interview training, and workplace simulations. Additionally, lecturers should provide constructive feedback and encourage students to persevere when facing academic and non-academic pressures. Students are advised to design career planning more carefully, including establishing short-term and long-term objectives and strategic implementation steps. Furthermore, students require resilience skill development, including mental fortitude, stress management competencies, and challenge-confrontation abilities, to better prepare for competition in dynamic work environments. Future research should examine additional variables potentially affecting student work readiness. Discussions and investigations should expand to explore other factors enriching understanding of this phenomenon. Additionally, expanding population and sample scope is essential to yield more representative results, thereby enhancing finding generalizability and contributing more comprehensively to student work readiness studies.

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The role of internship mentors in office administration practicum: a qualitative analysis

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Abstrak

Magang dalam konteks pendidikan profesional tidak hanya berfungsi untuk meningkatkan keterampilan teknis, tetapi juga mengembangkan keterampilan lunak seperti komunikasi, kolaborasi, dan kemampuan beradaptasi. Penelitian ini bertujuan menganalisis peran mentor magang dalam pelaksanaan magang administrasi perkantoran mahasiswa Program Studi Pendidikan Administrasi Perkantoran (PAP) FKIP Universitas Sebelas Maret angkatan 2021. Metode yang digunakan adalah kualitatif fenomenologi dengan teknik purposive sampling. Data dikumpulkan melalui wawancara mendalam kepada informan yang relevan dan dianalisis menggunakan model interaktif Miles dan Huberman, meliputi reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan bahwa peran mentor mencakup bimbingan, monitoring, dukungan penyusunan laporan, penilaian kinerja, tanggung jawab program, serta pembentukan hubungan profesional yang menciptakan suasana kerja positif. Meskipun terdapat perbedaan pola pendampingan pada setiap mentor, secara umum peran tersebut berkontribusi pada efektivitas pembelajaran mahasiswa, khususnya dalam mengintegrasikan teori dengan praktik serta mengembangkan keterampilan teknis maupun soft skills. Namun demikian, diperlukan peningkatan konsistensi monitoring, koordinasi, dan proporsionalitas beban kerja agar manfaat program magang dapat dirasakan secara optimal dan merata oleh seluruh mahasiswa.

Kata kunci: bimbingan; kualitatif; mentoring

Abstract

Professional education internships serve not only to enhance technical skills but also to develop soft skills such as communication, collaboration, and adaptability. This study examined the role of internship mentors in supporting office administration internships among students in the Office Administration Education program at Sebelas Maret University (Class of 2021). A qualitative phenomenological approach with purposive sampling was employed. Data were collected through in-depth interviews with relevant informants and analyzed using the Miles and Huberman interactive model, encompassing data reduction, data display, and conclusion

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drawing. Results indicated that mentors' roles included guidance, monitoring, report preparation support, performance evaluation, program accountability, and the establishment of professional relationships that fostered positive work environments. Although mentorship patterns varied among mentors, these roles generally contributed to students' learning effectiveness, particularly in integrating theory with practice and developing both technical and soft skills. However, improvements in monitoring consistency, coordination, and workload proportionality are needed to ensure that internship benefits are optimally and equitably experienced by all students.

Keywords: internship; mentorship; qualitative research

Introduction

Higher education plays a crucial role in preparing human resources who are not only theoretically competent but also possess practical abilities relevant to workplace demands. One strategy employed by universities to bridge the gap between academia and industry is through internship programs. Internship programs constitute an integral component of experiential learning processes, providing students with opportunities to apply knowledge acquired in lectures to real-world work contexts.

The Indonesian government regulates internship programs through Law No. 13 of 2003 concerning employment, which describes internships as "an element within the work training system implemented in training institutions by performing work directly under the direction and supervision of instructors or more experienced workers to achieve mastery of specific skills or expertise." In professional education contexts, internships aim not only to enhance technical skills but also to develop soft skills such as communication, collaboration, and adaptability.

The Office Administration Education program is one of the programs within the Faculty of Teacher Training and Education at Sebelas Maret University (FKIP UNS). According to the Office Administration Education curriculum (2020), learning methods in the program consist of lectures, tutorials, seminars, practicums, fieldwork or practical work, research or development, military training, student exchanges, internships, entrepreneurship, and/or other forms of community service that can be implemented both within and outside the study program. The learning objectives of the Office Administration Education program are to produce educators in office administration, office management practitioners, and entrepreneurs who possess learning skills (critical thinking, creativity, collaboration, communication), literacy skills (information, media, technology), and life skills (flexibility, leadership, initiative, productivity, social skills). To support these objectives, the Office Administration Education program organizes three types of internship programs: entrepreneurship internships, office administration internships, and school environment introduction internships. These three internship programs are conducted from semester 5 through semester 7.

First, the entrepreneurship internship program is implemented in semester 5 to prepare students to become entrepreneurs. Students conduct internships at legally registered business entities for one month. Entrepreneurship internship activities include learning production and marketing procedures, leadership practices, business law, taxation, and conducting business activities independently from production through distribution. Second, the office administration internship program is implemented in semester 6 to prepare students to become office practitioners. Students undertake internships for three months at locations such as government institutions, private companies, or multinational corporations. The scope of internships in office administration includes performing tasks in personnel administration, financial administration, equipment and infrastructure management, public relations, archiving, administration, and information systems. Subsequently,

the school environment introduction internship or teaching assistantship program is held in semester 7 to gain direct experience in interacting within school environments, collaborating with teachers/mentors and students, and understanding the curriculum implemented in these schools. Students obtain valid and relevant information that contributes to enhancing pedagogical and professional competencies as well as personal and social skills.

In this study, researchers were interested in examining the implementation of the office administration internship program among the three types of internships conducted by the Office Administration Education program Class of 2021, as this program aligns with the scientific focus of the Office Administration Education program in office administration. This program is also implemented in various cities according to students' choices. Examination of this program can help evaluate its effectiveness in developing students' practical skills and curriculum alignment with workplace needs as related to the roles of internship mentors from host institutions. Additionally, the research can identify challenges faced by students during internships and formulate recommendations for improving program quality.

The Office Administration Education program curriculum (2020) at the Faculty of Teacher Training and Education, Sebelas Maret University, was designed based on the Indonesian National Qualifications Framework (KKNI). This aligns with Regulation of the Minister of Education and Culture of the Republic of Indonesia No. 73 of 2013 concerning the implementation of KKNI in higher education. Presidential Regulation of the Republic of Indonesia No. 8 of 2012 also explains that KKNI is a framework that describes various levels of competency qualifications aimed at matching and equalizing education, job training, and work experience to provide recognition of work competencies according to the structure of work in various sectors. Competencies acquired through lecture processes become the foundation for students to understand various theories and concepts in their disciplines. This process is strengthened through lecture activities that provide direct experience in applying theory to real-life contexts. The subsequent internship stage functions to connect academic knowledge with work environments, providing opportunities for students to hone practical skills, build professional networks, and observe industry dynamics directly. Additionally, internship programs are also designed to respond to ever-changing workplace demands and create alignment between the higher education sector and the workplace, as well as to face rapid changes in the future. The implementation of office administration internships represents direct implementation of office administration competencies and is assessed based on its effectiveness in enhancing students' competency mastery (Lisnawati & Adman, 2019). Consistent with findings by Klau et al. (2023), internships constitute activities involving community service, where youth are prepared to apply knowledge they have learned to be ready to face the real career world in society.

The mentor's role is to help accelerate daily learning processes, provide on-the-job training, expand networks, connect students with companies, develop personality, and serve as role models in teaching interpersonal skills (International Labour Organization, 2021). Research conducted by Putri et al. (2023) also revealed that guidance for intern students is very important in maximizing their experience and learning during internship periods. Guidance for intern students also contributes to providing more in-depth and relevant practical experience related to their majors. This mentorship also helps enhance students' technical skills and interpersonal skills, such as communication abilities, problem-solving, teamwork, and leadership. During internship periods, students are accompanied by a field supervisor from the Office Administration Education program at FKIP UNS and a supervisor or mentor from the institution where they intern.

Rachman and Widiasih (2024) revealed that mentors are superiors for students interning at companies as new employees. Mentors have significant contributions to intern students' activities in the form of guiding, leading, and showing how to achieve established targets (Rachman & Widiasih, 2024). In supporting internship implementation, mentors have duties including guiding students in work activities, monitoring and evaluating student performance according to predetermined formats. Based on research by Neikirk et al. (2023), the purpose of mentors is to help learners navigate uncertainty, professional difficulties, and life challenges.

The novelty of this research lies in its analytical focus specifically highlighting the role of mentors in implementing office administration internships for Office Administration Education students at FKIP UNS Class of 2021. Whereas previous research has largely examined internship

experiences generally or internship program effectiveness, this research provides new contributions by emphasizing how mentor accompaniment at partner institutions plays a role in developing students' technical and soft skills. Additionally, this research links mentor roles with the relevance of KKNI-based curriculum implemented in the Office Administration Education program, so that research results are not only descriptive but also evaluative regarding alignment between the academic and work worlds. Thus, this research provides new perspectives on the importance of optimizing mentor roles in supporting internship program success while offering practical recommendations for improving experience-based learning quality in higher education.

The research problem formulation is: What is the important role of internship mentors in implementing office administration internships for Office Administration Education students at FKIP UNS Class of 2021?

Research Methods

This research was conducted in the Office Administration Education program, Faculty of Teacher Training and Education, Sebelas Maret University, located at Jalan Ir. Sutami No. 36A, Surakarta, Central Java 57126. This study employed a descriptive qualitative approach aimed at obtaining in-depth understanding regarding office administration internship implementation. Informants in this research consisted of two groups: internship mentors (supervisors from internship host institutions) totaling three people, and student internship participants totaling five people, resulting in a total of eight informants.

The sampling technique employed purposive sampling, a technique in which researchers select participants based on characteristics appropriate to research objectives (Ames et al., 2019), with criteria: (1) students who had completed all internship stages at partner institutions; (2) students who had active interaction experience with internship mentors; (3) mentors who directly supervised students during internship activities. Data validity was strengthened through source triangulation techniques and member checking, namely by requesting confirmation of interview results from informants to ensure accuracy of researchers' interpretations.

The main instrument in this research was a semi-structured interview guide developed based on research focus. Interviews were conducted directly and lasted approximately 30-45 minutes per informant. This research was conducted during the period from May to July 2025, encompassing planning, data collection, and analysis stages.

Data were analyzed using the Miles and Huberman interactive model consisting of three stages: (1) data reduction, namely the process of selecting and filtering relevant information from interview transcripts; (2) data display, in the form of thematic matrices or structured narratives; and (3) conclusion drawing/verification, conducted by searching for patterns, relationships between categories, and rechecking obtained data.

Results and Discussion

Results

Based on interview results and research findings, the role of internship mentors in supporting internship program implementation can be analyzed through several main aspects: guidance aspects, monitoring and evaluation, support in report preparation, student performance assessment, responsibility for internship programs, and professional relationships and learning:

Guidance Aspect

Mentors played an essential role in providing direct and effective guidance during internship periods. The availability of mentors for guidance included work direction, work practice, and providing motivation and moral support. This was consistent with statements from Participant 1: "I first ask the intern students what they know about the relevant institution, then after that I provide a general explanation while walking around, then break it down according to their respective majors." This was also aligned with statements delivered by Participant 2: "I usually provide work direction

through learning by doing, so students initially observe, follow, and then understand me at work, then I give them freedom to develop it in carrying out that work." This was strengthened by statements delivered by Participant 3: "I often invite them to sit together, chat, ask what difficulties they have, but in a relaxed condition, never hurt them in the slightest."

Thus, internship mentors in providing guidance and direction each have their own patterns, but also involve emotional closeness with intern students so that the mentoring process can run effectively.

Monitoring and Evaluation Aspect

Monitoring and evaluation by internship mentors aimed to provide constructive feedback on students' work. This was stated by Participant 1: "Monitoring and evaluation through direct communication or creating work papers, listing all daily activities performed." This was also aligned with Participant 3: "Monitoring is conducted while students are doing work, I check periodically, then for overall evaluation when about to start working in the morning the next day when giving assignments for that day." This was also conveyed by Participant 8: "It is conducted when the assigned task has been completed or midway through implementation, so we can evaluate and improve before the task is finished and of course to help ensure satisfactory results." However, Participant 10 stated: "There is none, because the internship mentor actually does not quite understand IT (the tasks given to students)." This was also stated by Participant 11: "There is none, once the task is finished it is just submitted."

This indicates variation in the quality of monitoring and evaluation conducted by mentors, so consistency and competence of mentors in providing accompaniment still need to be improved so that internship benefits can be experienced more evenly by all students.

Support in Report Preparation Aspect

Support in report preparation involved internship mentors providing information and relevant explanations regarding the internship institution. According to statements from Participant 1: "I first listen to all their questions; if at that time I can answer and provide data, I execute directly. But if not, I help by bridging them to resource persons who understand better." This was aligned with Participants 3 and 10: "Explaining during free time or during breaks," and strengthened by statements from Participant 8: "Regarding questions, students are usually given opportunities to search first, then if they do not find and have already tried to find access or information, they will usually ask the mentor, and the mentor will also provide answers if students have made efforts to search. If they have not tried and it turns out there are answers that can be obtained without having to ask, students will be directed back to search for those answers again."

This indicates that the mentor's role is not only as a data provider but also as a learning facilitator who trains students' independence, responsibility, and initiative in obtaining information. Thus, mentor support in report preparation contributes to achieving more accurate, systematic reports that meet both academic and practical needs in work environments.

Student Performance Assessment Aspect

Student performance assessment was conducted by internship mentors according to formats provided by students originating from the study program. This was also explained by Participant 8: "The assessment basis is given from assigned tasks and agreed upon or the syllabus provided at the beginning, and then the implementation process with results provided, both from students' efforts to find answers or information needed, then results that meet predetermined standards or achievements. In addition, discipline is also made strict so intern students can be disciplined in entering and leaving work because there is already an application that detects work entry and exit." This was also aligned with statements from Participant 2: "I assess based on responsibility, attitude, and enthusiasm." Participant 3 provided a statement that "Time discipline, courtesy with coworkers, work initiative such as what they do if tasks are finished, dress code, implementation of 5S (Sort, Set in order, Shine, Standardize, Sustain) also become the basis for assessment." Based on interview results, it can be concluded that student performance assessment by internship mentors has referred to formats

provided by the study program while considering aspects of attitude, discipline, and responsibility during internship implementation.

Mentor Responsibility for Internship Program Aspect

Mentor responsibility for internship programs consisted of appropriateness of tasks given to students and ensuring safe work environments for students. This was consistent with statements from Participant 1: "If one division has more than one intern student, then one student will be given one workload by staff from that division. Tasks and workloads are adjusted to the abilities of intern students themselves; if they appear not yet capable, they may be pulled back first, given understanding regarding their work, and told to try again."

This was aligned with statements from Participant 3: "Per day, targets are explained for that day; usually intern students are assigned to help PKWT (fixed-term contract workers)." This was strengthened by statements from Participant 2: "If interning at this office, work orientation is more toward field practice; if in the office, it is brief. It is in accordance with initial agreements. Because at the beginning of internships I usually offer whether they want more time in the office or in the field. I also provide quite comfortable space with tables and chairs as well as freedom and flexibility to move and carry out work satisfactorily." Participants 7 and 11 stated that "Tasks given were in accordance with initial agreements but often experienced overtime during internship implementation."

Based on participant statements, it can be concluded that mentor responsibility for internship programs is manifested through adjustment of task loads to students' abilities and provision of safe and comfortable work environments. However, although in general tasks have been adjusted to initial agreements, some students still experienced excessive workload (overtime), thus indicating the need for more proportional time management and task distribution so that internship experiences remain conducive and effective as learning vehicles.

Professional Relationship and Learning Aspect

This relationship focused on supporting internship program success and student development that supports two-way learning. This was consistent with statements from Participant 1: "Always building good communication. What makes students feel less attended to? I try to always make personal approaches." This was aligned with Participant 3: "We consider intern students like coworkers; we usually do not discriminate." This was strengthened by statements from Participant 8: "Although mentors do not continuously supervise, there are staff who help mentors find out whether intern students experience discrimination or difficulties during internships, and later will report to mentors and evaluate or provide input."

Based on these interview results, it can be concluded that professional relationships established among mentors, staff, and intern students are able to create positive and collaborative work atmospheres. Communication built personally, non-discriminatory attitudes, and support from supporting staff indicate that students are treated as part of work teams, not merely internship participants.

Discussion

The role of internship mentors is to conduct daily work learning, connect students with companies, and build personality (Kusumah et al., 2023). Hendrajaya (2021) stated that mentors are leaders for students as both students and new staff. Based on interview results, it can be concluded that internship mentor roles have very important contributions in supporting internship program implementation for Office Administration Education students at FKIP UNS Class of 2021. Deschaine and Jankens (2017) revealed that the purpose of implementing administrative internships is to provide deep and varied opportunities for individuals in the field of office administration. In the guidance aspect, mentors provide systematic accompaniment through varied approaches, such as general direction, direct practice (learning by doing), and personal communication that builds students' comfort and confidence. Each mentor has their own style in providing guidance but shares the commonality of ensuring students understand tasks, are able to adapt, and develop professionally during internship implementation.

Monitoring and evaluation conducted by mentors also greatly help students in the process of reflection and self-improvement. Through methods used by mentors in internship implementation such as direct observation, routine discussions when starting or ending work, and daily activity reporting, students obtain constructive and relevant feedback to improve their work quality. Evaluation is not only focused on work results but also on implementation processes, initiative, and students' work attitudes. Alunaza and Mentari (2024) also stated that the main purpose of monitoring and evaluation is to help internship participants learn from experience, expand practice and activities in the future, accountability of resources in making future initiative decisions.

Internship mentors in students' report preparation serve as information providers regarding systems, procedures, and organizational structures at internship institutions. In implementing office administration internships, internship mentors more encourage students to actively seek information independently first, but the follow-up action is still providing information or directing to resource persons who have deeper knowledge about needed information. According to the Office Administration Internship Guidebook 2024, this office administration internship program replaces classroom learning for one semester. Courses recognized in office administration internship activities are Excellent Service (2 credits), Organizational Behavior (2 credits), Office Ergonomics (3 credits), Office Administration Laboratory Management (3 credits), Office Information System Analysis (3 credits), Office Administration Internship (3 credits), Office Business Simulation (3 credits), and Community Service Program (2 credits).

In the student assessment process, internship mentors have referred to formats provided by the study program, paying attention to discipline, responsibility, attitude, and students' initiative in program implementation. This assessment is conducted comprehensively and objectively, in accordance with study program expectations for student outcomes related to work professionalism, occupational safety and health, ethics and personality, and risk experience. This internship mentor assessment is very important not only for efforts to improve internship quality but also because it relates to the image of educational institutions. Research results by Melati and Dewi (2024) showed that internship programs can enhance positive images of educational institutions where images are formed from students' hard skills and soft skills.

In addition, mentor responsibility is also reflected in their efforts to create work environments that are conducive, safe, and comfortable for students. Task adjustments are given in accordance with study programs and student requests when submitting internship permission applications; task load provision is also adjusted to students' capabilities as well as provision of space and workplaces that still consider students' comfort and occupational safety. This indicates that internship mentors have concerns for students' welfare and learning processes. Implications from Syafitri et al. (2023) also highlight the importance of creating internship work environments that support and motivate students. Improvement of work environments, mentor involvement, and strategies to increase student motivation can be main focuses in improving internship experience quality.

Professional relationships built between mentors and students have generally been implemented quite well by intern students. Students are able to adjust themselves to tasks and functions in their respective internship positions. Although indeed there still needs to be better adjustment in terms of coordination and communication with mentors and staff at internship institutions. Effective communication, non-discriminatory attitudes, and moral support from mentors and other supporting staff create positive and collaborative work atmospheres. This relationship supports realization of meaningful two-way learning and strengthens integration between theory and practice. According to Ufia et al. (2024), internship programs are also assessed as mutual symbiosis where internship institutions gain benefits from assistance of workforce sourced from students, then students also gain advantages in the form of learning and training that can be useful as provisions for entering the work world.

Thus, the overall role of internship mentors is highly strategic and multifaceted. Internship mentors not only carry out technical coaching functions but also become learning partners who shape students' readiness in facing work world challenges professionally, ethically, and adaptively.

Conclusion

Based on research results, the role of internship mentors in implementing office administration internships for Office Administration Education students at FKIP UNS Class of 2021 has generally attempted to guide students to be able to integrate theory with practice, develop technical and soft skills, and adapt in professional work environments. However, improvements in consistency, coordination, and workload proportionality are still needed so that all students can experience internship benefits optimally and equitably. This research is limited to Office Administration Education students at FKIP UNS Class of 2021, so results cannot yet be generalized to broader contexts. In addition, findings are heavily influenced by students' subjective experiences and diverse internship institution conditions, and have not yet considered other external factors such as organizational culture and institutional policy support.

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Block system entrepreneurship education and self-efficacy: effects on student entrepreneurial motivation

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Abstrak

Motivasi berwirausaha siswa SMK masih perlu ditingkatkan, sehingga dibutuhkan pembelajaran kewirausahaan yang efektif serta dukungan efikasi diri. Penelitian ini bertujuan untuk mengetahui (1) pengaruh pembelajaran kewirausahaan sistem blok terhadap motivasi berwirausaha, (2) pengaruh efikasi diri terhadap motivasi berwirausaha, dan (3) pengaruh pembelajaran kewirausahaan sistem blok dan efikasi diri secara bersama-sama terhadap motivasi berwirausaha. Peneliatian ini menggunakan pendekatan kuantitatif dengan metode penelitian survey, sedangkan teknik pengumpulan data melalui kuesioner. Sampel yang digunakan yaitu 83 siswa kelas XI SMK Negeri 1 Surakarta Tahun Ajaran 2024/2025 dengan metode simple random sampling dan menggunakan teknik analisis regresi linier berganda. Hasil penelitian menunjukkan: (1) terdapat pengaruh positif signifikan antara pembelajaran kewirausahaan sistem blok terhadap motivasi diri (t_{hitung} 3,598 > 1,990 t_{tabel}); (2) terdapat pengaruh positif signifikan efikasi diri terhadap motivasi berwirausaha (t_{hitung} 2,215 > 1,990 t_{tabel}); (3) terdapat pengaruh positif signifikan antara pembelajaran kewirausahaan sistem blok dan efikasi diri secara bersama-sama terhadap motivasi berwirausaha (f_{hitung} 32,02 > 3,11 f_{tabel}). Hal ini menunjukkan bahwa pembelajaran kewirausahaan sistem blok dan efikasi diri membantu meningkatkan motivasi berwirausaha siswa.

Kata kunci: efikasi; kewirusahaan; kuantitatif; motivasi; sistem blok

Abstract

Entrepreneurial motivation among vocational high school students requires enhancement through effective entrepreneurship education and self-efficacy development. This study examined (a) the effect of block system entrepreneurship education on entrepreneurial motivation, (b) the effect of self-efficacy on entrepreneurial motivation, and (c) the combined effects of block system entrepreneurship education and self-efficacy on entrepreneurial motivation. Using a quantitative approach with survey methodology, data were collected through questionnaires from 83 Grade XI students at SMK Negeri 1 Surakarta in the

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2024/2025 academic year, selected via simple random sampling. Multiple linear regression analysis revealed three key findings: First, block system entrepreneurship education significantly and positively predicted entrepreneurial motivation (t = 3.60, p = .001). Second, self-efficacy significantly and positively predicted entrepreneurial motivation (t = 2.22, p = .030). Third, the combined model demonstrated significant predictive power (F = 32.80, p < .001), with both variables jointly explaining 45.1% of variance in entrepreneurial motivation (R² = .451). These findings suggest that block system entrepreneurship education and self-efficacy effectively enhance students' entrepreneurial motivation.

Introduction

Indonesia possesses substantial potential for economic advancement, evidenced by its population of 281 million (BPS, 2024), vast territory, cultural diversity, and natural resources. Entrepreneurship represents a viable governmental strategy for economic development through early cultivation of entrepreneurial knowledge (Amelia & Sulistyowatie, 2022). As a critical component of economic development (Bhegawati et al., 2022), entrepreneurship stimulates economic growth by generating employment, increasing GDP, reducing poverty, fostering innovation, and enhancing market competition, collectively improving societal welfare and development (Fajri, 2021).

The Indonesian government has prioritized entrepreneurship development in vocational education through the Minister of Education Decree No. 56/M/2022, which mandates curriculum allocation of 70% for intracurricular learning and 30% for strengthening Pancasila student profiles. The intracurricular component comprises general education for character development and vocational education for developing competencies aligned with industry needs. The vocational curriculum includes vocational subjects, creative entrepreneurship products, and elective courses.

Regulation No. 34 of 2018 specifies that vocational high school graduates must demonstrate competencies appropriate to their field of expertise for both employment and entrepreneurship. Despite these standards, open unemployment data reveal persistent challenges: vocational high school graduates constitute 1.8 million unemployed individuals, with numbers increasing monthly (BPS, 2025). This situation necessitates enhanced alignment between vocational skill training and entrepreneurial motivation development.

Motivation represents a psychological process explaining individual behavior toward goal achievement (Uno, 2016). Entrepreneurial motivation specifically refers to an individual's internal calling that drives new entrepreneurs to initiate and develop business processes (Odoardi, as cited in Tentama et al., 2024). However, empirical evidence indicates low entrepreneurial motivation among vocational students, with only 35% expressing entrepreneurial interest while 65% demonstrated no such inclination (Widiaastuti et al., 2022).

Several factors influence vocational students' entrepreneurial motivation. Slamet et al. (2016) identified three primary factors: self-efficacy, perception of aspirations, and background influences on entrepreneurial character formation. Putri et al. (2024) additionally identified independence, environment, creativity, and entrepreneurship education as influential factors.

Entrepreneurship education emerges as a potentially significant factor, with previous research demonstrating positive and significant direct effects on motivation (Suciviana et al., 2025). This education develops students' cognitive, affective, and psychomotor entrepreneurial skills, directing them toward entrepreneurship as a career choice (Sari et al., 2021). The block system represents an innovative learning approach focused on developing students' productive

competencies aligned with industry needs (Salam et al., 2025). Block system entrepreneurship education combines organized educational approaches in intensive learning periods to implement school-industry linkages, particularly in entrepreneurship (Angelina et al., 2023).

This block system approach has gained attention in vocational education. Previously, entrepreneurship education occurred regularly across multiple weeks; since 2024, SMK Negeri 1 Surakarta implemented the block system. This approach enables students to learn intensively and focus within specific timeframes, creating deeper, more applicative, and contextual learning experiences. This study examines whether block system implementation in entrepreneurship education enhances students' entrepreneurial motivation.

Self-efficacy represents another factor potentially influencing entrepreneurial motivation. Originally defined by Bandura and Schunk (1981) as individuals' beliefs in their capabilities to organize and execute actions necessary to achieve specific outcomes, self-efficacy influences entrepreneurial motivation. Higher self-efficacy correlates with increased entrepreneurial motivation (Ekawarna et al., 2022). Research by Caliendo et al. (2020) demonstrated that self-efficacy generally positively influences motivational persistence by enhancing entrepreneurs' confidence in their ability to overcome challenges and achieve entrepreneurial success.

SMK Negeri 1 Surakarta implemented block system entrepreneurship education in its curriculum to encourage student entrepreneurial motivation. The block system consolidates intensive entrepreneurship learning hours into one full month, rotating among classes. To assess students' entrepreneurial motivation, the researcher conducted preliminary testing with 30 Grade XI Office Management and Business Services students. Results indicated low entrepreneurial motivation: 98.3% felt uncertain about starting their own business, 83.3% believed substantial capital was necessary to begin, 86.7% more frequently feared failure than felt willing to take entrepreneurial risks, 80% felt more secure with salaried employment than starting businesses, and 80% felt they required external encouragement to initiate entrepreneurial ventures. These findings suggest that either block system entrepreneurship education implementation remains ineffective or students' self-efficacy requires development.

This research addresses the need to enhance vocational students' entrepreneurial motivation as an economic development factor in Indonesia. Further research examining entrepreneurship education effectiveness, particularly block system implementation, is necessary. Previous research by Rahayu and Kurniawan (2022) examined entrepreneurship education and self-efficacy effects on entrepreneurial motivation but focused on general entrepreneurship education without specifically addressing block system learning. Additionally, gaps exist in understanding how self-efficacy and block system entrepreneurship education jointly influence entrepreneurial motivation. This study contributes importantly to vocational education research by providing both theoretical contributions to entrepreneurship learning models and supporting governmental efforts to prepare adaptive, independent, employment-creating vocational graduates.

Research Methods

This quantitative study employed survey methodology to examine the effects of block system entrepreneurship education and self-efficacy on entrepreneurial motivation. The study focused on Grade XI Office Management and Business Services students at SMK Negeri 1 Surakarta in the 2024/2025 academic year. The research proceeded with official approval and support from school administration, with voluntary participation requiring no intervention or coercion from researchers or school personnel. The study was conducted from November 2024 to July 2025.

The population comprised 105 students, from which 83 participants were sampled using Slovin's formula with a 5% margin of error. Sample selection employed probability sampling via simple random sampling using Microsoft Excel's RAND() function. This function assigned sequential numbers to all population members, then generated random numbers, ensuring equal selection probability for each population member.

Data collection utilized preliminary observation to assess students' initial motivation levels and closed questionnaires. Recognizing potential bias from data collection at the researcher's affiliated institution, questionnaire completion occurred via Google Forms, enabling respondents to

answer more freely. Google Form data remained accessible only to researchers for research purposes. Closed questionnaires were selected to avoid biased responses and standardize answers. Following recommendations for student assessment (Sandjaja et al., 2020), the study employed a 4-point Likert scale (1-4) rather than including a neutral midpoint, as students tend toward neutral responses. According to Machali (2021), response options for 4-point Likert scale questionnaires are Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD).

Instrument validity was established through pilot testing with 22 students outside the research sample. From the 105-student population, 83 were designated as research sample and 22 as validity test respondents, ensuring distinct respondent groups. Validity test participants were determined after selecting the 83-member research sample, with remaining population members serving as instrument test subjects. Following pilot testing, instruments underwent validity and reliability testing using IBM SPSS Version 26. Pilot testing results informed statement revision, invalid item elimination, and instrument comprehensibility verification.

Validity testing employed bivariate correlation analysis with product-moment correlation, correlating each item with its variable's total score. Reliability testing utilized Cronbach's alpha coefficient via IBM SPSS Version 26. Instruments were considered reliable when Cronbach's alpha values reached or exceeded .70, indicating high reliability. Conversely, Cronbach's alpha values below .70 indicated insufficient reliability, requiring revision or improvement.

Data analysis employed multiple linear regression analysis using IBM SPSS Version 26. Analysis included classical assumption tests: normality, linearity, multicollinearity, and heteroscedasticity tests. Hypothesis testing utilized t-tests (partial effects), F-tests (simultaneous effects), multiple linear regression analysis, and effective and relative contribution calculations.

Results and Discussion

Results

Instrument validation yielded 13 valid items for entrepreneurial motivation, 14 valid items for block system entrepreneurship education, and 10 valid items for self-efficacy. Reliability testing using Cronbach's alpha at 5% significance level produced results presented in Table 1.

Table 1
Reliability Test Results

Variable	Cronbach Alpha	R Table	Explanation
Entrepreneurial Motivation (Y)	0,878	0,423	Reliable
Block System Entrepreneurship Education (X₁)	0,918	0,423	Reliable
Self-Efficacy (X₂)	0,946	0,423	Reliable

Source: Data processed by researchers (2025)

The research instrument comprised questionnaires with 13 items for entrepreneurial motivation (Y), 14 items for block system entrepreneurship education (X₁), and 10 items for self-efficacy (X₂). The sample consisted of 83 students randomly selected from three classes. Descriptive statistics are presented in Table 2.

Table 2
Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Deviation
Entrepreneurial Motivation	83	29	52	41,77	5,030
Block System Entrepreneurship Education	83	30	56	44,53	5,686
Self-Efficacy	83	21	40	30,04	4,570
Valid N (listwise)	83				

Source: Data processed by researchers (2025)

Table 3

Linearity Test Results

Variable	Sig. Deviation from Linierity	Linierity	Explanation
Block System Entrepreneurship Education	0,701	0,000	Linear
Self-Efficacy	0,748	0,000	Linear

Source: Data processed by researchers (2025)

Residual normality test results using the Kolmogorov-Smirnov formula revealed that the significance value was .200. Therefore, it can be concluded that data are normally distributed because the significance value (.200) > .05. Linearity test results in Table 3 demonstrate that the relationship between block system entrepreneurship education variable and entrepreneurial motivation possesses a linear relationship, as shown in Table 3. Multicollinearity test results indicated that the VIF value for each variable was 2.213, or it can be concluded < 10.00. Meanwhile, the obtained tolerance value was .452, or it can be stated that no multicollinearity symptoms occurred because the value > .10. Based on heteroscedasticity test results above using scatterplots between residual values (ZRESID) and standard predictive values (ZPRED), it is evident that residual points scatter randomly and do not form specific patterns. This indicates that the regression model does not experience heteroscedasticity problems, so the classical regression assumption regarding homoscedasticity has been fulfilled.

Table 4

T-test Results

Variable	T_{count}	t_{table}	Sig.
Block System Entrepreneurship Education	3,598	1,990	0,001
Self-Efficacy	2,215	1,990	0,030

Source: Data processed by researchers (2025)

Partial t-test results are shown in Table 4, t-test analysis of data calculations examined significance values and also $t_{count} > t_{table}$. In this study, t_{table} used a 5% significance level (2-tailed/two-tailed = .025) and df = 80 (df = n - k - 1, so df = 83 - 2 - 1), yielding t_{table} of 1.990. Simultaneous F-test analysis indicated a significant joint effect between block system entrepreneurship education (X_1) and self-efficacy (X_2) on entrepreneurial motivation (Y). This occurred because the F_{count} value in this study was 32.802, or in other words, greater than F_{table} of 3.11 with significance level .000 < .05. In multiple linear regression analysis, the equation is written as demonstrating that in this regression model, only the block system entrepreneurship education variable (X_1) significantly influences entrepreneurial motivation (Y), whereas self-efficacy (X_2) does not provide significant influence. In coefficient of determination (R^2) analysis, it can be determined that the coefficient of determination result in this study was .451. This can be interpreted that block system entrepreneurship education and self-efficacy jointly can influence students' entrepreneurial motivation by 45.1%. Consequently, there exists 54.9% other variation influenced by factors outside this research model, such as parental support, school environment, peer factors, internship, and so forth.

Effective contribution calculations were performed by multiplying the regression coefficient and correlation coefficient of each variable, producing a total value of 45.03%, which approximates the R^2 value of 45.1% from SPSS output. This small difference is caused by rounding of decimal result numbers performed automatically by SPSS. Manual calculations retain more decimal digits; however, this does not affect substantive research result interpretation. Based on calculation results for each respective variable, it can be observed that the effective contribution for the block system entrepreneurship education variable to students' entrepreneurial motivation is 28.62%, while the effective contribution value for the self-efficacy variable to students' entrepreneurial motivation is

16.41%. From these results, it can be concluded that block system entrepreneurship education possesses more dominant influence on students' entrepreneurial motivation. Meanwhile, the relative contribution for the block system entrepreneurship education variable to students' entrepreneurial motivation is 63%. Furthermore, the relative contribution for the self-efficacy variable to entrepreneurial motivation is 36%.

Discussion

Analysis results demonstrated that block system entrepreneurship education significantly influences entrepreneurial motivation, evidenced by significance value .001 < .05 and t_{count} value 3.598 > t_{table} 1.990. Therefore, H_0 was rejected while H_1 was accepted, concluding that block system entrepreneurship education (X_1) influences entrepreneurial motivation (Y). Furthermore, based on multiple linear regression analysis in Table 4, the regression coefficient value for the block system entrepreneurship education variable was obtained at .392, meaning that each one-unit increase in block system entrepreneurship education will increase entrepreneurial motivation by .392. This occurs due to good material comprehension, student engagement in learning, environmental support, student experience and skills, and high student confidence. This demonstrates that the better the block system entrepreneurship education, the higher the entrepreneurial motivation of Grade XI MPLB students at SMK Negeri 1 Surakarta in Academic Year 2024/2025.

This is reinforced by research from Prawiranegara et al. (2018), which argued that practice-based learning methods are effective in enhancing entrepreneurial motivation and retaining excellent students for development and goals. Furthermore, according to Widyawati et al. (2022), it also shows that the more intensive entrepreneurship education provided, the higher students' motivation to start their own business. Entrepreneurship education plays a role in shaping entrepreneurial motivation through its influence in increasing entrepreneurial interest (Al Affan & Harpain, 2025). This research is also strengthened by the opinions of Savitri et al. (2024) and Yanti et al. (2024), who stated that entrepreneurship education has a significantly positive effect on students' entrepreneurial motivation. The existence of the block system will help increase students' entrepreneurial motivation through entrepreneurship education; this is reinforced by several previous studies. In Wibowo et al. (2019), it was stated that the block system increases student interest in learning to very high (52.05%) and high (47.95%) levels. In line with research by Mawardi and Sutopo (2019), which shows that the block system increases learning effectiveness very well.

Analysis results indicated that self-efficacy significantly influences entrepreneurial motivation, evidenced by significance value .030 < .05 and t_{count} value 2.215 > t_{table} 1.990. Therefore, H_0 was rejected while H_2 was accepted, concluding that self-efficacy (X_2) influences entrepreneurial motivation (Y). Furthermore, based on multiple linear regression analysis in Table 4, the regression coefficient value for the self-efficacy variable was obtained at .301, meaning that each one-unit increase in self-efficacy will increase entrepreneurial motivation by .301. This occurs due to curiosity, good planning, gathering and building relationships, implementing confidence, and management. In previous research, self-efficacy was shown to positively influence entrepreneurial motivation. In cognitive processes, self-efficacy can influence student motivation; when students trust their cognitive abilities, they will be motivated to work seriously because they believe their efforts will produce achievement (Sukatin et al., 2023). In Putry et al. (2020), it is explained that self-efficacy positively influences entrepreneurial interest through motivation because the higher a person's self-efficacy, the higher their entrepreneurial motivation. In line with research by Sa'adah and Mahmud (2019), which shows that there is an effect of self-efficacy on entrepreneurial motivation, it can be concluded that in previous research, high entrepreneurial self-efficacy is proven to enhance motivation, which ultimately affects individual goals.

Analysis results proved that block system entrepreneurship education and self-efficacy jointly influence the entrepreneurial motivation of Grade XI MPLB students at SMK Negeri 1 Surakarta; this was demonstrated by ANOVA F-test calculation values producing F_{count} value of 32.802, where this result is greater than F_{table} for 83 respondents of 3.11. Furthermore, the resulting significance value is .000, where this value is smaller than .050. Therefore, H_0 was rejected while H_3 was accepted, concluding that there is a significantly positive joint effect of block system

entrepreneurship education (X_1) and self-efficacy (X_2) on entrepreneurial motivation (Y) among Grade XI MPLB students at SMK Negeri 1 Surakarta in Academic Year 2024/2025. These analysis results strengthen research previously conducted by Rahayu and Kurniawan (2022). This research shows that entrepreneurship education and self-efficacy have a positive and significant simultaneous effect on entrepreneurial motivation. Based on analysis result evidence and previous research, it can be stated that block system entrepreneurship education and self-efficacy positively and significantly influence entrepreneurial motivation. This will affect the increase in students' entrepreneurial motivation, demonstrated when the block system entrepreneurship education variable and self-efficacy also experience increases.

Conclusion

There exists a significantly positive effect of block system entrepreneurship education (X_1) on entrepreneurial motivation (Y) among Grade XI MPLB students at SMK Negeri 1 Surakarta in the 2024/2025 cohort. Research results have demonstrated that block system entrepreneurship education and self-efficacy variables, both partially and jointly, influence the entrepreneurial motivation variable. This can be determined from research results proving that the better the quality of block system entrepreneurship education and the better students' self-efficacy levels, the more it can enhance students' entrepreneurial motivation. These research results align with research by Rahayu and Kurniawan (2022), stating that entrepreneurial motivation forms the basis for developing entrepreneurial spirit and intention. Intention serves as a trigger for motivational emergence. Without intention that subsequently becomes motivation, a person cannot suddenly become an entrepreneur. It can also be stated that entrepreneurial motivation represents an internal drive from individuals to begin entrepreneurship. Implications from this research include research results that can be used as reference material for subsequent research. These research results can provide knowledge contributions, perspectives with facts, and direction to principals and also teachers in evaluating block system entrepreneurship education implementation, thereby supporting and enhancing students' entrepreneurial motivation. Furthermore, self-efficacy also provides important implications for teachers and schools to design learning programs or training aimed at enhancing students' confidence and independence, thus supporting students' entrepreneurial motivation. This research provides information that block system entrepreneurship education and self-efficacy variables influence entrepreneurial motivation by 45.1%. This indicates that entrepreneurial motivation can be influenced by other variables not examined in this study. However, this research possesses limitations in location scope and respondent numbers limited to one school, so these findings may not necessarily be generalized to other schools with different conditions. This research has several limitations: research was conducted at only one school, so result generalization remains limited; variables used only encompassed block system and self-efficacy, while other factors such as family support and industrial practice experience have not been analyzed; and research methods employed surveys that heavily depend on respondent perceptions, so subjective bias is possible. These limitations can become considerations for subsequent research to expand samples, add other variables such as parental support, school environment, peer factors, internships, and so forth. Future research can also combine quantitative methods with qualitative methods..

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Influence of TPACK and parental support on students' teaching career interest

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Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh (1) penguasaan TPACK terhadap minat menjadi guru, (2) dukungan orang tua terhadap minat menjadi guru, serta (3) pengaruh bersama antara penguasaan TPACK dan dukungan orang tua terhadap minat menjadi guru pada mahasiswa Prodi Pendidikan Administrasi Perkantoran FKIP UNS angkatan 2021. Penelitian ini merupakan penelitian kuantitatif dengan teknik sampling jenuh, melibatkan seluruh populasi sebanyak 81 mahasiswa yang telah melaksanakan PLP. Data dikumpulkan melalui kuesioner dan dianalisis menggunakan regresi linear berganda dengan bantuan IBM SPSS 25. Hasil penelitian menunjukkan bahwa: (1) terdapat pengaruh positif dan signifikan penguasaan TPACK terhadap minat menjadi guru (thitung 4,31 > ttabel 1,99; sig. 0,00 < 0,05), (2) dukungan orang tua juga berpengaruh signifikan (thitung 2,11 > ttabel 1,99; sig. 0,03 < 0,05), dan (3) secara simultan, TPACK dan dukungan orang tua berpengaruh signifikan terhadap minat menjadi guru (Fhitung 22,13 > Ftabel 3,14). Sumbangan efektif penguasaan TPACK sebesar 25% dan dukungan orang tua sebesar 10%, dengan total kontribusi 35%, sedangkan sisanya dipengaruhi oleh variabel lain di luar penelitian.

Kata kunci: dukungan orangtua; minat menjadi guru; penguasaan TPACK

Abstract

This study examined the influence of (1) Technological Pedagogical and Content Knowledge (TPACK) mastery on interest in teaching careers, (2) parental support on interest in teaching careers, and (3) the combined influence of TPACK mastery and parental support on interest in teaching careers among students in the Office Administration Education program at FKIP UNS, class of 2021. This quantitative study employed a saturated sampling technique, including all 81 students who had completed the Teaching Practice Program (PLP). Data were collected through questionnaires and analyzed using multiple linear regression with IBM SPSS version 25. Results revealed that (1) TPACK mastery exerted a positive and significant influence on interest in teaching careers (t = 4.31, p < .001), (2) parental support also demonstrated a significant effect (t = 2.11, p = .038), and (3) collectively, TPACK mastery and parental support significantly influenced interest in teaching careers (F =

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22.13, p < .001). TPACK mastery contributed 25% of the variance, while parental support contributed 10%, yielding a total explained variance of 35%. The remaining 65% may be attributed to variables not examined in this study.

Introduction

Education serves as a fundamental pillar of national development by equipping younger generations with essential knowledge, skills, and moral values. The quality of education depends primarily on competent human resources, particularly teaching personnel (Ningrum, 2016). Quality education drives national development, with the expectation that higher educational quality produces more capable human resources. Teachers represent one of the critical success factors in educational implementation (Wahyuni & Setiyani, 2017).

Teaching is a profession that plays a vital role in driving educational innovation and development, particularly regarding human resource advancement (Wulan, 2020). Teachers are professionals responsible for planning and delivering instruction, evaluating learning outcomes, providing guidance and training, and conducting research and community service, especially at higher education levels (Rachman, 2018).

Although teachers serve as the cornerstone of education, interest in pursuing teaching careers remains low, even among graduates from Faculties of Teacher Training and Education (Atikah, 2018; Chotimah, 2024; Nasrulloh, 2018). Factors influencing teaching career interest encompass both internal and external dimensions. In the contemporary era, technological proficiency, especially in educational technology, is essential for professional teachers. Fathiya (2021) emphasizes that merely observing technology use in learning environments is insufficient; hands-on experience is necessary. According to Achru (2019), interest is dynamic and evolves over time. Prospective teachers must reflect on educational technology effectiveness to evaluate its value and relevance. Beyond technology skills, teachers must also master content knowledge, which together forms Pedagogical Content Knowledge (PCK)—the ability to transform subject matter into effective learning experiences (Zulhazlinda et al., 2023).

TPACK (Technological Pedagogical and Content Knowledge) is a framework that explicates the integration of technological, pedagogical, and content knowledge that teachers must master (Akhwani & Rahayu, 2021; Eka, 2018). The interaction among these components generates new knowledge domains: Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), Pedagogical Content Knowledge (PCK), and TPACK. Besides TPACK, parental support represents another key factor influencing teaching career interest. As a proximal external influence, family plays a crucial role in shaping career decisions. A student's early interest often stems from observing their parents' professions and experiences, which can significantly impact career aspirations (Rini Yuliani & Abdi, 2020).

Interest in teaching careers has become a research concern in Indonesia, as student enthusiasm for the profession tends to decline. Although the Office Administration Education (PAP) program aims to produce educators, many students prefer office positions due to heavy workloads and low starting salaries in teaching, particularly for non-civil servants. Fadilla (2020) found that 65.7% of students were not interested in teaching careers, while Chotimah (2024) reported an even higher percentage 88.7% of PAP students at FKIP UNS demonstrated no interest in becoming teachers.

Research Methods

According to Sugiyono (2019), a sample is a subset of the population that reflects its characteristics. This study employed a saturated sampling technique, wherein the entire population served as the sample due to its relatively small size. The population consisted of 81 students from the 2021 cohort of the Office Administration Education program at FKIP UNS who had completed the Teaching Practice Program (PLP). The sampling method was non-probability sampling with a saturated sampling approach, meaning all population members were included based on specific criteria (Sugiyono, 2022).

According to Purnomo (2016), validity testing assesses how accurately a questionnaire measures its intended construct. Items are considered valid if the calculated correlation coefficient (r) exceeds the critical value (r_table) at a 5% significance level, and invalid if the calculated correlation coefficient is less than the critical value. Validity in this study was tested using SPSS. The validity test was conducted with Economics program students, comprising 31 respondents. Valid statement items were retained, while invalid items were eliminated.

Validity of Interest in Becoming a Teacher

Table 1 presents the validity test results for the Interest in Teaching Career (Y) variable. Of 13 items, 12 items were valid (r > 0.361 at 5% significance level), and one item was invalid.

Table 1
Validity Test Results for Interest in Teaching Career Variable

Item Number	r Count	r Table	Sig	Status
1	0,725	0,361	0,000	Valid
2	0,568	0,361	0,001	Valid
3	0,532	0,361	0,002	Valid
4	0,843	0,361	0,000	Valid
5	0,545	0,361	0,002	Valid
6	0,802	0,361	0,000	Valid
7	0,568	0,361	0,001	Valid
8	0,866	0,361	0,000	Valid
9	0,576	0,361	0,001	Valid
10	0,740	0,361	0,000	Valid
11	0,883	0,361	0,000	Valid
12	0,553	0,361	0,001	Valid

Validity TPACK
Table 2
Validity Test Results for TPACK Mastery Variable

Item Number	r Count	r Table	Sig	Status
1	0,729	0,361	0,000	Valid
4	0,635	0,361	0,000	Valid
5	0,571	0,361	0,001	Valid
6	0,610	0,361	0,000	Valid
7	0,568	0,361	0,001	Valid
8	0,636	0,361	0,000	Valid
9	0,749	0,361	0,000	Valid
10	0,738	0,361	0,000	Valid
11	0,730	0,361	0,000	Valid
12	0,720	0,361	0,000	Valid
13	0,736	0,361	0,000	Valid
14	0,589	0,361	0,000	Valid
15	0,603	0,361	0,000	Valid

Table 2 displays the validity test results for the TPACK Mastery (X_1) variable, which used a 5% significance level with an r-table value of 0.361. Of 18 statement items, 13 items were valid, as each item had a calculated r-value greater than the critical value (r > 0.361). Five items were invalid and subsequently removed.

Validity of Parental Support

Table 3 presents the validity test results for the Parental Support (X_2) variable, which used a 5% significance level with an r_table value of 0.361. Of 14 statement items, 10 items were valid, as each item had a calculated r-value exceeding the critical value (r > 0.361). Four items were invalid and were removed from the final instrument.

Table 3
Validity Test Results for Parental Support Variable

Item Number	r Count	r Table	Sig	Status
1	0,509	0,361	0,003	Valid
2	0,562	0,361	0,001	Valid
3	0,569	0,361	0,001	Valid
4	0,654	0,361	0,000	Valid
5	0,635	0,361	0,000	Valid
6	0,513	0,361	0,003	Valid
8	0,515	0,361	0,003	Valid
9	0,535	0,361	0,002	Valid
10	0,664	0,361	0,000	Valid
11	0,506	0,361	0,004	valid

This research examined three variables: two independent variables TPACK Mastery (X_1) and Parental Support (X_2) and one dependent variable Interest in Teaching Career (Y). The sample comprised 81 students from the Office Administration Education program, FKIP UNS, class of 2021, who had completed their Teaching Practice Program (PLP). Data for all variables were collected through a questionnaire containing 35 statement items. Following instrument validation, variable Y retained 12 of 13 items, variable X_1 retained 13 of 18 items, and variable X_2 retained 10 of 14 items. Invalid items were discarded as their respective indicators were adequately represented by valid items. The collected data were analyzed using IBM SPSS version 23.

Result and Discussion

Research Result

This research is titled "The Influence of Mastery of Technological, Pedagogical and Content Knowledge (TPACK) and Parental Support on the Interest in Becoming a Teacher among Students of the Office Administration Education Study Program, FKIP UNS, Class of 2021". It involves three variables: two independent variables TPACK (X1) and Parental Support (X2) and one dependent variable Interest in Becoming a Teacher (Y). The sample in this study consists of 81 students from the Office Administration Education Study Program, FKIP UNS, Class of 2021, who have completed their Teaching Practice Program (PLP). The sample was taken using a saturated sampling technique. File for all variables were collected through the distribution of a questionnaire containing 35 statement items. Before being used for the research, the questionnaire was tested. Based on the instrument trial results: for variable Y, 12 out of 13 items were valid; for variable X1, 13 out of 18 items were valid; and for variable X2, 10 out of 14 items were valid (results attached). Invalid items were discarded as their respective indicators were already represented by the valid ones. The collected data were then processed and analyzed using IBM SPSS version 23. The descriptive analysis results are as follows

Table 4
Descriptive Statistics

	TPACK Mastery	Parental Support	Teaching Interest
Valid	81	81	81
Missing	0	0	0
Mean	53,55	36,48	40,28
Median	40	35	40
Std. Error of Mean	0.70	0.42	0.62
Std. Deviation	6.31	3,86	5,60
Variance	39,90	14,92	31,43
Range	23	20	33
Minimum	41	28	27
Maximum	64	48	60
Sum	4338	2955	3263

Table 4 presents the descriptive statistics for all study variables. The Interest in Teaching Career variable demonstrated a minimum score of 27, maximum score of 60, mean of 40.28 (SD = 5.60), and total score of 3,263. This variable comprised 12 Likert-scale items (1–5). Using Sturges' formula, eight classes were identified with a data range of 33 and class width of 5.

Multiple Linear Regression Analysis Result

Table 5 displays the multiple linear regression analysis results. The constant value of 6.365 indicates that when both TPACK Mastery (X_1) and Parental Support (X_2) equal zero, the predicted Interest in Teaching Career (Y) score is 6.365. The regression coefficient for X_1 (B = 0.39) indicates that a one-unit increase in TPACK mastery, holding parental support constant, corresponds to a 0.39-unit increase in teaching career interest. The coefficient for X_2 (B = 0.34) indicates that a one-unit increase in parental support, holding TPACK mastery constant, corresponds to a 0.34-unit increase in teaching career interest. Both coefficients demonstrate positive relationships between the independent variables and teaching career interest.

Table 5
Multiple Linear Regression Coefficients

Model	B	Std. Error	Beta
(Constant)	6,365	5.310	
TPACK Mastery	0,39	0,09	0,44
Parental Support	0,34	0,15	0,23

Table 6.
t Test Result

Model	T_{count}	Significance
(Constant)	1,19	0,23
TPACK Mastery	4,31	0,00
Parental Support	2,30	0,02

The test results in Table 6 show that both TPACK Mastery (X1) and Parental Support (X2) have a significant partial effect on Interest in Becoming a Teacher (Y).

For X1: Sig. = 0.000 < 0.05 and t = 4.31 > 1.99 → H₀ rejected
For X2: Sig. = 0.000 < 0.05 and t = 2.30 > 1.99 → H₀ rejected

This confirms that both variables significantly influence students' interest in becoming teachers

Table 7

F Test Result

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	910,397	2	455,199	22,13	0.00
Residual	1604,072	78	20,565		
Total	2514,469	80			

Based on Table 7 above, it can be seen that the probability value in the Sig. column is 0.00, which is less than 0.05. Furthermore, the calculated F-value (Fcount) is 22.13. This result indicates that Fcount > Ftable, which is 3.14 (df1 = 2, df2 = 78, α = 0.05). Based on these results, it can be concluded that H0 is rejected, which means there is a significant joint effect between the variables of TPACK Mastery and Parental Support on the Interest in Becoming a Teacher among students of the 2021 cohort of the PAP Study Program, Faculty of Teacher Training and Education, UNS."

Table 8

Result of the Determination Coefficient (R2) Test

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.60	0.36	0.34	4,53

Based on Table 8 above, it can be seen that the coefficient of determination (R Square) is 0.36. This result means that 0.36 or 36% of the interest in becoming a teacher is influenced by TPACK mastery and parental support. The remaining 64% is likely influenced by other factors or variables not examined in this study."

Discussion

The Mastery of Technological, Pedagogical, and Content Knowledge Affects the Interest in Becoming a Teacher among 2021 Cohort PAP FKIP UNS Students."

The analysis demonstrated that TPACK mastery exerted a positive and significant influence on students' interest in teaching careers within the Office Administration Education program, class of 2021. The t-test result (t = 4.31, p < .001) confirmed this finding, indicating that enhanced TPACK mastery increases students' teaching career interest by strengthening their foundation for success in the education field.

This finding aligns with Koehler and Mishra (2018), who emphasized that technological, pedagogical, and content knowledge are essential for professional teaching. Supporting studies (Gonen, 2019; Istiqomah et al., 2022; Kurniawan et al., 2015; Miguel-Revilla et al., 2020) also confirmed TPACK's role in teacher preparation. However, Backfisch et al. (2020) argued that motivation and self-confidence are more critical than TPACK in readiness for technology-based teaching.

Questionnaire data revealed the highest score (350) on item 5, related to technological developments, and the lowest score (290) on item 11, concerning material delivery. This pattern suggests weak content mastery, which may contribute to low teaching career interest.

Parental Support Influences 2021 Cohort PAP FKIP UNS Students.

Parental support demonstrated a positive and significant impact on students' interest in teaching careers within the Office Administration Education program, class of 2021. The t-test result ($t = 2.30$, $p = .024$) confirmed that greater parental support increases interest in teaching careers.

According to Rini Yuliani and Abdi (2020), parental support helps children develop interests, take initiative, and feel confident in their choices, fostering a sense of security when pursuing teaching careers. Similarly, Sawitri (2021) noted that such support shapes future career interests, while Kusumaningrum and Sugiasih (2022) and Solikhati and Saraswati (2021) highlighted the importance of parental involvement in providing resources, guidance, and encouragement.

Questionnaire results revealed the highest score (363) on item 3, indicating that parental support is perceived as the most valuable form of support. The lowest score appeared on item 10, reflecting insufficient parental appreciation or recognition.

TPACK Mastery and Parental Support Jointly Influence the Interest in Becoming a Teacher among 2021 Cohort PAP FKIP UNS Students

Research by Erlina and Maria Ulfah (2022) demonstrated that TPACK mastery and parental support jointly influenced 56% of students' interest in teaching careers. Data analysis ($F = 22.13$, $p < .001$) confirmed a significant combined effect of both variables on students in the 2021 PAP FKIP UNS cohort.

Arin Ananda (2024) added that TPACK significantly affects teaching readiness, with Pedagogical Content Knowledge (PCK) exerting the greatest impact. Enhanced TPACK mastery and parental support strengthen students' interest in teaching careers.

Questionnaire results showed the highest score (361) on item 7, reflecting high appreciation for the teaching profession. The lowest score (178) appeared on item 2, indicating insufficient understanding of the profession, likely attributable to limited content mastery.

Conclusion

The results of the study show that mastery of TPACK has a greater influence than parental support on the interest in becoming a teacher, although both variables still play a significant role together. Therefore, it is recommended that the Office Administration Education Study Program at FKIP UNS enhance the development of students' TPACK competencies through training, workshops, or integration into the curriculum, as well as build collaboration with parents to strengthen students' emotional support and motivation. Lecturers are also expected to play an active role in providing guidance, practical experience, and positive feedback to boost students' confidence and readiness to face the workforce. Students need to independently and formally improve their TPACK mastery and establish good communication with lecturers and parents in planning their careers in education. Furthermore, it is important to explore other variables that may influence the interest in becoming a teacher, considering that TPACK mastery and parental support only contribute 36% to this interest. Thus, based on the research data obtained by the researcher, the variables of TPACK Mastery and Parental Support together have an influence on the Interest in Becoming a Teacher by 36%. This means that there are 64% of other variables that can influence the interest in becoming a teacher. Future researchers are expected to consider other variables that are suspected to influence students' interest in becoming teachers, in order to enrich the theoretical framework related to the interest in becoming a teacher, as the results of this study show that the variables of TPACK Mastery and Parental Support together influence the Interest in Becoming a Teacher.

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The influence of smartphone addiction and teacher behavior on cyberloafing behavior

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Abstrak

Tujuan penelitian ini adalah untuk mengetahui: 1) pengaruh smartphone addiction terhadap perilaku cyberloafing di SMK Negeri 1 Banyudono; 2) pengaruh teacher behavior terhadap perilaku cyberloafing di SMK Negeri 1 Banyudono; 3) pengaruh smartphone addiction dan teacher behavior secara bersama sama terhadap perilaku cyberloafing di SMK Negeri 1 Banyudono. Penelitian ini merupakan penelitian kuantitatif jenis ex post facto. Populasi dalam penelitian ini adalah seluruh siswa kelas X Manajemen Perkantoran dan Layanan Bisnis yang berjumlah 72 siswa. Sampel pada penelitian ini menggunakan sampling jenuh. Teknik pengumpulan data dengan angket dan observasi. Teknik analisis data menggunakan analisis regresi linier berganda dengan bantuan SPSS versi 20. Hasil penelitian menunjukkan bahwa:1) terdapat pengaruh smartphone addiction terhadap perilaku cyberloafing yang dibuktikan dengan nilai t tabel sebesar 4.274 (4.274 > 1.994); 2) terdapat pengaruh teacher behavior terhadap perilaku cyberloafing dibuktikan dengan nilai $t_{hitung}>t_{tabel}$ (4,32>1,99); 3) terdapat pengaruh positif dan signifikan smartphone addiction dan teacher behavior secara bersama sama terhadap perilaku cyberloafing dengan nilai $F_{hitung}>F_{tabel}$ (15.53>3,12). Persamaan Regresi penelitian ini adalah $\hat{Y}$= -5.837 + 0,388X_1 + 0,485X_2 dengan nilai Adjusted R Square sebesar 0,290 yang berarti variabel smartphone addiction dan teacher behavior mampu menjelaskan variabel perilaku cyberloafing sebesar 29%.

Kata kunci: Adiksi internet; distraksi digital; gaya mengajar guru

Abstract

This study examined: (1) the effect of smartphone addiction on cyberloafing behavior at SMK Negeri 1 Banyudono; (2) the effect of teacher behavior on cyberloafing behavior at SMK Negeri 1 Banyudono; and (3) the combined effect of smartphone addiction and teacher behavior on cyberloafing behavior at SMK Negeri 1 Banyudono. This quantitative ex post facto study involved all 72 tenth-grade students in the Office Management and Business Services program. The sample was determined through saturated sampling. Data were collected through questionnaires and observation, and analyzed using multiple linear regression analysis with SPSS version 20. Results indicated that: (1) smartphone addiction significantly influenced cyberloafing behavior (t = 4.274, p < .001); (2) teacher behavior significantly

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influenced cyberloafing behavior (t = 3.232, p = .002); and (3) smartphone addiction and teacher behavior jointly exerted a significant positive influence on cyberloafing behavior (F = 15.533, p < .001). The regression equation was $\hat{Y} = -5.837 + 0.388X_1 + 0.485X_2$, with an adjusted R^2 of .290, indicating that smartphone addiction and teacher behavior explained 29% of the variance in cyberloafing behavior.

Introduction

Internet penetration in Indonesia has increased annually. The Indonesian Internet Service Providers Association (APJII) reported that 215 million Indonesians were connected to the internet in 2023, rising to 221 million in 2024, representing a penetration rate of 79.50% (Nuzula & Fahmawati, 2024). Within educational contexts, internet usage has similarly increased. To support learning, many schools provide free internet access. While such access aims to enhance educational outcomes, students frequently use the internet for non-academic purposes during instructional time, leading to cyberloafing behavior.

Cyberloafing refers to the use of the internet for non-academic purposes during learning sessions (Akbulut et al., 2016). M. Zhang et al. (2024) defined cyberloafing as students' engagement in online activities unrelated to learning, which negatively impacts their academic performance. Students experiencing boredom during instruction often seek entertainment through internet activities unrelated to coursework, such as watching videos, accessing social media, and listening to music. Cyberloafing disrupts learning time and adversely affects academic achievement (Adawiyah, 2023), making it a critical problem requiring immediate attention.

Several factors contribute to cyberloafing behavior. Nuzula and Fahmawati (2024) identified internal factors (interest, emotions, cognition) and external factors (facilities, peer influence). Simanjuntak et al. (2022) highlighted additional factors including instructor characteristics, course content, learner attributes, and learning environment. Akbulut et al. (2016) operationalized cyberloafing through five indicators: sharing, shopping, real-time updating, accessing online content, and gaming/gambling. Cyberloafing is closely associated with electronic devices, particularly smartphones. While smartphones' advanced features facilitate daily activities, excessive use leads to smartphone addiction. Hidayanto et al. (2021) defined smartphone addiction as dependent behavior characterized by excessive reliance on smartphones in daily activities and diminished self-control. Excessive smartphone use results in negative consequences including declining academic performance, increased financial costs, disrupted interpersonal relationships, headaches, wrist or neck pain, and accidents (Adawiyah, 2023).

Empirical evidence suggests that smartphone addiction positively influences cyberloafing behavior. Saritepeci (2020) found that smartphone addiction was the most important predictor of cyberloafing among high school students, explaining 8.4% of the variance. Beyond smartphone addiction, instructors constitute another external factor contributing to cyberloafing. Teachers play crucial sociological and psychological roles in students' educational experiences (Niaga et al., 2019). Teachers must develop strategies that actively engage students in learning to redirect attention away from cyberloafing activities (Rana et al., 2019). Teacher behavior—defined as attitudes and actions reflecting superior pedagogical insight—encompasses continuous development of teaching ideas and their implementation in managing the teaching-learning process to optimize student learning (Standsyah et al., 2019). These behaviors include communication patterns with students, creative instructional design, and cultivation of inclusive and supportive classroom environments that enable students to maximize their potential.

Research Method

This study was conducted with tenth-grade students in the Office Management and Business Services program at SMK Negeri 1 Banyudono, located at Jalan Kuwiran No. 3, Banyudono District, Boyolali Regency, Central Java Province. The research site was selected due to identified cyberloafing problems. This quantitative ex post facto study examined causal relationships between smartphone addiction and teacher behavior as independent variables and cyberloafing behavior as the dependent variable. The study included two independent variables: smartphone addiction (X_1) and teacher behavior (X_2), and one dependent variable: cyberloafing behavior (Y).

Data were collected using closed-ended questionnaires distributed through Google Forms. The questionnaires employed a 5-point Likert scale with response options: Never, Rarely, Sometimes, Often, and Very Often. Respondents completed demographic information and responded to questionnaire items following provided instructions. All respondent information and responses were kept confidential and used solely for research purposes.

The research instruments were systematically constructed based on indicators representing each variable. Cyberloafing behavior was measured using the Cyberloafing Activities Scale (Five-Factor Cyberloafing Scale) developed by Akbulut et al. (2016), comprising five indicators: sharing, shopping, real-time updating, accessing online content, and gaming/gambling. Smartphone addiction was assessed using the Smartphone Addiction Proneness Scale (SAPS) developed by Kim et al. (2014) and modified by Kurniawan et al. (2016), encompassing six indicators: disturbance of adaptive functions, positive anticipation, withdrawal, cyberspace-oriented relationships, overuse, and tolerance. Teacher behavior was measured using the Teacher as Social Context Questionnaire (TASC-Q) developed by Ahn et al. (2018), consisting of three indicators: teacher involvement, structure, and autonomy support.

Prior to administration in the main study, the questionnaires were pilot-tested with 30 respondents not included in the research sample. Items were considered valid if significance values were less than .05 or calculated r values exceeded critical r values at the 5% significance level. Questionnaires were deemed reliable if Cronbach's alpha values exceeded .60. Validity and reliability testing using IBM SPSS Statistics 20 yielded the results presented in Table 1.

Table 1
Validity and Reability Test Results

Variable	*Validity Test*	Reliability Test
Cyberloafing Behavior	*11 of 13 items valid*	Reliable (0,829 > 0,6)
Smartphone Addiction	*12 of 13 items valid*	Reliable (0,904 > 0,6)
Teacher Behavior	*9 items valid*	Reliable (0,732 > 0,6)

The population comprised all 72 tenth-grade students in the Office Management and Business Services program at SMK Negeri 1 Banyudono. The sampling technique employed non-probability sampling with a saturated sampling approach, whereby the entire population constituted the research sample. This study analyzed relationships between independent and dependent variables using multiple linear regression analysis with IBM SPSS Statistics 20 software. Prior to data analysis, assumption tests were conducted including: (1) normality test to assess data distribution, (2) linearity test to determine linear relationships between independent and dependent variables, and (3) multicollinearity test to detect strong intercorrelations among independent variables.

After verifying all assumptions, hypothesis testing was conducted to determine acceptance or rejection of proposed hypotheses. Hypothesis testing included: t-test (partial test), F-test (simultaneous test), multiple linear regression analysis, coefficient of determination (R^2), and calculation of effective and relative contributions of each independent variable to the dependent variable.

Results and Discussion

Research Results

Descriptive statistical analysis of cyberloafing behavior revealed a minimum value of 12, maximum value of 38, mean of 21.33, and standard deviation of 6.66. This variable comprised 11 items measured on a 5-point Likert scale. Smartphone addiction showed a minimum score of 20, maximum score of 56, mean of 36.79, and standard deviation of 7.30, measured through 12 items on a 5-point Likert scale. Teacher behavior demonstrated a minimum score of 14, maximum score of 38, mean of 26.62, and standard deviation of 4.41, assessed through 9 items.

Residual normality testing using the Kolmogorov-Smirnov test yielded a significance value of .859, indicating normally distributed data ($p > .05$). Linearity testing revealed that smartphone addiction demonstrated a linear relationship with cyberloafing behavior (deviation from linearity $p = .480$). Similarly, teacher behavior showed a linear relationship with cyberloafing behavior (deviation from linearity $p = .293$).

Multicollinearity testing indicated that each independent variable had a tolerance value of 1.006 and VIF value of 0.994, confirming the absence of multicollinearity among independent variables. Table 2 presents the effects of each independent variable on the dependent variable.

Table 2
T-test Results

Variable	t-count	Sig.(p-value)
(constant)	1.157	.251
Smartphone Addiction	4.274	.000
Teacher Behavior	3.232	.002

Source: Data processed by researchers (2025)

Table 2 shows that smartphone addiction had a significance value $< .001$ and t value of 4.274, exceeding the critical value of 1.994. These results indicate that smartphone addiction exerted a significant positive effect on cyberloafing behavior. Teacher behavior demonstrated a significance value of .002 and t value of 3.232, also exceeding the critical value. Thus, teacher behavior significantly and positively influenced cyberloafing behavior. Table 3 presents the simultaneous effect of independent variables on the dependent variable.

Table 3
F-test Results

	Sum of Squares	df	Mean Square	F	Sig.
Regression	962.417	2	481.208	15.533	.000
Residual	2137.583	69	30.979		
Total	3100.000	71			

Source: Data processed by researchers (2025)

Table 3 reveals an F value of 15.533 with significance $< .001$, indicating that smartphone addiction and teacher behavior jointly exerted a significant effect on cyberloafing behavior. Table 4 presents multiple linear regression analysis results.

Table 4
Multiple Linear Regression Analysis Results

Model	Unstandardized Coefficients	
	B	Std. Error
(constant)	-5.837	5.043
Total Smartphone Addiction	.388	.091
Total Teacher Behavior	.485	.150

Source: Data processed by researchers (2025)

The regression equation derived from Table 4 is:

$$\hat{Y} = -5.837 + 0.388X_1 + 0.485X_2$$

The constant value of -5.837 indicates that when both X_1 (smartphone addiction) and X_2 (teacher behavior) equal zero, the predicted value of Y (cyberloafing behavior) is -5.837. The regression coefficient for X_1 of 0.388 indicates that each one-unit increase in smartphone addiction corresponds to a 0.388-unit increase in cyberloafing behavior. The regression coefficient for X_2 of 0.485 indicates that each one-unit increase in teacher behavior corresponds to a 0.485-unit increase in cyberloafing behavior, holding other variables constant. Table 5 presents the coefficient of determination results.

Table 5
Coefficient of Determination Results

R	R Square	Adjusted R Square	Std. Error of the Estimate
.557	.310	.290	5.566

Source: Data processed by researchers (2025)

Table 5 shows an adjusted R squared of .290, indicating that smartphone addiction and teacher behavior explained 29% of the variance in cyberloafing behavior, while the remaining 71% was attributable to other variables not examined in this study. Table 6 presents effective contribution calculations.

Table 6
Effective Contribution Results

Variable	Beta	*Correlation Coefficient*	R Square
X_1	0,429	0,454	31%
X_2	0,324	0,358	

Source: Data processed by researchers (2025)

Based on Table 6, the SE formula can be obtained as follows:

$$SE(X)\% = \beta x \times r_{xy} \times 100\%$$

Based on this formula, the effective contribution of the smartphone addiction variable to cyberloafing behavior is 19.5% (calculated from 0.429 x 0.454 x 100%), while the effective contribution of the teacher behavior variable to cyberloafing behavior is 11.6% (calculated from 0.324 x 0.358 x 100%). The total effective contribution of the two independent variables is 31%, which corresponds to the previously calculated R2 value. After calculating the effective contribution of each independent variable, the next step is to calculate the relative contribution of each independent variable using the following formula:

$$SR(X)\% = \frac{SE(X)\%}{R2}$$

Based on this formula, the relative contribution of the smartphone addiction variable to cyberloafing is 0.63% (calculated from 19.5/31), while the relative contribution of the teacher behavior variable to cyberloafing is 0.37% (calculated from 11.6/31). The total relative contribution of both independent variables is equal to 100%.:

Discussion

Data analysis revealed that smartphone addiction had a significance value < .001 and t value of 4.274, demonstrating that smartphone addiction significantly influenced cyberloafing behavior. These results support the alternative hypothesis. The significant positive relationship between smartphone addiction and cyberloafing behavior indicates that higher levels of smartphone dependence correspond to greater cyberloafing behavior among tenth-grade Office Management and Business Services students at SMK Negeri 1 Banyudono.

These findings align with research by Saritepeci (2020) and Gokcearlan et al. (2018). Saritepeci (2020) identified smartphone addiction as the most important predictor of cyberloafing behavior, explaining 8.4% of the total variance. Gokcearlan et al. (2018) found that smartphone addiction had a significant positive relationship with cyberloafing behavior ($t = 4.119$, $p < .001$).

The second hypothesis posited a significant positive relationship between teacher behavior and cyberloafing behavior among tenth-grade Office Management and Business Services students at SMK Negeri 1 Banyudono. Results showed a significance value of .002 and t value of 3.232, supporting the alternative hypothesis.

These findings contradict research by Lutfiyah (2018), which found a relationship between teaching methods and cyberloafing, but align with Varol and Yildirim (2019), who demonstrated that teacher instructional methods influence cyberloafing behavior. The significant positive relationship between teacher behavior and cyberloafing in this study suggests that certain teacher behaviors--particularly authoritarian teaching styles characterized by strict control--may increase student cyberloafing behavior.

The third hypothesis proposed that smartphone addiction and teacher behavior jointly influence cyberloafing behavior. Results revealed a significance value < .001 and F value of 15.533, confirming that smartphone addiction and teacher behavior simultaneously contributed to cyberloafing behavior among tenth-grade Office Management and Business Services students at SMK Negeri 1 Banyudono. The coefficient of determination (R squared) of .290 indicated that 29% of variance in cyberloafing behavior was explained by these independent variables, with the remaining 71% attributable to factors not examined in this study.

Conclusion

Based on data collection and analysis, three main conclusions emerged. First, smartphone addiction exerted a significant positive influence on cyberloafing behavior among tenth-grade Office Management and Business Services students at SMK Negeri 1 Banyudono ($t = 4.274$, $p < .001$). Higher levels of smartphone addiction corresponded to increased likelihood of student engagement in cyberloafing activities during instruction. Second, teacher behavior significantly and positively influenced cyberloafing behavior among tenth-grade Office Management and Business Services students at SMK Negeri 1 Banyudono ($t = 3.232$, $p = .002$). This relationship suggests that authoritarian teaching styles may increase student cyberloafing behavior. Third, smartphone addiction and teacher behavior jointly exerted a significant positive influence on cyberloafing behavior among tenth-grade Office Management and Business Services students at SMK Negeri 1 Banyudono ($F = 15.533$, $p < .001$), indicating that higher smartphone usage intensity combined with authoritarian teaching styles corresponds to increased cyberloafing behavior.

This study had several limitations, including restricted sample size, single research location, and limited explanatory power (smartphone addiction and teacher behavior explained only 29% of cyberloafing behavior variance). Future researchers should expand sample sizes and include multiple research sites to avoid overgeneralization. Additionally, investigating other variables with stronger influences on cyberloafing behavior, such as self-control or learning motivation, would enhance understanding of this phenomenon.

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The influence of application accessibility and service quality on customer satisfaction of the Tukufood E-Canteen

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Abstrak

Dalam dunia pendidikan, layanan e-canteen mulai dimanfaatkan untuk mendukung digitalisasi fasilitas sekolah. Penelitian ini bertujuan untuk mengetahui pengaruh kemudahan akses aplikasi dan kualitas pelayanan terhadap kepuasan pelanggan e-canteen Tukufood di SMK Negeri 1 Surakarta. Metode yang digunakan adalah kuantitatif dengan pendekatan eksplanatori, melibatkan 138 siswa sebagai sampel. Hasil penelitian menunjukkan bahwa kemudahan akses aplikasi dan kualitas pelayanan secara parsial maupun simultan berpengaruh positif dan signifikan terhadap kepuasan pelanggan. Hal tersebut dibuktikan dengan F_{hitung} 117,499 > 3,06 F_{tabel} dan nilai signifikansi sebesar 0,000 < 0,05. Temuan ini menegaskan pentingnya optimalisasi fitur aplikasi dan peningkatan layanan dalam mendukung pengalaman pengguna e-canteen.

Kata kunci: aplikasi mudah diakses; digitalisasi layanan; pengalaman pengguna; kuantitatif

Abstract

In educational settings, e-canteen services are increasingly utilized to support the digitalization of school facilities. This study examines the influence of application accessibility and service quality on customer satisfaction with the Tukufood e-canteen at SMK Negeri 1 Surakarta. Using a quantitative explanatory approach, the study involved 138 students as participants. Results indicated that both application accessibility and service quality exerted positive and significant effects on customer satisfaction, both individually and collectively. The simultaneous effect was evidenced by $F = 117.50$, $p < .001$, exceeding the critical value of $F_{crit} = 3.06$. These findings underscore the importance of optimizing application features and enhancing service delivery to support positive e-canteen user experiences.

Keywords: easy to access applications; digitalization of services; user experience; quantitative

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Introduction

Technological advancement has fundamentally transformed how individuals live, work, and interact. In educational contexts, technology plays a crucial role in enhancing efficiency and productivity (Andri et al., 2019). According to Herawati et al. (2022), technologies that enable students to access information quickly and efficiently are essential, given contemporary students' instant-paced lifestyles and high mobility. One manifestation of technology utilization in school environments is the digitalization of canteen services, known as e-canteens (Rahmawati, 2019). Such services not only represent technological progress in the education sector but also support the implementation of digital culture relevant to current generational needs.

The continuous growth in smartphone usage has driven digital application utilization across various sectors, including education. Data from the Central Bureau of Statistics indicate an increase in mobile phone ownership from 50.94% in 2013 to 67.29% in 2023 (Badan Pusat Statistik Indonesia, 2024). This trend presents opportunities for introducing application-based services in schools, such as e-canteens. According to Mufidah and Trihantoyo (2020), e-canteens are facilities that enable students and school community members to fulfill food and beverage needs through electronic systems, similar to online food ordering services like GoFood and GrabFood. This exposure familiarizes students with practical and efficient digital systems.

E-canteens offer solutions to problems commonly encountered in conventional canteens, such as long queues, order errors, and payment mistakes (Nugroho et al., 2019). However, these services also present potential drawbacks, including misuse during class hours, increased covert consumption, and impacts on students' learning focus (Mufidah & Trihantoyo, 2020). Therefore, school oversight is essential to ensure e-canteen usage does not disrupt teaching and learning processes. Such oversight can be implemented through policies, access time regulation, and collaboration among teachers, students, and canteen management.

SMK Negeri 1 Surakarta is one school that has adopted e-canteen services through the Tukufood application, developed from Tukuyo.id. However, preliminary surveys indicate that most students still prefer conventional canteens due to access constraints, limited ordering time windows, and service quality issues. Consequently, evaluating application accessibility and service quality aspects is crucial for enhancing e-canteen customer satisfaction in schools.

In business contexts, customer satisfaction plays a vital role and serves as a cornerstone for organizational success (Herawati et al., 2022). When producers or companies deliver products and services that meet consumer needs and desires, customer satisfaction results. According to Mwiya et al. (2022), customer satisfaction is a feeling associated with outcomes that meet or exceed expectations. Customer satisfaction can be defined as the result of comparing customer expectations with the performance of received products or services. Customer satisfaction emerges from several important factors. Factors influencing customer satisfaction include product quality, service quality, emotional aspects, price, and costs (Puspitasari & Astuti, 2019). These factors must be considered by product or service providers. Customer satisfaction indicators in this study include quality products, effective complaint handling systems, satisfactory service delivery, promotional offerings to please customers, and ease of product access (Adhari, 2021).

Application accessibility is defined as the ease users experience when employing applications or systems. According to Nugroho and Laily (2022), application accessibility represents a perception of how easy it is to operate the application. Meanwhile, Setyani et al. (2024) define accessibility as ease of use, encompassing clarity of user experience, simplicity in operating the application, and problem-solving features. Davis et al. (2020) assert that ease of use is determined by user perceptions of effort required to operate technology or systems. Based on these definitions, application accessibility in this study refers to students' perceived ease when

using the Tukufood e-canteen application, including interface clarity, navigation simplicity, and operational efficiency. Application accessibility indicators in this study comprise user-friendly interfaces, simple system usage, clear application language, clear instructions, and availability of access channels (Susanti & Putra, 2023).

Service quality constitutes a critical aspect determining organizational success or failure in satisfying customers. According to Agustina and Sapitri (2022), service quality represents the difference between customer expectations and perceptions of received services. When provided services meet or exceed expectations, service quality is considered good; conversely, when services fall short of expectations, quality is deemed poor. Samirudin (2023) emphasizes that service quality is intangible, complex, and difficult to measure because it depends on customer perceptions and experiences. Quality assessment involves comparing customer expectations with actual service performance. Based on these perspectives, service quality in this study refers to students' perceptions of Tukufood e-canteen services, including responsiveness, accuracy, and friendliness of service providers. Service quality indicators in this study include reliability, physical facilities, empathy, responsiveness, and assurance (Winata & Anugrah, 2023).

Puryanto (2021) investigated the influence of price, service quality, and product quality on customer satisfaction in Shopee e-commerce. Results indicated that price, service quality, and product quality significantly influenced customer satisfaction. This research demonstrates that service quality is crucial for enhancing customer satisfaction. Irfansyah et al. (2022) examined the influence of service quality and application usability on customer satisfaction among Maxim users in Bandar Lampung. Results showed that service quality and application usability significantly influenced customer satisfaction. This finding reveals that service quality and ease of use serve as important foundations for satisfaction in digital transportation services.

Based on the background above, this study aims to determine: (1) whether application accessibility influences customer satisfaction with the Tukufood e-canteen among Grade X and XI MPLB students at SMK Negeri 1 Surakarta, (2) whether service quality influences customer satisfaction with the Tukufood e-canteen among Grade X and XI MPLB students at SMK Negeri 1 Surakarta, and (3) whether application accessibility and service quality simultaneously influence customer satisfaction with the Tukufood e-canteen among Grade X and XI MPLB students at SMK Negeri 1 Surakarta.

Research Method

This research was conducted with Grade X and XI students majoring in Office Management and Business Services (MPLB) at SMK Negeri 1 Surakarta. The independent variables in this study were Application Accessibility (X_1) and Service Quality (X_2), while the dependent variable was Customer Satisfaction (Y). The research method employed was quantitative with an explanatory approach. The quantitative method was used to examine a specific population or sample, with data collected through research instruments and analysis results presented as statistical data or numbers, aiming to test previously formulated hypotheses. The population for this study comprised all Grade X and XI students from the Office Management and Business Services (MPLB) major. Population selection was based on students from SMK Negeri 1 Surakarta who had used the Tukufood e-canteen.

Sampling employed proportional random sampling technique, with sample size calculated using the Slovin formula, resulting in 138 respondents from a total population of 211. The sample proportion distribution consisted of 69 samples from Grade X MPLB (from a population of 106 students) and 69 samples from Grade XI MPLB (from a population of 105 students). Data collection utilized questionnaires with a modified Likert scale. The use of a modified Likert scale in this questionnaire was highly appropriate because the variables studied were subjective and psychological in nature, such as perceptions of ease, quality, and satisfaction. The Likert scale enables quantitative measurement of perceptions in ordinal form. With a rating range of 1–4, this scale facilitated respondents (students) in providing responses reflecting their level of agreement/disagreement with each statement while avoiding biased responses. The instrument also

underwent validity and reliability testing, making it suitable for use as a measurement tool in quantitative research.

Research instrument validation techniques employed validity testing and reliability testing to ensure that the research instrument was appropriate for measuring the studied variables. Data analysis techniques utilized SPSS version 26 software with several steps: (1) compiling data tabulation; (2) prerequisite analysis tests consisting of normality testing using the Kolmogorov-Smirnov method, linearity testing using the ANOVA method, multicollinearity testing by examining Tolerance and VIF (Variance Inflation Factor) values, and heteroscedasticity testing using the Glejser Test; (3) hypothesis testing consisting of the t-test to determine the partial influence of X_1 and X_2 on Y, and the F-test to determine the simultaneous influence of X_1 and X_2 on Y, multiple linear regression analysis using the Multiple Linear Regression method (OLS – Ordinary Least Squares) to determine the simultaneous and partial influence of X_1 and X_2 on Y; (4) coefficient of determination analysis to determine the magnitude of independent variable contribution to dependent variable variation; and (5) calculating the effective contribution and relative contribution of X_1 and X_2 to Y to determine the proportional contribution of each independent variable to customer satisfaction.

Results and Discussion

Research Results

In this study, data collection was conducted using questionnaires. Before distributing questionnaires to respondents, questionnaire pilot testing was performed to determine validity and reliability. Validity test results for the customer satisfaction variable (Y) questionnaire indicated that all 14 statement items were valid. For the application accessibility variable (X_1) questionnaire, out of 15 statement items, 13 were valid and 2 were invalid. Additionally, validity test results for the service quality variable (X_2) questionnaire showed that out of 14 statement items, 13 were valid and 1 was invalid. Invalid statement items were subsequently eliminated, as they were already represented by other statement items within the same indicator. Based on reliability test results, the customer satisfaction variable (Y) yielded $0.919 > 0.60$, the application accessibility variable (X_1) yielded $0.872 > 0.60$, and the service quality variable (X_2) yielded $0.801 > 0.60$, indicating that statement items were reliable and could serve as measurement instruments. The hypothesis test results conducted using SPSS version 26 are as follows.

Table 1
t-Test Results

Model	t_{count}	Significance Value	Explanation
Application Accessibility	5,355	0,000	Linear
Service Quality	5,023	0,000	Linear

In the research process, hypothesis testing is necessary to determine whether the proposed hypothesis can be accepted or rejected. The t-test is used to determine whether there is an influence from independent variables on the dependent variable partially (individually). Data processing results in Table 1 show that the t value for the application accessibility variable was 5.355 with significance $p < .001$. Determination of tcrit with a significance level of $.05/2 = .025$ and n = 138 (the formula is $\alpha/2$; $n - k - 1$, thus .025; $138 - 2 - 1 = 135$) yielded tcrit = 1.977. Therefore, it can be determined that $5.355 > 1.977$, meaning H_0 is rejected and H_a is accepted. Thus, it can be concluded that there is a positive and significant influence of application accessibility on customer satisfaction. Furthermore, the t value for the service quality variable was 5.023 with significance $p < .001$. Therefore, it can be determined that $5.023 > 1.977$, meaning H_0 is rejected and H_a is accepted. Thus, the results indicate that there is a positive and significant influence of service quality on customer satisfaction.

Table 2
F-test Results

	Sum of Squares	df	Mean Square	F	Sig.
Regression	2253,754	2	1126,877	117,499	,000[b]
Residual	1294,717	135	9,590		
Total	3548,471	137			

The F-test in Table 2 was conducted to determine whether independent variables simultaneously influence the dependent variable. Based on the obtained results, it can be determined that the F value = 117.50 with a significance value $p < .001$ and Fcrit = 3.06 (the formula for determining Fcrit is k : n − k, thus 2 : 138 − 2, 2 : 136 = 3.06). From the presented results, it is known that F is greater than Fcrit, meaning H$_0$ is rejected and H$_a$ is accepted. Therefore, it can be concluded that collectively, application accessibility and service quality influence customer satisfaction.

This study employed multiple linear regression analysis to calculate and analyze relationships among variables. The objective was to determine whether the relationships among these variables are positive or negative, and to predict the value of the dependent variable when independent variables experience changes, whether increases or decreases. The results of the multiple linear regression analysis conducted in this study are presented in the following table.

Table 3
Multiple Linear Regression Analysis Results

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
(Constant)	6,113	2,389		2,558	,012
Application Accessibility	,471	,088	,437	5,355	,000
Service Quality	,449	,089	,410	5,023	,000

Analysis results demonstrate that the regression model formed in this study is: $Y = 5.952 + 0.337X_1 + 0.229X_2$. This equation indicates that if application accessibility (X_1) increases by one unit and service quality (X_2) remains constant, then customer satisfaction will increase by 0.337 units. Meanwhile, if service quality (X_2) increases by one unit and application accessibility (X_1) remains constant, then customer satisfaction will increase by 0.229 units.

Table 4
Coefficient of Determination Results

R	R Square	Adjusted R Square	Std. Error of the Estimate
,797[a]	,635	,630	3,097

Based on Table 4, results show that the coefficient of determination value is 0.635, thus it can be concluded that the influence of application accessibility and service quality on Tukufood e-canteen customer satisfaction among Grade X and XI MPLB students at SMK Negeri 1 Surakarta is 63.5%, with the remaining 36.5% influenced by other variables not examined in this study.

Table 5
Multiple Linear Regression Analysis Results and Coefficient of Determination Results

Variable	Regression Coefficient (Beta)	Correlation Coefficient	R Square
X_1	0,437	0,753	63,5
X_2	0,410	0,747	63,5

Effective contribution is a measure of the pure contribution provided by each independent variable to the dependent variable. Based on the data presented in the table above, for the application accessibility variable, the value is $0.437 \times 0.753 = 0.329$, yielding a percentage value of 32.9%. For the service quality variable, the value is $0.410 \times 0.747 = 0.306$, yielding a percentage value of 30.6%.

Relative contribution is used to determine the percentage of each independent variable to the dependent variable collectively, forming a 100% value. Calculation of the relative contribution for the application accessibility variable to customer satisfaction is $32.9 : 63.5 = 0.518$, yielding a percentage value of 51.8%. For the service quality variable to customer satisfaction, the calculation is $30.6 : 63.5 = 0.482$, yielding a percentage value of 48.2%.

Discussion

Calculation results from the t-test in this study demonstrate that $t > t_{crit}$ ($5.355 > 1.977$) with a significance value $p < .001$, thus explaining that application accessibility positively and significantly influences customer satisfaction. Based on data processing conducted, it can be determined that the higher the level of application accessibility, the higher the Tukufood e-canteen customer satisfaction. This aligns with research by Setyani et al. (2024), which explains that application accessibility significantly influences customer satisfaction, ultimately also increasing customer loyalty. Previously, research conducted by Irfansyah et al. (2022) elaborated that application accessibility positively and significantly influences customer satisfaction. If customers find an application easy to use and requiring minimal effort, this can influence increasingly higher customer satisfaction. With easy and flexible access, customers will feel more comfortable and loyal in using digital services, including in the e-canteen context such as Tukufood.

Based on data collection results, the statement with the lowest value was "Orders at the Tukufood e-canteen can be easily monitored due to good internet facility availability at school." This indicates that some students perceive school internet facilities as still not optimal when needed for placing orders at the Tukufood e-canteen. The second-lowest value for the application accessibility variable was found in the statement "The Tukufood e-canteen is responsive and does not experience lag or force close when used." This indicates that Grade X and XI MPLB students at SMK Negeri 1 Surakarta perceive that application accessibility at the Tukufood e-canteen is still not responsive and possibly experiences lag or force close when used. The existence of problems when accessing the Tukufood e-canteen can reduce comfort and even reduce student interest in placing orders. Therefore, Safitri and Dewi (2025) stated that good application accessibility with high flexibility can be considered a key factor influencing customer satisfaction.

Statistical testing results regarding the influence of service quality on customer satisfaction show that $t > t_{crit}$ ($5.023 > 1.977$) with a significance value $p < .001$. These results can be concluded to indicate that the service quality variable positively and significantly influences customer satisfaction. Service quality plays an important role in increasing customer satisfaction. This aligns with previous research by Winata and Anugrah (2023), which elaborated that service quality has a positive and significant influence on customer satisfaction. Additionally, research conducted by Puryanto (2021) found that service quality positively and significantly influences customer satisfaction. This corresponds with the results of this study, which reveal that service quality has an effective contribution of 30.6% and a relative contribution of 48.2%. This means service quality influences Tukufood e-canteen customer satisfaction.

These findings confirm that service quality is a key factor in creating positive experiences for Tukufood e-canteen customers. Responsive, friendly service capable of consistently meeting customer needs and expectations will drive the creation of higher satisfaction. In the context of digital services such as e-canteens, service quality not only encompasses direct interaction but also concerns application ease of use, service speed, menu information clarity, and order processing accuracy. When customers feel that the provided service aligns with or even exceeds expectations, this will impact increased satisfaction and the likelihood that customers will recommend the service to others. Based on data collection results, the lowest item was found in the statement "I feel payment method options at the Tukufood e-canteen are diverse and quite complete." This

indicates that service quality in terms of transaction service diversity is still lacking. This condition can create difficulties for users with particular payment method preferences, especially in the digital era that demands flexibility and transaction ease. Therefore, Tukufood e-canteen management needs to consider adding more digital payment options such as e-wallets, QRIS, or bank transfers to enhance user comfort and satisfaction. Additionally, adding payment method variations that meet user preferences is also expected to increase customer satisfaction.

Results from this study show that F > Fcrit (117.50 > 3.06) and a significance value p < .001. Based on these F-test results, it can be interpreted that application accessibility and service quality simultaneously have a significant influence on Tukufood e-canteen customer satisfaction among Grade X and XI MPLB students at SMK Negeri 1 Surakarta. This research is also supported by research from Firdaus and Himawati (2022), which states that service quality and application accessibility collectively substantially influence customer satisfaction. Subsequently, research conducted by Aditya and Damayanti (2024) shows results that the ease-of-use variable referring to application accessibility and the service quality variable positively influence customer satisfaction. Thus, optimal accessibility and good service quality complement each other in creating satisfying user experiences and can increase customer satisfaction. Based on coefficient of determination calculations, the application accessibility variable provides a contribution of 32.9%, while the service quality variable provides a contribution of 30.6%, with effective contribution from both variables reaching 63.5%. Furthermore, in terms of relative contribution, application accessibility contributes 51.8%, while service quality contributes 48.2%. Therefore, these results show that the application accessibility variable has a greater influence compared to the service quality variable. Optimal application accessibility will increasingly enhance Tukufood e-canteen customer satisfaction.

In the context of the Tukufood e-canteen, synergy between user-friendly application displays, intuitive navigation, and fast, responsive service becomes an important element in shaping positive user perceptions. When customers experience ease in placing orders, receive clear information, and are well served, satisfaction will naturally form. Consequently, an integrated approach between technical aspects (application ease of use) and humanistic aspects (service quality) is very important to maintain and enhance to ensure sustainable customer satisfaction.

Conclusion

Based on data processing results in research regarding the influence of application accessibility and service quality on customer satisfaction, it can be concluded that application accessibility positively and significantly influences customer satisfaction, and service quality positively and significantly influences customer satisfaction. Furthermore, results show that application accessibility is the variable that has a greater influence on e-canteen customer satisfaction; thus, application accessibility plays an important role in shaping positive customer experiences that ultimately can increase customer satisfaction. The final finding indicates that application accessibility and service quality collectively have a positive and significant influence on Tukufood e-canteen customer satisfaction among Grade X and XI MPLB students at SMK Negeri 1 Surakarta. Recommendations that can be provided for SMK Negeri 1 Surakarta to enhance Tukufood e-canteen customer satisfaction are: school principals need to improve internet network quality and stability. Meanwhile, Tukufood e-canteen operators or management are expected to enhance application accessibility to be more responsive and, if possible, provide various non-cash payment methods to increase customer satisfaction. This research was conducted only among Grade X and XI MPLB students at SMK Negeri 1 Surakarta; therefore, results may not be generalizable to broader populations or other schools with different characteristics. Future research is expected not only to measure the influence of application accessibility and service quality on customer satisfaction but also to consider other factors that may influence customer satisfaction, such as price, product variety, or prior usage experience.

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Students' perceptions of teaching methods and learning interest effects on general administration outcomes

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Abstrak

Penelitian ini dilatarbelakangi dengan adanya permasalahan pada hasil belajar siswa kelas XI MPLB SMK Negeri 6 Surakarta pada mata pelajaran administrasi umum yang dipengaruhi oleh persepsi siswa tentang metode mengajar guru dan minat belajar siswa. Diketahui bahwa ketuntasan hasil belajar siswa kelas XI MPLB pada mata pelajaran administrasi umum hanya sebesar 32,08%. Penelitian ini bertujuan untuk mengetahui pengaruh (1) persepsi siswa tentang metode mengajar guru terhadap hasil belajar siswa, (2) minat belajar siswa terhadap hasil belajar siswa, dan (3) persepsi siswa tentang metode mengajar guru dan minat belajar siswa terhadap hasil belajar siswa. Penelitian ini merupakan penelitian kuantitatif dengan metode survei. Hasil penelitian menunjukkan bahwa (1) terdapat pengaruh positif dan siginifikan pada persepsi siswa tentang metode mengajar guru terhadap hasil belajar siswa yang dibuktikan dengan nilai signifikansi 0,004 < 0,05 (2) terdapat pengaruh negatif pada minat belajar siswa terhadap hasil belajar siswa yang dibuktikan dengan nilai signifikansi 0,034 < 0,05 dan nilai koefisien pada kolom B sebesai -0,315 (3) terdapat pengaruh secara simultan pada persepsi siswa tentang metode mengajar guru dan minat belajar siswa terhadap hasil belajar siswa pada mata pelajaran administrasi umum kelas XI MPLB SMK Negeri 6 Surakarta yang dibuktikan dengan nilai signifikansi sebesar 0,008 < 0,05.

Kata kunci: evaluasi pembelajaran; ketuntasan belajar; kuantitatif; survei

Abstract

This study investigated the relationship between students' perceptions of teachers' teaching methods and learning interest with learning outcomes among grade XI MPLB students at SMK Negeri 6 Surakarta in general administration. The learning completion rate was only 32.08%. This quantitative survey research examined: (1) the effect of students' perceptions of teaching methods on learning outcomes, (2) the effect of learning interest on learning outcomes, and (3) the simultaneous effect of both variables on learning outcomes. Results indicated that (1) students' perceptions of teaching methods had a significant positive effect on learning outcomes ($p = 0.004$), (2) learning interest had a significant negative effect on learning outcomes ($p = 0.034$,

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B = -0.315), and (3) both variables simultaneously and significantly affected learning outcomes (p = 0.008).

Introduction

Human capital constitutes a key driving factor in a nation's economic development. Education directly influences the qualitative development of a country's human resources (Hasan et al., 2023). Education represents one of the most critical components in shaping human resource quality and serves as the most effective tool for enhancing a nation's workforce capabilities. This aligns with Article 3 of Law Number 20 of 2003 concerning the National Education System, which states that national education functions to develop capabilities and shape the dignified character and civilization of the nation in order to educate the nation's life, aiming to develop students' potential to become faithful and pious human beings who believe in God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens.

The learning process constitutes an educational activity involving interactions among teachers and students, among students themselves, and between students and their surrounding environment. Teachers play a crucial role in teaching and learning activities to ensure that students comprehend the knowledge being taught. The teaching methods employed by teachers significantly influence students' understanding of the material, particularly in general administration subjects that require a combination of theory and practice. Therefore, innovation in teaching methods becomes crucial for enhancing student engagement.

Research on factors influencing student learning outcomes has found that learning readiness and parental role affect student learning outcomes (Nafisah et al., 2015). However, other research demonstrates that student learning outcomes are influenced not only by learning readiness and parental role but also by students' perceptions of teachers' teaching methods (Az-Zahra, 2019) and students' learning interest (Dewi, 2023). This indicates a discrepancy between research findings and field reality. Therefore, researchers were interested in examining whether positive effects exist from students' perceptions of teachers' teaching methods and students' learning interest on student learning outcomes, particularly in general administration for grade XI MPLB at SMK Negeri 6 Surakarta. This study contributes to current literature by presenting new empirical evidence regarding the simultaneous influence of students' perceptions of teachers' teaching methods and students' learning interest on student learning outcomes, which has rarely been examined together previously.

Based on preliminary observations conducted in grade XI MPLB at SMK Negeri 6 Surakarta, problems existed in the learning process of general administration subjects related to student learning outcomes. Student learning outcomes in grade XI at SMK Negeri 6 Surakarta for general administration subjects were not optimal. This can be seen from the average daily test scores as follows:

Table 1
Daily Test Scores for Odd Semester in General Administration Subject

No	Class	Number of Students	Passed KKM	Did Not Pass KKM	% Learning Completion
1	XI MPLB 1	34 students	9	25	26,47%
2	XI MPLB 2	36 students	12	24	33,33%
3	XI MPLB 3	36 students	13	23	36,11%
	Total	106	34	72	32,08%

Table 1 demonstrates that learning completion for grade XI MPLB students at SMK Negeri 6 Surakarta in general administration subjects was only 32.08% with a KKM (Minimum Completion Criteria) of 70. After conducting interviews with several grade XI MPLB students at SMK Negeri 6 Surakarta and direct observation during the School Field Introduction (PLP) program, it was identified that students' learning interest in general administration subjects remained low. Furthermore, students' perceptions of teachers' teaching methods were less favorable, resulting in reduced student enthusiasm in participating in general administration learning.

In educational contexts, learning outcomes serve as the primary indicator of learning process success. Learning outcomes represent results given to students after the learning process concludes in the form of assessments that evaluate students' knowledge, attitudes, and skills with behavioral changes (Nurrita, 2018). According to Nabillah and Abadi (2020), learning outcomes are obtained as a result or effect of students' learning experiences and processes at school. It can be concluded that learning outcomes constitute results obtained by students through learning processes and experiences in the form of knowledge and skill assessments accompanied by behavioral changes. The domain of learning outcomes is classified into three domains as explained by Bloom in Mahmudi et al. (2022): cognitive domain, affective domain, and psychomotor domain. Factors influencing student learning outcomes include internal and external factors. Internal factors consist of interest, motivation, attention in learning, and learning readiness. Meanwhile, external factors consist of teachers' teaching methods, classroom space, and peers (Angraini, 2016). Measurement of learning outcomes in this study utilized formative test results measuring learning outcomes in cognitive aspects in the form of accumulated assignment grades for general administration subjects during half of the even semester.

Perception is the process by which individuals understand and give meaning to an object or stimulus using their senses to express opinions, responses, and perspectives about what they observe, which will subsequently influence their behavior (Triyono & Febriani, 2018). According to Krisnawan et al. (2024), teachers' teaching methods are methods used by teachers to establish relationships with students during the learning process that encompass interaction, communication, and approaches used by teachers to create an effective learning environment. Students' perceptions of teachers' teaching methods constitute the process by which students conclude information and interpret how teachers teach so that these methods have meaning and influence for students in the learning process. According to Hamid (2019), various teaching methods include assignment method (recitation), team teaching, drill method, resource person method, storytelling method, sociodrama method, role-playing method, and project method. Ilyas and Armizi (2020) mention factors that must be considered in teaching method selection: (1) guided by objectives; (2) individual student differences; (3) teacher capabilities; (4) nature of learning materials; (5) classroom situations; (6) method strengths and weaknesses; and (7) facility completeness. Indicators of students' perceptions of teachers' teaching methods used in this study are students' perceptions of teaching methods aligned with learning objectives, students' perceptions of teaching methods suited to learning situations and conditions, students' perceptions of teaching methods aligned with teacher capabilities, students' perceptions of teaching methods adapted to student characteristics, and students' perceptions of teaching methods suited to subjects.

Learning interest is the force that motivates individuals to achieve learning goals (Achru, 2019). Sirait (2016) argues that learning interest constitutes an individual's psychological aspect that can be observed from several symptoms such as enthusiasm, desire, and feelings of liking to make behavioral changes through various activities including seeking knowledge and experience. It can be concluded that learning interest is a desire or individual feeling characterized by high curiosity, feelings of liking, and interest in studying a field of study more deeply. When students feel interested in a field of study, they will actively participate during the learning process. According to Karwati and Priansa (2016), various types of learning interest include personal interest, situational interest, and psychological interest. The learning interest indicators used in this study are (1) presence of attention focus, feelings, and thoughts toward learning when attending general administration lessons; (2) presence of interest in studying general administration subjects; and (3) involvement during general administration subject learning.

In the MPLB major, general administration subjects constitute one of the important subjects for students to learn so that students can understand basic administrative concepts within institutions, thereby developing students' abilities in that competency expertise (Rachmawati & Rosy, 2021). Learning achievements that grade XI MPLB students at SMK Negeri 6 Surakarta must attain in general administration subjects are that at the end of the learning phase, students are capable of creating official letters, circulars, and instruction letters.

Research Method

This research was conducted at SMK Negeri 6 Surakarta with a research timeline from the preparation stage through analysis and report compilation over 11 months. The independent variables in this study were Students' Perceptions of Teachers' Teaching Methods (X1) and Students' Learning Interest (X2), while the dependent variable was Student Learning Outcomes (Y). Students' perceptions of teachers' teaching methods represent students' assessment of the alignment of teachers' teaching methods with learning objectives, classroom situations, teacher capabilities, student characteristics, and types of subjects, measured through 50 questionnaire statement items. Students' learning interest represents the drive within students to pay attention, be interested, and be involved in general administration learning, measured through 22 statement items distributed via questionnaire based on indicators of students' attention, interest, and involvement in learning. Student learning outcomes represent students' academic achievements in both knowledge and skills, measured through assignment grades for general administration subjects; grade data were obtained from teacher grade documentation. The type of research method used was survey method with a quantitative approach. Survey research method is a type of quantitative research that aims to collect data related to events that have occurred or current conditions, as well as hypothesis testing on specific samples from a population (Sugiyono, 2022). This study employed a quantitative approach with survey method because it is suitable for measuring relationships among variables objectively and systematically.

The population used in this study comprised all grade XI MPLB students at SMK Negeri 6 Surakarta totaling 106 students. Population selection determination was based on grade XI students from SMK Negeri 6 Surakarta who had received general administration subjects. Sampling employed simple random sampling technique and sample calculation using the Slovin formula, resulting in a sample of 84 individuals.

Data collection techniques utilized observation conducted to directly ascertain problems occurring in the classroom, which would subsequently be used as the research problem background; questionnaires using a Likert scale modified to four points; and documentation to obtain students' daily test score data and assignment grades. According to Arikunto (2020), the Likert scale modified to four scales aims to encourage respondents to provide more definitive answers without choosing a neutral position. Elimination of the neutral choice aims to reduce biased answers and increase clarity of respondents' attitudes or perceptions toward given statements.

Research instrument validation techniques employed validity testing and reliability testing. Research commenced by conducting instrument trials tested on 22 students outside the research sample. Data analysis techniques began with conducting prerequisite tests or classical assumption tests consisting of normality test, linearity test, multicollinearity test, and heteroscedasticity test. Subsequently, hypothesis testing was conducted consisting of multiple linear regression analysis, t-test, F-test, and coefficient of determination (R^2) analysis, and calculating the effective contribution and relative contribution of X1 and X2 to Y. Research data processing was performed using IBM SPSS 26 for Windows software. Research stages consisted of (1) preparing research proposal; (2) preparing research instruments; (3) conducting data collection; (4) processing and analyzing data; and (5) preparing research report. Before data collection was conducted, this research underwent an ethical approval process in accordance with applicable institutional guidelines. All respondents were provided informed consent explaining research objectives, rights as participants, and data confidentiality guarantees. Respondent identities were maintained using anonymous codes, and collected data were only used for academic purposes and analyzed collectively without revealing personal information.

Results and Discussion

Research Results

Validity Test

The validity test was used to ensure that the instrument or measurement tool truly measures the aspect that is the research object. Validity test results for variables X1 and X2 using rtable values at a 5% significance level (rtable value 0.432) indicated that all statement items for variable X1, totaling 50 statement items, were declared valid, with each item's rcalculated value > 0.432 and significance value < 0.05. Validity test results for variable X2 indicated that 22 statement items were declared valid and 8 items were declared invalid.

Reliability Test

The reliability test was used to determine whether a measurement tool can be used; an instrument can be considered reliable if Cronbach's alpha value > 0.60. Reliability test results for variables X1 and X2 obtained Cronbach's alpha values of 0.98 and 0.92, respectively. These Cronbach's alpha values were greater than 0.60.

Normality Test

The normality test was used to determine whether the dependent variable (Y) and independent variables (X) in the regression model were normally distributed. A good regression model has normal or near-normal distribution (Muthahharah & Fatwa, 2022). Based on normality test results using the one-sample Kolmogorov-Smirnov test, the significance value was 0.119 > 0.05. Therefore, it can be concluded that residual values were normally distributed.

Linearity Test

The linearity test was conducted after performing the normality test, and its purpose was to determine whether each independent variable had a linear relationship with the dependent variable. Based on linearity test results with linearity requirements that if significance value > 0.05, then the variable is declared to have a linear relationship, significance values of 0.752 > 0.05 were obtained for the students' perceptions of teachers' teaching methods variable and 0.176 > 0.05 for the students' learning interest variable; therefore, both variables were declared to have linear relationships with the dependent variable (student learning outcomes).

Multicollinearity Test

The multicollinearity test was conducted with requirements that if tolerance value > 0.100 and VIF (Variance Inflation Factor) < 10.00, then no multicollinearity symptoms occur between variables X1 and X2. Multicollinearity test results can be seen in the following table:

Table 2
*Multicollinearity Test Results*

Variable	Tolerance	VIF
Students' Perceptions of Teachers' Teaching Methods	.896	1.116
Students' Learning Interest	.896	1.116

Based on Table 2, the test results had tolerance values of 0.896 > 0.100 and VIF values of 1.116 < 10.00; therefore, it can be stated that no multicollinearity symptoms occurred among independent variables.

Heteroscedasticity Test

The heteroscedasticity test was conducted to determine whether there were differences in residual variance between one observation and another in the regression model. The heteroscedasticity test results in this study can be seen in the following figure 1:

Figure 1
Heteroscedasticity Test Results
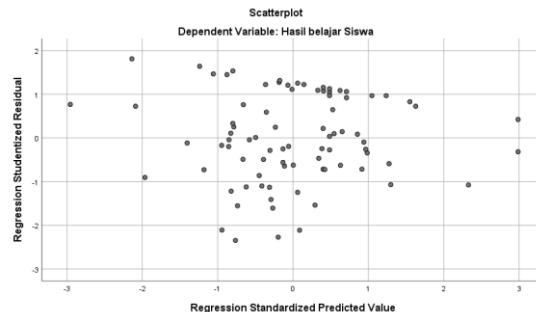
The figure demonstrates that points in the diagram (representing data) are randomly distributed without forming specific patterns and are evenly distributed above and below the zero line on the Y-axis. This condition indicates that the regression model did not experience heteroscedasticity symptoms; therefore, it can be stated that the regression model was suitable for use.

Multiple Linear Regression Analysis

This study conducted calculations including multiple linear regression analysis technique used to determine whether significant effects exist from two or more independent variables (X_1 & X_2) on the dependent variable (Y) (Mona et al., 2015). Multiple linear regression analysis results in this study can be seen in the following table:

Table 3
Multiple Linear Regression Analysis Results

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	72.102	9.594		7.515	.000
Students' Perceptions of Teachers' Teaching Methods	.155	.053	.324	2.930	.004
Students' Learning Interest	-.315	.146	-.239	-2.159	.034

From the multiple linear regression analysis results in Table 3, the following equation can be obtained:

Y = 72,102 + 0,155 X1 - 0,315 X2

In column B, the constant value of 72.102 indicates a positive influence from students' perceptions of teachers' teaching methods and students' learning interest variables. Based on this regression equation, it can be stated that the average increase or decrease in student learning outcomes is estimated at 0.155 or 15.5% for each decrease or increase in the students' perceptions of teachers' teaching methods variable (X_1), and if the students' learning interest variable (X_2) is increased by one unit, then student learning outcomes decrease by 0.315 or 31.5%. This negative coefficient indicates that students' learning interest negatively affects student learning outcomes.

t-Test

The t-test in this study aimed to determine whether partial effects exist between independent variables (X_1 and X_2) on the dependent variable (Y). Independent variables can be considered to significantly affect the dependent variable if significance value < 0.05 and t_calculated > t_table. t_table determination with significance level of 0.05/2 = 0.025 and n = 84 (formula: $\alpha/2$; n-k-1, thus 0.025; 84-2-1 = 81) obtained t_table of 1.989. Following are t-test results in this study:

Table 4
t-Test Results

Variable	t	Sig.
(Constant)	7.515	.000
Students' Perceptions of Teachers' Teaching Methods	2.930	.004
Students' Learning Interest	-2.159	.034

Based on Table 4, the significance value for the students' perceptions of teachers' teaching methods variable (X_1) was $0.004 < 0.05$ and t_calculated was $2.930 > 1.989$, meaning H_0 was rejected and H_a was accepted; therefore, it can be concluded that the students' perceptions of teachers' teaching methods variable (X_1) significantly affected the student learning outcomes variable (Y). The significance value for the students' learning interest variable (X_2) was $0.034 < 0.05$ and t_calculated was $2.159 > 1.989$, meaning H_0 was rejected and H_a was accepted; therefore, it can be concluded that the students' learning interest variable (X_2) significantly affected the student learning outcomes variable (Y).

F-Test

The simultaneous test (F-test) was conducted to test the significance level of the simultaneous (combined) effect of independent variables on the dependent variable. Independent variables can be considered to have simultaneous effects if significance value < 0.05 and F_calculated $>$ F_table. F_table determination using formula k; n-k, thus 2; 84-2 = 82 = 3.105. Following are F-test results in this study:

Table 5
F-Test Results

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1657.797	2	828.898	5.115	.008[b]
Residual	13127.346	81	162.066		
Total	14785.143	83			

Table 5 indicates that the significance value was $0.008 < 0.05$ and F_calculated was $5.115 > 3.105$, meaning that the students' perceptions of teachers' teaching methods variable (X_1) and students' learning interest variable (X_2) simultaneously (combined) affected the student learning outcomes variable (Y).

Coefficient of Determination (R^2) Analysis
Table 6
Coefficient of Determination Test Results

R	R Square	Adjusted R Square	Std. Error of the Estimate
.335[a]	.112	.090	12.731

Based on Table 6, the R^2 value obtained was 0.112, meaning the magnitude of contribution from students' perceptions of teachers' teaching methods variable (X_1) and students' learning interest variable (X_2) to student learning outcomes variable (Y) simultaneously (combined) was 11.2%, with the remaining 88.8% influenced by other variable factors not examined in this study.

Effective and Relative Contributions

Based on calculation results, the effective contribution of students' perceptions of teachers' teaching methods variable (X_1) to student learning outcomes (Y) was 8%, while the effective contribution of students' learning interest variable (X_2) to student learning outcomes (Y) was 3.2%. The relative contribution of students' perceptions of teachers' teaching methods variable (X_1) to

student learning outcomes (Y) was 71%, and the relative contribution of students' learning interest variable (X_2) to student learning outcomes (Y) was 29%.

Discussion

The research hypothesis stated that a significant positive effect exists between students' perceptions of teachers' teaching methods on student learning outcomes in general administration subjects for grade XI MPLB at SMK Negeri 6 Surakarta. This hypothesis was tested using partial t-test between the independent variable students' perceptions of teachers' teaching methods and the dependent variable student learning outcomes. Based on t-test results conducted, a significance value of 0.004, which was less than 0.05, was obtained. Therefore, it can be stated that the independent variable students' perceptions of teachers' teaching methods significantly affected the dependent variable student learning outcomes in general administration subjects. Based on multiple linear regression analysis results conducted, a regression coefficient value for the students' perceptions of teachers' teaching methods variable of 0.155 was obtained, meaning that increases or decreases in students' perceptions of teachers' teaching methods would affect increases or decreases in student learning outcomes by 0.155 or 15.5%. The students' perceptions of teachers' teaching methods variable had an effective contribution value of 8% and a relative contribution value of 71%.

Based on data processing conducted, it can be determined that the better students' perceptions of teachers' teaching methods, the better student learning outcomes for grade XI MPLB at SMK Negeri 6 Surakarta in general administration subjects. This aligns with research conducted by Sari et al. (2021), explaining that good teaching methods positively and significantly affect student learning outcomes. When teachers use varied teaching methods, students will feel enthusiastic and comfortable participating in learning. Consequently, this can make students' perceptions of teachers' teaching methods favorable, ultimately affecting student learning outcomes. These research results also align with research conducted by Wulandari et al. (2021), showing a significant effect between students' perceptions of teachers' teaching methods on student learning outcomes with an effect of 17.8%. With increased positive perceptions of teachers' teaching methods, student learning outcomes can also increase.

The second research hypothesis revealed a significant effect between the students' learning interest variable on student learning outcomes in general administration subjects. Based on research results conducted using the t-test, a significance value of 0.034 < 0.05 was obtained; therefore, the independent variable students' learning interest (X_2) was declared to significantly affect the dependent variable student learning outcomes (Y). However, based on multiple linear regression analysis results conducted, a regression coefficient value of -0.315 was obtained for the students' learning interest variable, indicating that this effect was negative. This means that each one-unit increase in students' learning interest was followed by a decrease in learning outcomes of 0.315 or 31.5%, assuming other variables were constant.

This finding appears inconsistent with learning theory stating that high learning interest generally encourages better learning achievement. These research results contradict research results by Putra and Dharmayasa (2024), stating that a significant and positive effect of students' learning interest on student learning outcomes exists at SMAN 1 Sawan. Research conducted by Kismurdiani et al. (2022) also concluded that learning interest provides a significant positive effect on learning outcomes of grade XI students at SMKN 11 Malang. High learning interest forms good learning attitudes and behaviors, thereby impacting optimal learning outcomes.

One possibility that can explain these results is that high learning interest is not always accompanied by effective learning strategies or consistency in students' learning processes. According to Firmansyah (2015), high learning interest alone is insufficient without appropriate learning strategies. This means learning intention must be accompanied by good learning strategies for maximum learning outcomes. Furthermore, high learning interest does not guarantee better learning outcomes. Other factors such as intelligence, effective learning strategies, learning environment support, and stable psychological conditions are required so that this interest can truly be realized in optimal academic achievement forms. Without these factors, high learning interest might not significantly impact increased student learning outcomes.

Besides learning interest, learning motivation is also greatly needed so that student learning outcomes can increase. If only relying on interest without motivation, results are not optimal or merely aspirations. In this study, students' learning interest did not positively affect student learning outcomes; this occurred because learning interest was not accompanied by learning motivation. This aligns with research by Heriyati (2017), explaining that learning interest and motivation together significantly affect student learning outcomes. Learning motivation becomes the driving force so that learning interest can be realized in real efforts, thereby increasing learning outcomes. Research conducted by Nurhayati and Nasution (2022) concluded that motivation and learning interest together have very strong relationships in influencing student learning outcomes. Without motivation, interest alone is insufficient to encourage students to achieve optimal learning outcomes.

Research data results indicated item number 12 with a score value of 201 and the statement "General Administration is one of my favorite subjects" had the lowest score value among 22 statement items. This demonstrates that general administration subjects did not become favorite subjects for most grade XI MPLB students at SMK Negeri 6 Surakarta.

The third research hypothesis stated that a significant positive effect exists between students' perceptions of teachers' teaching methods and students' learning interest together on student learning outcomes in General Administration subjects for grade XI MPLB at SMK Negeri 6 Surakarta. The F-test was conducted to prove that students' perceptions of teachers' teaching methods and students' learning interest variables affected student learning outcomes for grade XI MPLB at SMK Negeri 6 Surakarta together. Based on F-test results, $F_{calculated}$ was 5.115 and F_{table} was 3.11 (5.115 > 3.11), and significance value was 0.008 < 0.05, meaning that the independent variables students' perceptions of teachers' teaching methods and students' learning interest simultaneously had significant effects on learning outcomes in general administration subjects for grade XI MPLB students at SMK Negeri 6 Surakarta with positive direction. Based on coefficient of determination (R^2) analysis results, a coefficient of determination (R^2) value of 0.112 was obtained, which can be interpreted that the independent variables students' perceptions of teachers' teaching methods and students' learning interest simultaneously affected 11.2% of student learning outcomes for grade XI MPLB at SMK Negeri 6 Surakarta in general administration subjects, with 88.8% remaining influenced by other factors not examined in this study.

Students' perceptions of teachers' teaching methods constitute students' processes in concluding and interpreting teaching methods used by teachers so that these methods have meaning and significance for students. If students' perceptions of teachers' teaching methods are favorable, student learning outcomes can tend to increase. Research results conducted by Deswita and Dahen (2015) stated that students' perceptions of teachers' teaching methods and students' learning interest positively affected student learning outcomes. The better students' perceptions of teachers' teaching methods and the higher students' learning interest, the better learning outcomes obtained. Favorable students' perceptions of teachers' teaching methods make students enthusiastic about participating in learning. Similarly, students who have high learning interest will be consistently enthusiastic and actively involved in learning. This demonstrates that student learning outcomes for grade XI MPLB at SMK Negeri 6 Surakarta were simultaneously affected by students' perceptions of teachers' teaching methods and students' learning interest variables. Student learning outcomes, particularly in general administration subjects, will increase along with improved quality of teachers' teaching methods that affect students' perceptions and students' learning interest.

Conclusion

Based on hypothesis testing and data analysis results regarding the effects of students' perceptions of teachers' teaching methods and students' learning interest on student learning outcomes in general administration subjects for grade XI MPLB at SMK Negeri 6 Surakarta, it can be concluded that students' perceptions of teachers' teaching methods had positive and significant effects on learning outcomes, whereas learning interest had negative effects; simultaneously both contributed 11.2% to student learning outcomes, while the remainder was influenced by other factors. These findings support behaviorist theory that stimuli from the environment, such as teachers' teaching methods and students' learning interest, can affect learning outcomes, and

emphasize the importance of teachers adapting teaching methods to students' learning styles so that the learning process becomes more effective.

This study employed a quantitative approach; therefore, obtained results were limited to numbers and inter-variable relationships, without being able to explore more deeply the reasons behind students' perceptions regarding teachers' teaching methods or students' learning interest. However, information regarding factors underlying students' perceptions and learning interest is very important for understanding research result contexts more completely, which could actually be explored through qualitative methods such as interviews or observations. Furthermore, this study was limited to only two independent variables: students' perceptions of teachers' teaching methods and students' learning interest; however, learning outcomes can also be influenced by various other factors such as learning environment, intrinsic motivation, learning facilities, and parental support. Consequently, this study's scope remained relatively narrow and did not yet encompass all factors that might be relevant in affecting student learning outcomes.

For future researchers, it is recommended to be more careful in selecting independent variables that will be used in research. Ensure that each independent variable does not have strong relationships with one another or does not directly affect each other. This is important to avoid multicollinearity occurrence, namely conditions when two or more independent variables in the regression model have high correlations. Multicollinearity can cause biased analysis results, unstable regression coefficients, and difficulties in interpreting each independent variable's effect on the dependent variable. Future researchers are also expected to theoretically and empirically examine each variable used so that no independent variables illogically provide negative effects on the dependent variable. For instance, if a variable should theoretically increase student learning outcomes but in analysis results shows negative effects, then construct validity and contextual appropriateness of that variable need to be reviewed. Variable selection must consider topic appropriateness, empirical data support, and previous study results so that research results can accurately and relevantly depict research conditions.

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Classroom facilities and learning quality: effects on student satisfaction in vocational education

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Abstrak

Penelitian ini bertujuan untuk mengetahui (1) pengaruh sarana prasarana kelas terhadap kepuasan belajar siswa, (2) pengaruh kualitas pembelajaran terhadap kepuasan belajar siswa, (3) pengaruh sarana prasarana kelas dan kualitas pembelajaran secara bersama-sama terhadap kepuasan belajar siswa kelas X Manajemen Perkantoran dan Layanan Bisnis di SMK Negeri 1 Banyudono. Penelitian ini menggunakan pendekatan kuantitatif dengan metode survei. Populasi penelitian berjumlah 72 siswa. Data dikumpulkan melalui angket yang telah diuji validitas dan reliabilitasnya, kemudian dianalisis menggunakan regresi linear berganda melalui SPSS. Hasil analisis menunjukkan bahwa Sarana Prasarana Kelas berpengaruh signifikan terhadap Kepuasan Belajar Siswa (thitung = 5,079; Sig. = 0,000), begitu pula Kualitas Pembelajaran (thitung = 4,669; Sig. = 0,000). Secara simultan, keduanya juga berpengaruh signifikan (Fhitung = 59,250; Sig. = 0,000) dengan nilai determinasi (R²) sebesar 0,632. Hasil penelitian ini yaitu (1) terdapat pengaruh signifikan antara sarana prasarana kelas terhadap kepuasan belajar siswa, (2) kualitas pembelajaran terhadap kepuasan belajar siswa, (3) sarana prasarana kelas dan kualitas pembelajaran secara bersama-sama terhadap kepuasan belajar siswa. Kesimpulannya, sarana prasarana yang memadai serta pembelajaran berkualitas dapat meningkatkan kepuasan belajar siswa.

Kata kunci: kegiatan belajar mengajar; kuantitatif; manajemen pendidikan; sekolah vokasi; SERVQUAL

Abstract

This study examined the effects of (1) classroom facilities and infrastructure on student learning satisfaction, (2) learning quality on student learning satisfaction, and (3) the combined influence of classroom facilities and infrastructure and learning quality on learning satisfaction among Grade X Office Management and Business Services students at SMK Negeri 1 Banyudono. Employing a quantitative approach with a survey method, this study utilized a total population of 72 students. Data were collected through validated and reliability-tested questionnaires and analyzed using multiple linear regression via SPSS. The analysis revealed that classroom facilities

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and infrastructure significantly influenced student learning satisfaction (t = 5.079, p < .001), as did learning quality (t = 4.669, p < .001). Simultaneously, both variables demonstrated a significant effect (F = 59.250, p < .001) with a coefficient of determination (R²) of .632. These findings indicate that (1) classroom facilities and infrastructure significantly influence student learning satisfaction, (2) learning quality significantly influences student learning satisfaction, and (3) both variables jointly and significantly affect student learning satisfaction. The results support the relevance of SERVQUAL theory in educational contexts, particularly regarding tangibles, responsiveness, and reliability dimensions. In conclusion, adequate facilities and infrastructure combined with quality learning can enhance student learning satisfaction.

Pendahuluan

Vocational education in Indonesia faces new challenges post-COVID-19 pandemic, particularly in adapting practice-based learning amid facility limitations. Concurrently, the Industry 4.0 era demands that vocational high school (SMK) graduates possess skills adaptable to digital technology development, automation, and information-based services. These conditions underscore the importance of evaluating learning quality and facility availability to ensure that SMKs can produce skilled workers aligned with current industrial needs. As part of formal education, Vocational High Schools (SMK) play a strategic role in developing student competencies for workforce readiness. SMK Negeri 1 Banyudono, as a vocational education institution, demonstrates commitment to enhancing educational quality while supporting both academic and non-academic achievements to produce skilled and competent graduates.

According to Wibowo et al. (2018), achieving quality vocational school objectives requires attention to student learning outcomes. Within learning outcomes, student learning satisfaction warrants consideration as it represents a crucial aspect of education with significant impacts on motivation, learning results, and social relationships. Student learning satisfaction serves as an important indicator of effective educational processes. Astin (as cited in Feldman & Newcomb, 2020) noted that student learning satisfaction can enhance student engagement in learning processes, which subsequently contributes to better learning outcomes. Student learning satisfaction can be influenced by both internal and external factors. Internal factors include student interest, learning motivation, and self-efficacy. External factors encompass teacher-provided learning quality in classrooms, available classroom facilities and infrastructure, resource or environmental availability, and student involvement in learning processes (Wang et al., 2023).

Field realities often reveal gaps between idealism and practice. Through a preliminary study conducted using questionnaires with 28 students in Grade X Office Management and Business Services (MPLB) at SMK Negeri 1 Banyudono, researchers found that 22 students reported dissatisfaction and difficulties in receiving classroom instruction. Based on these data, 45.5% complained about uncomfortable learning conditions due to hot and odorous classrooms, 31.7% expressed concerns about teachers' unprofessional material delivery in classrooms, and 22.7% mentioned unsupportive peer environments.

Observations conducted during teaching assistance at SMK Negeri 1 Banyudono revealed classroom facility and infrastructure problems, including inadequate classroom equipment and supporting facilities such as fans, school environmental cleanliness, and learning support equipment completeness. Additionally, through interviews and field observations, researchers identified

learning dissatisfaction issues. Several students expressed dissatisfaction with teaching methods perceived as insufficiently varied and misaligned with student needs, thereby reducing student engagement during learning. Some students revealed that teacher material explanations occasionally did not align with assessed learning objectives in summative assessments, teacher explanations remained insufficiently clear and difficult for students to comprehend, teacher characteristics that intimidated students from asking questions caused comprehension blockages during learning activities, and created poor reciprocal interactions between teachers and students.

Adequate facilities and infrastructure can create conducive learning environments, while high learning quality can enhance interaction and student engagement. Research on educational facilities and infrastructure has been conducted by Amaliyah and Rosdiana (2023), who argued that facilities and infrastructure encompass physical and non-physical aspects constituting policy components aimed at improving and enhancing basic service quality in educational implementation. Furthermore, Regulation of the Minister of Education, Culture, Research and Technology of the Republic of Indonesia Number 22 of 2023 concerning Standards for Facilities and Infrastructure in Early Childhood Education, Basic Education Levels, and Secondary Education Levels explains that facility and infrastructure standards contain minimum standards that educational institutions must provide in implementing education (Kementrian Pendidikan, Kebudayaan, Riset dan Teknologi, 2023).

Beyond facilities and infrastructure as educational standard benchmarks, learning quality provided by subject teachers during learning activities represents another factor. According to Mystakidis et al. (2019), ideal learning quality constitutes a learning process that not only involves memorizing information or superficial facts but also provides deep and meaningful experiences for students. Quality learning must develop deep understanding in studied disciplines and encourage students to connect new knowledge with personal experiences, enabling them to find deeper meaning in learned material. This can include active student involvement in discussions and classroom activities, student ability to apply knowledge in real situations, student learning outcomes achievement, and relevance between material received by students during classroom learning activities (As et al., 2024).

Tarnanidis and Tarnanidis (2024) reported that their research on learning satisfaction using SERVQUAL theory demonstrated that learning satisfaction measurement indicated learning quality provided by teachers as the most dominant factor. Mauludin et al. (2024) showed that learning service levels and learning facilities significantly influenced student satisfaction. Arham et al. (2021) identified three factors significantly affecting student satisfaction: teaching quality as the most important factor for their satisfaction, followed by administration and facilities or infrastructure.

Previous research extensively employed SERVQUAL in higher education and general school contexts (Arham et al., 2021; Titin, 2023). However, SERVQUAL application in Vocational High School (SMK) contexts, particularly in Office Management and Business Services (MPLB) majors, remains limited. Additionally, classroom facility and infrastructure aspects and learning quality are rarely examined simultaneously in relation to student learning satisfaction. Therefore, this study attempts to fill this gap by analyzing the influence of classroom facilities and infrastructure and learning quality on student learning satisfaction at SMK Negeri 1 Banyudono.

Based on identified problem backgrounds, researchers were interested in conducting research on (1) the influence of classroom facilities and infrastructure on student learning satisfaction, (2) the influence of learning quality on student learning satisfaction, and (3) the combined influence of classroom facilities and infrastructure and learning quality on learning satisfaction among Grade X Office Management and Business Services students at SMK Negeri 1 Banyudono.

Research Method

This research was conducted with Grade X Office Management and Business Services (MPLB) students at SMK Negeri 1 Banyudono, Boyolali Regency, Central Java, from November to July 2025. The study focused on Grade X Office Management and Business Services (MPLB) students because this major directly relates to service aspects, administration, and classroom facility and infrastructure use, which constitute the primary research objects. Additionally, Grade X

selection was considered because students at this level are in early SMK learning adaptation stages, so their experiences regarding learning quality and facilities and infrastructure can provide more objective perspectives. The approach employed was quantitative with causal research type, aiming to determine the influence of two independent variables on one dependent variable, namely the influence of classroom facilities and infrastructure and learning quality on student learning satisfaction.

The independent variables in this study were classroom facilities and infrastructure (X_1) and learning quality (X_2), while the dependent variable was student learning satisfaction (Y). Classroom facilities and infrastructure were reflected through completeness, condition, and functional ease of facilities and infrastructure supporting classroom learning activities, such as desks and chairs, lighting, ventilation, classroom cleanliness, and learning media. Learning quality was assessed based on teacher performance and learning process implementation, encompassing teacher behavior, student behavior and learning impacts, learning climate, learning materials, learning media, and learning systems. Student learning satisfaction was reflected through assessments of learning comfort, material comprehension, learning motivation, perceptions of teacher performance, and perceived learning objective achievement based on five measurement dimensions in SERVQUAL theory: reliability, responsiveness, empathy, assurance, and tangibles.

Before data collection, researchers submitted research permission letters to schools and obtained ethical clearance from relevant institutions. Researchers also provided informed consent forms to each respondent, explaining research purposes and objectives, identity confidentiality guarantees, and respondents' rights not to complete questionnaires if unwilling to participate. To ensure instrument feasibility, pilot testing was conducted with 33 students outside the main sample to test research instrument validity and reliability. Pilot test results were not included in main analyses but served only as bases for instrument improvement. The main research population consisted of 72 Grade X MPLB students, all of whom were used as samples through total sampling technique. Research instruments were arranged as closed questionnaires based on 5-point Likert scales, ranging from "Strongly Agree" to "Strongly Disagree." Instrument development was based on indicators relevant to theory and previous research. Based on validity test results using Pearson correlation, 35 valid items were obtained, distributed as follows: 8 items for classroom facilities and infrastructure variables, 15 items for learning quality, and 12 items for student learning satisfaction. All variables also met reliability requirements, indicated by Cronbach's Alpha values above .60, so instruments were declared reliable and appropriate for main data collection.

The study population comprised all Grade X MPLB students at SMK Negeri 1 Banyudono in the 2024/2025 academic year, totaling 72 students. Because the population was less than 100, saturated sampling technique was used, whereby all population members became samples. Data analysis was performed using SPSS version 24 software. Analysis stages began with data tabulation and prerequisite analysis tests: normality, linearity, multicollinearity, and heteroscedasticity tests. Subsequently, multiple linear regression analysis was conducted to test simultaneous and partial influences between independent and dependent variables. The t-test and F-test were used to measure influence significance, while the coefficient of determination (R^2) and effective contribution and relative contribution analyses were used to examine each variable's contribution magnitude to student learning satisfaction.

Results and Discussion

Research Results

Based on descriptive statistical analysis results, the Student Learning Satisfaction variable showed a maximum score of 60 and minimum score of 24, with a mean of 42.07 and standard deviation of 6.516. The Classroom Facilities and Infrastructure variable had a maximum value of 40 and minimum of 12, with a mean of 28.40 and standard deviation of 5.156. Meanwhile, the Learning Quality variable showed a maximum value of 73 and minimum of 38, with a mean of 50.78 and standard deviation of 6.105. All data totaled 72 and were listwise valid.

Before regression testing, classical assumption tests were first performed. Normality test results indicated that data in each variable were normally distributed with a significance value of .200 (p > .05). Linearity test results showed that the relationship between Student Learning Satisfaction and Classroom Facilities and Infrastructure had a linearity significance value of < .001 and deviation from linearity of .131 (p > .05), so their relationship was declared linear. Similarly, the relationship between Student Learning Satisfaction and Learning Quality had linearity significance of < .001 and deviation from linearity of .131 (p > .05), also meeting linearity assumptions.

Multicollinearity testing showed that tolerance values for both independent variables were .641 (> .10) and VIF values were each 1.559 (< 10), so it could be concluded that multicollinearity symptoms did not occur in the regression model. Furthermore, heteroscedasticity testing using the Glejser Test showed that Classroom Facilities and Infrastructure significance value was .207 and Learning Quality was .670 (both p > .05), meaning heteroscedasticity did not occur in this regression model.

Table 1

t-Test Results

Coefficients[a]					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.368	3.998		.592	.556
Classroom Facilities and Infrastructure	.585	.115	.463	5.079	.000
Learning Quality	.454	.097	.426	4.669	.000

Table 1 shows that t-test results indicated Classroom Facilities and Infrastructure significantly influenced Student Learning Satisfaction with a t-value of 5.079 and significance of < .001 (p < .05). This significance value was less than .05, with t = 5.079 > t_critical = 1.994 (df = 72 – 2 – 1 = 69). This means there was a significant partial influence between the Classroom Facilities and Infrastructure variable (X_1) on the Student Learning Satisfaction variable (Y). Similarly, Learning Quality also had a significant influence with a t-value of 4.669 and significance of < .001. This significance value was also less than .05, with t = 4.669 > t_critical = 1.994. Because the significance value p < .05 and t > t_critical, H_0 was rejected. This indicates a significant partial influence between the Learning Quality variable (X_2) on the Student Learning Satisfaction variable (Y).

Table 2

F-Test Results

ANOVA[a]					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	1905.266	2	952.633	59.250	.000[b]
Residual	1109.386	69	16.078		
Total	3014.653	71			

Table 2 shows that F-test results indicated both independent variables simultaneously significantly influenced the dependent variable, with an F-value of 59.250 and significance of < .001 (p < .05). Based on these results, the conclusion was drawn that H_0 was rejected, meaning there was a significant influence from the Classroom Facilities and Infrastructure variable (X_1) and Learning Quality variable (X_2) simultaneously (together) on Grade X Student Learning Satisfaction at SMK Negeri 1 Banyudono (Y).

Table 3

Multiple Linear Regression Analysis Results

Coefficients[a]					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.368	3.998		.592	.556
Classroom Facilities and Infrastructure	.585	.115	.463	5.079	.000
Learning Quality	.454	.097	.426	4.669	.000

Based on Table 3, the multiple linear regression analysis results from this study were:

$$\hat{Y} = 2{,}368 + 0{,}585\ X_1 + 0{,}454\ X_2$$

From these results, it can be concluded that (1) the constant of 2.368 indicates that if X_1 and X_2 equal zero, the Student Learning Satisfaction variable (Y) value remains 2.368; (2) based on the Classroom Facilities and Infrastructure variable (X_1), regression test results showed the X_1 variable had a positive regression coefficient on the Student Learning Satisfaction variable (Y) with a value of 0.585, meaning if the X_1 variable value increased by 1 point, there would also be an increase in the Y variable of 0.585; (3) based on the Learning Quality variable (X_2), regression test results showed the X_2 variable had a positive regression coefficient on the Student Learning Satisfaction variable (Y) with a value of 0.454, meaning if the X_2 variable value increased by 1 point, there would also be an increase in the Y variable of 0.454. Regression analysis results showed that the constant of 2.368 indicated a basic student satisfaction level even without being influenced by facilities and infrastructure or learning quality variables. The Classroom Facilities and Infrastructure variable (X_1) had a positive regression coefficient of 0.585, meaning better facility and infrastructure conditions and utilization would significantly increase student learning satisfaction. Meanwhile, the Learning Quality variable (X_2) also provided a positive influence with a regression coefficient of 0.454, indicating that learning quality improvements, whether in methods, media, or evaluation aspects, also increased student satisfaction. Thus, both variables proved to contribute positively, though classroom facilities and infrastructure provided relatively greater influence compared to learning quality on student learning satisfaction at SMK Negeri 1 Banyudono..

Table 4

Coefficient of Determination Results

Model Summary[b]			
R	R Square	Adjusted R Square	Std. Error of the Estimate
.795[a]	.632	.621	4.010

Table 4 shows that the coefficient of determination (R^2) value was .632, meaning the Classroom Facilities and Infrastructure (X_1) and Learning Quality (X_2) variables together could explain Student Learning Satisfaction (Y) variable variance by 63.2%. Meanwhile, the remaining 36.8% was explained by other factors outside this regression model, such as learning motivation, parental support, school environment, or individual student factors not analyzed in this study.

To clarify inter-variable relationships, this study was also visualized in path diagram in figure 1 as follows:

Figure 1
Path Diagram of Research Results
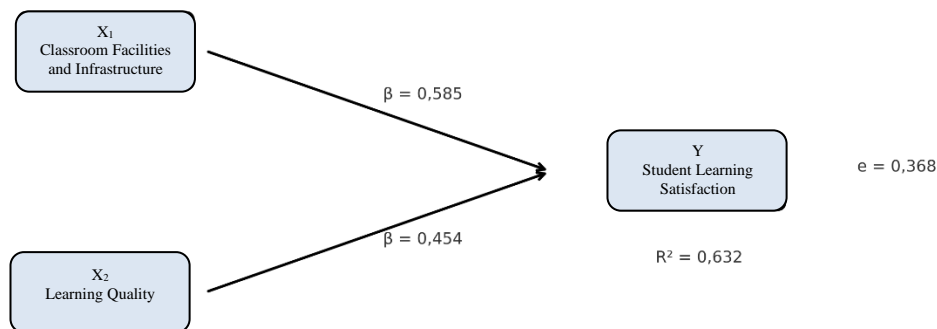
This diagram illustrates the influence of Classroom Facilities and Infrastructure (X_1) and Learning Quality (X_2) on Student Learning Satisfaction (Y), with a determination contribution of 63.2% and the remaining 36.8% influenced by factors outside the model.

Discussion

Based on data analysis results using multiple linear regression methods, results showed positive and significant influences of classroom facilities and infrastructure (X_1) and learning quality (X_2) variables on learning satisfaction (Y) of Grade X MPLB students at SMK Negeri 1 Banyudono, with the following discussion:

The Influence of Classroom Facilities and Infrastructure on Student Learning Satisfaction

Based on t-test analysis results, there was a significant influence of the Classroom Facilities and Infrastructure variable (X_1) partially on Student Learning Satisfaction of Grade X MPLB students at SMK Negeri 1 Banyudono (Y). If classroom facilities and infrastructure are fulfilled and operate optimally, student learning satisfaction can be positively influenced. Conversely, if classroom facilities and infrastructure are not fulfilled and do not operate optimally, negative impacts on student learning satisfaction will occur.

The first hypothesis in this study was that classroom facilities and infrastructure influence learning satisfaction. This hypothesis was tested using the t-test and results showed t = 5.079 > t_critical = 1.994, with significance value < .001 (p < .05). Based on these results, H_0 was rejected and H_1 was accepted, so it can be interpreted that there was a significant partial influence between Classroom Facilities and Infrastructure on Student Learning Satisfaction. This finding aligns with previous research results by Amaliyah and Rosdiana (2023), namely there was a significant influence between Classroom Facilities and Infrastructure on Student Learning Satisfaction with t-value (8.190) > t_critical (1.989).

Based on data tabulation conducted by researchers, the item receiving the highest score was number 13 with a score of 292, namely in the Classroom Facilities and Infrastructure Completeness indicator containing the statement "Every student has sufficient desks and chairs in the classroom." This shows that students tangibly experienced adequate classroom facility and infrastructure

availability, so physical comfort aspects in the learning process were assessed as well-fulfilled. Conversely, the item receiving the lowest score was number 19 with a score of 229, located in the Classroom Facilities and Infrastructure Use indicator with the statement "Teachers always use projectors when explaining material." This shows that technology-based learning facility and infrastructure utilization in classrooms was still not optimal, possibly caused by equipment limitations, lack of electronic media usage habits, or teacher preferences for conventional methods.

This research finding supports SERVQUAL theory as stated in Tarnanidis and Tarnanidis's (2024) journal, that the tangible dimension in educational service quality includes physical facility availability and feasibility that directly affects student perceptions and satisfaction. Research results showed that adequate classroom facilities and infrastructure significantly contributed to student learning satisfaction improvement. This aligns with SERVQUAL theory principles that tangible aspects become initial indicators forming students' positive perceptions of overall educational service quality. Other research conducted by Amaliyah and Rosdiana (2023), Coronado et al. (2021), Sitorus et al. (2023), and Santoso and Putri (2020) stated that classroom facilities and infrastructure have positive relationships with student learning satisfaction; in other words, the better and more optimal available classroom facilities and infrastructure, the more satisfied students are in learning activities.

The Influence of Learning Quality on Student Learning Satisfaction

Based on t-test calculation results using SPSS 24 application, Learning Quality significantly influenced Student Learning Satisfaction. This was shown by t-test results indicating that $t = 4.669 > t\_critical = 1.994$ with significance value $< .001$ ($p < .05$). Based on these results, H_0 was rejected and H_2 was accepted, so it can be interpreted that there was a significant partial influence between Learning Quality on Student Learning Satisfaction.

From data tabulation results, the item receiving the highest score was item number 22 with a score of 269, namely in the Teacher Behavior indicator containing the statement "Teachers appear enthusiastic and spirited during teaching." This shows that students assessed teacher enthusiasm and spirit in teaching as very prominent and positive aspects, playing important roles in creating lively learning atmospheres, motivating, and increasing student engagement in classrooms. Meanwhile, the lowest score was found in item number 28 with a score of 204, namely in the Learning Climate indicator containing the statement "I feel tense or pressured when learning in class." This shows that most students did not experience tension or excessive pressure during learning processes, indicating that classroom learning climates were conducive, comfortable, and supported student involvement both emotionally and cognitively.

This research finding also supports SERVQUAL theory in Tarnanidis and Tarnanidis's (2024) journal, that responsiveness and reliability dimensions in educational service quality are reflected through learning quality provided by educators. Research results showed that learning designed with appropriate methods, clear material delivery, and teacher ability to respond to student needs and questions quickly provided significant influences on student learning satisfaction. This aligns with SERVQUAL principles emphasizing that educational service quality not only depends on physical facilities but also on interaction quality and educator competence in meeting student expectations. This research also supports SERVQUAL theory as explained in Rapa et al.'s (2025) journal, where learning quality closely relates to responsiveness and reliability dimensions. Responsiveness is reflected in teacher ability to respond to student needs quickly, provide clear explanations, and deliver material with appropriate methods. Meanwhile, reliability is seen from teacher consistency in carrying out learning processes, providing appropriate feedback, and maintaining regularity and reliability in delivering material. High teaching quality reflects educational services that are reliable and responsive to student expectations, ultimately positively impacting their learning satisfaction levels. This research also strengthens previous research conducted by Mukroni (2017), Mauludin et al. (2024), Bakti et al. (2024), Chalim (2018), Indarti et al. (2021), and Titin (2023) stating that learning quality has significant influences on student learning satisfaction. The existence of classroom learning quality influences on Grade X MPLB student learning satisfaction at SMK Negeri 1 Banyudono explains that the more optimal learning quality provided by schools, the more satisfied students will be with received learning.

The Combined Influence of Classroom Facilities and Infrastructure and Learning Quality on Student Learning Satisfaction

Based on F-test results obtained from multiple linear regression analysis, an F-value of 59.250 was obtained with significance value < .001. This value was compared with F_critical at 5% significance level ($\alpha = .05$) with $df_1 = 2$ and $df_2 = 69$, namely 3.13. Because F > F_critical and significance value (Sig.) < .05, it can be concluded that H_0 was rejected and H_3 was accepted. This means Classroom Facilities and Infrastructure and Learning Quality variables simultaneously significantly influenced Student Learning Satisfaction.

These results showed that both independent variables together contributed to student satisfaction improvement in learning processes. Adequate facility and infrastructure support and good learning quality were assessed by students as important factors influencing their comfort, motivation, and satisfaction while participating in classroom learning activities. This aligns with learning satisfaction concepts, where satisfaction is not only influenced by delivered material but also by supportive learning conditions and active teacher involvement in teaching processes.

This was supported by data tabulation results having the highest score, namely item number 3 in the Responsiveness indicator with a score of 283 containing the statement "Teachers are always ready to help if I have questions." This finding shows that students experienced responsive and supportive teacher presence during learning processes, creating open interactions and increasing student confidence in conveying questions or learning difficulties. Meanwhile, the lowest score was found in item number 12 with a score of 220, namely in the Tangible indicator containing the statement "Students have classrooms that are often dirty and uncomfortable for learning." Low scores on negatively nuanced statements indicated that most students disagreed with these conditions, meaning they assessed that classrooms were generally clean and comfortable for use in learning processes. Thus, student perceptions of physical learning space aspects were positive, and this also supported creation of conducive learning environments.

These analysis results strengthened Mauludin et al.'s (2024) research stating that learning service quality and learning facility availability simultaneously significantly influenced student satisfaction. Similarly, Sumarno et al.'s (2024) study proved that educational service quality, including physical facility aspects and teacher interactions, contributed tangibly to student learning satisfaction simultaneously. These findings support SERVQUAL theory in Irmawati et al.'s (2025) journal, namely that educational institution service quality is influenced by tangibles and service reliability dimensions, where adequate facilities and infrastructure and consistent and reliable learning processes become important indicators in forming student satisfaction. In this context, physical facilities such as comfortable classrooms, sufficient lighting, and available learning media reflect service quality in the tangible dimension, while teacher readiness and ability to deliver material systematically and responsively reflect the reliability dimension. These results affirm that student learning satisfaction is not only determined by single aspects but results from combinations between learning quality and classroom facility and infrastructure support that comprehensively support teaching-learning processes.

Conclusion

Based on research conducted with students at SMK Negeri 1 Banyudono, it can be concluded that Classroom Facilities and Infrastructure and Learning Quality positively and significantly influenced Student Learning Satisfaction both partially and simultaneously. Regression analysis results showed that one-unit increases in Classroom Facilities and Infrastructure and Learning Quality each contributed 0.585 and 0.454 units respectively to Student Learning Satisfaction improvement, with a constant of 2.368. This regression model had a coefficient of determination (R^2) value of .632, meaning 63.2% of Student Learning Satisfaction variation could be explained by two independent variables in the research, while the remaining 36.8% was influenced by other factors not examined. Contribution analysis showed that Classroom Facilities and Infrastructure provided an effective contribution of 33.3% and relative contribution of 52.7%, while Learning Quality provided an effective contribution of 29.9% and relative contribution of 47.3%. These

research results support SERVQUAL theory in Tarnanidis and Tarnanidis's (2024) journal, that tangible, reliability, and responsiveness dimensions simultaneously influence student satisfaction. Adequate classroom facilities and infrastructure and consistent learning quality proved to jointly increase student learning satisfaction. These analysis results strengthened Mauludin et al.'s (2024) research stating that learning service quality and learning facility availability simultaneously significantly influenced student satisfaction. Similarly, Sumarno et al.'s (2024) study proved that educational service quality, including physical facility aspects and teacher interactions, contributed tangibly to student learning satisfaction simultaneously. These results affirm that student learning satisfaction is not only determined by single aspects but results from combinations between learning quality and classroom facility and infrastructure support that comprehensively support teaching-learning processes.

Nevertheless, this research had limited scope, namely on Grade X student populations at SMK Negeri 1 Banyudono. Therefore, result generalization to other schools or different majors must be done carefully, considering facility and infrastructure conditions and learning quality can vary. Additionally, this research had limitations in examined variable scope, so further research is needed by considering other factors such as learning motivation, teacher roles, or social environments that might also influence student learning satisfaction.

Based on research findings, it is recommended that school principals focus on improving classroom cleanliness and comfort and facilitating technology-based teacher training programs. School committees are expected to strengthen support through continuous facility and infrastructure procurement and maintenance together with schools and parents. Teachers are advised to more optimally utilize digital learning media such as PowerPoint, videos, and interactive applications so learning becomes more varied and satisfying for students. Students are expected to also maintain school facilities and actively participate in learning to build conducive and sustainable learning experiences. Meanwhile, for subsequent research, other variables that can influence student learning satisfaction need examination, considering classroom facility and infrastructure and learning quality contributions only explained 63.2%.

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