Technology Compatibility and Social Support: Determinants of Students' Self-Regulated Learning in the Digital Era

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ABSTRACT: Education was regarded as a long-term investment to develop superior human resources. Unfortunately, the education system in Indonesia remained overshadowed by inequality and systemic obsolescence, making the reinforcement of self-regulated learning (SRL) as the foundation of students' learning autonomy urgently necessary. The objective of this study was to investigate the impact of Technology Compatibility and Social Support on the SRL of students at Catholic Senior High School Bhakti Luhur Malang, Indonesia. Employing a quantitative approach, data were collected from 144 students selected through a stratified random sampling technique. The research instrument consisted of questionnaires for the three measured constructs, all of which had been validated in advance. Multiple linear regression analysis was conducted using SPSS software. The results revealed that the correlation coefficient between the independent and dependent variables was $r = 0.786$, indicating a strong relationship. In terms of causality, the simultaneous regression analysis yielded $p = 0.001 < 0.05$, suggesting that the regression model was appropriate for predicting students' SRL. Furthermore, the variables of Technology Compatibility and Social Support were found to significantly affect SRL individually, with each showing a $p = 0.001$. Therefore, both simultaneously and individually, the two independent variables significantly influenced students' SRL, with Social Support contributing more than Technology Compatibility.

INTRODUCTION

Enhancing the quality of competent human resources (HR) is essential to increasing national competitiveness in the global era, as a country's advancement in the 21st century is no longer determined solely by natural resources or industrial power, but by its citizens' ability to think critically, innovate, and adapt to change (Aulia & Efendi, 2024). Developing human resources requires sustained, long-term investment in the education sector. Unfortunately, in Indonesia, the education system continues to struggle under the weight of persistent inequality and systemic obsolescence. The Indonesian education landscape faces a variety of challenges, including disparities in access, teacher quality, outdated curricula, and misalignment between education and labour market demands (Rhosada et al., 2024; Syafi'i et al., 2023). Addressing these issues calls for coordinated efforts among the government, educational institutions, communities, and the private

sector to build an inclusive, high-quality, and future-relevant education system (Siregar et al., 2022; Nurfatimah et al., 2022).

At the secondary level, particularly in senior high schools (SMA), student development is oriented towards preparing individuals for greater independence. In this context, high school students are increasingly engaged in various academic-based intracurricular and extracurricular activities, primarily driven by the goal of pursuing higher education (UU RI No.20/2003). The ability to manage the learning process independently thus becomes crucial. Consequently, self-regulated learning (SRL) the capacity to plan, monitor, and evaluate one's own learning emerges as a key determinant of students' academic success and preparedness for the demands of higher education. Without sufficient SRL skills, students are more likely to experience academic procrastination (Azizah & Ruhaena, 2022; Brahma & Saikia, 2023), and face greater difficulties in achieving academic success (Elvag et al., 2023). Low levels of SRL are often associated with poor time and task management, which can lead to increased academic stress and reduced academic performance (Sun et al., 2022). Students with a high level of SRL tend to engage more actively in the learning process, whereas those with low SRL demonstrate limited engagement (Dewi & Hadiana, 2021). In the context of SMAK Bhakti Luhur serving as the object of this study exploratory findings shared by the school principal indicate that some students continue to exhibit concerning behaviors, such as arriving late to class despite lessons having already begun, engaging in conversations while the teacher is explaining, and remaining passive when given the opportunity to ask questions. Moreover, these same students are often unable to respond accurately when the teacher initiates questioning. Such behavioral patterns reflect a lack of self-regulation in learning. In contrast, students with well-developed SRL skills are characterized by their ability to set personal academic goals, monitor and evaluate their progress, employ a variety of cognitive and metacognitive strategies, modify those strategies as needed, and adapt to evolving academic demands (Kimber, 2009).

SRL refers to students' capacity to actively direct, control, and monitor their own learning processes, encompassing the regulation of thoughts, emotions, and actions to achieve predetermined academic goals (Listiana et al., 2020). SRL is particularly relevant within the context of secondary education, where students are expected not only to attain academic success but also to prepare for increasingly complex future challenges. Proficiency in SRL equips students with the ability to identify and apply effective learning strategies, monitor their academic progress, and evaluate learning outcomes (Duru et al., 2023; Garcí-a-Ros et al., 2022). From the perspective of social cognitive theory, SRL development is best understood through the dynamic interaction of personal, behavioral, and environmental factors. Albert Bandura (1925–2021) emphasized that self-regulated individuals are not formed in isolation, but through continuous engagement with their social environments and structured educational experiences (Syafitri et al., 2024). This perspective highlights the significant influence of environmental contexts, such as parental and peer social support, in fostering SRL among students (Oktariani et al., 2020; Mawardi, 2022). The theory underscores that human behaviour, particularly in the context of learning, is not developed in isolation but arises through dynamic and reciprocal interactions among personal factors (such as self-belief and motivation), behavioural patterns, and environmental influences. This concept, known as *reciprocal determinism*, posits that these three components continuously and mutually influence one another (Bandura, 2001).

The contemporary educational landscape is inextricably linked to the rapid advancement of digital technology. Virtually every aspect of human life is now dominated, influenced, and mediated by digital innovations, leading many to refer to this period as the "digital era." The digital era denotes a time in which digital technologies particularly the Internet are profoundly transforming multiple dimensions of human existence, including social interactions, economic practices, education, and cultural dynamics (Darmi et al., 2024; Syafika et al., 2025). Digital technology has

become a central driver in reshaping the ways people live, work, communicate, and learn. Students now have access to a vast array of educational resources from around the world, and learning is no longer confined to traditional face-to-face settings fundamentally altering the nature of education.

Although numerous studies have examined self-regulated learning (SRL), significant gaps remain, particularly within the context of Indonesian education. Key issues that require further attention include cultural diversity, disparities in technological infrastructure, and the uneven implementation of educational policies across different regions (Pratiwi, 2024; Sudarto, 2023). Much of the existing research has concentrated on higher education, while investigations at the secondary and vocational levels are still limited. This is critical oversight, as secondary education represents a pivotal stage in the development of students' autonomy and learning skills (Yusnidar et al., 2023). Prior studies have also highlighted the complex relationship between social support and SRL, emphasizing that the interaction between these two factors is essential for fostering students' skill development in the digital era (Iqbal et al., 2020). To address these research gaps, the present study employs a conceptual framework that integrates three core variables: self-regulated learning, technology compatibility, and social support.

The concept of technology compatibility, adapted from the work of Everett M. Rogers (1931-2004), refers to the extent to which an innovation is perceived as aligned with the existing values, previous experiences, and needs of its prospective users (Rogers, 1983, 2003; Karahanna et al., 2006). In the context of this study, technology compatibility refers to the extent to which various technologies including both software and hardware components can operate synergistically without conflicts or operational difficulties. This definition aligns with the perspective of Jia et al. (2021), who emphasize that compatibility is a critical factor in the successful integration of new technologies into established systems, helping to prevent disruptions and failures. Moreover, Guo et al. (2018) highlight the challenges of cross-platform compatibility, noting that such issues can significantly impede the effectiveness of technology implementation. Guo and colleagues emphasize that compatibility must be a central consideration to avoid migration issues and to ensure seamless operational processes across various technological layers, particularly within evolving software frameworks and systems. Furthermore, Jyothsna et al. (2024) identify compatibility as a critical attribute in technology adoption, highlighting that it reflects the extent to which an innovation aligns with users' existing beliefs, needs, and prior experiences. This underscores the significance of perceived compatibility, which enhances user acceptance and contributes to the overall success of technology implementation. Empirical studies have shown that user-friendly learning platforms significantly boost student engagement and support the development of SRL (Listiana et al., 2020; Sabaliauskas et al., 2022).

In addition to the influence of technology compatibility in the digital era, social support encompassing interactions with peers, teachers, and family also significantly impacts students' motivation and confidence in managing their learning (Acar & Özler, 2024). Social support is a critical factor in the development of SRL, as it fosters enhanced motivation, self-efficacy, and active engagement in the learning process (Sudarto, 2023). For instance, Rahmadini and Salim (2023) found that in the context of distance learning, perceived social support significantly contributed to increased academic motivation through the application of Self-Regulated Online Learning (SROL). These findings suggest that social support not only facilitates but also encourages students to take greater responsibility in organising their learning. Moreover, Pratitasari et al. (2022) demonstrated that family-based social support had a positive impact on the SRL of high school students during the COVID-19 pandemic. This study highlights that when students receive both emotional and practical support from their families, they are more likely to develop effective learning strategies, thereby enhancing their capacity for self-management within the learning process. This finding underscores the significance of social interactions across multiple environmental levels particularly family and peer contexts in fostering SRL. Furthermore, Yang and Xiang (2024) emphasised the role of peer

social support in strengthening SRL, as reflected in students' improved ability to plan, monitor, and evaluate their learning activities. In addition to peer support, Yuzarion et al. (2024) also confirmed the substantial contribution of parental support in shaping SRL among high school students, indicating that social support is a multidimensional construct that can originate from various complementary sources.

Although the influence of technology compatibility and social support on students' SRL has been extensively examined in various studies, the results have yet to yield consistent conclusions. While some studies report a significant impact, others reveal negligible or insignificant effects. For instance, Maulana and Setiawati (2023) found that the use of information and communication technology significantly enhanced students' learning motivation, which in turn supported the development of SRL. Their findings suggest that when students perceive technological tools as compatible with their needs, they are more likely to engage in independent learning. Similarly, Paska and Laka (2020) demonstrated that social support particularly from parents and peers exerts a significant influence on vocational students' SRL strategies, indicating that social factors can reinforce students' capacity to effectively manage their learning processes. However, contrasting findings have also been reported. Research by Ma'ruf et al. (2022) indicated that family social support and school climate did not exert a significant influence on SRL among junior high school students, suggesting the presence of other, more dominant factors in shaping students' self-regulation abilities. Similarly, Wardaya et al. (2022) investigated the impact of digital technology skills on high school students' academic achievement but did not identify a direct influence on SRL. These discrepancies highlight that, despite compelling evidence supporting the positive roles of social support and technology compatibility, other variables such as individual characteristics, contextual factors, and methodological differences may contribute to the variation in research outcomes. Consequently, further research is warranted to account for these variables and to provide a more comprehensive understanding of the influence of technology compatibility and social support on SRL among high school students, as undertaken in the present study.

Rationale of the Study

Enhancing the quality of human resources (HR) is a critical factor in strengthening a nation's competitiveness in the global era, where the ability to think critically, innovate, and adapt to change increasingly determines national progress (Aulia & Efendi, 2024). Investment in the education sector remains the primary strategy for developing high-quality human capital. However, Indonesia's education system continues to grapple with various structural challenges, including unequal access, substandard teaching quality, and a misalignment between educational outcomes and the demands of the labour market (Rhosada et al., 2024; Syafi'i et al., 2023). At the secondary education level, particularly in senior high schools, fostering students' learning autonomy is vital for preparing them to pursue higher education and face increasingly complex life challenges. In this regard, SRL defined as the ability to manage one's thoughts, emotions, and behaviours in pursuit of academic goals, emerges as a critical competency (Listiana et al., 2020; Duru et al., 2023). According to Bandura's (2001) social cognitive theory, the development of SRL is influenced not only by internal personal factors but also by interactions with the social environment, including support from family members, peers, and educators (Oktariani et al., 2020; Mawardi, 2022).

The digital era has significantly transformed the landscape of education, with technology becoming an integral component of students' learning processes (Darmi et al., 2024; Syafika et al., 2025). Within this context, technology compatibility defined as the degree to which technological tools align with users' needs, preferences, and existing systems emerges as a critical determinant of the effective utilisation of technology in fostering SRL (Jia et al., 2021; Guo et al., 2018; Jyothsna et al., 2024). Simultaneously, social support continues to play a vital role in enhancing students' motivation and self-efficacy, both of which are essential for the development of SRL (Acar & Özler,

2024; Pratitasari et al., 2022). Although numerous studies have explored SRL, the majority have focused on higher education or distance learning contexts, with limited attention given to the secondary education level in Indonesia, particularly in relation to the combined influence of technology compatibility and social support (Pratiwi, 2024; Yusnidar et al., 2023). Furthermore, prior research has yielded inconsistent findings regarding the effects of these two variables on SRL, underscoring the need for further empirical investigation (Ma'ruf et al., 2022; Wardaya et al., 2022). In response to these research gaps, the present study seeks to address the following question: To what extent do technology compatibility and social support in the digital era influence self-regulated learning among students at Catholic Senior High School (SMAK) Bhakti Luhur Malang?

Accordingly, this study aims to empirically investigate the influence of technology compatibility and social support on the SRL of the students under study. The hypotheses proposed in this research are based on the following assumptions:

1. Technology compatibility influences students' SRL. This implies that the effective functionality and alignment of various technological tools significantly influence the SRL of students at SMAK Bhakti Luhur Malang.
2. Social support has an effect on students' SRL. This indicates that various forms of social support whether from peers, teachers, or family contribute to the development of SRL among students at SMAK Bhakti Luhur Malang.

Based on these hypotheses, the researchers aim to examine the extent to which technology compatibility and social support, both individually and jointly, influence the SRL of students at SMAK Bhakti Luhur Malang. Furthermore, the study seeks to explore the underlying mechanisms of the relationships among these three variables within the broader context of fostering student potential at the secondary education level.

METHODS

Design and Participants

This research adopted a quantitative methodology utilizing a correlational design. This design was selected to explore the association between the independent variable's technology compatibility and social support and the dependent variable, SRL, as well as to assess the extent to which these independent variables account for the variance in the dependent variable. This study is grounded in the theoretical framework of Social Cognitive Theory, as formulated by Bandura (2001). The unit of analysis comprises students of Catholic Senior High School (SMAK) Bhakti Luhur Malang, Indonesia, representing the context of formal education in the digital era. The study was conducted using a cross-sectional approach, wherein data was collected at a single point in time from 144 respondents. A stratified random sampling technique was employed to ensure proportional representation across different strata within the population.

Instruments

In this study, data were collected using a questionnaire. The questionnaire employed a self-report method, whereby participants provided responses either favorable or unfavorable that reflected their personal perceptions and experiences. This method was deemed the most appropriate instrument for the study. Three scales were measured: the Self-Regulated Learning (SRL) scale (Y), the Technology Compatibility scale (X_1), and the Social Support scale (X_2). All variables were measured using a revised six-point Likert scale, with response options ranging from 1 (Strongly Disagree), 2 (Disagree), 3 (Somewhat Disagree), 4 (Moderately Agree), 5 (Agree), to 6 (Strongly Agree). Prior to distribution to the actual participants, each scale underwent a field trial to evaluate the items' discriminatory power specifically, their ability to differentiate individuals or groups who possess or lack the measured attributes. The item discrimination index was classified as high, with

all items scoring above 0.30. A high discrimination index indicates consistency between the function of the item and that of the overall scale.

Self-Regulated Learning (SRL) (Y) refers to the learning strategies employed by students of SMAK Bhakti Luhur Malang in planning, executing, and monitoring the progress of their academic tasks. These strategies encompass a range of behaviors, including self-evaluation reactions, self-consequences, goal setting and planning, organizing and transforming, seeking information, rehearsing and memorizing, environmental structuring, keeping records & monitoring, reviewing texts, reviewing notes, reviewing tests, seeking assistance from peers, seeking assistance from teachers, seeking assistance from parents. Based on these indicators, the SRL scale was constructed using 38 statement items. The results of the field test yielded a reliability coefficient of 0.955, indicating a high level of internal consistency.

Technology Compatibility (X_1) refers to the perception of students at SMAK Bhakti Luhur Malang regarding the extent to which the use of Information and Communication Technology (ICT) aligns with various aspects of their academic activities, personal experiences, learning needs, and preferred methods of working or studying. Based on these indicators, the technology compatibility scale was developed using 12 statement items. The results of the field test indicated a reliability coefficient of 0.888, demonstrating a high level of internal consistency.

Social Support (X_2) refers to the support perceived by students of SMAK Bhakti Luhur Malang, which may take the form of emotional support, self-esteem support, network support, informational support, and tangible support. Based on these indicators, the social support scale was developed using 20 statement items. The results of the field test yielded a reliability coefficient of 0.874, indicating a high level of internal consistency.

Data Analysis

The data analysis employed to test the research hypotheses utilized multiple linear regression statistical techniques. Prior to conducting the regression analysis, a series of classical assumption tests including assessments of normality, linearity, multicollinearity, and heteroscedasticity were conducted. All statistical procedures and data analyses were performed using IBM SPSS Statistics version 27 for Windows.

RESULTS AND DISCUSSION

Results

The data analysis commenced with the presentation of descriptive statistical results pertaining to the responses of research participants for each variable. The responses were categorized into five levels based on the calculated mean and standard deviation values. This classification allowed for the interpretation of response levels with evaluative significance. The description of participants' assessments for each variable is outlined as follows:

Table 1. Response Categories for the Variables of SRL (Y), Technology Compatibility (X_1), and Social Support (X_2).

Standardized Norms	Percentage (%)			Category
	(Y)	(X_1)	(X_2)	
M + 1,50SD < X	6	3	0	Very High
M + 0,50SD < X < M + 1,50SD	25	24	32	High
M – 0,50SD < X < M + 0,50SD	43	49	42	Moderate
M – 1,50SD < X < M – 0,50SD	17	16	20	Less
X < M – 1,50SD	9	8	6	Low
Total	100%	100%	100%	

Based on the results of the descriptive analysis using standardized norms, as presented in the table above, the frequency distribution for each variable indicates that most student responses fall within the 'moderate' category. Specifically, for the SRL (Y), the largest proportion of responses was in the 'moderate' category, accounting for 43% of the total respondents. This was followed by the 'high' category (25%), 'less' (17%), 'low' (9%), and 'very high' (6%). Similarly, for the Technology Compatibility variable (X_1), the highest frequency was also observed in the 'moderate' category at 49%, followed by 'high' (24%), 'less' (16%), 'low' (8%), and 'very high' (3%). As for the Social Support variable (X_2), most students also fell within the 'moderate' category, comprising 42% of the responses, followed by 'high' (32%), 'less' (20%), 'low' (6%), with no respondents falling into the 'very high' category. The predominance of the 'moderate' category suggests that while most students possess a degree of ability to manage their learning process independently, this capacity has yet to reach its optimal level. Students also perceive that the technology utilized in the learning process is compatible with their needs. In addition, they report receiving an adequate level of support emotional, self-esteem, network, informational, and tangible from their social environment, including family, peers, and teachers. However, it is important to note that, as these perceptions have not reached the “high” category, the quality and intensity of social support received by students remain suboptimal and may still be enhanced.

Hypothetical testing

Classical Assumption Test

To verify the validity of the regression model, a series of classical assumption tests were conducted, encompassing assessments of normality, linearity, multicollinearity, and heteroscedasticity. The normality test was employed to determine whether the data for the research variables were normally distributed (Ghozali, 2021). This test was conducted by examining the Normal P-P Plot of Regression Standardized Residuals. The results revealed that the data points were closely aligned with the diagonal line, indicating that the residuals were normally distributed and that the assumption of normality was satisfied. In addition, a linearity test was conducted to verify whether the relationships among variables conformed to the theoretically assumed linear pattern. The test results showed that the Deviation from Linearity significance values for each pair of variables were greater than 0.05, specifically 0.432 for Technology Compatibility (X_1) and 0.822 for Social Support (X_2). These findings indicate that the relationships between the independent variables and the dependent variable are linear. Furthermore, a multicollinearity test was performed to determine whether a high degree of correlation exists among the independent variables within the regression model. According to Ghozali (2021), ‘a regression model is considered free from multicollinearity if the Tolerance value is greater than 0.10 and the Variance Inflation Factor (VIF) is less than 10’. The test results indicate that all independent variables satisfy these criteria, with both variables exhibiting a Tolerance value of 0.622 and a VIF of 1.607. Subsequently, the heteroscedasticity test was conducted to assess whether the residual variances remain constant across all values of the independent variables within the regression model. To determine whether heteroscedasticity is present, the Spearman's Rho correlation coefficient test was employed. A significance value greater than 0.05 in the correlation between the Unstandardized Predicted Values and the Unstandardized Residuals indicates that the regression model does not exhibit signs of heteroscedasticity. The results of the Spearman's Rho test revealed a significance value of 0.071 (> 0.05), indicating no significant relationship between the predicted values and the absolute residuals. These findings confirm that all classical assumptions have been met.

Regression Analysis

Following the completion of the classical assumption tests, the researcher conducted hypothesis testing through multiple linear regression analysis. The F-test results, which evaluate the joint effect of the independent variables on the dependent variable, are presented in the table below.

Table 2. ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	46388.127	2	23194.063	114.205	<.001[b]
Residual	28635.866	141	203.091		
Total	75023.993	143			

The results of the F-test indicate a significance value (sig. F) of 0.001, which is less than the alpha level of 0.05. This confirms that the independent variables have a statistically significant simultaneous influence on the dependent variable. Accordingly, the regression model is deemed appropriate for predicting the effect of Technology Compatibility (X_1) and Social Support (X_2) on SRL (Y). Moreover, the magnitude and direction of the association between each independent variable and the dependent variable are detailed in the table below.

Table 3. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.786[a]	.618	.613	14.25101

Drawing on the data displayed in the preceding table, the correlation coefficient between the independent variables and the dependent variable is 0.786, suggesting a strong positive association. A correlation coefficient of 0.786 is classified as "strong" in magnitude (Sugiyono, 2019). This indicates a strong association between the independent variables Technology Compatibility (X_1) and Social Support (X_2) and the dependent variable, SRL (Y). Moreover, the positive value of the correlation coefficient suggests that an increase in the values of the independent variables is associated with an increase in SRL levels.

Regarding the coefficient of determination (R^2), the value of 0.618 implies that 61.8% of the variation in the dependent variable (SRL) can be explained by the combined influence of Technology Compatibility and Social Support. The remaining 38.2% of the variation is attributed to other factors not included in the current research model. Based on the Standard Error of the Estimate value of 14.25101, it can be interpreted that the average deviation between the predicted values (generated by the regression model) and the actual values of SRL is approximately 14.25101 points. This magnitude suggests that, although the regression model demonstrates a *strong* correlation, there remains a substantial degree of variability in the data that is not fully accounted for by the independent variables. Furthermore, the partial effects of each independent variable can be examined in the table below.

Table 4. Coefficients

Independent Variable	t-count	Sig. / p	Description
Technology Compatibility (X_1)	5.484	<0,001	H_0 rejected (H_1 accepted)
Social Support (X_2)	7.740	<0,001	H_0 rejected (H_1 accepted)

The interpretation of the *t*-test results follows the rules for "partial" hypothesis testing, which state that if the *sig. t* value is less than 0.05, the regression coefficient is considered *significant*. Based on the data presented in the table above, this indicates that each independent variable exerts

a significant influence on the dependent variable. In addition to the significance value, the partial causal effect of each variable can also be determined by comparing the *t*-calculated value with the *t*-table value. Specifically, when the calculated t-value surpasses the critical t-value at the 5% level of significance, the null hypothesis (H_o) is rejected in favor of the alternative hypothesis (H_a). With degrees of freedom (*df*) = $n - k$ (144 – 3), the critical *t* value is 1.976931. Therefore, since all *t*-calculated values for the independent variables exceed this threshold, it can be concluded that each independent variable exerts a statistically significant partial effect on the SRL variable.

Discussion

Based on the results of the descriptive analysis using standardized norms, the frequency distribution for each variable in this study indicates that students' responses tend to fall within the 'moderate' category. For the SRL variable, the 'moderate' category suggests that most students possess the ability to independently manage their learning processes including planning, monitoring, and evaluating their learning strategies although they have not yet achieved an optimal level of self-regulation. Students' SRL can still be enhanced through more targeted pedagogical interventions, such as training in learning strategies or the regular practice of self-reflection. Similarly, the 'moderate' category for the Technology Compatibility variable indicates that the majority of students perceive the technology used in learning as reasonably aligned with their learning needs. This student perception reflects a generally positive trend toward the use of technology in learning, although a number of students still fall within the relatively low category. This suggests the need for further refinement in the selection and implementation of educational technologies to ensure broader accessibility and effectiveness across the student population. Meanwhile, the 'moderate' category for the Social Support variable indicates that students feel adequately supported by their social environment, including family, peers, and teachers. However, the absence of students in the 'high' category suggests that the quality of social support received remains suboptimal. Therefore, it is essential to strengthen the role of the social environment in providing more consistent, relevant, and responsive support to foster optimal development of students' SRL.

Furthermore, the results of hypothesis testing indicate that all proposed hypotheses both simultaneous and partial are accepted. The results of the 'major hypothesis' test show a significance value of F = 0.001, which is less than 0.05. This signifies that the independent variables collectively exert a significant influence on students' SRL, with a positive correlation (R = 0.786). Accordingly, the 'major hypothesis' stating, "There is a significant influence of Technology Compatibility and Social Support on the SRL of students at SMAK Bhakti Luhur Malang, "is supported. The acceptance of this 'major hypotheses align with the perspectives of prior theorists who assert that individuals' capacity to actively manage their own learning through the regulation of cognition, motivation, behavior, and the learning environment is essential to achieving academic goals (Zimmerman, 1989, 2008). Similarly, Bandura's (2001) Social Cognitive Theory emphasizes that the development of SRL is not an isolated process, but rather one shaped by the dynamic interaction of personal, behavioral, and environmental factors. The findings of this study thus corroborate and extend the conclusions of earlier research. Alhadi et al. (2018) identified two critical factors influencing SRL: technology compatibility and social support. Their findings demonstrated that the use of appropriate technological tools can enhance students' motivation and learning effectiveness. When students have access to relevant and user-friendly technologies, they are more likely to engage actively in the learning process, thereby fostering greater learning autonomy (Miatun & Muntazhimah, 2018). Technological tools and applications that align with students' needs and are easy to operate contribute significantly to increased motivation and engagement. For instance, a study conducted by Fu-hai et al. (2023) revealed a significant relationship between technology acceptance and SRL, mediated by intrinsic motivation and engagement. This implies that students who perceive

technology as compatible with their expectations are more capable of managing their own learning processes.

Partially, the results of testing the 'minor hypothesis' concerning the presumed influence of Technology Compatibility on the SRL of students at SMAK Bhakti Luhur Malang indicate that the Technology Compatibility variable has a significant effect on SRL. This is evidenced by a *t*-value of 5.484, which exceeds the critical *t*-value of 1.976931, and a significance level (p-value) of 0.001, which is below the threshold of 0.05. Based on these findings, it can be concluded that the hypothesis stating, "There is a significant effect of Technology Compatibility on the SRL of students at SMAK Bhakti Luhur Malang, "is supported and thus accepted. The acceptance of this hypothesis aligns with the perspectives of previous theorists such as Rogers (1983, 2003); and Karahanna et al. (2006). Rogers described compatibility as the extent to which an innovation is viewed as aligning with the existing values, prior experiences, and needs of prospective adopters. According to Rogers (1983), innovations that are perceived as compatible are more likely to reduce users' resistance and increase their willingness to adopt them. Rogers further elaborated that an innovation may be perceived as either compatible or incompatible depending on three factors: (1) the prevailing sociocultural values and beliefs, (2) previously established ideas, and (3) the extent to which the innovation meets the needs of its intended users. In relation to self-regulated learning (SRL), although Zimmerman (2008) does not explicitly employ the term 'technological compatibility', the concept can be theoretically examined within the framework of his SRL model. Zimmerman defines SRL as an active process wherein students set goals, select appropriate strategies, and monitor and evaluate their learning progress. His model outlines three distinct phases: forethought (planning), performance (execution and monitoring), and self-reflection (evaluation and adjustment). Within the forethought phase, technological compatibility influences students' self-efficacy; in the performance phase, it facilitates the selection and application of effective learning strategies; and in the self-reflection phase, technology that aligns with students' needs enables them to evaluate their performance more accurately and make informed adjustments.

The results of this study align with the findings reported in prior research. Maulana and Setiawati (2023) demonstrated that the use of information and communication technology (ICT) significantly influences students' learning motivation, which in turn supports the development of SRL. Similarly, Andini et al. (2023) found that the integration of ICT in the learning process has a significant impact on student motivation. Their research highlights that ICT not only enhances access to information but also facilitates the development of SRL among students. In addition, Khairiyah and Maiyana (2023) noted that technology-based learning systems improve students' IT competencies, which constitute an important aspect of personal development. These findings suggest that students' learning motivation can be stimulated by the relevance of the content delivered through ICT and its connection to their daily lives and future aspirations.

In the current digital era, alongside technology compatibility, social support also plays a crucial role in influencing students' SRL. Technology that is both beneficial and user-friendly, when complemented by relevant and consistent social support, significantly enhances students' SRL capabilities. The results of the 'minor hypothesis' testing regarding the influence of social support on the SRL of students at SMAK Bhakti Luhur Malang indicate that the social support variable has a significant effect on SRL. This is evidenced by a t-value of 7.740, which exceeds the critical t-table value of 1.976931, and a p-value of 0.001, which is less than the significance threshold of 0.05. Based on these results, the hypothesis stating, "There is a significant influence of social support on the SRL of students at SMAK Bhakti Luhur Malang," is confirmed (accepted). The acceptance of this hypothesis is in line with the theoretical perspectives of Zimmerman and Martinez-Pons (1990), who emphasized the role of the social environment including interactions with teachers, peers, and parents in the development of SRL. Similarly, Zimmerman (2015) emphasizes that the support provided by parents, teachers, and peers plays a highly significant role in the student learning

process. According to Zimmerman, when students receive support from their social environment, they are more likely to internalize various learning strategies essential for achieving academic goals.

The results obtained in this study are in accordance with earlier research findings. Several earlier studies have demonstrated that social support plays a critical role in helping students overcome challenges encountered during the learning process, particularly in online learning environments (Alhadi et al., 2018). When students perceive that they are supported by others, they tend to exhibit a stronger motivation to set goals and monitor their learning progress an essential aspect of SRL (Sutarni et al., 2021). Moreover, social support has been shown to reduce stress and enhance students' motivation to learn (Xie, 2024). Xie further reported a positive relationship between students perceived social support and their SRL strategies, concluding that teacher support, can significantly improve SRL among adolescents. These findings underscore the importance of emotional reassurance and a supportive social environment in fostering students' initiative and capacity to manage their own learning effectively. Other studies have demonstrated that social support plays a crucial role in enhancing students' SRL skills, particularly in the context of distance education. Yahya (2021) provided evidence that students who received sufficient social support exhibited notable improvements in their SRL abilities, which subsequently had a positive impact on their academic performance. Similarly, Paska and Laka (2020) emphasized that support from parents and peers significantly influenced the application of SRL strategies among vocational students. Furthermore, Saputra and Daliman (2021) confirmed not only the significant effect of social support, but also its direct relationship with students' SRL capabilities. Individuals who benefit from adequate social support are generally more focused in setting learning objectives and more adept at independently monitoring and evaluating their academic progress.

Limitations and Further Research

This study has certain limitations and suggests avenues for further development in future research. First, the unit of analysis in this study is limited to students from a single school; therefore, future studies are encouraged to include a broader scope to enhance generalizability. Second, the sample size employed in this study is relatively small; subsequent research would benefit from targeting a wider geographical area and a larger population to improve the robustness of the findings.

CONCLUSION

Based on the inferential statistical analysis of the research data, it can be concluded that both Technology Compatibility and Social Support, whether examined jointly or individually, have a significant influence on the SRL of students at SMAK Bhakti Luhur Malang. The relationship between the independent variables and the dependent variable is confirmed to be 'strong' and positively correlated. Among the two independent variables, Social Support demonstrates a greater contribution to students' SRL compared to Technology Compatibility.

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All authors have carefully examined and endorsed the final version of the manuscript, jointly confirming its completeness, reliability, and suitability for publication.

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