NEXUS MODELING OF TRAINEES' SATISFACTION IN A SCIENTIFIC WRITING CONTEXT: AN EMPIRICAL INVESTIGATION

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ABSTRACT

Purpose – Scientific writing is one primary way scientists disseminate their discoveries to the broader scientific community. International journals' extensive scope and stringent peer review procedures have earned them the gold standard for academic publications. However, writing in reputable international journals and publishing them is no easy task. This prompted various online courses to assist researchers in overcoming writing obstacles and raising the caliber of their work to the point where it is acceptable for publication in esteemed publications. The study had two goals: (i) to investigate the correlations between perceived self-efficacy, enjoyment, motivation for courses, online course design, time management, Technology Acceptance Model (TAM), and satisfaction with E-courses, and (ii) to examine whether the motivation for courses and perceived self-efficacy moderate time management.

Methodology – This study employed a quantitative approach and randomly selected 184 trainees from Indonesia who took online courses for scientific writing. The questionnaire to gather the quantitative data used a five-point Likert scale format. Descriptive statistics were obtained using IBM's SPSS 25 statistical software. The statistical program Smart-PLS 3.0 was used to handle the data analysis, and it used structural equation modeling to assess the measurement model and test the hypotheses.

Findings – The measuring methodology supported the study constructs' convergent and discriminant validity. Three factors directly impacted Indonesian trainees' perceptions of the ease of use of e-courses:

perceived self-efficacy, enjoyment, and online course design. Furthermore, there was a negative and significant moderating effect on motivation and the relationship between time management and perceived enjoyment. However, the relationship between online course design and time management was positively moderated by perceived self-efficacy. It was found that 69.9% of the variance in online course satisfaction could be explained by exogenous factors, such as perceived self-efficacy, enjoyment, and online course design, influencing perceived ease of use**.**

Significance – E-courses in scientific writing assist in improving writing and getting published in reputable journals. Apart from enhancing the academic quality of one's writing, they helped in networking and gaining a reputation abroad. Besides, it encourages Indonesian researchers and the Indonesian Ministry of Education, Culture, Research, and Technology to develop a more evidence-based national development framework that serves as a basis for more effective policy development and decision-making. The impact of perceived self-efficacy on perceived usefulness was found to be negligible. On the other hand, perceived usefulness and simplicity were positively and directly impacted by both perceived enjoyment and online course design. The TAM was not significantly affected by course motivation, although time management was. The satisfaction of trainees was also positively and indirectly impacted by the following four external factors: perceived self-efficacy, perceived enjoyment, course motivation, and online course design.

Keywords: Perceived self-efficacy, trainee motivation and satisfaction, online course design, time management, TAM.

INTRODUCTION

The COVID-19 epidemic has further accelerated the e-course industry's expansion. E-courses remained popular even after lockdowns were lifted because of their benefits, which included flexibility in terms of location and study schedule and comparatively low costs. However, the dynamics of one-on-one virtual courses require further research (Mullen et al., 2022). E-courses have drawbacks despite their advantages. Lack of social interaction, for instance, may harm students' motivation and academic performance (Hoi et al., 2021).

Professionals actively involved in scientific work must be proficient in scientific writing. It facilitates the exchange of research results, encourages critical thinking, and allows researchers to reflect on their conceptual understanding (Fernández et al., 2018). However, writing is frequently difficult, particularly for people just starting research. Although most researchers are adept at planning, carrying out, and evaluating research projects (Yang et al., 2018), many struggle with writing and lack formal training in scientific writing.

Indonesia is committed to increasing the number of scientific papers it produces. The Ministry of Higher Education, Research, and Technology in Indonesia launched the Science and Technology Index (SINTA) platform to aid this endeavor. It makes publishing findings easier for researchers, students, and lecturers. The number and caliber of research publications from Indonesia are anticipated to increase further thanks to SINTA. Similarly, in Malaysia, the country's Ministry of Education founded the

Malaysian Citation Centre (MCC) to manage the MyCite or Malaysian Citation Index, a nationwide citation system.

The aim is to organize, track, and raise the nation's academic journal publication standards. The Thai-Journal Citation Index (TCI) Center is a national agency in Thailand tasked with creating and maintaining a citation database for reputable local academic journals, including the computation of Journal Impact Factors (JIF). Lecturers are not the only ones who should do research; students are also urged to become involved by working with academics on research projects and community service initiatives. The benefits of scientific writing have been emphasized in previous research, including the chance to record new information, improve scholarly partnerships, develop a professional academic portfolio, increase access to research funding, and establish a respectable academic reputation (Hand et al., 2021; Rakedzon & Baram-Tsabari, 2017).

The growing publication requirements of higher education institutions have significantly increased lecturers' understanding of the need to do research and academic investigations and engage in scientific paper production. The Ministry of Higher Education requires undergraduate, graduate, and doctoral students in Indonesia to publish articles in scientific publications as part of their graduation requirements. As a result, academics have begun to feel more pressure to contribute actively to nationally and internationally renowned journals. Despite this push, many still struggle with a variety of issues, including coming up with unique and imaginative ideas, lacking skills in using research-related software, having trouble analyzing data, managing their time well, having limited second-language skills, and not being familiar with the format and structure of scientific writing. Because scientific writing e-courses provide crucial assistance in overcoming these obstacles, their demand is rising significantly.

In the past, completing graduation requirements was the primary purpose for conducting research in educational institutions. However, research and publication efforts must be bolstered and made more fruitful in light of the rapidly evolving global education scene and new concerns, such as the COVID-19 pandemic. Beyond their scholarly worth, research findings have real-world implications in various scientific domains and, when regularly pursued, can significantly improve a university's standing and ranking. Innovative, creative, and issue-responsive students, instructors, and academic staff are essential for higher education institutions. Indonesia requires competent people who are highly competitive, have strong leadership traits, and can work well with others to effectively address national concerns. These skills are particularly important for achieving the Tridharma Perguruan Tinggi, or the three primary purposes of educational institutions: research, teaching, and community service.

Many online course providers use digital platforms to provide instruction and feedback to students worldwide (Li et al., 2016). More thorough empirical research on one-on-one virtual learning environments is still required, even though the number of e-course providers has grown dramatically (Smirnova, 2016). Such studies are necessary to investigate the relationship between trainee satisfaction and assignment completion rates, and their opinions on how simple or difficult it is to use customized online learning services. This study has investigated the relationship between practitioners' level of satisfaction in scientific writing and their e-learning experience to close the existing research gap. As a result, this study has posed the following research questions:

What are the relationships between the following aspects: perceived self-efficacy, enjoyment, motivation for the course, online course design, time management, usefulness, ease of use, and trainees' satisfaction with e-courses?

Do perceived self-efficacy and course motivation have a moderating effect on time management?

LITERATURE REVIEW

Perceived Self-Efficacy

Bandura (1991) developed the Social Cognitive Theory (SCT), which provided a fundamental framework for comprehending how people interact with behavioral, psychological, and environmental factors to control their learning. Perceived self-efficacy, or a person's confidence in their capacity to complete a task successfully and accomplish objectives, is a key element of SCT. Self-efficacy boosts students' confidence in using digital tools, finishing tasks, and participating in class activities in the context of online learning. Self-efficacy is essential to behavior, motivation, and performance outcomes (Bandura, 1991, 2023). The possibility is higher for trainees with high technological self-efficacy to think that online courses are helpful and straightforward. According to studies, higher degrees of self-efficacy have been linked with enhanced satisfaction levels in e-learning settings because it increases an individual's ability to manage academic activities and overcome obstacles (Alfadda & Mahdi, 2021).

Perceived Enjoyment

The present study has emphasized the intrinsic fun in the process, regardless of its effect on performance, by defining perceived enjoyment (PE) as using e-courses to improve scientific writing (Davis et al., 1992). PE describes how much students enjoy using online courses to finish their assignments in the context of e-learning. According to research, easy-to-navigate online courses are more fun for trainees (Thumvichit, 2022). Additionally, having enough time to join, get ready, and participate in the course in a way they love is linked to trainees' comfort level with online learning. Working with peers could significantly increase the fun of writing. When peer critique is conducted constructively, trainees acquire fresh viewpoints and insights, making writing feel less lonely and more enjoyable. Clear structure, scaffolding, and step-by-step instruction are all features of well-designed scientific writing courses, making trainees more contented.

Motivation for Courses

Self-Determination Theory (SDT), first presented by Deci and Ryan (2012), posits that people are motivated by their sense of autonomy and the personal meaning they derive from an action. Motivated trainees are more engaged in online learning, have better time management skills, and report higher levels of pleasure. Trainees' motivation to participate is a significant factor in the success of online courses. In an online course, Kyewski and Kramer (2018) investigated how badges affected trainees' performance, motivation, and involvement. Their results demonstrated that using badges increased the motivation of participants who had previously exhibited low levels of intrinsic motivation. Conversely,

under the badge settings, people who already exhibited high levels of intrinsic motivation tended to show lower levels of inherent drive. Motivation affects how hard trainees work to learn, their tactics, and their resilience in the face of difficulties. Trainees are frequently motivated by intrinsic (like personal interest and enthusiasm for research) and extrinsic (such as job growth, publishing possibilities, and fulfilling academic requirements). Providing trainees a sense of independence in their educational process and designing writing assignments that are meaningful and relevant are essential to promoting intrinsic motivation in online courses.

Online Course Design

Content, design, learning objectives, and results make up a course. The design of the online course (OCD) is a crucial element that determines whether online learning is successful or unsuccessful (Shi et al., 2023). The online course creator must consider whether or not trainees are ready and equipped to use the platform for their assignments after finishing the current course. A careful balance between pedagogical strategies, technological tools, and efficient assessment methods is required to design online courses for scientific writing. Trainers could construct engaging and practical courses that improve trainees' scientific writing skills by implementing process-oriented writing instruction, collaborative technologies, and explicit feedback systems. Trainees could be educated about genre conventions by giving them samples of well-written scientific articles and annotated models of scientific writing. Using a variety of instructional tactics that promote engagement and skill development is necessary when designing an online course on scientific writing.

Time Management

Time management (TIM) involves effectively organizing and using time to complete course tasks by their deadlines. Applying techniques such as keeping a regular study schedule and learning in a concentrated setting can impact the effectiveness of an online course. By adopting basic time management skills, trainees can improve their experience with online learning. One of the biggest challenges in e-courses is sustaining self-discipline, essential for achieving satisfaction. This entails regularly attending classes, presenting work on time, and engaging fully in class discussions. Time management could be hampered by procrastination, conflicting obligations, and the difficulty of writing assignments. However, these obstacles could be addressed using instructional design and technology. Trainers could assist trainees in creating efficient time management methods by encouraging self-regulated learning, offering scaffolded assignments, and utilizing time management technologies. In addition to improving the caliber of scientific writing, cultivating practical time management abilities also prepares trainees for the rigors of college and the workplace (Andreeva et al., 2020).

Perceived Ease of Use and Perceived Usefulness

The perceived usefulness (PU) and perceived ease of use (PEU) are the two primary components of Davis' Technology Acceptance Model (TAM), which describes how people accept and use technology. Trainees' perception that utilizing the e-course system improves their performance in online courses is known as perceived usefulness. In contrast, PEU represents how easy it is to use the system. Trainees who see a platform as practical and straightforward to use are likelier to engage with it and feel satisfied.

An online course's ease of use and positive learning experience directly impact satisfaction with the course (Zareisaroukolaei et al., 2024). This link is significant for scientific writing online courses, as trainees need help understanding due to the content's intricacy. Lower anxiety and more pleasure occur when trainees think the course interface is easy to use. This is especially important in scientific writing courses, where the emphasis should be on subject mastery rather than platform difficulties.

Perceived ease of use in scientific writing courses could relate to the user-friendliness of submission systems, the ease of use of online course platforms, or the accessibility of writing software for trainees. Writing tasks are completed by trainees who believe the site is simple to use and intuitive. Trainees tend to finish projects more quickly and express more pleasure when they feel that digital writing tools are easier to use. Perceived usefulness measures trainees' thoughts about adopting a specific platform that would help them become better writers. Perceived usefulness frequently refers to the efficiency of feedback mechanisms, writing tools (such as citation management software), and collaborative writing elements in online scientific writing courses. When taking an online course, trainees are initially drawn to its convenience. However, they will eventually see its value as they become proficient with the platform's scientific writing tools and resources.

Relationship between Perceived Self-Efficacy, Time Management, Perceived Usefulness, Perceived Ease of Use, and Satisfaction in E-Courses

Efficient time management is crucial for raising learning and performance in online classes. Setting aside time for studying is essential, even though everyone has different ideal learning times. Training participants must cultivate metacognitive abilities that increase their sense of efficacy to manage their time while taking online courses effectively. In online scientific writing courses, positive self-efficacy significantly influences time management (Hanham et al., 2021). Confidence in one's skills enhances motivation, effective self-regulation, and planning, leading to a more successful and superior job completion. Enhancing one's self-efficacy through practice, constructive criticism, and hands-on learning aids people in improving their time management and academic success.

Self-efficacy determines whether technology has been approved and used for e-courses in scientific writing. Building trainees' self-efficacy could assist them in believing that technology is valuable, which boosts their confidence and success in online courses. High self-efficacy trainees perceive the course as more beneficial since they feel more capable of understanding and applying complex writing skills. Because they felt more competent in employing the technology and comprehending the material, trainees who had poor self-efficacy could find it challenging to understand the material, which could result in a dropout rate that was higher than expected. Prior studies indicate that self-efficacy directly impacts the perceived usefulness of E-courses (Amin et al., 2022; Kim et al., 2022).

The level of self-confidence strongly influences a person's view on the simplicity of navigating online courses (Thompson et al., 2022; Zakariya et al., 2022). Higher self-efficacy trainees approach problems with more confidence and problem-solving skills, making them think the online platform is straightforward. In addition, trainees could interact closely with the course content utilizing the platform's features. A user-friendly learning platform could boost trainees' self-efficacy by offering a seamless and encouraging course environment. When trainees employ the platform successfully, their

confidence grows, and they feel more capable overall. As a result, designing and implementing online courses should include strategies to boost trainees' self-efficacy.

Self-efficacious trainees are more inclined to engage actively in training and experience satisfaction with their performance. They could overcome difficulties, stay dedicated to their objectives, and persevere despite setbacks. Trainees' motivation to learn in online training is influenced by their self-efficacy, which affects their satisfaction with the training. Consequently, training planners must consider tactics that could raise trainees' sense of self-efficacy, like giving constructive criticism, offering sufficient assistance, and fostering a friendly learning atmosphere. Online course research has demonstrated a positive and indirect relationship between self-efficacy and course satisfaction (Prifti, 2022). Self-efficacy could boost satisfaction by encouraging the use of effective methods of training, enhancing motivation, and reducing stress.

Relationship between Perceived Enjoyment, Time Management, Perceived Usefulness, Perceived Ease of Use, and Satisfaction in E-Courses

When instructional activities are enjoyable, the atmosphere becomes more stimulating and engaging, which may improve trainees' time management skills. Trainees with a positive experience with online courses could demonstrate good time management practices, like completing assignments on time and participating actively in class discussions. Previous studies have shown that perceived enjoyment and time management correlated positively and significantly (Jo & Baek, 2023; Luo & Wang, 2023). Social connection, technological use, and appealing course design have been found to boost engagement and assist trainees in managing their time more effectively.

E-courses serve a hedonic purpose in contrast to traditional classroom settings by offering users a distinctive and practical platform for course participation and fostering an entertaining and pleasurable learning environment. Engaging activities, interactive learning settings, and the utilization of multimedia are characteristics of contemporary e-course designs. Perceived enjoyment directly impacts perceived usefulness in the E-courses (Holdack et al., 2022). The overall course experience and results are improved when trainees enjoy the learning process and perceive the course material to be more beneficial. For several trainees, writing scientifically is considered a complex and uninteresting undertaking. The perceived usefulness of online courses rises when they are made to be fun through gamification, interactive content, and intuitive interfaces. When the learning experience is fun, trainees gain relevant and worthwhile knowledge. Online trainees who enjoyed learning thought the system was easy to use. Trainees who find the process enjoyable in online scientific writing courses, whether through exciting and interactive materials or encouraging interactions with other trainees, see the course as user-friendly. This understanding could improve learning outcomes and engagement by lowering the anxiety frequently related to complex subjects like scientific writing. With online classes, students may learn at their own pace, have more fun, and communicate with teachers and other students. Online courses are, therefore, generally well-received by trainees. Previous studies have demonstrated that trainees' perceptions of the ease and utility of e-course platforms are directly related to their level of satisfaction (Bagdi & Bulsara, 2023; Dang & Zhang, 2021). Enhancing enjoyment while taking the courses online positively influences trainees' satisfaction with the E-courses. Trainees' engagement in

training activities may rise due to their perceived enjoyment. Increased understanding and mastery of the subject matter could result from higher involvement, boosting trainees' satisfaction with the course.

Relationship between Motivation for Courses, Time Management, Perceived Usefulness, Perceived Ease of Use, and Satisfaction in E-Courses

In online courses, time management is especially crucial since trainees must exercise self-control to set aside sufficient time for their study. An elevated level of motivation and effective time management are still necessary for online courses, regardless of how they offer trainees the freedom to finish assignments whenever it is most convenient. Previous research has demonstrated that course motivation (MC) significantly affects time management (Amida et al., 2021; Üstün et al., 2016). Taking courses online was associated with increased involvement in intrinsic motivation. Since they coincide with personal and professional objectives, online courses are worthwhile for trainees driven to enhance their scientific writing abilities. Extrinsic motivation is another factor that can spur engagement. However, it can have a more varied effect on perceived usefulness (Alfadda & Mahdi, 2021). If the course directly assists them in achieving these objectives, trainees driven by outside incentives like grades or occupation requirements view it as the most beneficial.

While trainees perceive utilizing technology as modest, they will adjust to it more readily and feel more at ease taking online courses. Motivated trainees are interested in the material and eager to experiment with the platform's capabilities, making it easy to use in an online course. Their enthusiasm for the topic encourages them to persevere through usability issues, improving their impression of the ease of use of online classes for scientific writing. Driven trainees are committed and involved in the learning process, which raises their opinion of the course's usefulness. Perceived usefulness and simplicity are also strongly associated with motivation (Kurniawan et al., 2021; Saadé & AlSharhan, 2015). Motivated trainees are prone to stick with online classes, which raises trainees' satisfaction. Both internal and external motivators frequently fuel this persistence. Raising trainees' engagement and motivation indirectly impacts satisfaction. Trainees engaged in E-courses attend classes, turn in assignments on time, and ask for assistance, enhancing the learning process.

Relationship between Online Course Design, Time Management, Perceived Usefulness, Perceived Ease of Use, and Satisfaction in E-Courses

Online courses are designed to significantly impact how well trainees manage their time, notably in scientific writing courses (Nakayama et al., 2021). Trainee engagement is directly related to improved time management and academic achievement, which could be increased through well-designed online courses. Essential elements include learning objectives, frequent assessments, opportunities for interaction with trainers and trainees, and the structure and presentation of the materials. Interactive exercises such as collaborative tasks, discussion boards, and frequent feedback can increase trainees' engagement. By offering structure and regular checkpoints, the components support trainees in maintaining motivation and improving their time management skills.

Trainees' perceptions of the usefulness of online courses for scientific writing are positively impacted by their structure (Gunness et al., 2023; Tseng et al., 2022). Interactive components and engagement

tactics make learning more dynamic and applicable, which raises the possibility that trainees view the course as beneficial for advancing their skills in writing. Trainees' perceptions of course usefulness were closely connected with effective course design, specifically about the transparency of course objectives and the rational arrangement of content. The course design's effectiveness is expected to influence trainees' perceptions of the usability and simplicity of e-courses.

A well-designed course directly impacts how trainees interact with the material and the learning environment, shaping how simple or complex they believe the course is to navigate and finish. Online course design significantly impacts the perceived ease of use of online courses in scientific writing (Papakostas et al., 2023). The user experience of a course is greatly improved by efficient navigation. Trainees consider a course simple to utilize when they can quickly locate the required components and comprehend how to use them. Uncomplicated navigation is especially crucial in scientific writing, as trainees must repeatedly access various resources. Essentially, the present study has entertained the idea that trainees' learning efficiency was directly or indirectly influenced by the design of online courses. Therefore, the design of online courses greatly influences how trainees perceive the utility and convenience of using e-courses. An organized and disciplined learning process results from trainees managing their time more skillfully with a well-designed platform with user-friendly software and explicit course content.

An organized and engaging learning environment is one way a well-designed course directly affects trainees' satisfaction (Shree, 2020). Multimedia content could raise satisfaction by simplifying and captivating complex scientific writing themes. Course design indirectly affects trainees' satisfaction through its effects on other elements like perceived learning and instructor contact (Hora et al., 2024). To improve satisfaction, a well-structured course could make it easier for trainees and trainers to communicate, resulting in more insightful comments and a stronger feeling of being part of a community. Cooperative writing assignments and peer review activities can also help create collaborative learning and a sense of belonging in an educational setting, enhancing contentment and indirectly affecting trainees. Through the trainer's description of the material, the course design benefits trainees' satisfaction.

Relationship between Time Management and Satisfaction in E-Courses

Effective time management is linked with enhanced trainees' satisfaction with online courses (Aldhahi et al., 2022). Trainees' perceptions of their ability to turn in high-quality work on time are frequently linked to their level of satisfaction in scientific writing courses. Efficient time management enables trainees to turn in assignments on time and participate in peer reviews, which could increase trainees' contentment. Additionally, trainees can manage their time more effectively with better self-management skills. Thus, students must learn efficient time management techniques to succeed in online courses.

Relationship between Perceived Ease of Use, Perceived Usefulness, and Satisfaction in E-Courses

Perceived usefulness (PU) is the degree to which a person feels that a specific strategy could boost their performance professionally (Davis, 1989). Perceived usefulness directly impacts course satisfaction by influencing trainees' opinions regarding the course's objectives, organization, and material (Gunness et

al., 2023; Nikou, 2024). Trainees who find an online scientific writing course beneficial interact with the content, employ new abilities in their academic writing, and value the feedback they receive from the teacher. Yalcin and Dennen (2024) discovered that perceived usefulness positively impacts trainees' satisfaction with online courses. This association is evident in courses that require the practical application of learning skills, like scientific writing. Trainees feel more motivated to finish the course and refer others to it if they have a favorable view of the subject. Joo (2018) discovered that customer satisfaction is positively impacted by a dedicated trainees' platform's perceived utility and usability. Trainees' opinions of an e-course system's utility and usability can be improved by carefully applying the Technology Acceptance Model (TAM), ultimately improving their learning results and general satisfaction.

Moderating Effect of Time Management

Schwarzer (2008) et al. examined the moderating role of self-efficacy in the relationships and other workplace-related characteristics. Using surveys of high-achieving online learners, Barnard-Brak et al. (2010) found that Effective time management has been recognized as a critical self-efficacy tactic for thriving in virtual learning settings. With the various functions that online courses are supposed to perform in their design and delivery, assessing self-efficacy in the context of online courses provides insightful information that students may use to improve their scientific writing abilities. Perceived self-efficacy directly and moderately impacts online course design and time management (Tran, 2022). With the resources and framework necessary for success, a skilfully created online course could raise trainees' self-efficacy. Their sense of competence in completing the course requirements is enhanced, which positively impacts their time management skills. Trainees' confidence in their writing ability could significantly increase by providing a well-structured course with abundant support and clear expectations.

Motivation moderately impacts trainees' perceptions of enjoyment and time management in online scientific writing courses (Theobald, 2021). Motivated trainees are more likely to enjoy the educational process, which might improve their interest in the subject matter. This enjoyment could create a positive feedback loop and boost motivation even further. Better time management abilities are also typically displayed by motivated trainees who allocate their time wisely to complete assignments on time and participate in the virtual classroom (Vavasseur et al., 2020). Additionally, in making online courses more enjoyable, motivation assists in easing the time management issues that many online trainees encounter. For instance, compared to their less driven colleagues, trainees who were more motivated in online scientific writing courses expressed higher levels of course satisfaction and demonstrated superior time management skills.

METHODOLOGY

Research Design

Using a quantitative research methodology, this study investigated the connections involving several elements influencing trainee satisfaction in the context of scientific writing. Data was collected using a

cross-sectional survey, with participants receiving standardized questionnaires. The measuring scales for each concept were based on validated earlier research and modified through expert review and translation methods. The data was analyzed using SmartPLS 3.0 software. This approach was adopted because it is appropriate for complicated models with various components and indicators, particularly when the research centers on prediction and theory development. Path coefficients, R^2 values, and effect sizes were all part of the structural model, and the measuring model included tests for discriminant validity, convergent validity, and reliability, which were also analyzed. This offered a significant understanding of the connections between the variables.

Samples

The sample comprised 184 trainees from a private institution in Indonesia who took online courses for scientific writing (female = 56% and male = 44%). Respondents, aged 20 to 32 years and above, filled out the questionnaire voluntarily. The target participants were selected by cluster random sampling. The data was presented using structural equation modelling (SEM) in SmartPLS version 3. Each trainee's identity was kept private following study ethics, and neither their names were written in the register nor on the questionnaire. The only information collected was the usual demographic profiles of respondents, such as their age, gender, occupation, and courses taken.

Instrumentation

Selected academicians participated in a focus group to validate trainees' satisfaction constructs of accessibility and importance. Based on their credentials and specializations, the writers asked specialists to get involved in the discussion group. The selection of six experts included two professors, two lecturers, and two master's degree holders in education and business administration. The instrument's originality was maintained by modifying and improving elements from known and validated instruments used in previous studies to meet the setting of the trainees' satisfaction constructs. The study's questionnaire was made available to trainees in Indonesian to ensure its relevance and clarity. The translation technique included a forward translation of the English items into Indonesian by a bilingual expert. Eight measurement scales were used to collect the required data, namely perceived self-efficacy (PSE), perceived enjoyment (PE), motivation for the course (MC), online course design (OCD), time management (TIM), perceived usefulness (PU), perceived ease of use (PEU), and satisfaction (SF) in e-courses. These scales were based on the work of Strong et al. (2006), Lin et al. (2010), Zhang et al. (2008), Liu et al. (2010), Barnard et al.(2008), Venkatesh et al. (2012), and Teo (2009). The questionnaire was made available in Indonesian to ensure accurate comprehension and to get around language problems. The reliability of each construct was evaluated in a pilot study with thirty trainees, and findings showed a Cronbach's Alpha of .882, over the suggested cutoff of .7 (Hair et al., 2019). The survey link was shared via group conversations and social media inboxes, mostly on WhatsApp, and the poll was disseminated using Google Forms.

Perceived self-efficacy was utilized in this study to assess task-completion confidence connected to social cognitive theory. To gauge perceived self-efficacy, three items were employed, for example, "*I am confident in joining online courses to learn to process statistical data and write scientific papers*".

A Likert scale ranging from 1 (not at all) to 5 (very much) was used to rate each item. The scale showed a composite reliability of .918 and a Cronbach's alpha of .869.

Perceived enjoyment was used to assess trainees' enjoyment in the online scientific writing course and whether they would stick with it and turn in better-quality tasks. Perceived enjoyment was assessed using three items, for example, *"Keeping up with online courses was delightful and beneficial for writing scientific skills"*. A Likert scale ranging from 1 (not at all) to 5 (very much) was used to rate each item. The scale showed a composite reliability of .828 and a Cronbach's alpha of .711.

Motivation for courses was employed to assess motives behind enrolment in E-courses. Motivation for courses was assessed utilizing five items. However, three items had to be dropped, for example, *"I am excited to learn to process statistical data and write scientific skills during online courses"*. A Likert scale ranging from 1 (not at all) to 5 (very much) was used to rate each item. The scale showed a composite reliability of .912 and a Cronbach's alpha of .860.

The online course design item assessed whether a well-designed online course reduced cognitive load and increased trainees' engagement by catering to their requirements, abilities, and expertise. The online course design was assessed utilizing three items: *"The instructional content captivated me"*. A Likert scale ranging from 1 (not at all) to 5 (very much) was used to rate each item. The scale showed a composite reliability of .941 and a Cronbach's alpha of .904.

Time management assessed the capacity of trainees to organize, track, and evaluate their time and learning methods. Time management was assessed utilizing four items, but one had to be dropped, for example, *"I take part in the schedule regularly and seriously in online courses"*. A Likert scale ranging from 1 (not at all) to 5 (very much) was used to rate each item. The scale showed a composite reliability of .895 and a Cronbach's alpha of .845.

Training results were assessed using the perceived ease of use, which was impacted by trainees' proficiency with communication tools, managing assignments, and navigating course materials. Three items were used to measure it, for example, *"I figured out how to learn to write scientific articles in online courses"*. Perceived usefulness was employed to evaluate trainees' feelings that taking the online course would assist them in learning scientific writing more effectively. Perceived usefulness was assessed utilizing four items, for example, *"The quality of writing scientific articles was enhanced while taking part in online courses"*. A Likert scale ranging from 1 (not at all) to 5 (very much) was used to rate each item. The scale showed a composite reliability of .896 for perceived ease of use and a Cronbach's alpha of .823. In contrast, the scale showed a composite reliability of .904 for perceived usefulness and a Cronbach's alpha of .859.

Satisfaction in E-courses was used to appraise the extent to which trainees' expectations for the course were fulfilled or exceeded. Satisfaction with E-courses was assessed utilizing three items, for example, "I am pleased to increase my scientific writing skills in this online course". A Likert scale ranging from 1 (not at all) to 5 (very much) was used to rate each item. The scale showed a composite reliability of .930 and a Cronbach's alpha of .886.

Data Analysis

The researchers tested the hypothesized relationships with the conceptual framework proposed in the present study. Validity and reliability were confirmed using the following two statistical tools: partial least squares (PLS) via SmartPLS 3.0 software (variance-based SEM) and descriptive statistics using IBM SPSS. PLS-SEM modelling has two main steps (Hair et al., 2019). The measuring technique had to be evaluated before looking at the suggested model's psychometric features. After assessing the measurement model and confirming its psychometric properties, the structural model analyzed the suggested relationships.

Ethics

Authorization to modify and utilize the survey items was acquired from the sources referenced in earlier validated research. All essential changes were made and correctly attributed to ensure that they were appropriate for the context of this investigation. All trainees gave their informed consent before filling out the questionnaire. Trainees were guaranteed anonymity and secrecy of their answers, and participation was entirely optional. No personally identifiable information was gathered, and the information was only utilized for the study. Throughout the survey, rigorous adherence to ethical guidelines regarding data protection, privacy, and voluntary participation was maintained.

RESULTS

Table 1 provides demographic data including age, gender, occupation, religion, and course enrolment on Indonesian trainees enrolled in online scientific writing courses. The study found that 44% of the trainees were men and 56% were women. Age-wise, 9.2% of the population was between the ages of 20 and 21, 14.7% was between the ages of 23 and 25, and 15.8%, 4.3%, 17.4%, and 42.9% were for the 27–28, 29–31, and over 32 age categories, respectively. With 32.1% of enrolments, the Quantitative Research Boot Camp with SmartPLS was the most popular course. The Scientific Article Boot Camp, which focused on publishing in WoS and Scopus journals, was attended by 20.7% of participants thereafter. While 14.1% of participants enrolled in the Quantitative Research Boot Camp using SPSS, 17.9% participated in the Qualitative Research Boot Camp with NVivo. The Stata software-intensive class had the lowest attendance rate (6.5%). Lecturers made up the largest group (34.8%), followed by undergraduates (11.4%), master's and doctorate students (26.1%), and others (5.4%).

Table 1

Trainee Satisfaction in Scientific Writing: Respondent Demographics

Background	Frequency	%
Gender	Male: 81	44.0
	Female: 103	56.0
Age	20-22Yrs: 17	9.2
	23-25Yrs: 27	14.7
	27-28Yrs: 29	15.8
	29-31Yrs: 32	17.4
	Above 32Yrs: 79	42.9
Take Courses	Scientific articles boot camp for writing Scopus and WOS journals: 38	20.7
	Boot camp scientific articles for the SINTA journal: 16	8.7
	Quantitative research boot camp with Smart-Pls: 59	32.1
	Quantitative research boot camp with SPSS: 26	14.1
	Qualitative research boot camp with N-VIVO: 33	17.9
	Intensive classes using Stata software: 12	6.5
Occupation	Undergraduate Students: 21	11.4
	Master Students: 48	26.1
	Doctoral Students: 41	22.3
	Lecturers: 64	34.8
	Others: 10	5.4

Assessment of the Measurement Model

The reliability of the measurement scales for each concept was assessed as part of the measurement model's initial evaluation. The factor loadings of each indicator on the corresponding components were analyzed to determine the items' consistency. Composite reliability (CR) and Dijkstra-Henseler's rho (A) were used to quantify internal consistency for each construct. Average Variance Extracted (AVE) was used to evaluate convergent validity. Creswell (2009) asserts that a factor loading of at least .70 is necessary to guarantee a satisfactory CR value. The AVE shows how much of the variance caused by measurement error is captured by a construct. Every construct showed AVE values above the suggested cutoff of .50 (see Table 2).

The Heterotrait-Monotrait Ratio (HTMT), cross-loadings, and the Fornell-Larcker criterion were used to assess each concept's discriminant validity, as Henseler et al. have advised (2015). Table 3 illustrates that to meet the first criterion for discriminant validity, each construct's square root of the AVE, which is indicated diagonally in the correlation matrix, must be greater than its correlations with other latent variables. Further findings are as shown in Table 4; the second requirement for discriminant validity was also met: each item's loading on its targeted construct had to be greater than its loading on other constructs. As can be seen in Table 5, the third criterion, which calls for HTMT values to be less than .90, was satisfied. This attests to the established discriminant validity. Overall, as shown by the results in

Table 3, Table 4, and Table 5, each item showed more substantial loadings on its specific construct than the others.

Table 2

Results of Outer Loading, Composite Reliability (CR), and Convergent Validity (AVE) of the Variables

Construct	Questionnaire Statements	Items	Loading	CA	CR	AVE
Perceived Self-Efficacy (PSE)	I believe taking courses online will help me become a better writer.	PSE_01	.846	.724	.845	.645
	I'm comfortable enrolling in online classes to hone my scientific writing abilities and learn how to evaluate statistical data.	PSE_02	.829			
	Taking courses online has helped me become a better scientific writing.	PSE_03	.731			
Perceived Enjoyment (PE)	It was a pleasure to take part in online courses that aimed to enhance scientific writing abilities.	PE_01	.903	.888	.930	.817
	I found taking online classes to be entertaining and beneficial for improving my scientific writing skills.	PE_02	.896			
	I appreciate taking online classes that are designed to help me improve my scientific writing abilities.	PE_03	.913			
Motivation for Courses (MC)	I'm excited to use online classes to boost my scientific writing and learn how to interpret statistical data.	ML_01	.936	.856	.933	.874
	I'm keen to get better at writing scientifically.	ML_03	.934			
Online Course Design (OCD)	The course material was really interesting to me.	OCD_01	.864	.896	.935	.829
	My requirements and interests are well-aligned with the course material.	OCD_02	.937			
	The general caliber, applicability, and accessibility of the course materials have impressed me.	OCD_03	.928			
Time Management (TIM)	I always pay close attention to the timetable when taking courses online.	TIM_01	.912	.882	.927	.809
	I finish all of the assignments and duties for the course on time.	TIM_03	.924			
	After the online classes are over, I set aside time to practice again.	TIM_04	.860			

Construct	Questionnaire Statements	Items	Loading	CA	CR	AVE
Perceived Usefulness PU)	My performance improved as a result of taking online classes.	PU_01	.724	.822	.878	.643
	Aiming to get better at writing would increase my output.	PU_02	.820			
	I am committed and relentless in using my improved abilities to write scientific articles in scientific publications.	PU_03	.816			
	As a result of taking online classes, my scientific writing has become better.	PU_04	.843			
Perceived Ease of Use (PEU)	Online classes taught me how to improve my scientific writing abilities.	PEU_01	.830	.870	.921	.795
	I intend to improve my scientific writing skills after taking online classes.	PEU_02	.927			
	The contents were simple to understand, and the online classes provided flexibility.	PEU_03	.914			
Satisfaction (SF)	I'm pleased to be using this online course to develop my scientific writing abilities.	SF_01	.795	.853	.910	.772
	I'm delighted that I chose to sign up for this online course.	SF_02	.921			
	The material offered in the online classes is satisfactory to me.	SF_03	.915			

Table 2 indicates that all constructs have excellent validity and reliability in the measuring techniques, confirming each construct's appropriateness for an additional structural model study. Every item loading is higher than the suggested cut off of .70, indicating that every observable variable accurately represents its underlying construct. The Composite Reliability (CR) scores ranged from .845 to .935 and are significantly higher than the minimum requirement of .70 for all constructs. This demonstrates that the items measured the corresponding latent variables consistently. Convergent validity is deemed satisfactory when each construct was able to explain over fifty percent of the variation across its corresponding variables, as indicated by the Average Variance Extracted (AVE) values over the .50 criterion. PSE exhibits a strong measurement model, as evidenced by its Composite Reliability (CR) of .845 and AVE of .645. Perceived Enjoyment (PE) had a high AVE of .817, a CR of .930, and high loadings (above .88), indicating excellent measurement quality. Excellent dependability was also shown in online course design (OCD) and motivation for courses (MC), which had AVE values of 0.874 and .829 and CR values of .933 and .935. Time Management (TIM) performed strongly, with AVE at .809 and CR at .927. Perceived usefulness obtained acceptable reliability (CR = .878) and convergent validity (AVE = .643). Perceived ease of use gained CR values of .921 and AVE values of .795. Satisfaction obtained acceptable reliability (CR = .910) and convergent validity (AVE = .772).

Table 3

Fornell–Larcker Criterion Applied to the Proposed Model

Construct	PSE	PE	MC	OCD	TIM	PU	PEU	SF
Perceived Self-Efficacy (PSE)	.803							
Perceived Enjoyment (PE)	.482	.904						
Motivation for Courses (MC)	.164	.134	.935					
Online Course Design (OCD)	.421	.557	.112	.910				
Time Management (TIM)	.260	.279	.636	.284	.899			
Perceived Usefulness (PU)	.512	.760	.138	.555	.186	.802		
Perceived Ease of Use (PEU)	.518	.667	.183	.779	.339	.643	.891	
Satisfaction (SF)	.540	.624	.294	.571	.377	.621	.662	.879

When gauging discriminant validity, each construct's square root of the Average Variance Extracted (AVE) must be greater than its correlations with every other construct in the model to meet the Fornell–Larcker criterion. Table 3 demonstrates that every build satisfied this requirement. For example, the square roots of AVE for felt self-efficacy (.803), perceived enjoyment (.904), motivation for courses (.935), and online course design (.910) were higher than their correlations with other model elements. Comparably, the AVE square roots of perceived usefulness (.802), perceived ease of use (.891), perceived satisfaction (.879), and time management (.899) were all greater than those of their relationships with other constructs.

Table 4

Cross Loadings for the Proposed Model

Construct	PSE	PE	MC	OCD	TIM	PU	PEU	SF
PSE_01	.846	.450	.188	.350	.296	.400	.464	.485
PSE_02	.829	.342	.128	.368	.186	.410	.458	.468
PSE_03	.731	.368	.067	.292	.129	.432	.311	.334
PE_01	.429	.903	.128	.496	.257	.724	.586	.585
PE_02	.431	.896	.139	.515	.255	.639	.603	.560
PE_03	.464	.913	.096	.500	.245	.695	.621	.547
MC_01	.155	.100	.936	.119	.602	.138	.164	.270
MC_03	.151	.151	.934	.089	.587	.120	.179	.280
OCD_01	.301	.499	.047	.864	.249	.467	.693	.420

(continued)

Construct	PSE	PE	MC	OCD	TIM	PU	PEU	SF
OCD_02	.460	.548	.133	.937	.288	.566	.725	.585
OCD_03	.380	.470	.121	.928	.235	.478	.709	.547
TIM_01	.240	.233	.626	.236	.912	.206	.297	.373
TIM_03	.223	.266	.605	.283	.924	.148	.310	.342
TIM_04	.241	.258	.469	.248	.860	.144	.313	.295
PU_01	.429	.903	.128	.496	.257	.724	.586	.585
PU_02	.395	.460	.168	.464	.140	.820	.534	.448
PU_03	.342	.427	.039	.330	.021	.816	.413	.409
PU_04	.434	.441	.083	.428	.101	.843	.452	.465
PEU_01	.362	.582	.124	.650	.304	.512	.830	.474
PEU_02	.545	.640	.178	.707	.329	.645	.927	.659
PEU_03	.464	.563	.183	.725	.277	.554	.914	.621
SF_01	.333	.386	.234	.437	.301	.400	.439	.795
SF_02	.527	.654	.265	.514	.343	.628	.610	.921
SF_03	.530	.570	.275	.546	.349	.578	.665	.915

The cross-loading analysis, which is shown in Table 4, shows that each item loaded more strongly on its intended construct than on any other construct. For example, all items evaluating perceived self-efficacy (PSE_01 to PSE_03) had the most significant loadings on the PSE construct compared to other constructs such as PE, MC, or TIM. Similarly, elements connected to motivation for courses (MC_01 and MC_03) loaded highest on MC, as did other factors. According to these findings, the items successfully captured the latent constructions they were meant to capture without significantly affecting other constructs.
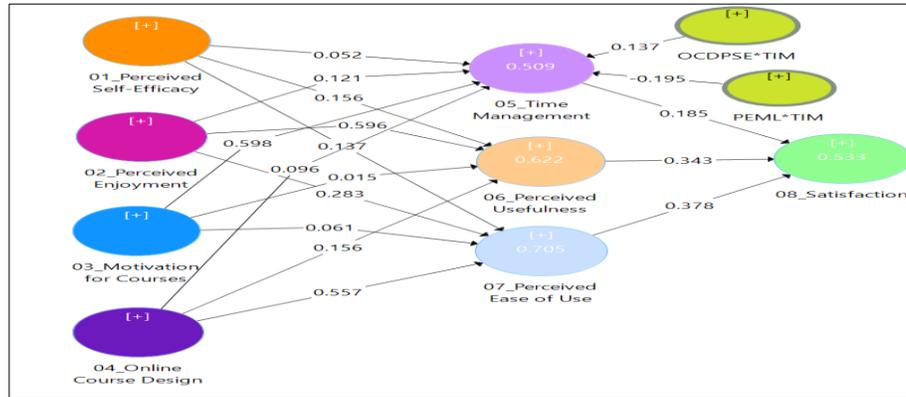
Table 5

HTMT for the Hypothesized Model

Construct	PSE	PE	MC	OCD	TIM	PU	PEU	SF
Perceived Self-Efficacy (PSE)								
Perceived Enjoyment (PE)	.600							
Motivation for Courses (MC)	.202	.154						
Online Course Design (OCD)	.517	.624	.126					
Time Management (TIM)	.319	.317	.725	.319				
Perceived Usefulness (PU)	.648	.808	.155	.618	.191			
Perceived Ease of Use (PEU)	.639	.760	.211	.883	.390	.724		
Satisfaction (SF)	.664	.701	.294	.647	.431	.692	.749	

Table 5 shows HTMT values among constructions. Strong discriminant validity was demonstrated by the fact that all HTMT values were significantly below the rigorous cutoff of .85 (and remained below .90). For example, the HTMT score between PSE and PE was .600, PE and MC were .154, MC and OCD were .126, OCD and TIM were .319, TIM and PU were .191, PU and PEU were .724, PEU

and SF were .749, demonstrating that the constructs were empirically distinct. The measurement model's discriminant validity was confirmed by the information in Table 5, which indicates that all criteria were met. In conclusion, the findings from the HTMT, cross-loadings, and Fornell-Larcker criterion all work together to validate discriminant validity in the research model, guaranteeing the accuracy of the structural model interpretation in the following analysis stage.

Figure 1

Measurement Model of Trainees' Satisfaction in Scientific Writing

Structural Model Evaluation

The evaluation results for both Q^2 and R^2 values are as shown in Table 6. The blindfolding technique in PLS was used to assess the inner (structural) model, with particular attention paid to the significance of path coefficients, the coefficient of determination (R^2 and Adjusted R^2), and predictive relevance (Q^2) (Henseler et al., 2015). Each external construct's ability to predict the corresponding endogenous constructs within the model was evaluated by the Q^2 value. On the other hand, the R^2 value indicated how well the predictor factors accounted for the variation of a specific endogenous variable. Hair et al. (2019) state that R^2 values of .70,.50, and. .25 are considered substantial, moderate, and weak, respectively, whereas Q^2 values of .02, .15, and .35 suggest weak, mild, and strong predictive relevance.

Table 6

Predictive Relevance (Blindfolding) Q^2 and Coefficient of Determination Result R^2

Variables	SSO	SSE	Q^2	R^2	R^2 Adjusted
Perceived Self-Efficacy	552.000	552.000			
Perceived Enjoyment	552.000	552.000			
Motivation for Courses	368.000	368.000			
Online Course Design	552.000	552.000			
Time Management	552.000	336.725	.392	.509	.492
Perceived Usefulness	736.000	492.715	.331	.622	.613
Perceived Ease of Use	552.000	249.056	.549	.705	.699
Satisfaction	552.000	335.128	.393	.533	.525

The Q^2 values for the endogenous variables show that the suggested model had high predictive relevance, as displayed in Table 6. Time management was at .509, perceived usefulness was at .622, perceived ease of use was at .705, and satisfaction was at .533, according to the R^2 values. These findings suggest that the external variables significantly impacted these endogenous dimensions. Regression analysis was utilized to further evaluate the model's explanatory strength using modified R^2, where an explained variance of more than 10% indicates sufficient explanatory power. In particular, the study discovered that perceived usefulness explained 61.3% of the variance in satisfaction, perceived ease of use explained 69.9%, and time management explained 49.2%. Given these findings, the model appears to have moderate explanatory power and successfully represents the underlying constructs. Finally, five thousand bootstrapping samples were used to assess the inner model. The path coefficients were evaluated for significance using both t-values and p-values, with thresholds of t > 1.96 and p < .05 at the 5% significance level. To find out how each exogenous construct affected its matching endogenous variable, the effect size (f^2) was also computed.

Table 7

Hypothesis Results

Intercourse	Direct Effect		Indirect Effect		Total Effect		f^2
	β	T-Value	β	T-Value	β	T-Value	
PSE → TIM	.052	.818			.052	.818	.004
PSE → PU	.156	1.905			.156	1.905	.047
PSE → PEU	.137	2.532			.137	2.532	.046
PSE → SF			.115	2.829	.115	2.829	
PE → SF			.334	7.136	.334	7.136	
PE → TIM	.121	1.609			.121	1.609	.017
PE → PEU	.283	3.274			.283	3.274	.167
MC → SF			.139	3.114	.139	3.114	
MC → TIM	.598	8.506			.598	8.506	.682
MC → PU	.015	.292			.015	.292	.001
MC → PEU	.061	1.371			.061	1.371	.012
OCD → SF			.282	4.882	.282	4.882	
OCD → TIM	.096	1.223			.096	1.223	.012
OCD → PU	.156	2.523			.156	2.523	.043
OCD → PEU	.557	5.162			.557	5.162	.695
TIM → SF	.185	3.096			.185	3.096	.065
PU → SF	.343	5.880			.343	5.880	.148
PEU → SF	.378	5.460			.378	5.460	.164

Perceived self-efficacy and perceived usefulness (β = .156, p = .057), perceived ease of use (β = .137, p = .011), and time management (β = .052, p = .413) did not statistically support each other. Perceived satisfaction also had no significant impact on time management (β = .121, p = .108). Nonetheless, there was a high and significant correlation between felt satisfaction and perceived ease of use (β = .283, p = .001) and usefulness (β = .596, p = .000). Furthermore, there was a positive effect and significant correlation between course motivation and time management (β = .598, p = .000). This means that while H3, H4, and H7 were accepted, H1, H2, and H5 was rejected. However, course motivation did not

significantly impact perceived ease of use (β = .061, p = .170) and perceived usefulness (β = .015, p = .770). Online course design had no significant effect on time management (β = .096, p = .221), but it had an indirect impact on perceived usefulness (β = .156, p = .012) and perceived ease of use (β = .557, p = .000). Lastly, motivation for courses (β =.139, p = .002), perceived enjoyment (β = .334, p =. 000), perceived self-efficacy (β = .115, p = .005), and online course design (β = .282, p = .000) all had substantial indirect effects on online learning satisfaction. Thus, whereas H11 to H13 were accepted, hypotheses H8 to H10 were not supported. Furthermore, reported enjoyment and time management were significantly mediated negatively by course motivation. Moreover, the association between time management and online course design was moderated by perceived self-efficacy. These results imply that time management in online scientific writing courses can be improved by perceived self-efficacy and learning motivation.
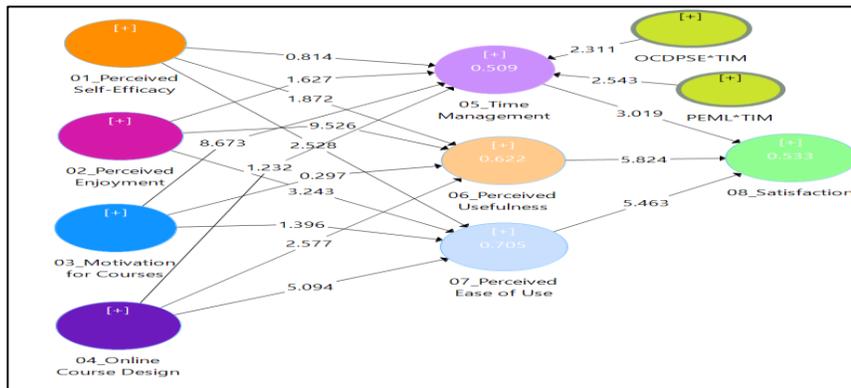
Table 8

Moderating Effect on Time Management

	Intercourse	β	T-Value	Remarks
14a	Perceived Enjoyment*Motivation for Course → Time Management	-.195	2.646	Not Rejected
14b	Online Course Design *Perceived Self-Efficacy → Time Management	.137	2.330	Not Rejected

Figure 2

Result of the Structural Model on Trainees' Satisfaction in Scientific Writing

IPMA (Importance-Performance Map Analysis) is used to pinpoint fundamental constructs that demonstrate average or low performance, making them key areas for improvement (Henseler et al., 2015). This method enhances the traditional PLS-SEM analysis by offering deeper insights beyond simple path coefficient estimates. According to Table 9, perceived ease of use had the highest importance score (.378) among all constructs. To strengthen scientific writing training through online courses, it is essential to maintain strong performance in areas such as motivation for learning and perceived usefulness. Additionally, greater emphasis should be placed on improving perceived self-

efficacy, course motivation, and time management. Overall, the results for the performance index were positive.

Table 9

Importance-Performance Map Analysis of Satisfaction

Construct	Satisfaction	
	Importance	Performance
Perceived Self-Efficacy	.115	69.836
Perceived Enjoyment	.334	72.618
Motivation for Courses	.139	64.173
Online Course Design	.282	73.029
Time Management	.185	69.747
Perceived Usefulness	.343	69.550
Perceived Ease of Use	.378	74.510
Satisfaction		75.494

Figure 3

IPMA of Satisfaction
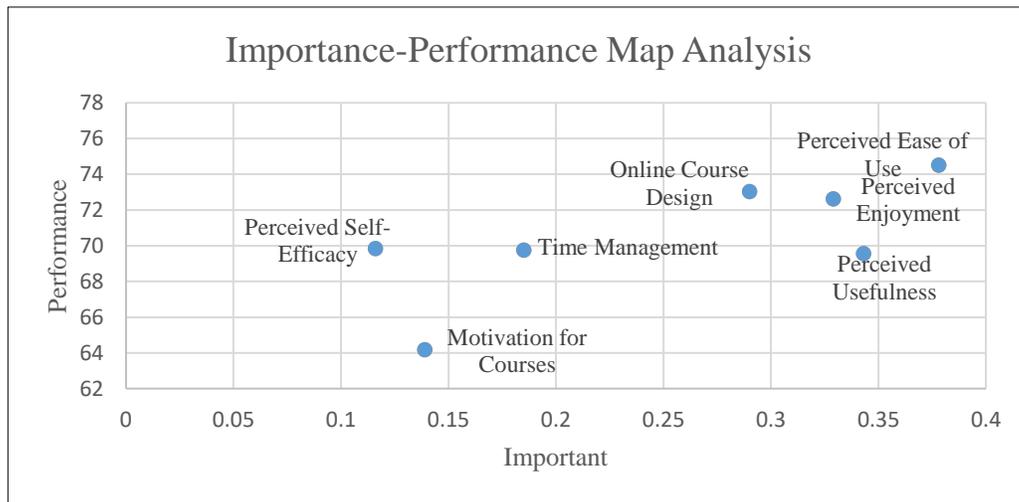
DISCUSSION

The results showed several significant insights. Initially, it was discovered that trainees' time management was not significantly impacted by perceived self-efficacy. Effective time management was challenging for those with weak organizational, emotional, and self-regulation skills. This finding corroborated the results of earlier studies, such as those by Yener et al. (2021), who hypothesized that people frequently find it challenging to handle their academic obligations when they lack self-efficacy.

According to earlier research, time management and perceived self-efficacy were positively correlated (Melissa Ng Lee Yen, 2020; Wolters et al., 2017). Online instructors and course designers should improve the course's usability and students' self-efficacy to produce more efficient and accessible learning environments. Given that this was a novel experience for many, it was shown that perceived self-efficacy and perceived usefulness were strongly correlated when trainees lacked confidence in their ability to use the technology. Trainees who took e-courses reported feeling more confident, committed, and inspired, and thought they were learning more independently. High self-efficacy learners were faster to participate and implement what they had learned since they thought the courses provided easy tools.

Perceived enjoyment did not significantly impact time management in this study. This observation is in line with the findings in prior studies, for example, Zhu and Doo (2022), who highlighted that cognitive techniques like goal-setting and self-monitoring were more closely linked to time management in online learning than were emotional elements like enjoyment. Similarly, Rienties et al. (2019) found a weak correlation between time management activities and affective involvement, including enjoyment. Conversely, other previous studies found that perceived enjoyment and time management were correlated (Luo & Wang, 2023; Mossman & Cronin, 2019). When trainees thought that time was flying by quickly during online courses, they found the activity more engaging. Trainees should efficiently manage their time during the course to enhance their scientific writing abilities. Perceived enjoyment significantly affects perceived usefulness and has an even more substantial effect on perceived ease of use. Enjoyment improves trainees' opinions of the course's worth and relevance to their objectives, making it valuable and easy to use. Previous studies have demonstrated that assessments of perceived usefulness and ease of use were strongly related to perceived enjoyment (Chao, 2019; Zhou et al., 2022). Trainees interacted deeply with the curriculum when they found the course material and activities enjoyable. As a result of their increased enjoyment of exploring the platform and making appropriate use of its capabilities, trainees would think that less effort was needed to complete the course.

Motivation for courses was positive, direct, and significantly affected time management. This observation was in line with the findings in previous studies (Sun & Gao, 2020), where motivated instructors were more likely to set goals, monitor their progress, and efficiently manage their time to meet academic objectives. Similarly, Cheng and Xie (2021) found that trainees with higher intrinsic motivation better organized their study schedules and avoided procrastination. Effective time management and addressing motivational issues through task organization and timely completion increased trainees' chances of success. However, neither perceived utility nor perceived ease of use was significantly related to course motivation. Scientific writing frequently requires high technical proficiency, cognitive effort, and attention to detail. A course may be challenging for even highly motivated trainees to navigate and apply effectively, reducing the impact of motivation on how they perceive its usefulness and ease of use. These findings contradict earlier research (Gutierrez-Aguilar et al., 2022; Sun & Gao, 2020). When creating online courses, trainers should take trainee motivation into account. Inspiring students and helping them improve their writing abilities while simultaneously increasing their will to learn should be the aim of the course.

The study discovered that both perceived usefulness and ease of use were favorably and significantly related to the design of online courses. A well-organized and easy-to-use course layout enhances trainees' opinions of the platform's ability to meet learning objectives and ease of usage (Susantini et

al., 2022). This is supported by Guerra-Macías and Tobón (2025) those who pointed out that instructional design aspects, including visual clarity, logical structure, and interactive material, would influence trainees' propensity to use e-course systems. Clear module sequences, simple interfaces, and readily available materials in scientific writing courses allow trainees to regard the system as practical and straightforward, enhancing engagement and overall happiness. As a result, the course design serves as a basic factor shaping trainees' technology attitudes and behaviors in online education. The essence of time management, perceived usefulness, and perceived ease of use influence trainees' contentment with online courses in scientific writing. According to Biwer et al.(2021), time-management-savvy trainees know how to manage the organized demands of online scientific writing. In line with Enyojo et al (2024), the digital learning platform is perceived as valuable and user-friendly, increasing engagement and satisfaction. In a study by Mejeh and Held (2022) support was found that a well-designed system and strong trainee self-regulation led to more positive learning outcomes. Therefore, improving time management skills and usability of technology are crucial for increasing student satisfaction in online scientific writing courses.

Perceived self-efficacy significantly and positively modifies the relationship between time management and online course design. This shows that well-designed courses are more effective when students feel confident in their abilities to achieve. High self-efficacy allows trainees to manage their time better, interact with content, and handle barriers, resulting in higher learning outcomes. This observation resonates with the investigation undertaken by Kim et al. (2022), which identified self-efficacy as a critical component affecting self-control and time management in virtual learning settings. As a result, course designers should add self-efficacy-boosting tactics such as scaffolded activities, feedback, and peer support to encourage more efficient time management and enrich trainees' learning experiences in scientific writing (Wu et al., 2022). Motivation for courses negatively and significantly moderates the link between perceived enjoyment and time management. Highly motivated trainees may overcommit, resulting in poor time management and decreased satisfaction (Chen et al., 2022; Smelser et al., 2022). Excessive motivation can lead to burnout and stress, negating the benefits of intrinsic delight. To avoid this, online scientific writing course designers should encourage balanced motivation by implementing variable pacing and goal setting, resulting in a more helpful and sustainable learning environment.

CONCLUSION

This study has examined online courses to help Indonesian students become better scientific writers. Eight variables were examined collectively using quantitative techniques to ascertain their causal links and evaluate the hypotheses that were put forth. According to the findings, satisfaction with the improvement of scientific writing was positively and indirectly impacted by the following four factors: perceived self-efficacy, perceived enjoyment, motivation for learning, and online course design. Furthermore, 69.9% of the variance in e-course satisfaction was explained by the perceived ease of use, which was impacted by the exogenous variables (perceived self-efficacy, enjoyment, and online course design).

The Technology Acceptance Model (TAM) has been expanded in this study by identifying perceived self-efficacy, enjoyment, and course design as important antecedents of the perceived ease of use, which

strongly predicted online course satisfaction. It further showed support for Social Cognitive Theory by demonstrating that self-efficacy positively moderated the relationship between time management and course design, in addition to directly impacting ease of use. Furthermore, the relationship between enjoyment and time management was negatively moderated by course motivation, indicating a more nuanced role for motivation than was typically thought of in self-determination theory. The results have emphasized combining psychological, emotional, and design elements to explain why individuals become satisfied with online courses.

This study has implications for individuals who want to enhance their scientific writing skills when enrolled in E-courses. Learning and satisfaction are improved by well-designed courses that reduce cognitive burden. In addition, trainees enjoy e-courses in scientific writing, which have made it easier for them to use intuitive interfaces. They also provided trainees with the instruments and materials to manage their time efficiently. Trainers who provide regular, helpful feedback to trainees boost satisfaction and engagement. Time management and self-control are essential for finishing self-paced online courses.

Future studies should examine other environmental and psychological elements as possible moderators or mediators between online learning components and course satisfaction, such as peer collaboration, digital literacy, and learning anxiety (Kim & Park, 2021). Longitudinal studies are also suggested to investigate how motivation, self-efficacy, and the perceived ease of use evolve and affect long-term learning results. Similar research should be conducted across academic subjects, individual demographics, and cultural contexts to improve generalizability. Incorporating qualitative methods, such as focus groups or interviews, may provide more profound understandings of the cognitive and emotional experiences of students taking online scientific writing courses. The impact of technological settings on student perceptions and satisfaction should be the subject of future research comparing various online platforms or instructional technologies.

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