Learning Outcomes of Educational Usage of Social Media: The Moderating Roles of Task–Technology Fit and Perceived Risk

Nasser M. Sabah 1,*, and Ali A. Altalbe 2

1 Department of Engineering Professions, Palestine Technical College, Gaza Strip P920, Palestine
2 Faculty of Computing and Information Technology, King Abdulaziz University, Jeddah 21589, Saudi Arabia; aaltalbi@kau.edu.sa
* Correspondence: nsabah@ptcdb.edu.ps

Abstract: This study aims to explore the moderating roles of task–technology fit (TTF) and perceived risk (PR) in the relationships between the educational usage of social media (SM) platforms and its use outcomes. This is to better understand the potential benefits of using SM for educational purposes and to provide thorough insights on how SM usage would influence students’ use outcomes. We conceptualize the potential use outcomes through three-dimensional factors: perceived satisfaction, perceived academic performance, and perceived impact on learning. We further hypothesize that TTF and PR have negative moderation effects on the relationships between SM usage and the variables of use outcomes. In addition, we examine gender differences using multi-group analysis. Data were collected from a state college in Palestine using a self-administered survey, and Smart-PLS was used for data analysis and model testing using partial least square–structural equation modeling. The findings reveal that TTF has significant negative effects on the relationships between SM usage and its outcomes, whereas PR has insignificant negative moderation effects. Despite the significant negative interaction effects of TTF, the educational usage of SM has a positive impact on use outcomes. Furthermore, the findings only indicate significant gender differences in three variables: information sharing, TTF, and PR.

Keywords: social media; learning outcomes; satisfaction; perceived academic performance; perceived impacts on learning; task–technology fit; perceived risk; gender differences

1. Introduction

The rising popularity of social media (SM) platforms and their intensive usage by students in their daily lives has motivated many researchers to investigate students’ willingness to participate in SM and the impact of its use in the educational context. While educators are eager to understand the pedagogical role of SM, researchers are in the investigational stage and continuing to gather indisputable evidence on the appropriateness of using SM platforms as pedagogical tools [1,2]. However, prior research in the literature has extensively focused on the antecedents of SM adoption or usage [3,4] and explored how the relevant factors affect such educational usage [5,6]. In the Palestinian context, most research on SM has focused on the antecedents of SM use and its usage patterns. For example, some studies have applied experimental research to investigate students’ attitudes toward using information and communication technology (ICT) and SM (WhatsApp and Facebook) in a blended learning environment [7], student’s acceptance of social network sites (SNSs) in e-learning [8], and the educational usage of Facebook to facilitate student-centered learning [9]. Other studies have explored the role of cultural values in using Facebook for maintaining social relationships [10] and the effect of excessive use of Facebook on students’ mental health risk [11].

In addition, the potential learning outcomes of the educational usage of SM platforms continue to be studied; some studies have evaluated the learning outcomes of SM usage...
However, these studies overlooked the nature of the associated links between SM usage and its learning outcomes, and fell significantly short of deepening our understanding of these explanatory links. Therefore, inconclusive findings were reported in the prior literature regarding the role of these platforms in improving students’ learning outcomes. For example, some of these studies have reported that using SM enhanced students’ academic performance [1,15,16]. In contrast, other studies have shown a negative impact on academic performance [17,18], and the use of SM may diminish students’ learning performance by wasting their time and effort dedicated to learning [19]. Intriguingly, other studies pointed out that SM platforms may not bring benefits to students. They have argued against the appropriateness of these platforms in achieving better learning outcomes [20] and argued that they have no significant impact on academic performance [21,22]. However, most of these studies have examined various mediator factors between SM usage and its learning outcomes, but neglected the crucial role of moderator factors. A very limited number of studies have focused directly on evaluating the moderator factor (e.g., cyberstalking) that affects the associated link between SM usage and academic performance (i.e., [23]) and cyberbullying as a moderator variable that influences the associated link between collaborative learning and learner performance when using SM (i.e., [24]).

The associated links between SM usage and its outcomes are more complex than simply a positive or a negative effect and to better understand this relationship a refined view is required to clarify how and when SM usage can enhance or diminish use outcomes.

In addition, the existing research from different fields of study has presented contradicting findings concerning gender differences [25–35]; most research showed that females outperformed males, some found the opposite, and other research reported no significant differences between females and males. These differences are varied according to the impact of each predictor variable on individual-related behaviors and depend on the field of study in the research. In a society such as that of Palestine, the issue of gender differences is an interesting one to examine; one reason for this is that the Palestinian society is facing challenges and changes. Contradictions and fast changes have become evolving characteristics of Palestinian society. This study attempted to examine the existence of gender differences in the antecedents of the educational usage of SM platforms, moderator variables, and use outcomes to clarify the current understanding of these differences in SM usage.

This study endeavors to address the gap in the literature and expand our understanding of the associated links between SM usage and use outcomes. To tackle the aforementioned limitations, this study aims to investigate the moderating effects of task–technology fit (TTF) and perceived risk (PR) induced by the educational usage of SM to simultaneously facilitate the use outcomes, which were assessed by measuring three-dimensional variables: perceived satisfaction (SAT), perceived academic performance (PAP), and perceived impact on learning (IMPT). Therefore, the objectives of this study are threefold. First, to assess the impact of using SM technology as an educational tool on students’ learning outcomes (technology impact). Second, to evaluate the roles of some moderator variables (i.e., TTF and PR) in the relationship between the educational usage of SM platforms and the three dimensions of learning outcomes (interaction impact). Third, to examine gender differences regarding the use outcomes of the educational usage of SM platforms. Accordingly, this study addresses the following fundamental research questions:

1. Does the educational usage of SM platforms as instructional tools lead to an improvement in students’ use outcomes?
2. How do the moderator variables (TTF and PR) affect the relationships between the educational usage of SM platforms and students’ use outcomes?
3. Are there significant gender differences in the factors affecting the use outcomes of the educational usage of SM platforms?

The rest of this paper is organized as follows: a literature review on the learning outcomes of using SM and theory development is presented in Section 2. The proposed model and hypotheses are presented in Section 3, followed by data collection and measurement
methods in Section 4. Section 5 examines the proposed model and tests the hypotheses based on data analysis, followed by an evaluation of the findings in view of the use outcomes of SM with the interaction effects of moderators in Section 6. The study limitations and their bearing on future research are highlighted in Section 7. Finally, conclusions are drawn in Section 8.

2. Literature Review and Theoretical Bases

2.1. Palestinian Context—Culture and Education

Individuals within a group and across societies share similar cultural values and exhibit variations in individual values. This variation is related to differences in individual behavior, reflecting their genetic inheritance, social settings, and personal experiences [36]. It is worth indicating that differences are more salient and convincing than similarities, which identify the influence of individuals’ behavior on their value priorities. The context theory of Hall [37] developed a better understanding of how the culture of high/low-context affects communication, where cultures differ in their communication preferences and, therefore, individuals from different cultures use different communication styles in response to complex messages. This theory classified the communication styles into two types: high-context for indirect and implicit messages versus low-context for direct and explicit messages. A high-context communication is one in which the mass information is either in the physical context or embodied within the individual; people who belong to this context prefer implicit and symbolic language. In contrast, low-context communication is one in which most information is vested in the explicit code and a direct communication style; people who belong to this context prefer explicit and task-related language. A prior study suggested that high-context communication takes place in collectivistic cultures, whereas low-context communication prevails in individualistic cultures [38]. The role of cultural values in communication has been identified by one of the five dimensions proposed by Hofstede’s taxonomy [39], which explains differences in human behavior based on cultural values. Individualism versus collectivism—individualism is the degree to which an individual’s interest is prioritized over the interests of others, whereas collectivism is the extent to which a group’s interest prevails over the interests of the individual. According to Hofstede’s taxonomy, Arab countries were classified as having high levels of collectivism. Existing research indicated that cultural values play a central role in shaping the attitudes and actual behavior toward the adoption of ICT [40], usage of SNSs [41], cultural differences in using SNSs [42], and continuous usage of Facebook [43].

In the context of Palestinian culture, the state of Palestine is part of the Middle Eastern countries with a very similar culture to the neighboring Arab countries (i.e., Jordan, Lebanon, and Syria). The culture of Arab societies (e.g., Palestinians, Egyptians, and Saudi Arabian) differs from that of Western societies (e.g., Americans, Germans, and Scandinavians). In this view, Arab and Mediterranean peoples belong to high-context cultures, having close personal relationships and extensive, inclusive, thorough information networks between families and colleagues [44]. Accordingly, they do not require detailed background information about others in their usual daily transactions and keep themselves informed about the activities of people who are important to them. Western societies belong to low-context cultures; they compartmentalize their personal relationships with others and in many aspects of their daily life. Consequently, they require in-depth background information each time they interact with others.

Education in Palestine mainly relies on teacher-centered learning to deliver material and content, as well as students’ assessments. The governmental, local, and non-profit organizations in Palestine have struggled to develop the educational system by improving the technological infrastructure of the academic institutes, integrating different types of ICTs, and utilizing emerging technology (e.g., augmented reality, virtual reality, and artificial intelligence) [45]. As per the statistics of 2015, obtained by the social studio in Palestine [46], Internet and SM users were approximately 73%, and Facebook is the most popular SM platform amongst SM users (84%), followed by WhatsApp (47%) and G-mail (18%). The gender distribution of Facebook users is 57% male and 43% female; 90% of them
use Facebook more than once a day. The statistics from the ministry of higher education in 2017 showed that there were more female students than males across the academic institutes (universities, university colleges, and community colleges); the total was approximately 60% female and 40% male [47]. SM use was illustrated during the outbreak of the COVID-19 pandemic, where faculty members in most Palestinian universities were flexible in the transformation to distance education. Instructors used a wide range of tools and platforms to communicate with their students, including LMS (e.g., Moodle and Google Classroom), live-streaming platforms (i.e., Zoom), and SM platforms (e.g., Facebook and WhatsApp). This was clarified by the study on the usage patterns of various technological tools by faculty members in their online teaching during the COVID-19 pandemic [48]. The majority of participants used both synchronous and asynchronous tools in their online teaching, including Moodle (39.9%), Facebook groups (27.7%), Zoom (19.1%), WhatsApp (5.3%), YouTube (4.1%), and e-mails (2.3%).

2.2. Social Media Use and Theoretical Bases

The research stream regarding the use outcomes of SM platforms has mainly used well-known theories and framework models: gratifications (U&G) theory [49], social constructivism theory [50], technology acceptance model (TAM) [51], and Delone and McLean information system success model (DMISM) [52]. These theories or models were often extended by researchers to include complementary related factors and/or by integrating more than one theory/model in order to investigate the outcomes of SM use. For example, Goh et al. [53] incorporated the social norms with U&G theory to examine the impact of Facebook usage on perceived academic achievement. Other studies adopted the social constructivism theory to examine the effect of using SM on perceived task performance [54], while Al-Rahmi et al. [16] used TAM along with the social constructivism theory to measure the learning performance of using SM, and Doleck et al. [55] adopted DMISM as a theoretical framework to examine the net benefits and academic performance of using social networking.

Theoretically, TAM was designed to measure the adoption of information technology (IT) by evaluating its technological characteristics but not the outcomes of its use. The theory of U&G helps to explain the social and psychological needs to use media, which can be used in the assessment of factors that cause SNSs usage and explain the reasons behind such usage [56], but is not appropriate to examine the educational usage of SM [57]. The social constructivism theory of [50] highlighted the importance of social interaction while learning, and as learning is a social process, as suggested by the theory, then knowledge construction can be facilitated within the social environment context. As for DMISM, Delone and McLean [52] illustrated a direct relationship between system usage and net benefits and pointed out that the use outcome is not completely positive, but is also associated with negative consequences. Additionally, the argument that increased usage yields more benefits is insufficient without considering the nature and appropriateness of the system’s use, whether the functionalities of SM platforms are only used for educational purposes and whether the multidimensionality of such usage is refined. Conversely, it can be argued that rejecting the system is a significant indicator that the potential benefits are not being achieved. Accordingly, social constructivism theory and DMISM are appropriate for the assessment of effectiveness and net benefits.

2.3. Research on Educational Usage of Social Media

SM platforms have not only influenced personal life and daily practices through various platforms, they have also influenced the educational environment. Thus, educators have attempted to incorporate these practices into classroom teaching, to maximize the use of SM technologies and to improve student’s critical thinking abilities when using SM platforms [58]. For example, Rinaldo et al. [59] investigated the use of Twitter in a marketing class as a teaching tool. Their findings revealed that Twitter enabled instructors to create a social presence among instructors and students, offered a communication channel for instructors to contact their students, and facilitated online interaction between participants,
which complemented face-to-face learning. Kazanidis et al. [60] conducted an experimental study on students taking up instructional media design courses, comparing their learning experiences when using Moodle (control group) and Facebook for learning (experimental group), with the comparison being made in terms of the community of inquiry presence indicators (cognitive, teaching, and social presence). Their findings indicated that teaching and cognitive presence were similar for both groups, while the social presence of students who were using Facebook was higher than that of those who were using Moodle. This was due to the intensive use of Facebook by students for personal needs and their interaction with instructors and students to fulfill their course needs. Camus et al. [61] conducted an experimental study on students from two different sections taking two courses: “Introduction to women’s studies” and “Introduction to Philosophy”. The study compared the effects of online discussion using Facebook and a learning management system (LMS) forum on students’ participation, learning achievement, and course performance. Their findings suggested that Facebook is a good option for building a social community for online discussions, fostering student participation, and enhancing peer interaction dialogue. On the other hand, an LMS is a better choice for encouraging students to apply course content, integrate the learning goals, and develop coherent arguments.

2.4. Research on Use Outcomes of Social Media

The various SM platforms have changed societies worldwide in terms of their communication and means of accessing information, as well as students’ learning strategies in terms of their engagement, collaboration, and learning outcomes in higher education [62]. Furthermore, using SM in higher education environments plays an essential role in shaping students’ professional identity and enhancing their academic reputation through online social capital [63]. Several interactive factors and use consequences have been examined in prior studies, namely, collaborative learning [62], student engagement [64], learning performance [1,16,17], and the impact of SM usage on learning outcomes [65].

The contradictory findings of use outcomes of SM in educational settings were reported in the previous literature. Nevertheless, few studies have investigated the associated link between SM usage and its outcomes, as well as how this link can be manipulated. For example, a significant positive relationship was found between students’ intention to use SM in higher education and their academic performance, whereas the moderator variable of cyberstalking was found to deflate this relationship due to its negative interaction [23]. Furthermore, Durak [66] analyzed the antecedents of cyberloafing behaviors and the consequences of using SNSs as learning tools. The findings indicated a direct negative relationship between cyberloafing behaviors and academic success. However, such behaviors did not reach the level of preventing education in this learning environment, but provided a warning indicator of the need to take more precautions when using SM for educational purposes. Prior research indicated that students’ use of SM in academic settings, their academic performance, and their educational achievement were negatively affected by fears of privacy concerns, cyberstalking, and cyberbullying [67,68]. Psychosocial cybercrime types (e.g., cyberstalking and cyberbullying) were carried out through SM by an individual student or a group to abuse, insult, harass, or threaten their peers, causing psychological and mental distraction (depression and low self-assurance) [69]. In turn, students lost concentration in their learning activities [70] and were driven to not participate in group activities [71].

However, Qi [54] explored the relationship between SM usage and perceived task performance and examined how the communication variable in a group mediates this relationship. The results indicated that using SM increases the communication in the group, which leads to enhanced perceived task performance. The study of Rodriguez-Triana et al. [72] explored the relationship between context (teacher instruction), actions (simple and complex action measures), and outcomes (academic performance). Their findings revealed that simple action measures (behavioral engagement) were somewhat informative and insufficient to predict academic performance. Nevertheless, both simple and complex action measures (emotional engagement and disaffection) significantly improved the pre-
diction of academic performance. The findings pointed out that there is no positive impact on learning when using SM in an educational setting; therefore, instructors have to play a greater role in promoting the effective use of SM by designing the learning activities performed in SM to be in harmony with the learning goals.

3. Research Model and Hypotheses

The use of SM platforms for educational purposes in higher education has theoretical dimensions, namely, technological, social, behavioral, and pedagogical dimensions. As shown in Figure 1, the research framework includes moderator variables of TTF and PR (technology and behavior theories) and an exogenous variable of the educational use of SM (pedagogical theories) underlying the endogenous variables of use outcomes (pedagogical theories). The conceptual model includes various theoretical dimensions; however, this study focuses on the pedagogical dimension. First, the educational usage of SM was assessed through three dimensions of first-order reflective constructs: communication channels (CC), collaborative learning environment (CLE), and information sharing (IS). Second, students’ use outcomes were evaluated by measuring three variables of first-order reflective constructs: SAT, PAP, and IMPT. Third, the moderator variables (TTF and PR) were constructed with first-order reflective indicators.

Figure 1. Research framework.

The study aims to examine the impact of educational usage of SM platforms on use outcomes, in which the moderator variables, TTF and PR, influence the relationships between educational usage and use outcomes. Accordingly, the moderator variables are hypothesized to negatively influence the relationships between SM usage and the three variables of use outcomes. The following sections present the development of the hypotheses, including description and discussion.

3.1. Educational Usage of Social Media

SM platforms are virtual communities, which are designed to enhance communications, collaboration, interactions, and the sharing of content with others [21]. These platforms are a transparent medium of communication tools in modern social life, where people can connect and share ideas or information with others. For example, Facebook provides channels with prompt responses, different levels of interaction, and different degrees of visibility; private messages are only visible to a designated person and posts are visible to all friends in the network [73]. Some studies have reported that the use of SM platforms (e.g., Facebook, Twitter, and blogs) for educational purposes has increased students’ engagement, augmented their online interactions, and enhanced their affective
learning [61,62]. Students’ engagement in the collaborative environment of SM increased communication abilities among group members and enhanced the group task performance [54,65]. In Dillenbourg [74], collaborative learning was defined as “a situation in which two or more people learn or attempt to learn something together”, where individuals can participate in the collaborative environment of SM, interact in a group discussion, and share their experiences. Such an environment improves the mutual social relationships between group members and influences individuals’ knowledge-sharing behavior, which is explained by the belief in mutual benefits. Accordingly, the following hypotheses are proposed:

**Hypothesis 1a (H1a).** Communication channels will have a significant positive effect on the educational usage of social media.

**Hypothesis 1b (H1b).** Collaborative learning environments will have a significant positive effect on the educational usage of social media.

**Hypothesis 1c (H1c).** Information sharing will have a significant positive effect on the educational usage of social media.

Furthermore, the use of the system yields more benefits if the nature of use and appropriateness are taken into consideration, and when the system functionalities are fully used to achieve the desired goal [52]. Supporting this argument, the social constructivism theory described learning as a social process, where individuals can learn and construct knowledge while engaging in social interactions within a social learning environment [50]. Several studies have confirmed the positive effect of SM usage on students’ satisfaction [15,16], academic performance [14–16], and its impact on learning in terms of student participation and engagement, students’ feedback, and interaction with peers and practitioners [64,75]. Regarding the use of SM for educational purposes, this research suggests that SM usage will enable students to perform the assigned tasks and fulfill their educational obligations in a social environment. Consequently, the following hypotheses are proposed:

**Hypothesis 2a (H2a).** The educational usage of social media will have additional explanatory power in predicting perceived satisfaction.

**Hypothesis 2b (H2b).** The educational usage of social media will have additional explanatory power in predicting perceived academic performance.

**Hypothesis 2c (H2c).** The educational usage of social media will have additional explanatory power in predicting perceived impacts on learning.

### 3.2. Moderator Variables

Many researchers have examined the use of SM platforms within various situations (acceptance/adoption, personal and educational use, and use outcomes) in different disciplines. However, the moderating roles of TTF and PR have not yet been investigated in the educational context of SM platforms. Thus, this study attempts to fill this gap and provides a thorough framework for new research directions by explaining how TTF and PR can moderate the relationship between SM usage and its outcomes.

#### 3.2.1. Task-Technology Fit

Goodhue and Thompson [76] defined TTF as “the degree to which a technology assists an individual in performing his or her portfolio of tasks”. The TTF model postulates that the success of IT depends on the capabilities of that technology and how well it fits users’ needs and supports a particular task. Accordingly, the TTF model theorizes that the fit between technology characteristics and task requirements influences the technology’s acceptance/adoption and use, as well as the performance impact [76,77]. In line with the TTF model, and for the success of any SM platform, the utilized platform technology needs to identify the given tasks and the fit between tasks and technology; TTF can be materialized when SM platforms fit students’ learning styles and preferences.
Several studies have investigated the mediation effect of TTF on factors related to system usage behaviors and performance impact \[78,79\]. For example, Isaac et al. \[78\] examined the mediation effect of TTF in the Delone and McLean success model, based on the effects of actual usage and satisfaction on performance impact. However, in this study, we attempt to explore the moderating effect of TTF on the relationship between the educational use of SM and its outcomes. Since some students and academics have doubts and anxieties regarding the legacy of SM usage and engagement \[80\], this may lessen the benefits of such an innovative learning approach. Accordingly, the following hypotheses are proposed:

**Hypothesis 3a (H3a).** Task–technology fit, as a moderator, negatively influences the relationship between the educational usage of social media and perceived satisfaction.

**Hypothesis 3b (H3b).** Task–technology fit, as a moderator, negatively influences the relationship between the educational usage of social media and academic performance.

**Hypothesis 3c (H3c).** Task–technology fit, as a moderator, negatively influences the relationship between the educational usage of social media and perceived impacts on learning.

### 3.2.2. Perceived Risk

SM usage is usually associated with both positive aspects (e.g., perceived benefits) and negative aspects (e.g., PR). From a negative perspective, SM users may encounter negative issues related to privacy concerns \[13\], exposure to cyberstalking and cyberbullying \[23\], cyberloafing behaviors \[66\], and losing control over their daily activities \[81\]. These issues would discourage students from using SM. In the context of this study, PR can be defined as a consequence of cognitive processes, where an individual’s belief of potential harm/risk is formed through the influence of experience, thought, and emotion. When this belief exceeds the individual’s harm threshold, PR will deflate the relationship between SM usage and the outcomes of this use. Consequently, the following hypotheses are proposed:

**Hypothesis 4a (H4a).** Perceived risk, as a moderator, negatively influences the relationship between the educational usage of social media and perceived satisfaction.

**Hypothesis 4b (H4b).** Perceived risk, as a moderator, negatively influences the relationship between the educational usage of social media and perceived satisfaction.

**Hypothesis 4c (H4c).** Perceived risk, as a moderator, negatively influences the relationship between the educational usage of social media and perceived impacts on learning.

### 3.3. Learning Outcomes of Social Media

Learning outcome is defined as “the extent to which students have understood knowledge that relates to the acquisition of discipline skills which represent an important measure of the quality of learning” \[82\], where researchers have indicated that learning outcomes are associated with the learning approaches used by students in their study \[83\]. Petter et al. \[84\] defined SAT as “the extent to which users are pleased with ICT and support services”. Regarding performance, the definition of PAP in this study is not limited to the anticipated grade obtained by a student in a course but also the achievement patterns (e.g., acquiring new skills, gaining new knowledge, boosting self-confidence, and bolstering perseverance) demonstrated by a student both inside and outside the classroom. Lastly, in the context of using SM for educational purposes, IMPT refers to the improved efficiency, better information sharing, higher quality of performance, and deeper interaction and collaboration amongst users.

In harmony with social cognitive theory, individuals are more likely to engage in behavior that leads to satisfactory consequences \[85\]. Supporting this argument, Wasko and Faraj \[86\] indicated that participation in online communities and helping others brings pleasure, gratification, and satisfaction, where individuals expect to gain reputation and improve their status by sharing knowledge. Indeed, the actual use of SM has a significant positive effect on students’ satisfaction and, in turn, satisfaction positively impacts
students’ learning outcomes [13]. This was confirmed by Al-Rahmi et al. [16], illustrating the significant positive relationships between SM use, students’ satisfaction, and learning performance, where students’ engagement in SM affected their perceptions of satisfaction, and both factors (students’ engagement and satisfaction) contributed to learning performance. Another study was conducted by Ainin et al. [1], which indicated that the use of Facebook has positive effects on students’ satisfaction and academic performance and, in turn, students’ satisfaction positively impacted their academic performance. However, limited research in the literature has investigated the associated links between the educational usage of SM and students’ use outcomes, and how the moderator variables would affect these path links.

4. Research Method
4.1. Participants and Data Collection

This study was conducted at a small state college in Palestine (Palestine Technical College-Gaza), where instructors from different departments in the college have been using web forums and Moodle, as well as SM platforms, to guide their students in the learning process. Most courses offered by the institute utilize SM platforms as educational supported tools, i.e., using closed Facebook groups as instructional networking platforms, either through the official course group or batch year group, and using YouTube channels as learning resources to support the courses that offered (e.g., lectures and tutorials), and/or using WhatsApp groups to provide communication and improve interaction between students and student–instructor interactions. Accordingly, SM groups/channels have unique dynamic structures and special features compared to the traditional learning systems [87], which provide a collaborative learning environment, facilitate course discussion, enhance students’ interaction, and allow for the sharing of learning content. Data were collected via a paper-based survey from undergraduate students from different study levels and three academic majors: Computer System Engineering (CSE), E-management (E-Mngmt), and Accounting (Acctg). The study was carried out in accordance with the international educational research ethics, including obtaining informed consent, ensuring data confidentiality, voluntary participation, and using the collected data only for research purposes. The total population consisted of students from all courses in the three academic majors. The sampling unit included individual students from different study levels and was enclosed to those who used at least one SM platform as an educational tool. The courses within each academic major were divided into layers based on the study levels; then, one course was selected from every layer within each academic major using a simple random sampling technique. This study sample ensures bias-free course selection and represents all study levels in each academic major. Once these courses were identified, students from these classes were invited to voluntarily complete the paper-based survey. In collaboration with their respective instructors, a total of 120 questionnaires were distributed to participants, who confirmed their informed consent to voluntarily participate in the study and stated that they had been using at least one SM platform as an educational tool. Participants were given 20 minutes to complete the survey during class time. After removing the incomplete responses and respondents with no experience in the educational usage of SM, 95 survey responses were valid and reported using at least one SM application for educational purposes, and thus could be used for data analysis, which yielded an effective response rate of 86.25%.

For the sample size, the minimum observations were those recommended by well-known research: ten times the maximum number of inner paths [88] or formative indicators [89], or ten times the indicator items of the most complex construct pointing at a single construct in the structural model [90]. In this study model, the maximum number of arrowheads was three formative indicators or inner path links (i.e., educational usage of SM), while the indicator items of the most complex construct were four items (all constructs in the model were either dependent or independent); therefore, 40 observations were required for data analysis. Furthermore, the sample size of 95 participants for a population
of 148 with a confidence level of 95% and a margin of error equal to 5% was sufficient for further data analysis [91].

4.2. Questionnaire and Instrument Development

A pilot test was conducted with 15 students to reduce the ambiguity of the survey items [92], and some suggestions were made concerning the items and questionnaire structure. Some of the questionnaires were revised and modified according to the given suggestions. The questionnaire was designed with two major parts. The first part collected the demographic information of participants (gender, academic major, study level, SM preference, and prior experience with SM). The second part was designed with eight first-order reflective constructs to capture students’ educational usage patterns regarding SM platforms, use outcomes, and moderation variables. The educational usage of SM was operationalized as a second-order formative construct with three-dimensional variables (i.e., CC, CLE, and IS); three variables captured the use outcomes of SM (i.e., SAT, PAP, IMP), and TTF and PR were applied as moderator variables.

To ensure construct validity, most of the construct’s items were adapted from the existing literature and have been used in previous studies. All items were measured via the five-point Likert scale ranging from “strongly disagree (1)” to “strongly agree (5)”. The instrument items measuring the dimensions of educational usage of SM were adapted from prior studies, CC [93] and CLE [33], while the instrument items measuring IS were self-constructed. The instrumentation measurements for the three variables of use outcomes were as follows: the measuring items for SAT were adapted from Bhattacherjee [94], items used to represent PAP were adapted from Yu et al. [12] and Islam [95], while the items for measuring IMPT were adopted from Goodhue and Thompson [76] and Lin [96]. Finally, the moderator variable, TTF instrument, was based on the form of technology and compatibility fit instruments adopted from prior research by Goodhue and Thompson [76] and Moore and Benbasat [97], while the items used to measure PR were self-constructed.

5. Results

The partial least square–structural equation modeling (PLS-SEM) approach has some advantages over other approaches. It has less restrictions on small sample sizes [88], is appropriate for samples that are not normally distributed [98], and supports both reflective and formative higher-order constructs [99]. Accordingly, SmartPLS 3.3 with the PLS-SEM approach was used for data analysis, hypotheses-testing, and model-testing [100]. Furthermore, since the second-order construct (i.e., educational usage of SM) in this study had equal numbers of indicator items in its lower-order constructs, the repeated-indicators approach was used to measure the reflective-formative second-order construct and to validate the measurement and structural models using PLS-SEM [101].

PLS algorithm and bootstrapping were executed to assess the factor loadings, weights, path coefficients, and model significance (t-value). The parameter settings applied were: the number of PLS iterations equal to 300 cases, bootstrapping equal to 5000 samples, a significance level of 5% with a two-tailed test, and the option of no sign changes [102]. The goodness-of-fit measurements were assessed with the normed fit index (NFI), theta of root mean square (RMS_\text{theta}), and standardized root mean square residual (SRMR). The threshold values of NFI > 0.9 [103], RMS_\text{theta} < 0.12 [104], and SRMR < 0.08 [105] were applied. The findings of fit criteria indicated an accepted model fit with NFI = 0.942, RMS_\text{theta} = 0.103, and SRMR = 0.077.

5.1. Sample Descriptive Analysis

Table 1 presents the sample demographics of participants, which consists of 45.3% females and 54.7% males; based on their academic majors, 40% of students were from CSE, 25.3% of students were from E-Mngmt, and 34.7% of students were from Acctg. In addition, participants were chosen from different study levels, where 25.3% of students were from 1st year, 22.1% of students were from 2nd year, 21% of students were from 3rd year, 22.1% of students were from 4th year, and 9.5% of students were from 5th year. Regarding the
students’ preferred SM platform (i.e., Facebook, YouTube, Blogs) for educational purposes, most of the participants would choose to utilize Facebook over other platforms if they could only use one SM platform (89.5%), YouTube (4.2%), Blogs (1.1%), and other SM platforms (i.e., Instagram and WhatsApp) were preferred by 5.2% of the participants. Finally, based on their experience, 3.2% of the participants had less than 1 year of experience, 38.9% between 1 and 3 years’ experience, and 57.9% had more than 3 years’ experience in SM usage.

Table 1. Demographic profiles of participants.

| Demographic characteristics | Frequency | %     |
|----------------------------|-----------|-------|
| Gender                     |           |       |
| Female                     | 43        | 45.3  |
| Male                       | 52        | 54.7  |
| Academic major             |           |       |
| CSE                        | 38        | 40.0  |
| E-Mngmt                    | 24        | 25.3  |
| Acctg                       | 33        | 34.7  |
| Study level                |           |       |
| 1st year                   | 24        | 25.3  |
| 2nd year                   | 21        | 22.1  |
| 3rd year                   | 20        | 21.0  |
| 4th year                   | 21        | 22.1  |
| 5th year                   | 9         | 09.5  |
| Preference of SM           |           |       |
| Facebook                   | 85        | 89.5  |
| YouTube                    | 4         | 04.2  |
| Blogs                      | 1         | 01.1  |
| Other                      | 5         | 05.2  |
| SM experience              |           |       |
| < 1 year                   | 3         | 03.2  |
| 1–3 years                  | 37        | 38.9  |
| > 3 years                  | 55        | 57.9  |

5.2. Gender Differences

Table 2 presents the T-test for independent sample differences including descriptive statistics of means and standard deviations for the latent variables according to gender. As shown in the table, there were significant differences between the means of students’ responses in the latent variables IS, TTF, and PR. The average scores for IS (Female, μ = 3.9 and Male, μ = 4.2) and TTF (Female, μ = 3.9 and Male, μ = 4.2) were higher for males than females. However, regarding PR (Female, μ = 2.5 and Male, μ = 2.1), females reported more concern about their privacy than males when using SM platforms, and have less trust in these platforms compared to males.

Table 2. Gender differences: independent samples test for the latent variables.

| Constructs | Female Mean(Std) | Male Mean(Std) | t-Value | Sig. (2-Tailed) |
|------------|------------------|----------------|---------|-----------------|
| CC         | 4.1(0.54)        | 4.2(0.59)      | 0.63    | 0.532           |
| CLE        | 4.2(0.54)        | 4.1(0.63)      | 0.33    | 0.745           |
| IS         | 3.9(0.48)        | 4.2(0.59)      | 2.50 ** | 0.014           |
| SAT        | 4.0(0.63)        | 4.1(0.70)      | 0.74    | 0.459           |
| PAP        | 3.9(0.79)        | 4.0(0.71)      | 0.32    | 0.749           |
| IMPT       | 4.1(0.69)        | 4.1(0.65)      | 0.26    | 0.799           |
| TTF        | 3.9(0.58)        | 4.2(0.60)      | 2.06 *  | 0.042           |
| PR         | 2.5(0.85)        | 2.1(0.68)      | 2.84 ** | 0.006           |

* p < 0.05; ** p < 0.01.

5.3. Measurement Model

The repeated-indicators approach was used in this study to evaluate the research framework, where the first-order constructs were measured with reflective indicators, while the higher-order construct (i.e., educational usage of SM) was modeled as a second-order formative construct (i.e., reflective-formative second-order construct). Furthermore,
when assessing the measurement model, several tests were carried out, including reliability and validity (convergent and discriminant validity), as explained in the following sections. The quantitative data analysis, including descriptive statistics of means and standard deviations for the indicator items of latent variables, is presented in Table 3.

Table 3. Reflective constructs: descriptive statistics and factor loadings.

| Constructs/Items | Mean(Std) | Loading | t-Value |
|------------------|-----------|---------|---------|
| Communication Channels (CC): \( \alpha = 0.885 \) | | | |
| CC1. Communication channels help build a sense of community | 4.42(0.61) | 0.873 | 36.8 |
| CC2. Communication channels enable me to interact with and receive feedback from instructors and students | 4.25(0.63) | 0.904 | 57.1 |
| CC3. SM improves classroom discussions | 3.94(0.66) | 0.817 | 23.3 |
| CC4. SM keeps me updated and improves communication of announcements about courses, classes, and school | 3.85(0.71) | 0.856 | 32.1 |
| Collaborative Learning Environment (CLE): \( \alpha = 0.861 \) | | | |
| CLE1. SM builds a sense of a collaborative learning environment through synchronous and asynchronous interaction | 4.19(0.70) | 0.845 | 23.2 |
| CLE2. I can share course-related information with my colleagues using SM | 4.06(0.69) | 0.818 | 18.1 |
| CLE3. SM communication tools enhance my interactions and collaborations with my colleagues and instructors | 4.31(0.67) | 0.887 | 46.4 |
| CLE4. SM helps me receive support and feedback from my colleagues and instructors | 3.94(0.72) | 0.807 | 19.0 |
| Information Sharing (IS): \( \alpha = 0.889 \) | | | |
| IS1. I find SM useful for information-sharing | 4.32(0.59) | 0.898 | 43.5 |
| IS2. SM improves the delivery of course content and resources | 3.93(0.65) | 0.824 | 27.6 |
| IS3. SM provides me with the resources to share a wide variety of resources and learning materials | 4.19(0.64) | 0.907 | 50.9 |
| IS4. SM provides rich multimedia resources and media support to improve my educational experience | 3.69(0.70) | 0.837 | 24.7 |
| Perceived Satisfaction (SAT): \( \alpha = 0.895 \) | | | |
| SAT1. I am extremely satisfied with using SM | 4.19(0.78) | 0.893 | 36.3 |
| SAT2. I am pleased with the experience of using SM | 4.26(0.70) | 0.868 | 25.4 |
| SAT3. I am extremely contented with using SM | 3.86(0.74) | 0.825 | 27.5 |
| SAT4. I am extremely delighted with using SM | 3.98(0.85) | 0.900 | 45.9 |
| Perceived Impacts on Learning (IMPT): \( \alpha = 0.910 \) | | | |
| IMPT1. SM usage has a positive impact on my learning | 4.11(0.71) | 0.862 | 26.8 |
| IMPT2. SM is an important and valuable aid to me in my study | 3.98(0.86) | 0.899 | 46.8 |
| IMPT3. I gain a clearer understanding of some concepts using SM | 4.11(0.71) | 0.891 | 36.2 |
| IMPT4. I can easily achieve the learning goals asserted by courses where SM is used | 4.19(0.70) | 0.896 | 35.6 |
| Perceived Academic Performance (PAP): \( \alpha = 0.915 \) | | | |
| PAP1. I am confident I have adequate academic skills and abilities | 3.87(0.80) | 0.861 | 22.8 |
| PAP2. I have performed as well academically as I anticipated I would | 3.91(0.88) | 0.916 | 49.8 |
| PAP3. I anticipate good grades in courses where SM is heavily used | 4.02(0.79) | 0.887 | 31.1 |
| PAP4. I anticipate better grades in classes where SM is heavily used | 4.05(0.87) | 0.904 | 46.2 |
| Task-Technology Fit (TTF): \( \alpha = 0.865 \) | | | |
| TTF1. I am compatible with most aspects of SM use in my study | 4.13(0.72) | 0.858 | 31.8 |
| TTF2. I am compatible with the way I share information using SM | 4.26(0.67) | 0.898 | 42.6 |
| TTF3. Using SM fits well with my study style | 4.01(0.84) | 0.829 | 26.2 |
| TTF4. Using SM fits with the way I like to study | 3.78(0.62) | 0.784 | 19.5 |
| Perceived Risk (PR): \( \alpha = 0.832 \) | | | |
| PR1. Using SM would invade my privacy | 2.46(0.93) | 0.864 | 8.5 |
| PR2. Using SM would cause me to lose control over my daily activities | 2.31(1.02) | 0.738 | 4.1 |
| PR3. Using SM would let me be addicted to the Internet | 2.07(0.81) | 0.696 | 3.4 |
| PR4. Using SM would expose me to cyberbullying | 2.27(1.10) | 0.841 | 6.2 |

Notes: Significant at 0.001 level, Cronbach’s alpha (\( \alpha \)).

5.3.1. Assessment of Reflective Constructs

The reflective constructs of the measurement model were assessed using two criteria: reliability and validity (convergent and discriminant validity). The reliability of reflective constructs was evaluated with assessments of Cronbach’s alpha and composite reliability.
The coefficient values of Cronbach’s alpha ranging from 0.832 to 0.915 (see Table 3) and CR ranging from 0.867 to 0.940 (see Table 4) exceeded the cut-off threshold value of 0.70 [106]. The obtained results exhibit a high level of reliability for the reflective constructs in terms of internal consistency.

Table 4. Convergent and discriminant validity (Fornell–Larcker) for the measurement model.

|       | CC   | AVE  |   |       |   |   |   |   |   |   |
|-------|------|------|---|-------|---|---|---|---|---|---|
| CC    | 0.921| 0.745| 0.863|       |   |   |   |   |   |   |
| CLE   | 0.905| 0.705| 0.556| 0.840|   |   |   |   |   |   |
| IMPT  | 0.937| 0.787| 0.493| 0.438| 0.887|   |   |   |   |   |
| IS    | 0.924| 0.752| 0.608| 0.517| 0.485| 0.867|   |   |   |   |
| PAP   | 0.940| 0.796| 0.316| 0.356| 0.624| 0.413| 0.892|   |   |   |
| PR    | 0.867| 0.621| −0.403| −0.297| −0.312| −0.406| −0.199| 0.788|   |   |
| SAT   | 0.927| 0.760| 0.440| 0.352| 0.661| 0.431| 0.677| −0.249| 0.872|   |
| TTF   | 0.908| 0.711| 0.543| 0.505| 0.588| 0.568| 0.436| −0.386| 0.502| 0.843|

Items on the diagonal (highlighted in bold) represent the square roots of AVE. Off-diagonal elements are the correlation estimates.

Convergent validity involves the assessments of three measurement criteria: factor loadings, CR, and average variance extracted (AVE). As presented in Table 3, all indicator items have significant factor loadings ranging from 0.696 to 0.916, which exceeded the cut-off threshold value and are considered excellent, as the loading is higher than 0.7 [103], while CR satisfied the estimation criteria as stated above. Additionally, the AVE values for all constructs were greater than 0.50 [106], ranging from 0.621 to 0.796 (see Table 4). The findings of factor loading, CR, and AVE were satisfactory for the three measurement criteria of convergent validity.

Discriminant validity was verified using three criteria: inter-construct correlation analysis (square root of AVE value) [103], the measure of heterotrait–monotrait (HTMT) ratio of correlation [104], and inter-item correlation analysis (cross loadings) [98]. First, the square root of AVE for each construct and the construct inter-correlations are presented in Table 4. As illustrated in the correlation matrix of Fornell–Larcker, the square root of the AVE value for each construct is greater than its off-diagonal correlations in the model. Second, using the criterion of HTMT ratio of correlation, the upper bound of the factor correlations is precisely estimated. As demonstrated in Table 5, the HTMT values are smaller than the threshold value of 0.90 [104]; therefore, the third criteria is confirmed. Third, Table 6 shows the inter-item correlations, including the factor and cross-loadings. As demonstrated in the matrix of inter-item correlations, all indicator items have factor loading values greater than the cross-loading values and were significantly loaded into their respective latent variable. The overall results were satisfactory for the three measurement criteria and provided high support for discriminant validity.

Table 5. Discriminant validity: Heterotrait–Monotrait Ratio (HTMT).

|       | CC    | CLE   | IMPT  | IS    | PAP   | PR   | SAT   | TTF   |
|-------|-------|-------|-------|-------|-------|------|-------|-------|
| CC    | −     | 0.635 | 0.543 | 0.684 | 0.347 | 0.435| 0.488 | 0.617 |
| CLE   | 0.635 | −     | 0.495 | 0.585 | 0.394 | 0.302| 0.392 | 0.577 |
| IMPT  | 0.543 | 0.495 | −     | 0.537 | 0.682 | 0.259| 0.731 | 0.652 |
| IS    | 0.684 | 0.585 | 0.537 | −     | 0.455 | 0.391| 0.474 | 0.444 |
| PAP   | 0.347 | 0.394 | 0.682 | 0.455 | −     | 0.192| 0.741 | 0.478 |
| PR    | 0.435 | 0.302 | 0.259 | 0.391 | 0.192 | −   | 0.226 | 0.381 |
| SAT   | 0.488 | 0.392 | 0.731 | 0.474 | 0.741 | 0.226| −     | 0.552 |
| TTF   | 0.617 | 0.577 | 0.652 | 0.444 | 0.478 | 0.381| −     | −     |
5.3.2. Assessment of Formative Constructs

For the second-order formative construct, each indicator (i.e., CC, CLE, and IS) has a causal effect on a single latent construct (i.e., educational usage of SM), where indicators do not share a common theme and the effect of an indicator does not necessarily lead to changes in other indicators. Thus, there is no need to analyze the reliability and inter-correlation of formative constructs [106].

The validity of formative constructs was evaluated following three techniques: examining the indicators’ weights [101], variance inflation factors (VIFs) [106], and effect size ($f^2$) [107]. As shown in Table 7, the indicators’ weights for the three first-order constructs were greater than 0.10, as recommended by Henseler et al. [108], ranging from 0.355 to 0.422 with a significance level of 0.001. For the assessment of multicollinearity, the VIF values have not exceeded the cut-off threshold value of 5, as suggested by Hair Jr et al. [106], ranging from 1.56 to 1.82, which indicates that the multicollinearity problem is not a concern in this study. Finally, the effect size was computed using the formula proposed by Cohen [107]. In this study, the effect size identifies the augmented link of every first-order construct introduced on the second-order construct, by which $f^2$ values less than 0.02, greater than 0.15, or greater than 0.35 have a weak, medium, or strong effect, respectively [107]. The $f^2$ values between 0.34 and 0.42 are considered large, suggesting an excellent explanatory power for the model. Accordingly, the validity of formative constructs using the three techniques has been confirmed and demonstrated a sufficient validity level.

Table 6. Discriminant validity: inter-item correlations (cross-loadings).

|       | CC   | CLE  | IMPT | IS   | PAP  | PR   | SAT  | TTF  |
|-------|------|------|------|------|------|------|------|------|
| CC1   | 0.873| 0.426| 0.413| 0.536| 0.306| −0.343| 0.368| 0.524|
| CC2   | 0.904| 0.501| 0.486| 0.583| 0.388| −0.353| 0.457| 0.472|
| CC3   | 0.817| 0.502| 0.351| 0.474| 0.199| −0.358| 0.311| 0.412|
| CC4   | 0.856| 0.492| 0.445| 0.501| 0.187| −0.337| 0.374| 0.464|
| CLE1  | 0.487| 0.845| 0.375| 0.490| 0.326| −0.279| 0.316| 0.488|
| CLE2  | 0.399| 0.818| 0.336| 0.367| 0.170| −0.205| 0.208| 0.352|
| CLE3  | 0.522| 0.887| 0.405| 0.491| 0.370| −0.287| 0.359| 0.414|
| CLE4  | 0.451| 0.807| 0.351| 0.373| 0.310| −0.216| 0.286| 0.436|
| IMPT1 | 0.416| 0.426| 0.862| 0.422| 0.522| −0.303| 0.563| 0.445|
| IMPT2 | 0.525| 0.329| 0.899| 0.470| 0.634| −0.329| 0.620| 0.573|
| IMPT3 | 0.367| 0.377| 0.891| 0.402| 0.564| −0.177| 0.603| 0.463|
| IMPT4 | 0.427| 0.428| 0.896| 0.423| 0.493| −0.287| 0.561| 0.585|
| IS1   | 0.508| 0.380| 0.393| 0.898| 0.334| −0.375| 0.308| 0.536|
| IS2   | 0.563| 0.447| 0.403| 0.824| 0.432| −0.339| 0.397| 0.483|
| IS3   | 0.500| 0.467| 0.482| 0.907| 0.424| −0.352| 0.418| 0.533|
| IS4   | 0.537| 0.496| 0.402| 0.837| 0.241| −0.343| 0.369| 0.416|
| PAP1  | 0.338| 0.338| 0.536| 0.413| 0.861| −0.173| 0.623| 0.378|
| PAP2  | 0.256| 0.313| 0.541| 0.329| 0.916| −0.255| 0.596| 0.458|
| PAP3  | 0.269| 0.304| 0.524| 0.520| 0.887| −0.021| 0.590| 0.287|
| PAP4  | 0.264| 0.312| 0.622| 0.403| 0.904| −0.231| 0.605| 0.413|
| PR1   | −0.341| −0.322| −0.353| −0.458| −0.168| 0.864| −0.226| −0.338|
| PR2   | −0.262| −0.164| −0.080| −0.199| −0.126| 0.738| −0.099| −0.173|
| PR3   | −0.246| −0.156| 0.025| −0.167| 0.002| 0.696| −0.086| −0.167|
| PR4   | −0.364| −0.202| −0.251| −0.271| −0.191| 0.841| −0.240| −0.375|
| SAT1  | 0.390| 0.278| 0.588| 0.340| 0.652| −0.133| 0.893| 0.435|
| SAT2  | 0.339| 0.275| 0.583| 0.294| 0.494| −0.118| 0.868| 0.358|
| SAT3  | 0.367| 0.296| 0.515| 0.378| 0.556| −0.309| 0.825| 0.429|
| SAT4  | 0.424| 0.365| 0.616| 0.464| 0.639| −0.282| 0.900| 0.506|
| TTF1  | 0.475| 0.455| 0.476| 0.522| 0.375| −0.327| 0.415| 0.858|
| TTF2  | 0.509| 0.468| 0.561| 0.559| 0.411| −0.332| 0.514| 0.898|
| TTF3  | 0.432| 0.432| 0.489| 0.394| 0.389| −0.227| 0.440| 0.829|
| TTF4  | 0.405| 0.329| 0.444| 0.428| 0.276| −0.319| 0.291| 0.784|
Table 7. Formative constructs: indicators’ weights and VIFs.

| Construct Level | 1st-Order Construct | Weight | VIF | t-Value | $f^2$ |
|-----------------|---------------------|--------|-----|---------|------|
| 2nd-Order       | Educational         |        |     |         |      |
| Construct       | CC                  | 0.410  | 1.82| 16.1*** | 0.41 |
|                 | CLE                 | 0.355  | 1.56| 11.4*** | 0.34 |
|                 | IS                  | 0.422  | 1.71| 14.7*** | 0.42 |

Notes: *** $p < 0.001$.

5.4. Structural Model

PLS analysis of the structural model is presented in Figure 2, showing the factor loading for each indicator item, indicator weights, path coefficients, and their significance levels.

As shown in Table 8, the cursor indicators of the first-order reflective constructs (CC, CLE, and IS) contribute causal weights to the second-order formative construct (educational usage of SM) at a significant level of 0.001, supporting the hypotheses H1a, H1b, and H1c. In turn, the use of SM has explanatory power, predicting the use outcomes. This usage has significant and positive impacts on the three variables of use outcomes in the model with direct effects, as well as in the model with interaction effects (see Table 9). Thus, the hypotheses H2a, H2b, and H2c are supported (see Table 8). Furthermore, TTF (as a predictor variable) not only has direct effects on the variables of use outcomes, but, more importantly, has interaction effects on the relationships between variables in the model. Specifically, the interaction effects of TTF (Edu*TTF-SAT, Edu*TTF-PAP, and Edu*TTF-IMPT) negatively influence the relationships between SM usage and use outcomes (see Figure 2 and Table 9), supporting the hypotheses H3a, H3b, and H3c (see Table 8). In contrast, the interaction effects of PR (Edu*PR-SAT, Edu*PR-PAP, and Edu*PR-IMPT) do not have significant effects on the relationships between SM usage and the three variables of use outcomes (see Figure 2 and Table 9), and thereby, the hypotheses H4a, H4b, and H4c were not supported in this study (see Table 8).
Table 8. Summary of hypothesised results.

| Hypotheses | Coefficient | t-value | Supported |
|------------|-------------|---------|-----------|
| H1a        | 0.410  
|           | a          | 16.1*** | YES       |
| H1b        | 0.355  
|           | b          | 11.4*** | YES       |
| H1c        | 0.422  
|           | c          | 14.7*** | YES       |
| H2a        | 0.225  
|           | b          | 2.0 *    | YES       |
| H2b        | 0.217  
|           | b          | 2.0 *    | YES       |
| H2c        | 0.268  
|           | b          | 2.5 **   | YES       |
| H3a        | −0.207  
|           | c          | 2.3 *    | YES       |
| H3b        | −0.212  
|           | c          | 2.3 *    | YES       |
| H3c        | −0.155  
|           | c          | 2.0 *    | YES       |
| H4a        | −0.141  
|           | c          | 1.3 ns   | NO        |
| H4b        | −0.212  
|           | c          | 1.3 ns   | NO        |
| H4c        | −0.155  
|           | c          | 1.3 ns   | NO        |

* p < 0.05, ** p < 0.01, *** p < 0.001, ns non-significant.  

a weight, b path coefficient, c interaction coefficient.

Table 9 clarifies the role of the two moderator variables (TTF and PR); the findings show that TTF, as a predictor variable, has significant positive effects on the three variables of use outcomes, whereas PR has no significant effects on these three variables. Moreover, the interaction effects of TTF (Edu*TTF−SAT, Edu*TTF−PAP, and Edu*TTF−IMPT) significantly deflate the positive relationship between SM usage and SAT (β = −0.207, p < 0.023), PAP (β = −0.212, p < 0.029), and IMPT (β = −0.155, p < 0.043), respectively. Regarding the explained variance $R^2$ values for the three variables of use outcomes, the values of $R^2$ for the model with direct effects: SAT ($R^2 = 0.299$), PAP ($R^2 = 0.231$), IMPT ($R^2 = 0.405$) and for the model with interaction effects: SAT ($R^2 = 0.335$), PAP ($R^2 = 0.287$), IMPT ($R^2 = 0.435$). The improvement in the explained variance $R^2$ values was also statistically significant in the model with interaction effects, suggesting that the inclusion of the moderator variable TTF improves the explained variance in the three variables of use outcomes.

Table 9. PLS results analysis.

| Determinants | SAT          | PAP          | IMPT         |
|--------------|--------------|--------------|--------------|
|              | Model 1      | Model 2      | Model 1      | Model 2      | Model 1      | Model 2      |
| Edu          | 0.284 **     | 0.225 *      | 0.271 **     | 0.217 *      | 0.307 ***    | 0.268 **     |
| TTF          | 0.320 ***    | 0.304 ***    | 0.272 **     | 0.264 *      | 0.357 ***    | 0.373 ***    |
| PR           | −0.004 ns    | −0.019 ns    | 0.026 ns     | −0.007 ns    | −0.031 ns    | −0.055 ns    |
| Edu*TTF      | −0.207 *     | −0.212 *     | −0.212 *     | −0.155 *     | −0.155 ns    |              |
| Edu*PR       | −0.141 ns    | −0.212 *     | −0.212 ns    | −0.155 ns    |              |              |
| $R^2$        | 0.299        | 0.335        | 0.231        | 0.287        | 0.405        | 0.435        |

Model 1: model with direct effects, Model 2: model with interaction effects. * p < 0.05, ** p < 0.01, *** p < 0.001, ns non-significant.

Figure 3 presents the slope plot analysis for the interaction effects of TTF on the relationships between SM usage and the three use outcome variables. TFF’s significant interaction effects on the use outcomes indicate that TTF deflates these positive relationships. The findings also indicate that the relationships between the educational usage of SM and its use outcomes are positive; however, these relationships are greater for students with a higher TTF than for those with low TTF. However, students with a higher TTF have a flatter slope, while students with a lower TTF have a steeper slope. The simple slope plot of the negative interaction effects of TTF implies that the positive relationships between SM usage and use outcomes increase more with those students with a low level of TTF and high use of SM. Accordingly, the more that students with low TTF use SM, the greater the benefits perceived by those students.
Figure 3. Simple slope plot analysis for the interaction effects of TTF.

6. Discussion and Implications

This research study explores the relationships between students’ use of SM for educational purposes and their use outcomes. We hypothesized that the educational usage of SM has a direct positive effect on students’ use outcomes, and the moderator variables (TTF and PR) dampen the relationships between SM usage and the three use outcome variables (SAT, PAP, and IMPT). As shown in Table 8, nine out of the twelve hypotheses were supported in this study: three causal weights, three direct effects, and three interaction effects of the moderator variable TTF.

The findings reveal that CC, CLE, and IS have a significant positive effect on SM usage, where IS and CC were shown to be the most significant cursor indicators contributing to the educational usage of SM. The practical explanation for this finding is that students use SM platforms for multitasking and do not conceive of these platforms as a typical learning environment. In turn, SM usage is positively associated with students’ use outcomes. As indicated in Table 9, SM usage has significant positive effects on the three variables of use outcomes in both models (with direct effects and the interaction effects of TTF). However, it is interesting to note that the relationship between SM usage and IMPT is slightly higher than that with SAT and PAP. The reason for this result is that students were probably more concerned about the benefits of using SM (e.g., course content, shared materials and higher overall grades), which has an impact on their learning. From the perspective of Palestinian culture (high-context and collectivistic cultures), learning achievement is seen not just as an individual endeavor, but also as an important means of bringing honor to the family. The findings further suggest that while both SAT and PAP are important to students’ learning, IMPT is more important to students in all situations. Furthermore, the obtained results receive indirect support from the previous research, where system usage is usually associated with performance improvements, provided that the nature and appropriateness of the usage are taken into consideration [52]. Likewise, the general findings are consistent with prior empirical studies, where a direct positive relationship exists regarding the associated link between SM usage and students’ satisfaction [15,16], academic performance [14,15], and impact on students’ learning [15,64,75].

6.1. Moderator Variables

The findings further confirm that the underlying relationships between SM usage and the three use outcomes are positive, despite the significant negative effects of the interaction terms of TTF (Edu*TTF-SAT, Edu*TTF-PAP, and Edu*TTF-IMPT), which deflate the positive relationships. However, the findings regarding the moderator role of TTF cannot be confirmed from the prior literature, since it was not tested in this context. In the m-banking context, Tam and Oliveira [109] reported that TTF moderates the positive relationship between m-banking usage and individual performance. As the service fits users’ task needs (high level of TTF), the impact of using m-banking on individual performance becomes stronger. Furthermore, the higher the perceptions of TTF, the better the effects of SM
usage on students’ use outcomes compared to those students with low perceptions of TTF. Interestingly, this relationship is stronger for students with lower levels of TTF, particularly at high levels of SM usage (see Figure 3). This implies that when SM platforms support particular tasks and fit students’ learning styles and preferences, it is more likely that students with low levels of TTF will use SM, which will increase their perceptions of the benefits of such usage and, in turn, lead to better use outcomes. Conversely, when SM platforms do not add further features or fit the needs of those students with high levels of TTF, it is most probable that using SM will not have an ample influence on their perceptions of the benefits of such usage, which leads to a deflation in their use outcomes.

Lastly, the findings reveal that PR has an insignificant negative effect on use outcomes, and its interaction effects (Edu*PR-SAT, Edu*PR-PAP, and Edu*PR-IMPT) are also insignificant. Thus, there is no evidence that SM use makes a significant difference to the three use outcomes regarding low or high perception of risk. Since the moderator variable ‘PR’ was not tested in the SM context, some related findings were drawn from previous studies. For example, Al-Rahmi et al. [23] found that cyberstalking, as a moderator variable, has a significant negative moderating effect on the relationship between the intention to use SM and academic performance, and the positive relationship between collaborative learning and academic performance was dampened by the moderator variable of cyberbullying. Similarly, Sarwar et al. [24] reported that the moderator variable of cyberbullying deflated the relationship between collaborative learning and learner performance. However, knowledge of SM activities and cybersecurity skills has significant positive effects on cybersecurity awareness [110,111], where proper SM activities increased students’ awareness of cybersecurity, and the development of related cybersecurity skills requires interactive and innovative approaches. The insignificant negative effect of PR can be clarified using two perspectives. First, all participants belong to a high-context society (Palestinian students), which places great value on close personal relationships [37]. They maintain effective communication with their peers after establishing trust in their personal relationships [112]; in turn, this trust is carried over from the physical to the virtual space, affecting their educational use of SM. Second, students are aware of the potential risks and the improvements in systems’ privacy settings in recent years. For example, some SNSs enable users to set up their profiles’ visibility and limit access to their content to designated people. Students can join SM groups through either the official course group or the batch year group, which assists to protect them against cyberbullying, cyberstalking, and privacy risk, as well as controlling their activities in SM groups. These findings make sense, since interactions with known people (individuals from the same high-context society) in the official SM groups reduces the risk of violating the privacy of others.

6.2. Gender Differences

Although this study focuses on the learning outcomes of SM, as well as the moderating roles of TTF and PR in the associated link between the educational usage of SM and use outcomes, the study further reveals some findings regarding gender differences in the perceptions of the educational usage of SM (CC, CLE, and IS), moderator variables (TTF and PR), and use outcomes (SAT, PAP, and IMPT).

Significant gender differences were found in the perceptions of IS (higher for males), TTF (higher for males), and PR (higher for females). The findings on the IS variable revealed statistically significant differences in favor of males. In contrast to our findings, Chai et al. [25] reported no significant gender differences in knowledge-sharing behavior between female and male bloggers; however, the sharing behavior of female bloggers was more influenced by social ties, trust, and reciprocity than the behavior of male bloggers. Our findings can be explained from two perspectives. (1) Sharing behavior is associated with the level of privacy, where individuals’ privacy concerns are inversely correlated with IS [26]. Since privacy risk has a stronger effect the sharing attitudes of females compared to males [27], and females have more privacy concerns than males [25], females are less likely to share information. (2) Females are generally more influenced by social influence than males, as they are less likely to engage in something if others think that they do not have to do
so. Accordingly, the study suggests that cultural values, along with the social pressure associated with females in the Middle East, drive females to not share information with others.

The significant gender differences in the TTF variable are supported by prior results, where the perception of TTF was stronger for males than females. This can be explained by the fact that, when individuals believe that a particular technology fits their tasks and can enhance their performance, this leads to technology use. In this respect, males are more motivated by technology’s usefulness and possible achievements; therefore, TTF is more likely to be salient to males [28]. Furthermore, these behavioral differences were driven by the typical characteristics of gender roles [29]. Males are task-oriented, as they are motivated by functional values and focused on accomplishing tasks using new technologies, which involves goal-oriented behaviors. In contrast, females are social–emotional-oriented, as they tend to show friendly and supportive interpersonal behaviors on SM platforms. The study suggests that, although the teaching/learning approach is designed for SM environments, functional motivations drive the educational use of SM.

The significant differences in the PR variable are consistent with the previous research. Females show greater concerns about their privacy than males [30], and the privacy concerns of females are more influenced by trust compared to those of males, as indicated by Chai et al. [25]. In addition, females perceive more privacy risks and engage more often in privacy protection behaviors when using SNSs [31]. Privacy-concern-related behaviors reflect to what extent an individual’s information is shared with others and how it is shared; however, developing and maintaining interpersonal relationships challenges individuals’ decisions to use SM, as such usage requires the self-disclosure of some personal information [32]. Females tend to conceal their identities and personal information to protect their privacy in SNSs; they are also less likely to provide complete and accurate information about themselves compared to males [26]. In the context of this study, cultural value in the Middle East is one of the factors that shapes privacy concerns; therefore, it is rational to conclude that individuals with a high-context ethnic background are more likely to show concerns about their privacy.

However, gender differences were not found in perceptions of CC and CLE. This means that both females and males were comfortable using SM platforms and share the same motives, regardless of the differences in IS. They perceive these platforms as collaborative environments and a means of communication to maintain interaction, and are willing to use SM for educational purposes. The findings show no statistically significant gender differences among the three SM use outcomes (SAT, PAP, and IMPT). This indicates that both females and males are fully aware of the benefits of using SM, while their perceptions are based on their own experiences and beliefs. Similar findings in the literature were reported with respect to gender satisfaction using blended learning [33]. In contrast to our findings, most studies have shown that female students outperformed male students, considering their GPAs. One piece of research was conducted at the University of Jordan; the findings revealed significant gender differences in terms of academic performance, where female students outperformed male students in all areas of study for the years from 2002 to 2007 [34]. In another study at Taibah University, KSA, the findings indicated that female medical students demonstrated a better academic performance than their counterparts [35].

In conclusion, SM platforms have been developed across the digital globe and have been widely used by all generations in recent years. These platforms are beneficial for students’ learning in terms of communications, collaboration, and the sharing of information or ideas. However, if the learning activities carried out on these platforms are insufficient, fall short of fulfilling students’ needs, and cannot fit their preferences, then the positive impacts of the educational usage of SM are not granted. Likewise, the use outcomes can be worst if students’ beliefs (possible harm or risk) exceed the threshold level. In this regard, useful strategies (e.g., monitoring and anti-bullying interventions [24]) can help higher institutes to perform their educational duties by guiding students, encouraging them to engage in proper communications through SM platforms, and boosting their ability to
focus on learning. The findings of gender differences may not be generalized. This study suggests some issues that should be taken into consideration when examining gender differences: different SM platforms have diverse characteristics, high/low-context cultures utilize various communication styles, and cultural values across countries reflect variances in human behavior.

6.3. Theoretical and Practical Implications

Looking at students’ perspective on the use of SM for educational purposes, the current study contributes to the literature and existing research on SM usage. On theoretical grounds, and based on our knowledge, most previous research only investigated the acceptance/adoption and usage of SM platforms; however, this research study appears to be one of the first to explore the moderating roles of TTF and PR on the associated links between the educational use of SM and the variables of the use outcomes.

This study has three major theoretical implications. First, since this study did not intend to examine the antecedents of SM usage and went beyond usage, we have not drawn a comprehensive theoretical framework that captures the different patterns of SM usage. This study attempts to provide an initial insight into how the educational usage of SM would influence students’ use outcomes. As the findings successfully elucidate the underlying relationships between SM usage and its use outcomes, further research is very much needed in this direction to broaden our knowledge.

Second, the findings confirm a positive relationship between SM usage and the three use outcome variables, despite the significant negative effects of the interaction terms of TTF, which dampen the positive relationships. Furthermore, the associated link between SM usage and IMPT was slightly stronger than that with SAT and PAP, which reflects the impact and solicitude of SM platforms regarding students’ learning when considering TTF.

Third, TTF plays a significant role in moderating the relationship between SM usage and its use outcomes, but there is no significant evidence for the moderating role of PR. The findings suggest that the effect of SM usage on students’ use outcomes is reliant on the compatibility of the SM technology, wherein the fit between tasks and SM functionalities enhances the learning activities. In contrast, students using official SM groups had no concerns about PR; this is due to the fact that the students belonged to a high-context society, had experience in the educational usage of SM, showed high awareness of the potential privacy offered by SM platforms, and were able to experience the collaborative environment of the SM course groups.

This study also provides some practical implications for educators and practitioners in higher education. The findings of this study reveal that usage of SM may not necessarily improve the use outcomes, particularly for students with high levels of TTF. In fact, TTF as a moderator dampens the relationships between SM usage and the three use outcome variables. Hence, educators and practitioners need to pay more attention to providing “fit” in courses’ learning activities and find out whether the adopted SM functionalities fulfill students’ needs, fit their preferences, and suit their learning style. As educators, we can play a major role in driving students to use SM regularly and effectively to fully receive its benefits, as well as to guide them while using SM to improve their perceptions of TTF. Finally, the theoretical clarification of why and how gender affects the educational usage of SM and its use outcomes requires some salient measurements to be taken when utilizing SM platforms for educational purposes, for example, increasing students’ awareness regarding social privacy aspects and providing sufficient privacy protection measures.

7. Limitations and Future Research

The authors acknowledge some limitations and drawbacks of the study to provide directions for future research. First, this study was conducted at a small state college in Palestine, and only students with prior experience in the use of SM platforms as educational tools were targeted, so participants were selected from only three academic majors at one college, which resulted in a relatively small sample size. The findings may not generalize
well to other academic institutes and should be taken with caution; therefore, future research could replicate this study in larger institutes with additional participants.

Second, since the participants in this study belong to an Eastern culture and come from one country, the findings may not hold in Western contexts and can only be generalized to Palestinian society and other countries with similar cultural contexts. Therefore, future research could test the proposed model in different cultures to understand how the educational usage of SM and its use outcomes differ across cultures.

Third, the proposed model was tested using self-reported measures. In fact, the authors had no access to collect objective data on PAP (e.g., students’ grades) due to privacy issues. Thus, future research may use objective measures and focus on a single course, or more, to test the proposed model.

Fourth, three variables were used to conceptualize the outcomes of the educational usage of SM. Future research may provide a closer look to understand what other benefits SM platforms may provide and build a better conceptualization of the outcomes of SM use.

Finally, it is valuable to explore more antecedents of the educational use of SM. However, this study only focus on the outcomes of students’ use of SM for educational purposes, and how the potential moderator variables can influence the relationships between SM usage and its outcomes. Accordingly, the moderating effects of TTF and PR were tested in this study. Future research may explore a wide range of antecedents for SM usage (e.g., teacher and peer support, perceived usability factors, and perceived enjoyment) and other moderating variables (e.g., gender, academic major, study level, and experience) to provide a more comprehensive framework.

8. Conclusions

Previous studies have only examined SM usage for educational purposes, while others have evaluated the learning outcomes of such usage. However, this study endeavored to deepen our understanding and knowledge of the nature of the relationship between the educational usage of SM platforms and the potential use outcome variables (SAT, PAP, and IMPT). Therefore, this study aimed to explore the moderating roles of TTF and PR on the relationships between the use of SM groups for educational purposes and the outcomes of this use. Accordingly, the proposed model explains the relationship between students’ use of SM and their use outcomes, whether SM usage fulfills students’ education needs, how the moderator variables (TTF and PR) affect the associated relationships, and by what means the fulfillment of needs and moderator variables affect their use outcomes.

The findings indicate that TTF, as a moderator, negatively influences the relationship between SM usage and the three use outcome variables, while PR has insignificant negative moderating effects. Furthermore, the findings confirm that the relationships between SM usage and the three use outcomes are positive, despite the significant negative influences of TTF’s interaction effects, which deflate the relationships. For the moderating roles of TTF and PR, it can be concluded that SM platforms could not completely fulfill students’ educational needs and/or fit their preferences, while the learning experience gained by students by using SM groups as learning tools was important in eliminating the PR effect. Thus, more attention should be paid to providing “fit” in the offered courses, and more precautions should be taken regarding PR to ensure the threshold level, preventing learning, is not reached. In addition, the findings indicate no significant gender differences in CC, CLE, and the three use outcomes (SAT, PAP, and IMPT), but significant gender differences existed for IS, TTF, and PR. Male students outperformed their female counterparts in IS and TTF, while females perceived more privacy risks and had more concerns about their privacy than males. This drives female students to limit their engagement and interaction with SM groups.

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