Journal of Infrastructure, Policy and Development 2024, 8(10), 5633.
https://doi.org/10.24294/jipd.v8i10.5633

Article

The use of social networks Facebook and Instagram in the digital communication strategy of educational institutions

Ludmila Cabyova*, Jana Galera Matusova, Michal Kubovics

Faculty of Massmedia Communication, University of Cyrill et Methodius, 91701 Trnava, Slovakia
*** Corresponding author:** Ludmila Cabyova, ludmila.cabyova@ucm.sk

CITATION

Cabyova L, Galera Matusova J, Kubovics M. (2024). The use of social networks Facebook and Instagram in the digital communication strategy of educational institutions. Journal of Infrastructure, Policy and Development. 8(10): 5633. https://doi.org/10.24294/jipd.v8i10.5633

ARTICLE INFO

Received: 3 April 2024
Accepted: 28 May 2024
Available online: 29 September 2024

Abstract: This paper focuses on the analysis of educational institutions' communication on social media, with an emphasis on the individual type of content used by these institutions to increase engagement and interaction with current and potential students. The authors examine how educational institutions tailor their communication content on Facebook and Instagram to meet the expectations and needs of their target audience. The analysis includes content evaluation, frequency of posts, user interaction, and integration of multimedia elements. In our research we focused on private school segment from kindergartens, through primary to secondary schools. The paper also presents an analysis of the differences of communication on different platforms (Facebook and Instagram) and their impact on the digital communication strategy of private schools. The results suggest that despite the increasing popularity of Instagram and higher interaction, educational institutions are communicating more on Facebook.

Keywords: social media communication; private schools; Facebook; Instagram; content; digital communication strategy; social media metrics

1. Introduction

The success of educational institutions are largely dependent on the preferences of students, who are considered consumers of educational services. In the case of pre-primary and primary education, parents are identified as a key target group that has a significant influence on the choice of educational institution for their child (Jalongo, 2021; Putri et al., 2022). The choice of an educational institution is very often influenced by its location (especially in the case of kindergartens, primary and secondary schools, parents choose geographically close schools), but also by the level of the facilities and infrastructure, which are essential for the provision of quality education (Cerna et al., 2015). Building on Hague and Payton's (2021) digital literacy model, schools should identify the information needs of their target audiences and effectively seek and assess information about the preferences and needs of parents and students. It is imperative that the target group has achieved a certain level of digital literacy that is necessary to use digital technologies and critically assess them. School promotion is equally important. The services of educational institutions are easy to imitate; there is quite strong competition. To remain competitive, it is essential for educational service providers to effectively communicate their strengths and enhance their image. Without adequate promotion, even high-quality schools may face a lack of public recognition and limited interest from potential students (Ptacin and Chabyova, 2016). When formulating and implementing promotional strategies, educational institutions have a wide range of promotional tools at their disposal

(Krajčovič et al., 2019). Their selection can be based on the general classification of marketing communication into offline (traditional) and online (digital) marketing communication as defined in Kotler et al. (2021), Pelcmacker et al. (2021). The choice of tools is influenced by a number of factors, among which the target group, the set objectives and the budget can be included. Kindergartens and primary schools select communication tools that are particularly effective in communicating with parents. Secondary schools need to reach both parents and teenagers. Marketing communication of universities is mainly aimed at potential students (compare: Černá et al. (2015); Fedorko (2016); Paladan (2018); Pitoňáková (2014)). When choosing appropriate promotional tools, specific factors such as the characteristics of the target group, the stated marketing objectives and the available budget should be taken into account. Kindergartens and primary schools focus on tools that are particularly effective in communicating with parents. Secondary schools should reach two different demographic groups—parents and teenagers. On the other hand, marketing communication of universities is primarily oriented towards potential students, as noted in the work of Cerna et al. (2015), Fedorko (2016), Paladan (2018) and Pitoňáková (2014). Due to the limited budgets of educational institutions, schools mainly use online communication tools, and in particular communication through websites and social media. Despite the many benefits that social media has, it is also important to be aware of the fact that it can negatively affect the perception and image of the institution if used improperly, according to Bashinska (2016). Among offline tools, PR techniques are used and in particular the organization of open days or other event marketing activities and promotional leaflets. According to Meltareza and Tawaqal (2023), visits directly to schools are increasingly used. However, personal referrals, which can be verbal or electronic, are considered the most effective. Duan et al. (2008) define electronic word-of-mouth (e-WOM) as an online platform through which positive and negative information is shared between existing users and future clients on social networks. One strong advantage of using se-WOM is its minimal costs.

2. Theory—Social media in education institution

The basic attributes of social media use in educational institutions can be considered as the creation and consumption of content, interaction to subsequent discussion and sharing of the posted content (Clark et al., 2016; Kim et al., 2023; Maresova et al., 2020). That said, the authors also define that Facebook and Instagram belong to the Meta group of companies. Studies suggest (Clark et al., 2016, Kumar and Nanda, 2018) social media not only serves as a medium for disseminating information but also plays a crucial role in fostering communities that influence the educational process and establish relationships that transcend traditional educational methodologies and approaches. The importance of the use of social media in the academic environment is reflected in statistics that show that in February 2024, out of a global total of 13,888 universities, as many as 10,531 (75.8%) of them officially operate an institutional Facebook profile. An example of the greatest popularity on this social media is Harvard University, which has approximately 6,610,021 followers (Unirank, 2024). The use of social media in the education market differs according to

the level of the educational institution (university, secondary, primary and kindergarten). This variability is driven by a variety of factors such as the age and maturity level of the target group, specific educational objectives, and rules for appropriate use of these platforms. These differences are supported by various research studies (Dong et al., 2020; Nur'Aini and Minsih, 2022; Wati, 2022) that show diversity in the approach and implementation of social media depending on the educational level and the needs of the audience. The key difference in social media use is based on the level of user autonomy, the nature of the content shared, and the purposes for which social media is used (Wati, 2022). At the university level, the focus is on self-directed learning and academic advancement. In contrast, primary and nursery schools prioritize parental involvement, community building, and creating a secure environment for sharing information about children's activities and development. Universities utilize social media for various purposes, including academic discussions, research dissemination, networking, recruitment, and highlighting university life (Kimani and Obwatho, 2020). University students are more likely to independently engage with content and participate in discussions or scholarly debates. Social media serves as a tool for universities to strengthen their brand, communicate with stakeholders and attract potential students globally. In elementary and kindergarten schools, social media is often used by parents, especially to learn about school events, announcements, and student achievements (Wati, 2022). Social media use is more controlled, often managed by teachers and administrators, with a focus on creating a safe environment for sharing. According to Harini et al. (2023), particularly in lower-grade educational institutions, the emphasis is not primarily on the children interacting with educational content independently but on parents playing a pivotal role in their children's learning journey. This parental involvement is crucial for several reasons. In our view, involving parents in the educational process through social media and other communication channels helps build a strong sense of community and partnership between families and schools. When parents are actively engaged, they are more likely to communicate with teachers, participate in school events, and collaborate on strategies to support their child's learning. This collaboration can lead to a more cohesive and effective educational experience for the child.

In reviewing the existing literature, it can be noted that a significant amount of scholarly work and research has focused on the use of social media in higher education settings (compare: Cerna et al. (2015); Fedorko (2016); Kimani and Obwatho (2020); Paladan (2018); Pitoňáková (2014)). Yet, at the same time, research can also be identified that has addressed the use of digital communication at lower levels of education. These results confirm that social media is a useful channel for pre-primary and primary education institutions to communicate with parents and the surrounding community. The social media marketing and educational institution model (Marhareita et al., 2022) examines the impact of social media marketing strategies within educational institutions. The model includes several key variables: Social media marketing, brand awareness, brand attitude and brand image. Findings indicate significant positive relationships between social media marketing and brand attitude, brand awareness and brand image. They also highlight the role of strategic social media engagement in strengthening an institution's brand and achieving educational

goals through digital platforms. In doing so, there is a need to explore other variables that may be at work. Margareta et al. (2018) concluded that there is an opportunity to increase enrolment by using digital marketing tools. In particular, they recommend the use of online advertising and email communication, which they see as a strategy that is able to increase the range and intensity of communication and strengthen relationships between parents, school and community. Putri et al. (2022) report that early childhood education institutions can connect directly with parents and foster a close relationship through social media and email platforms. Effective methods include sharing detailed information about their child's development, daily schedule, meals, educational programs, and school activities. By using these communication channels, schools can not only strengthen the bond between the educational institution and parents, but also secure the support of the local community. In addition, providing up-to-date information on upcoming events, workshops and parent-teacher meetings through these platforms can further engage and involve parents in their child's educational journey. We anticipate that this approach will foster transparency, trust and collaboration, which ultimately benefits the overall development and well-being of the child.

According Septianti et al. (2023) blogs and social media platforms serve as effective means for distributing educational content. These channels allow for broad reach and engagement, making it possible to share knowledge and resources with a diverse audience. By leveraging these platforms, educators and content creators can enhance learning experiences and foster community interactions.

Another appropriate strategy for school promotion is to organize online events, including webinars, workshops, and talk shows. Lindeman et al. (2021) emphasize that marketing strategies for pre-primary and primary schools should keep up with the latest technological advances and use online platforms to improve school promotion, encourage parental involvement and strengthen relationships with potential students. In optimizing their social media content, they should also consider the use of social media platforms, according to Harini et al. (2023), educational institutions should prioritize the consistency and quality of their content as well as the engagement of their followers. User engagement (parents, students) can be influenced not only by the characteristics of the published content, but also by the characteristics of the educational institutions' account, especially in terms of virtual lifespan (age of the account), frequency and number of followers. Studies of Instagram, have clearly shown that the longer the virtual lifespan of an organization on a given platform, the more users engage with its content, as sufficient time is needed to gain experience of using a social media platform and to build a following (Stuart et al., 2017). The algorithms driving social media platforms are optimized to attract and maintain users' attention (Zuboff, 2019). Therefore, it can be assumed that frequent posting of new content is associated with greater overall engagement of individual posts. Stuart et al. (2017) note that the more images an institution posts on Instagram, the more followers it tends to have. This is consistent with other studies analyzing engagement on Facebook (Peruta and Shields, 2018) and Instagram (Stuart et al., 2017). The total number of such subscriptions (followers) is used as a metric of account popularity (Chandler and Munday, 2016). Accounts with more followers are also shown to have more user interactions with their content because they regularly reach larger audiences.

For example, Fähnrich et al. (2020) show that the number of friends of Facebook accounts of the top 50 universities in the Shanghai rankings is positively correlated with engagement on the platform. In addition, a steady growth rate in the number of account followers also suits the algorithms that organize social content, as accounts with many social media "followers" attract new followers faster than accounts with fewer followers (Chandler and Munday, 2016). The little available research on the impact of the number of HE followers on user engagement suggests a positive correlation due to greater exposure to content (Sörensen, Vogler, et al., 2023, p. 5).

3. Methodology

In conducting our quantitative survey, we focused on a sample of private educational institutions, comprising private kindergartens, private primary schools and private secondary schools. The database of private schools was obtained from the Statistical Office of the Slovak Republic, which participates in the annual summarization in the form of a list. Through the above list, basic data on these institutions, such as type of school, number of staff and students, location, and contact details were collected. Subsequently, we collected the social networking profiles on Facebook and Instagram based on the said list. Using the Zoom sphere analytics tool, we proceeded to analyze the existing social network profiles of these institutions, namely Facebook and Instagram. The criterion for collecting data from their Facebook and Instagram profiles was defined for a range of one year, namely from March 2023 to March 2024. The objective was to gain insight into the number of followers, the number and nature of posts, as well as the strength and nature of interactions with users on these platforms. For each hypothesis, subjects matching the given criteria were selected from the baseline set. Incorrect samples and incomplete data were excluded. Pearson's correlation coefficient was then applied. The primary objective of this research was to analyze the nature of communication by educational institutions on social networking platforms. In the process of formulating the hypotheses, we rely on the opinions of various authors who point out that the use of social networks is a prerequisite for effective communication (Kumar and Nanda, 2018), the number of followers and the type of content distributed have a significant impact on communication and interactions within social networks (Peruta and Shields, 2018; Stuart, 2017). Furthermore, the level of communication is also influenced by the nature of the users or target audience (Wati, 2022), which is a key element in the study of marketing communication by educational institutions. It is important to note that the communication by institutions providing education at lower levels is primarily oriented towards parents, while institutions with higher levels of education focus more on potential students or applicants in their communication.

Based on the theoretical background, we formulated the research question and the following hypotheses:

RQ1: How do educational institutions in Slovakia use social networks Facebook and Instagram to communicate with their target groups?

- Hypothesis H1: There is a positive relationship between the number of followers on Facebook and the number of followers on Instagram (Pittman and Reich, 2016).

- Hypothesis H2: There is a positive relationship between the number of profile interactions on Facebook and Instagram (Ellison et al., 2007).
- Hypothesis H3a: There is a positive relationship between the number of Facebook profile interactions and the number of students (Cheung et al., 2011).
- Hypothesis H3b: There is a positive relationship between whether schools have a Facebook profile and the number of students in schools (Dhir and Tsai, 2017).
- Hypothesis H4a: There is a positive relationship between the number of Instagram profile interactions and the number of students (De Veirman et al., 2017).
- Hypothesis H4b: There is a positive relationship between whether schools have an Instagram profile and the number of students in schools (De Veirman et al., 2017).

Statistical processing of the results was performed using MS Excel, IBM SPSS 29 and IBM SPSS AMOS 26. Statistical methods were used, sum and mean were used in the descriptions. First, normality was verified through a Gaussian curve where none of the variables showed a normal distribution. Bivariate analysis using Pearson's coefficient and multivariate analysis using PLM-SEM were used in the investigation. Pearson's correlation coefficient was used to verify the relationships because the nature of the variables was nominal and cardinal in nature. Pearson's correlation coefficient uses for variable p the following verbal reasoning: 0–0.1—none—trivial relationship, 0.1–0.3—weak relationship, 0.3–0.5—moderate relationship, 0.5–0.7—strong relationship, 0.7–0.9—very strong relationship, 0.9–1—perfect relationship—the variables are identical (Utheim Grønvik et al., 2016). For a deeper analysis of the structural model, we applied structural equation modelling (PLS-SEM), which allows us to analyze more complex relationships between variables. Based on the theoretical background, the parameters of the model were defined. The process involved a preliminary validation of the relationships between variables and, as a result, the significance of the hypotheses through the Person correlation coefficient. This was followed by validation of the model through the fitting indexes CMIN/DF, REMSEA, CFI and TLI.

4. Results

The following section contents the results of the investigation. In general, through hypothesis testing and in the following sections, the research question to what extent educational institutions in Slovakia use social networks Facebook and Instagram to communicate with their target groups is gradually clarified (**Figure 1**). Of the 446 educational institutions surveyed, 352 schools, i.e., (78.92%), communicate on the social network Facebook. The situation on Instagram is different. Only 176 schools communicate on this social network (39.46%).

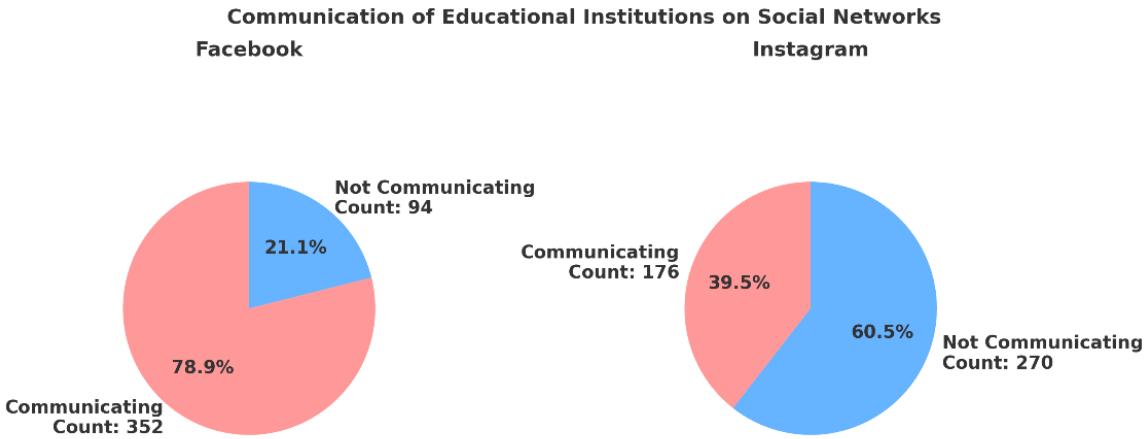

Figure 1. Number of private educational institutions with and without Facebook and Instagram profiles.

The total number of followers on Facebook is 335,517, which is an average of 953 followers per Facebook profile. On Instagram, there are a total of 42,321 followers, which is an average of 240.46 per profile. We examined whether there is a relationship between the number of followers on Facebook and the number of followers on Instagram. For the first hypothesis, which focuses on the existence of a positive relationship between the number of followers on Facebook and the number of followers on Instagram, we applied Pearson's correlation coefficient to the variables "number of followers on Instagram" and "number of followers on Facebook". In **Table 1** we can see the results of the calculation of the relationship between these variables.

Table 1. Relationship between the number of followers on Facebook and the number of followers on Instagram.

Correlations			
		Number of followers on Instagram	**Number of followers on Facebook**
Number of followers on Instagram	Pearson Correlation	1	0.073
	Sig. (2-tailed)		0.355
	N	168	163
Number of followers on Facebook	Pearson Correlation	0.073	1
	Sig. (2-tailed)	0.355	
	N	163	321

It can be concluded that there is no statistically significant relationship (Sig. > 0.05) between the variables "number of followers on Facebook" and "number of followers on Instagram", there is (p = 0.073) no to trivial relationship between the variables. We reject hypothesis H1, we have no evidence to suggest a relationship between the number of Facebook followers and the number of Instagram followers of schools. In total, we observed 260,180 interactions on all Facebook profiles, an average of 739 interactions per existing profile. We recorded 195,255 interactions on the Instagrams of educational institutions, an average of 1109 interactions per Instagram profile. **Table 2** shows the resulting values, focusing on the second hypothesis of the existence of a positive relationship between the number of interactions of profiles on Facebook and the number of interactions of profiles on

Instagram. The result of Pearson's coefficient suggests that there is a significant (Sig. < 0.05) positive, moderate (p = 0.387) relationship between the variable "number of interactions on Facebook" and "number of interactions on Instagram, i.e., the higher the number of interactions on the school's Facebook profile, the higher the number of interactions on the school's Instagram profile. Based on the above, we accept hypothesis H2, there is a significant relationship between the number of interactions on Facebook and the number of interactions on Instagram. The cutoff value for Pearson's correlation coefficient is 0.3307 at Sig. < 0.001 for N = 96.

Table 2. Relationship between the number of interactions on Facebook and Instagram.

Correlations			
		Total number of interactions on Facebook	**Total number of interactions on Instagram**
Total number of interactions on Instagram	Pearson Correlation	1	0.387**
	Sig. (2-tailed)		<0.001
	N	226	96
Total number of interactions on Facebook	Pearson Correlation	0.387**	1
	Sig. (2-tailed)	<0.001	
	N	96	122

**. Correlation is significant at the 0.01 level (2-tailed).

Hypothesis 3a in the form of the possible existence of a positive relationship between the number of Facebook profile interactions and the number of students is then analyzed. The Pearson's coefficient applied between the number of interactions on Facebook and the number of students is (Sig. > 0.05), exactly 0.452, which does not represent a significant relationship, (**Table 3**), any observed relationship between the number of interactions and the number of students may be the result of chance and we do not have sufficient evidence to confirm that there is a statistically significant relationship between these variables. We reject hypothesis H3a.

Table 3. Number of interactions and number of students.

Correlations			
		Number of pupils	**Total number of interactions on Facebook**
Number of pupils	Pearson Correlation	1	−0.050
	Sig. (2-tailed)		0.452
	N	444	226
Total number of interactions on Facebook	Pearson Correlation	−0.050	1
	Sig. (2-tailed)	0.452	
	N	226	226

The result of the hypothesis as to whether there is a positive relationship between schools having a Facebook profile and the number of students in schools is as follows. The results indicate that the relationship is statistically significant (Sig. < 0.05), the correlation coefficient of 0.248 (**Table 4**), indicates a weak positive relationship. The result confirms that schools with higher number of students tend to have a Facebook profile, but this relationship is not as strong as the relationship with Instagram (**Table**

5). Hypothesis H3b that there is a positive relationship between the presence of a Facebook profile and the number of students in schools is confirmed. The cutoff value for Pearson's correlation coefficient is 0.1581 at Sig. < 0.001 for $N = 430$.

Table 4. Existence of Facebook and Instagram and number of students.

Correlations			
		Number of pupils	**Do they have Facebook?**
Number of pupils	Pearson Correlation	1	0.248**
	Sig. (2-tailed)		<0.001
	N	444	430
Do they have Facebook?	Pearson Correlation	0.248**	1
	Sig. (2-tailed)	<0.001	
	N	430	430

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5. Number of interactions on Instagram and number of students.

Correlations			
		Number of pupils	**Total number of interactions**
Number of pupils	Pearson Correlation	1	0.271**
	Sig. (2-tailed)		0.003
	N	444	122
Total number of interactions	Pearson Correlation	0.271**	1
	Sig. (2-tailed)	0.003	
	N	122	122

**. Correlation is significant at the 0.01 level (2-tailed).

The hypothesis in the form of asserting the existence of a positive relationship between the number of Instagram profile interactions and the number of students is further clarified in the result through statistical inference. The Pearson correlation coefficient between the number of interactions on Instagram and the number of students is 0.271, indicating a moderately strong positive relationship between these variables. The significance (2-tailed) is 0.003, which means that the relationship found is statistically significant at the 0.01 level of significance (which is below the traditional $p < 0.05$). It can be concluded that as the number of students increases, the number of interactions on Instagram also increases, or vice versa. Although this relationship is not very strong, it is significant enough to be considered relevant (**Table 5**). The cutoff value for Pearson's correlation coefficient is 0.2324 at Sig. < 0.01 for $N = 122$.

The hypothesis that defines the existence of a positive relationship between whether schools have an Instagram profile and the number of students in schools is explained as follows. The result of Pearson correlation coefficient applied to the selected variables indicates significance at (Sig. < 0.05) level. In the summary of the results of the correlation coefficient of 0.337 (**Table 6**), we confirm hypothesis H4b and indicate a positive relationship between the presence of an Instagram profile and the number of students. As the number of students in a school increases, the likelihood

of the school having an Instagram profile increases. Significance of less than 0.001 indicates that the relationship is statistically significant at the 0.001 level (2-tailed). The cutoff value for Pearson's correlation coefficient is 0.1556 at Sig. < 0.001 for N = 444.

Table 6. Existence of Facebook and Instagram and number of students.

Correlations			
		Number of pupils	**Do they have Instagram?**
Number of pupils	Pearson Correlation	1	0.337**
	Sig. (2-tailed)		<0.001
	N	444	444
Do they have Instagram?	Pearson Correlation	0.337**	1
	Sig. (2-tailed)	<0.001	
	N	444	444

**. Correlation is significant at the 0.01 level (2-tailed).

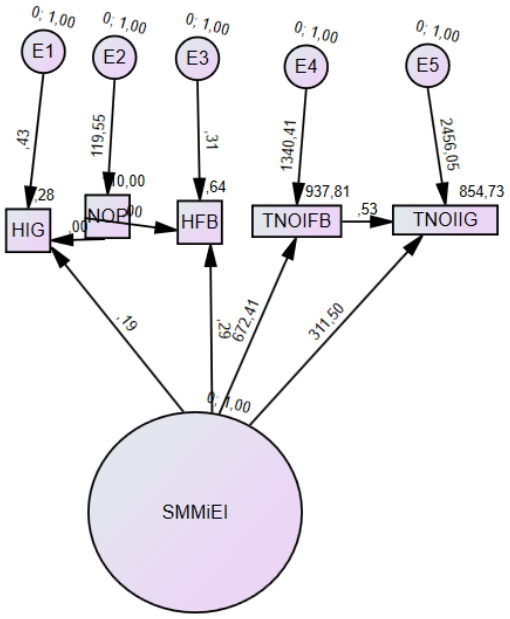

Figure 2. Model SMMiEI—HIG, NOP, HFB, TNOIFB, TNOIIG.

Based on the validation of the variable relationships and theoretical assumptions, the model was further derived. The resulting structural model contained 11 variables, of which 5 were observed endogenous variables (HIG—Do they have Instagram? NOP—Number of pupils, HFB—Do they have Facebook? TNOIFB—Total number of interactions on Facebook, TNOIIG—Total number of interactions on Instagram) and 6 unobserved exogenous variables (E1, E2, E3, E4, E5, SMMiEI—Social Media Marketing in Educational Institutions). The model has 17 parameters to estimate and 3 degrees of freedom. The results indicate that there are strong relationships between the exogenous variables and the endogenous variables. Specifically, TNOIFB is strongly influenced by SMMiEI (standardized weight of 0.448) and E4 (standardized weight of 0.894), suggesting that the above factors have a significant impact on TNOIFB. TNOIIG is influenced by TNOIFB (standardized weight 0.301) and

SMMiEI (standardized weight 0.118), indicating multilevel relationships between the variables. The model verification results are within CMIN: 4.468 (DF = 3, $p = 0.215$), RMSEA: 0.033 (p-value for close fit = 0.595), CFI: 0.987, and TLI: 0.934. The diagram is shown in **Figure 2**.

The diagram (SEM) contains observed and unobserved variables related to social media marketing in educational institutions. The coefficients adjacent to the arrows in the paths signify the magnitude and orientation of the associations among the variables. Positive coefficients indicate a positive correlation, while negative coefficients imply a negative correlation. The visual representation showcases how factors like having an Instagram or Facebook account, student population, and engagement on social media influence the effectiveness of social media marketing in educational environments. Each factor is also influenced by some unobserved variables, indicating potential external influences that are not directly measured in the model. The following table shows the Regression weights with subsequent interpretation of the data. HIG (Do they have Instagram?) is a variable indicating whether the educational institution has an Instagram account. This particular variable is linked to the unobserved exogenous variable E1 through a path coefficient of 0.43, impacting the latent variable SMMiEI (Social Media Marketing in Educational Institutions) directly with a path coefficient of 0.28. NOP (Number of Pupils) represents the count of students in the educational establishment. It is linked to the unobserved exogenous variable E2 with a path coefficient of 119.55 and influences the latent variable SMMiEI with a path coefficient of −0.19. HFB (Do they have Facebook?) is a variable indicating whether the educational institution has a Facebook account. It is influenced by the unobserved exogenous variable E3 with a path coefficient of 1 and has a direct effect on the latent variable SMMiEI with a path coefficient of 0.29. TNOIFB (Total number of interactions on Facebook) measures the total number of interactions on the institution's Facebook account. The variable under consideration is impacted by the unobserved external variable E4, which carries a path coefficient of 1340.41, and it also exerts a direct influence on the latent variable SMMiEI with a path coefficient of 0.53. TNOIIG (Total Number of Instagram Interactions) quantifies the overall volume of interactions occurring on the Instagram page of an organization. It is influenced by the unobserved exogenous variable E5 with a path coefficient of 854.73 and has a direct effect on the latent variable SMMiEI with a path coefficient of 0.31. Unobserved exogenous variables include E1, which influences HIG (Do they have an Instagram?) with a path coefficient of 0.43; E2, which influences NOP (Number of students) with a path coefficient of 119.55; E3, which affects HFB (Have Facebook?) with a path coefficient of 1; E4, which affects TNOIFB (Total Number of Interactions on Facebook) with a path coefficient of 1340.41; and E5, which affects TNOIIG (Total Number of Interactions on Instagram) with a path coefficient of 854.73. SMMiEI (Social Media Marketing in Educational Institutions) is a latent variable representing the overall effectiveness or strategy of social media marketing in educational institutions and is influenced by the observed variables HIG, NOP, HFB, TNOIFB and TNOIIG. **Table 7** shows the individual regression weights.

Table 7. Regression weights.

			Estimate	S.E.	C.R.	*P*
NOP	←	E2	119,555	4017	29,766	***
TNOIFB	←	E4	1340,411	87,642	15,294	***
TNOIFB	←	SMMiEI	672,408	153,801	4372	***
HIG	←	E1	0.434	0.021	21,101	***
HFB	←	E3	0.308	0.050	6127	***
HIG	←	NOP	0.001	0.000	5814	***
HFB	←	NOP	0.001	0.000	5845	***
TNOIIG	←	TNOIFB	0.531	0.205	2586	0.010
HIG	←	SMMiEI	0.188	0.040	4714	***
HFB	←	SMMiEI	0.291	0.055	5306	***
TNOIIG	←	SMMiEI	311,504	379,023	0.822	0.411

The degree of significance of interactions was confirmed for all individual exogenous and endogenous variables in the model. The regression weight between HIG and NOP is 0.001, indicating that NOP has a very small but statistically significant effect on HIG (C.R. = 5.814, $P < 0.001$). Similarly, NOP also has a very small but statistically significant effect on HFB, with a regression weight of 0.001 (C.R. = 5.845, $P < 0.001$). TNOIFB has a moderate and statistically significant effect on TNOIIG, with a regression weight of 0.531 (C.R. = 2.586, $P = 0.010$). SMMiEI has a significant effect on HIG with a regression weight of 0.188 (C.R. = 4.714, $P < 0.001$) and also a significant effect on HFB with a regression weight of 0.291 (C.R. = 5.306, $P < 0.001$). Finally, SMMiEI has no statistically significant effect on TNOIIG, as the regression weight is 311.504, but C.R. = 0.822 and $P = 0.411$.

5. Discussion

The analysis of the results of the formulated hypotheses allows answering the research question RQ1, which focuses on the mechanisms of implementation of social networks Facebook and Instagram into the communication strategies of educational institutions in Slovakia in order to improve the interaction with their target groups. According to the results of our research, the most used network by private educational institutions is Facebook. All types of schools surveyed communicate on it more than on Instagram, although it is more dominant in kindergartens than in primary and secondary schools. Our findings corroborate the results of earlier research from 2019, when research shows that Facebook was the predominant method of communication at 70% of educational institutions (Schneider media, 2019). However, it should be noted that this is less compared to last year's findings, where Facebook was overwhelmingly the most popular platform (86%). The choice between Facebook and Instagram (or a combination of both) depends on the institution's specific goals, target audience and content strategy. Facebook has a broader demographic of users, including older generations that are often critical in the educational process, such as parents and teachers. Instagram tends to be more popular among younger people, which may limit its reach to parents and other adults (Alvarez, 2018; Belanche and

Ibáñez-Sánchez, 2020). Although Facebook appears to be losing its power, Facebook is still an important tool for communicating with selected target audiences, which include parents of pre-primary and primary school children. According Dancheva (Statista, 2023) the vast majority of global marketers in 2023 selected Facebook. Instagram and LinkedIn followed in second and third places, however Instagram only started seeing a growth in its importance since 2019. 2021 was the first year when Pinterest was not named in this context. Crucially for educational institutions, Facebook provides extensive features for creating and managing groups and events. Our survey results confirmed that there is a smaller group of private schools that only communicate through closed groups. These Facebook features allow schools and universities to easily interact with their community, organize events, and promote various activities (See also: Bauer et al. (2019), Sörensen, Fürst, et al. (2023) (On Facebook, institutions can share longer and more detailed posts. It is ideal for announcements, event details and academic content. Instagram is more focused on visual content with limited text posts (Harini et al., 2023; Wati, 2022). Facebook allows for the sharing of different types of content including videos, links to articles and other educational resources. Zohar (2018) notes that this flexibility is advantageous for educational institutions in providing diverse content to their community. Facebook is a platform that encourages discussion and interaction, which is also important for educational institutions to build and maintain community connections. The ability to comment, like and share posts allows for a higher degree of engagement and interaction with the community. Despite the many benefits that communication on Facebook brings to educational institutions, it is important to highlight that, according to our research, Instagram is the platform with a higher rate of interactions in conjunction with the number of following users. Several studies can be found in the literature that confirm these results (Barnwell, 2023). The aforementioned fact suggests to private educational institutions that it is important, within specific objectives, to create and regularly post on the social network Instagram. This is a very important finding that educational institutions need to take into consideration, especially since interaction is a supporting social media metric that has the direct potential to influence reach, and ultimately can develop a social media profile. It also tends to attract a younger audience. In particular, secondary schools, whose primary audience is adolescents aged 15–16, should prioritize communication on Instagram if strategies aim to engage that audience. Younger generations are looking for the visually appealing and interactive content that Instagram provides. Our findings complement the recent research by Sörensen and Fürst et al. (2023), which confirmed the important position of Instagram. Significantly more users responded to posts on Instagram than on Facebook and Twitter (X). The results of the analysis show that there is a significant positive relationship between the number of interactions on Facebook and Instagram (H2). This means that schools that are already actively engaging with their fans on Facebook also achieve higher interaction on Instagram in most cases. Higher frequency of interactions on Facebook has a positive effect on a higher number of interactions on Instagram. Therefore, schools should focus on developing interaction on both platforms to synergistically increase their digital presence and community engagement. The research results did not support hypothesis H3a, which examined the relationship between Facebook interaction and student

numbers, and confirmed H4a, which confirmed the relationship between the number of interactions on Instagram and the number of students, indicating that as the number of students increases, the frequency of interactions on this platform also increases. The result supports the importance of an active presence on Instagram in building community and increasing brand awareness, which can have a direct impact on the increase in the number of students. In defining the social media strategy, we highlight the important role of Instagram not only to promote their programs, but also to build community, increase brand awareness, and also to attract new students. Different platforms can effectively contribute to the different goals of an educational institution: for example, Instagram may be more effective in visual presentation and more appealing to younger demographics, while Facebook may offer more extended tools for community discussions and events, and is more effective in communicating with older age groups. We also examined the relationship between school size and Facebook and Instagram presence (H3b, H4b).

We found that schools with larger pupil numbers are more likely to have a Facebook profile, but this trend is more pronounced on Instagram. Based on the above, it can be concluded that larger schools are more active or visible on social media. The reasons for this can be found in the fact that they have more resources to manage social media, better staffing and a more effective communication strategy, and last but not least the need to reach a wider community, which requires further investigation. Equally, the digital marketing environment offers a multitude of opportunities that can influence users and target audiences alike. The SMMiEI (Social Media Marketing in Educational Institutions) model, which represents the social media marketing strategy in educational institutions in conjunction with the variables HIG, NOP, HFB, TNOIFB and TNOIIG, was statistically verified. The conclusions complement the model by Marhareito et al. (2020), the model they present is supplemented by quantitative evidence and adds further insights to the scientific apparatus to explore. Further research is therefore desirable, particularly in the areas of exploring specific content frameworks, budgetary and strategic options, the content creation process and the environment of other social networks. Further investigation is also needed into the tools used in the digital environment, which may influence the overall results of marketing activities. Scientific study also has its limits and limitations. The biggest is its geographical limitation, as the research was conducted in educational institutions in Slovakia. A further limitation is the restriction of the research to the specific social networks Instagram and Facebook. In the same way, future investigations should be aimed at documenting additional variables and evidence of the functionality of the defined model. A limiting factor for the communication of educational institutions in the digital environment is the different level of digital literacy, especially among representatives of older generations (parents and grandparents). The inability to use digital technologies, to find and process information in the digital environment, can significantly affect the success of promotional activities.

6. Conclusion

In our study we verified the use of SMMiEI model and analyzed social networks Facebook and Instagram in educational institutions at different levels of education in

the Slovak Republic. The results of our research show that private schools use Facebook more than Instagram, which may be an opportunity for them to expand their digital communication strategy into this area. It also shows that the higher the number of interactions on the school's Facebook profile, the higher the number of interactions on the school's Instagram profile. Based on our analysis, we can confirm that there is a positive relationship between the presence of a Facebook profile and as the number of students in a school increases, the likelihood that the school has an Instagram profile increases. On the other hand, when we look at Instagram interactions, here we can already see that as the number of students increases, the number of interactions on Instagram also increases, or vice versa. Overall, our results highlight the complexity and multilevel nature of the relationships between the variables under study. While some relationships proved statistically significant and consistent with our hypotheses, others require further investigation. Based on these results, recommendations for further research can be made, which should include a deeper examination of the latent variables and their moderating effects, as well as the inclusion of other relevant variables that may influence the relationships in our model. The key contribution of our work is a comprehensive look at the use of these platforms across the full spectrum of private parent, primary, and secondary educational institutions, which represents a significant enrichment to the existing literature that primarily focuses on higher education institutions. The approach outlined above allows for a better understanding of how different types of private schools use digital platforms to communicate with their different target audiences. Examining all educational levels, from preschool through high school, provides a more comprehensive view of social media use. Based on the results, specific strategies and approaches tailored to the needs and characteristics of each target group can be implemented. We also see the importance of the paper in the comparison of the interaction on the two social networks and their impact on the relationships between educational institutions and their communities. The analysis of the differences and impact between Facebook and Instagram can be a starting point for educational institutions planning or optimizing their digital communication strategy.

Author contributions: Conceptualization, LC, JGM and MK; methodology, MK; validation, LC, JGM and MK; formal analysis, LC, JGM and MK; investigation, LC, JGM and MK; resources, LC, JGM and MK; data curation, LC, JGM and MK; writing—original draft preparation, LC, JGM and MK; writing—review and editing, LC, JGM and MK; visualization, LC, JGM and MK. All authors have read and agreed to the published version of the manuscript.

Funding: The study was elaborated within the research project supported by Slovak Research and Development Agency No. APVV-22-0469—Roadmap of a digital platform providing AI (Artificial Intelligence) automation of decision-making processes in the field of communication strategy.

Acknowledgments: All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

References

Alvarez-Milán, A., Felix, R., Rauschnabel, P. A., et al. (2018). Strategic customer engagement marketing: A decision making framework. Journal of Business Research, 92, 61–70. https://doi.org/10.1016/j.jbusres.2018.07.017

Barnwell, A., Neves, B. B., & Ravn, S. (2021). Captured and captioned: Representing family life on Instagram. New Media & Society, 25(5), 921–942. https://doi.org/10.1177/14614448211012791

Bashynska, I. O. (2016). Using SMM by industrial enterprises. Actual Problems of Economics, 12(186), 360–369.

Bauer, M. W. (2019). Universities in the dilemma between research and application: Investigations into the digital communication of digitization drivers. In: Stumpf, M. (editor). Digitalization and communication. Springer. pp. 483–502. https://doi.org/10.1007/978-3-658-26113-9_28

Belanche, D., Flavián, M., & Ibáñez-Sánchez, S. (2020). Followers 'reactions to influencers' Instagram posts. Spanish Journal of Marketing—ESIC, 24(1), 37–54. https://doi.org/10.1108/sjme-11-2019-0100

Černá, J., Čábyová, Ľ., Ptačin, J., & Mazáková, S. (2015). Marketing of educational institutions. Trnava: Faculty of Mass Media Communication UCM.

Cheung, C. M. K., Chiu, P. Y., & Lee, M. K. O. (2011). Online social networks: Why do students use Facebook? Computers in Human Behavior, 27(4), 1337–1343. https://doi.org/10.1016/j.chb.2010.07.028

Chugh, R., & Ruhi, U. (2017). Social media in higher education: A literature review of Facebook. Education and Information Technologies, 23(2), 605–616. https://doi.org/10.1007/s10639-017-9621-2

Clark, M., Fine, M. B., & Scheuer, C. L. (2016). Relationship quality in higher education marketing: The role of social media engagement. Journal of Marketing for Higher Education, 27(1), 40–58. https://doi.org/10.1080/08841241.2016.1269036

De Veirman, M., Cauberghe, V., & Hudders, L. (2017). Marketing through Instagram influencers: the impact of number of followers and product divergence on brand attitude. International Journal of Advertising, 36(5), 798–828. https://doi.org/10.1080/02650487.2017.1348035

Dhir, A., & Tsai, C. C. (2017). Understanding the relationship between intensity and gratifications of Facebook use among adolescents and young adults. Telematics and Informatics, 34(4), 350–364. https://doi.org/10.1016/j.tele.2016.08.017

Dong, C., Cao, S., & Li, H. (2020). Young children's online learning during COVID-19 pandemic: Chinese parents' beliefs and attitudes. Children and Youth Services Review, 118, 105440. https://doi.org/10.1016/j.childyouth.2020.105440

Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The Benefits of Facebook "Friends": Social Capital and College Students' Use of Online Social Network Sites. Journal of Computer-Mediated Communication, 12(4), 1143–1168. https://doi.org/10.1111/j.1083-6101.2007.00367.x

Fedorko, R. (2016). Online public relations activities in the marketing environment of educational institutions. Prešov.

Hague, C., & Payton, S. (2021). Understanding and developing digital literacy. Cambridge University Press.

Harini, H., Wahyuningtyas, D. P., Sutrisno, S., et al. (2023). Marketing Strategy for Early Childhood Education (ECE) Schools in the Digital Age. Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini, 7(3), 2742–2758. https://doi.org/10.31004/obsesi.v7i3.4454

Hartin, T. (2024). Pearson correlation coefficient. Available online: https://study.com/learn/lesson/pearson-correlation-formula-examples.html (accessed on 4 April 2024).

Kimani, M., & Obwatho, S. (2020). Influence of social media marketing on student enrolment among private universities in Kenya. Journal of Marketing and Communication, 3(1), 76–94.

Kiriago, A. N. (2013). External Communication and Its Influence on Secondary Schools Corporate Image: A Case Study of Kitale Academy Secondary School. International Journal of Academic Research in Business and Social Sciences, 3(8). https://doi.org/10.6007/ijarbss/v3-i8/113

Kisiołek, A., Karyy, O., & Halkiv, L. (2021). Social media in marketing management of higher education institutions in the context of Poland and Ukraine. Polish Journal of Management Studies, 24(1), 164–182. https://doi.org/10.17512/pjms.2021.24.1.10

Kotler, P. h., Keller, K., & Chernev, A. (2021). Marketing management. 16th. Global edition. Social media in higher education: A framework for continuous engagement. International Journal of Information and Communication Technology Education, 15(1), 109–120.

Krajčovič, P., Mendelová, D., & Martovič, M. (2019). Practical implementation of marketing communication tools. Faculty of Mass Media Communication UCM Trnava.

Lindeman, S., Svensson, M., & Enochsson, A. B. (2021). Digitalisation in early childhood education: a domestication theoretical perspective on teachers' experiences. Education and Information, Technologies, 26(4), 4879–4903. https://doi.org/10.1007/s10639-021-10501-7

Maresova, P., Hruska, J., & Kuca, K. (2020). Social Media University Branding. Education Sciences, 10(3), 74. https://doi.org/10.3390/educsci10030074

Margareta, R. T. E., Ismanto, B., & Sulasmono, B. S. (2018). School Marketing Strategy in Increasing Learner Interest Based on Delta Model. Kelola: Jurnal Manajemen Pendidikan, 5(1), 1–14. https://doi.org/10.24246/j.jk.2018.v5.i1.p1-14

Paladan, N. N. (2018). Higher Education Institutions Embracing Digital & Social Media Marketing: A Case of Top 25 Universities in Asia & Africa. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3347018

Pelsmacker, D. P., Guens, M., & Berg, J.V.D. (2021). Marketing Communications: A European Perspective 7th Edition, Pearson.

Petters, J. S., Owan, V. J., Okpa, O. E., et al. (2024). Predicting users' behavior: Gender and age as interactive antecedents of students' Facebook use for research data collection. Online Journal of Communication and Media Technologies, 14(1), e202406. https://doi.org/10.30935/ojcmt/14104

Pitoňáková, S. (2014). Marketing communication of universities. University of Žilina.

Pittman, M., & Reich, B. (2016). Social media and loneliness: Why an Instagram picture may be worth more than a thousand Twitter words. Computers in Human Behavior, 62, 155–167. https://doi.org/10.1016/j.chb.2016.03.084

Ptačin, J., & Čábyová, Ľ. (2016). Marketing, communication and identities of educational institutions. Trnava: Faculty of Mass Media Communication, UCM. ISBN 978-80-8105-834-9.

Putri, Y. E., Elita, R. F. M., & Gemiharto, I. (2022). Utilization of WhatsApp Social Media as a Learning Media during the Pandemic for Early Childhood (Indonesian). Jurnal PG-PAUD Trunojoyo: Jurnal Pendidikan Dan Pembelajaran Anak Usia Dini, 9(2), 28–40. https://doi.org/10.21107/pgpaudtrunojoyo.v9i2.16023

Septianti, R., Wahab, A., Hastuti, R., et al. (2023). Re-examining the Impact of Covid-19 on Education. Jurnal Pendidikan Tambusai, 7(1), 3934–3940.

Song, B. L., Lee, K. L., Liew, C. Y., et al. (2023). The role of social media engagement in building relationship quality and brand performance in higher education marketing. International Journal of Educational Management, 37(2), 417–430. https://doi.org/10.1108/ijem-08-2022-0315

Sörensen, I., Fürst, S., Vogler, D., et al. (2023). Higher Education Institutions on Facebook, Instagram, and Twitter: Comparing Swiss Universities' Social Media Communication. Media and Communication, 11(1), 264–277. https://doi.org/10.17645/mac.v11i1.6069

Sörensen, I., Vogler, D., Fürst, S., et al. (2023). Platforms matter: Analyzing user engagement with social media content of Swiss higher education institutions. Journal of Marketing for Higher Education, 1–20. https://doi.org/10.1080/08841241.2023.2289009

Utheim Grønvik, C. K., Ødegård, A., & Bjørkly, S. (2016). Factor Analytical Examination of the Evidence-Based Practice Beliefs Scale: Indications of a Two-Factor Structure. Open Journal of Nursing, 06(09), 699–711. https://doi.org/10.4236/ojn.2016.69072

Wati, Y. E. R. (2022). Marketing Strategy Management for Early Childhood Education RA Al Wardah North Sumatra. Journal of Childhood Development, 2(2), 71–78. https://doi.org/10.25217/jcd.v2i2.2679

Xiang, J., & Stanley, S. J. (2017). From online to offline: Exploring the role of e-health consumption, patient involvement, and patient-centered communication on perceptions of health care quality. Computers in Human Behavior, 70, 446–452. https://doi.org/10.1016/j.chb.2016.12.072

Zohar, B. (2018). Parental involvement in school-ways of communications between teachers and parents. Interdisciplinary Contexts of Special Pedagogy. Adam Mickiewicz University Press. pp. 311–328.