Journal of Applied Organizational Systems and Behavior

The Impact of Social Media on Purchasing Behavior: An Empirical Study of E-Marketing Among Algerian University Students

Hassan Ali[1], Noor Fatima[1], Adeel Malik[2]*, Sana Iqbal[2]

1. Department of Organizational Behavior, Faculty of Management Sciences, University of Faisalabad, Faisalabad, Pakistan.
2. Department of Work and Organizational Psychology, School of Business, Lahore University of Management Sciences, Lahore, Pakistan.

Abstract

The use of social media has become pervasive across diverse population groups and is acknowledged as a powerful tool for digital marketing and promotional activities, significantly shaping consumer buying behavior. The reliance on these platforms has surged notably amid the COVID-19 crisis. This study explores how social media influences purchasing decisions through e-marketing, taking into account demographic variations such as age and gender. The research targeted students from the University of Algiers, collecting data from 845 participants via online surveys distributed through various channels. Data was analyzed utilizing SPSS version 24 alongside hierarchical linear regression analysis. Findings reveal a meaningful relationship between social media engagement and consumer purchasing behavior driven by digital marketing efforts. The study offers practical insights for university administrators and contributes to academic discourse, serving as a resource for future research.

Keywords: Social media, Electronic marketing, Consumer behavior, University students, Empirical analysis

Introduction

Over time, the world has experienced numerous successive advancements, with the rise of technology and media standing out as among the most transformative. These innovations have introduced new challenges within the realm of virtual reality, fundamentally altering individual lifestyles. Social media platforms, in particular, have attracted millions of users across diverse genders, cultures, and age groups. This widespread engagement has given rise to novel forms of communication and interaction that influence everyday activities, including shopping, advertising, and various purchasing behaviors.

The rapid expansion of social networks has facilitated widespread information sharing among users. This has created an environment saturated with data, where more than half of social media users access their accounts multiple times daily, often using these platforms to assess and validate information in their everyday lives. Furthermore, the number of individuals generating online content continues to grow steadily [1]. According to Veil *et al*. (2011), social media plays a pivotal role in knowledge sharing among individuals [2]. Platforms such as Facebook and micro-blogging services like Twitter serve as accessible venues where users discuss a wide range of topics and concerns.

Digital marketing, on the other hand, encompasses the use of electronic communication technologies to promote products or services. It primarily refers to online advertising distributed via the internet—a vast, interconnected network of computer systems that disseminate various types of information and serve as a readily available resource [3]. Social media platforms

enhance consumer awareness by offering easy access to product and service information, aligning with the growing consumer preference for digital purchasing channels.

Social media has transformed the landscape of online networking by enabling companies to engage interactively with both existing and potential customers. Singh and Singh (2018) emphasize that younger audiences increasingly favor social media as a marketing medium, prompting marketers to tailor their communication strategies to meet the expectations of this demographic, who prefer these platforms over traditional advertising methods [4].

This study seeks to investigate university students' attitudes toward social media platforms in relation to their purchasing decisions, with attention to differences across gender and age groups. Given the rising interest among marketers to promote products via these digital channels, understanding how social media influences young consumers—who are often digital natives—is increasingly important. College students, adept in navigating online environments, significantly shape consumer behavior through their social media engagement. This research aims to offer valuable insights into how digital marketing campaigns can effectively resonate with this demographic. It will identify optimal strategies, highlight areas needing enhancement, and assess the actual role social media platforms play in shaping purchasing patterns among distinct demographic groups. The findings will equip marketers with a clearer understanding of current digital promotion trends and consumer preferences within university populations.

The study is organized into six key sections, each serving a specific purpose to facilitate comprehensive understanding. The first section provides an introductory overview and background context. The second section reviews relevant literature in depth. The third section details the research methodology employed. The fourth section presents the key findings uncovered during the investigation. The fifth section offers a discussion of these results in a broader context, leading into the sixth and final section which concludes the study.

Literature review

Numerous studies have examined the influence of social media on online shopping behavior. For example, Miah *et al.* (2022) explored the impact of social media on apparel purchases in Jaipur City [5]. Their research, combining data analysis and literature review, revealed that social media platforms create direct, personal connections between marketers and consumers. Platforms such as Twitter, LinkedIn, blogs, and Facebook have significantly enhanced buyer-seller interactions. Similarly, Zulqurnain *et al.* (2016) investigated the effect of social media marketing on brand perception and purchasing decisions [6]. Their survey of 145 university students showed a 97% acceptance rate, confirming a positive influence of social media marketing on consumer buying behavior. Additionally, Kumar *et al.* (2020) studied how Malaysian restaurants leverage social media to shape consumer behavior in the food and beverage sector [7]. Through a comprehensive literature review and data analysis, their research highlighted the strong effects social media advertising has on target audiences' buying patterns. Collectively, these studies demonstrate social media's growing role in various consumer contexts, from apparel shopping in Jaipur to food industry promotions in Malaysia, and underscore the platforms' effectiveness in influencing purchasing decisions.

Materials and Methods

This section outlines the methodology employed in this research, describes the construction of the study model, and presents the hypotheses designed to address the research questions.

Study methodology

The research utilized a quantitative approach for data analysis, employing an inductive reasoning process to generalize findings from the sampled population. The focus of the study was on consumers—specifically university students—who make purchasing decisions through e-marketing on social media platforms. A total of 845 students from the University of Algiers constituted the study sample.

Study variables

The key variables considered in this research are:

- **Social Media (Independent Variable):** Social media refers to digital platforms that facilitate the creation, sharing, communication, participation, and sometimes collaboration or entertainment among individuals and communities. These platforms are commonly accessed via web browsers or mobile applications [8]. In the literature, social media is often interchangeably referred to as social networking sites [9] and is characterized by user-generated content and interactive Web 2.0 technologies [10]. Social media comprises a set of internet-based applications that allow global users to connect, communicate, and exchange ideas, experiences, information, and relationships [11].

- **Electronic Marketing (Mediating Variable):** Social media marketing (SMM) is defined as a social and managerial process through which individuals and groups fulfill their needs and desires via digital platforms [12].
- **Purchase Decision (Dependent Variable):** The purchase decision process involves multiple core activities such as information search, analytical evaluation, future planning, and decision control. This process is influenced by situational factors including the importance of the purchase, task complexity, uncertainty levels, and the range of alternatives available. These elements, combined with consumer perceptions, significantly shape the final purchasing decision [13].

Field study procedures and model

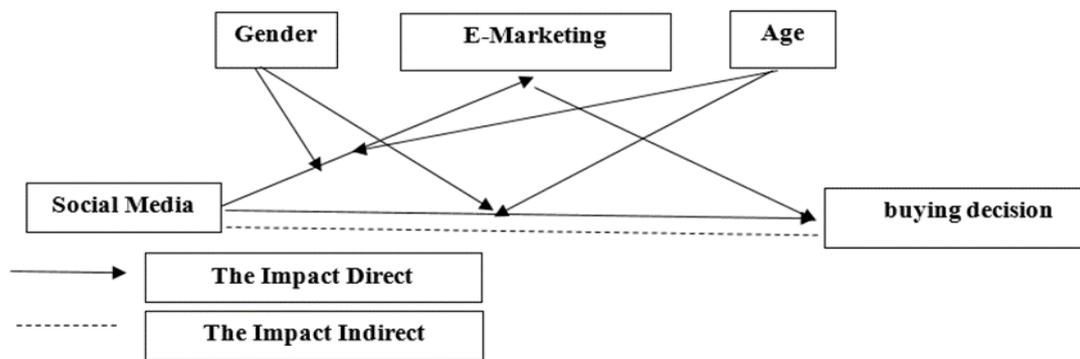The study model along with the proposed hypotheses are illustrated in **Figure 1**:

Figure 1. The Model Specification of Study.
Source: By researchers

The study population includes all students enrolled at the University of Algiers, encompassing its three branches, with an estimated total of 9,750 students. For the sample, the researcher distributed the questionnaire through various electronic communication channels and successfully collected 845 valid responses suitable for analysis. This sample size represents approximately 10% to 20% of the total population, which is considered highly appropriate for this type of research, as supported by Casteel and Bridier (2021) [14]. Additionally, the adequacy of the sample size is confirmed by the base rule referenced by Thompson (2012) [15]. It is important to highlight that the study population is homogeneous, consisting exclusively of undergraduate or diploma students.

Regarding the study hypotheses, the research model led to the formulation of several hypotheses. The first hypothesis proposes that the respondents hold positive attitudes toward the variables under investigation. The second hypothesis tests the impact of social media on purchase decisions prompted by e-marketing. The null hypothesis (H0) posits that social media does not have a statistically significant effect on purchase decisions among the sampled students at a significance level of 0.05 or higher. Conversely, the alternative hypothesis (H1) asserts that social media does significantly influence purchase decisions made through electronic advertising within the same confidence level.

The third hypothesis examines gender differences in relation to the study variables. The null hypothesis assumes no statistically significant differences between genders in how the variables are manifested, measured with a confidence level of 0.05 or higher. In contrast, the alternative hypothesis suggests that significant differences exist between male and female respondents concerning the variables under study, supported by comparable statistical measures at a confidence level near or equal to 0.05.

Finally, the fourth hypothesis explores age-related differences among the student participants. The null hypothesis claims that there are no significant differences across age groups regarding the studied variables when analyzed at a confidence interval of 0.05 or greater. Meanwhile, the alternative hypothesis posits that meaningful differences do exist between different age segments within the sample, according to the same level of statistical confidence.

This study employed a quantitative approach to analyze data, interpret correlational relationships, and examine the effects among the various variables under investigation [16]. Additionally, an inductive approach was used to analyze the findings and generalize the results to the broader study population.

Data collection was conducted primarily through a structured questionnaire distributed to students at Algerian universities via multiple communication channels, yielding a total of 845 completed responses.

The questionnaire comprised 23 items divided into several sections. The first section collected personal information such as gender, age, educational qualification, and preferred communication method. The second section targeted the independent variable, social media, with eight related questions. The third section addressed the mediating variable, electronic marketing,

containing six questions. The final section focused on the dependent variable, purchase decision, which included nine questions. Participant responses were measured using a Likert scale.

To ensure the validity of the questionnaire, it was carefully reviewed by subject matter experts who recommended modifications, additions, and rephrasing of certain items. These adjustments resulted in the finalized version of the instrument. The reliability of the questionnaire was evaluated using the Cronbach's alpha coefficient and split-half reliability methods, with the corresponding results presented in **Table 1**.

Table 1. Statistics of Item-Total

	Scale Mean	Scale Variance	Correlation	Alpha Cronbach
Q	94,4125	383,0068	0,56425	0,951
W	94,215	383,1422	0,584333	0,951167
B	94,95804	372,2326	0,673222	0,950333
Social media	94,4044	382,369	0,887	0,949
E-Marketing	94,215	382,705	0,791	0,95
buying decision	94,958	371,535	0,9	0,948
ALL	94,5716	378,036	1	0,948

Sources: Output SPSS

The results presented in the table show that each questionnaire item has a reliability coefficient exceeding 0.90. Since this value is well above the commonly accepted threshold of 0.70, the questionnaire is deemed reliable for scientific research purposes. Furthermore, the overall scale achieved a reliability coefficient of 0.95, indicating excellent stability and consistency.

According to the Central Limit Theorem, a sufficiently large sample size allows the sample distribution to approximate a normal distribution, which supports the assumption of normality in this study [17].

The statistical analyses were conducted using SPSS version 24. Various statistical tools were applied, including calculation of means, standard deviations, and correlation coefficients for identification and interpretation purposes. Additionally, F-tests and t-tests were used to test hypotheses and validate the study's theoretical framework. The hierarchical linear regression model was employed to assess relationships between variables and determine significant differences [18].

Table 2. Statistics of Descriptive

	Observations	Min	Max	Mean	Std. Dev
Q		1,125	5	2,8762	0,9633
W		1	5	4,06565	1,020498
B		1	5	3,3226	1,303608
Social media	845	1,88	5	3,8762	0,71687
E-Marketing		1,17	5	4,0657	0,78962
buying decision		1	5	3,4659	0,9325
ALL		1,35	5	4,021	0,6986
Observations			845		

Sources: The Output of SPSS

Table 2 provides the average scores and standard deviations for the study variables. To interpret these values, the scoring scale was divided into three categories using the formula $(5 - 1) \div 3 = 1.33$, classifying responses as low (1.00 to 1.33), moderate (1.34 to 3.46), or high (3.47 to 5.00).

The social media variable scored an average of 3.88, suggesting that participants consider it highly significant. The relatively low standard deviation indicates that responses were fairly consistent among the students [19]. This corresponds with findings by Jacobs *et al.* (2016), although it contrasts with Van Aelst *et al.* (2021), who found that television was deemed a more important news source than social media in the countries they examined [20, 21].

In terms of electronic marketing, the average rating was 4.07, with minimal variation among responses. This finding echoes Trainor *et al.* (2011), who highlighted that e-marketing integrates technological, business, and human resource factors to boost organizational performance [22]. Supporting this, Zaoui *et al.* (2021) showed through a survey of Belgian firms that market orientation and technological adoption in e-marketing contribute to better customer loyalty and satisfaction [23].

Regarding purchase decisions, the mean score was 3.47, indicating a moderate influence of this factor on consumers' choices. The standard deviation was somewhat larger, reflecting a wider range of opinions. These results align with McGrath *et al.* (2020), who found that website trustworthiness plays a pivotal role in online buying behavior, a conclusion also supported by Sharma and Klein (2020) [24].

Overall, the composite mean across all survey items was 3.71, with limited response variability, placing it firmly in the high category. This confirms the first hypothesis, which anticipated positive perceptions toward the variables under study. More detailed analysis of these outcomes will be provided in the next sections.

Results and Discussion

In this section, we aim to evaluate the hypotheses presented in our study and offer an interpretation of the findings. The results for our second hypothesis reveal a significant relationship between social media usage and purchasing decisions influenced by digital marketing among the students surveyed, thereby rejecting the Null Hypothesis. To better understand the influence on the dependent variables, we applied the modeling approach outlined by Lai *et al*. (2022), which is specifically tailored for analyzing such effects [18].

A – Initial Model:

$$Y_i = a_i + b_1 * X_i + \varepsilon_i \qquad (1)$$

B – Reduced Model:

$$Y_i = a_i + b_1 * X_i + b_2 * Z_i + \varepsilon_i \qquad (2)$$

C – Final Model:

$$Y_i = -1.18E - 14 + 0.889 * X_i + 0.123 * Z_i + 2.556 * X_i * Z_i + \varepsilon_i \qquad (3)$$

We tested our hypothesis by examining the coefficient of determination alongside the calculated F and T values across three relevant models. These models included the independent variable (X), the dependent variable (Y), the mediating variable (Z), and the interaction term (XZ), representing the interplay between the independent variable and the mediator.

A – Initial Model: $Y_i = a_i + b_1 * X_i + \varepsilon_i$

Table 3. ANOVAa Test

	Model	Sum of Squares	df	Mean Square	F	Sig.
	Regression	222,566	1	222,566	702,213	0,000 [b]
1	**Residual**	229,471	724	0,317	--	--
	Total	452,037	725	--	--	--
	Regression	367,556	2	183,778	351,981	0,000 [b]
2	**Residual**	377,496	723	0,522	-	-
	Total	745,052	725	-	-	-
	Regression	669,338	1	669,338	6400,41	0,000[b]
3	**Residual**	75,714	724	0,105	-	-
	Total	745,052	725	-	-	-

a. DV: E-Marketing
b. Constant: Social media
Sources: Output SPSS

Table 4. The Summary Models

Model	R	R Sq	R Sq Adj	Std. Err
1	0,815 [a]	0,673	0,673	0,6345
2	0,818 [a]	0,584	0,591	0,8337
3	0,948[a]	0,898	0,898	0,32338

a. Constant: Social media
Sources: Output SPSS

Table 5. The Summary of Coefficients [a]

Model		Unstandard Coefts		Standard Coefs	t	Sig.	Collinearity Statistics	
		B	Std. Err	Beta			Tolerance	VIF
1	**Constant**	1,07	0,115	-	9,305	0	-	-
	Social media	0,773	0,029	0,702	26,499	0	1	1
2	**Constant**	-0,569	0,202	0.0001	-3,17	0.002	0	0
	Social media	0,791	0,112	0,597	17,212	0.002	0,475	1,97
	E-Marketing	0,161	0,048	0,125	3,376	0,001	0,508	1,97
3	**Constant**	-1,18E-14	0	-	.	.	-	-

Social media	0,889	0	0,629	16,465	.	1	1
E-Marketing	0,667	0	0,519	80,003	.	1	1
ALL	2,556	0	1,89	174.332	.	1	1

a. Dependent Variable: E-Marketing

Sources: Output SPSS

The correlation coefficient showed a strong negative value of -0.70, indicating a robust relationship between the variables. The adjusted R-squared (R^2) was 0.49, meaning social media explains approximately 50% of the variance in electronic marketing. Additionally, the model's F-value was 702.213 with a significance level of 0.000, supporting the acceptance of the initial model. The Variance Inflation Factor (VIF) was 1.000, confirming the absence of multicollinearity among the predictors. The regression coefficient for social media's effect on electronic marketing was 0.773, with a t-value of 26.499, significant at $p < 0.01$ **(Tables 3–5)**. The model can be represented by the equation:

$$Y\_i = 1.07 + 0.773 * X\_i + \varepsilon\_i \tag{4}$$

This confirms that social media has a significant positive impact on electronic marketing. These results align with the findings of Priansa and Suryawardani (2020) and Suryani and Margery (2020), who emphasized the strong influence of social media advertising, electronic marketing, and product quality on consumer behavior [3, 25].

For the reduced model: : $Y_i = a_i + b_1 * X_i + b_2 * Z_i + \varepsilon_i$

where both social media (X) and electronic marketing (Z) are predictors of purchase decision (Y), the correlation coefficient was -0.818, indicating a strong relationship. The adjusted R^2 was 0.584, showing that social media and electronic marketing together explain about 58.4% of the variance in purchase decisions **(Table 4)**. However, this combined explanatory power did not significantly improve upon the initial model, implying that adding electronic marketing as a second predictor does not greatly enhance prediction of purchase decisions.

The model's F-value was 351.981 with a significance level of 0.000, validating the reduced model **(Table 3)**. The regression coefficient for social media in relation to purchase decision increased to 0.861 when electronic marketing was included, suggesting that electronic marketing mediates the relationship between social media and purchase decisions, consistent with Baron and Kenny's (1986) mediation framework. The t-values of 17.212 and 3.376, both significant at $p < 0.05$, further support the model's validity **(Table 5)**. Therefore, the relationship can be expressed as follows:

$$Y_i = -0.668 + 0.861 * X_i + 0.161 * Z_i + \varepsilon_i \tag{5}$$

C- The final model:

$$Y_i = a_i + b_1 * X_i + b_2 * Z_i + b_3 * X_i * Z_i + \varepsilon_i \tag{6}$$

The correlation coefficient among social media, electronic marketing, and purchase decisions reached a strong positive value of 0.95, indicating a highly robust relationship. Nineteen strong positive correlations were identified, with no multicollinearity issues, as confirmed by the Variance Inflation Factor (VIF) value of 1.000, which suggests that there is no problematic linear dependency among the variables' components [26] **(Table 4)**.

The interaction between social media and electronic marketing has enhanced the relationship with purchase decisions, demonstrated by a higher correlation than those observed in both the original and reduced models. The adjusted R-squared value of 0.90 implies that 90% of the variance in purchase decisions can be explained by this interaction, highlighting a significant improvement in explanatory power when electronic marketing serves as a mediating variable between social media and purchase decisions **(Table 3)**.

Further support for adopting the final model is provided by an F-value of 6400.410 with a significance level of 0.000. These findings are consistent with prior research by Priansa and Suryawardani (2020) and Al-Azzam and Al-Mizeed (2021), which emphasized the strong influence of digital marketing on consumers' purchasing decisions [3, 27] **(Table 5)**.

The regression coefficient for the interaction between electronic marketing and social media on purchase decisions is 2.5560. Based on the frameworks presented by Preacher *et al.* (2006) and Aiken and West (1991) regarding mediation and interaction effects, this significant interaction confirms the mediating role of electronic marketing in the relationship between social media and purchase decisions. The model's validity is reinforced by a significance level of 0.000, and the relationship can be expressed as follows:

$$Y_i = -1.18E - 14 + 0.889 * X_i + 0.123 * Z_i + 2.556 * X_i * Z_i + \varepsilon_i \tag{7}$$

Where:

Based on the information, social media plays a significant role in influencing purchasing decisions through electronic marketing.

Hypothesis 3 states:

H0: Among the pupils in the sample. Gender-related differences in the research variables are not statistically significant, with a 0.05 confidence level.

H1: At a confidence level of 0.05, there is a statistically significant influence of the research variables related to gender among the sample students.

Table 6. Statistics of Group

	Gender	N	Mean	Std. Deviation	Std. Err. Mean
Social media	F	530	4,8482	0,56257	0,03256
	M	313	4,1001	0,78585	0,04567
E-Marketing	F	532	4,1081	0,83076	0,03602
	M	313	3,9493	0,65172	0,04679
buying decision	F	532	3,3954	1,02782	0,04456
	M	313	3,1231	0,94831	0,06808

Sources: Output SPSS

The analysis of the data reveals no statistically significant differences in responses related to electronic marketing and purchase decisions based on gender, as shown in **Table 6**. This indicates that gender does not influence university students' engagement with electronic marketing or their purchasing behavior. These findings align with previous research by Kanwal *et al.* (2022), which also found no association between gender and the online buying process [28]. Therefore, at a 0.05 confidence level, no significant gender-related differences exist in social media usage or responsible behavior among the students surveyed.

Regarding age, the hypotheses tested were as follows:

- Null hypothesis (H0): At a 0.05 confidence level, no statistically significant differences exist in the study variables based on students' age.
- Alternative hypothesis (H1): At a 0.05 confidence level, statistically significant differences exist in the study variables attributable to age.

While communication methods did not show significant differences, there were statistically significant variations related to electronic marketing and purchase decisions across different age groups. This finding is consistent with Kanwal *et al.* (2022), who noted that maturity influences electronic marketing engagement and purchasing behavior [28]. Additionally, age was found to significantly impact online trading characteristics.

Conclusion

This study aimed to understand how social media channels influence purchasing habits by focusing on e-marketing among students at the University of Algiers. Through a quantitative survey, the research explored the extent to which social media affects buying behavior and highlighted effective business strategies that shape consumer preferences within this demographic.

From the results, we conclude the following:

- The respondents generally perceive the research factors positively, indicating that social media usage has become an integral and influential part of various processes and activities among students.
- Analytical results confirm that social media platforms significantly impact purchase decisions. Furthermore, increased engagement with social media content enhances electronic marketing efforts. This aligns with findings from prior studies, which showed that e-commerce platforms are strongly influenced by social media marketing in shaping consumer choices. For example, one study with a sample size of 125, employing path analysis, revealed that social media marketing explains 45.35% of consumer decision-making, influencing purchase decisions by 35.73%, and overall affecting buying behavior by 81.08%.
- No significant gender-based differences were found in social media use or electronic marketing purchase behaviors, suggesting gender does not affect how male and female students respond.
- Significant differences tied to age suggest that cognitive maturity and awareness of social media platforms influence students' purchasing judgments.
- The research highlights a contemporary trend: social media platforms serve as important tools for making purchase decisions through electronic marketing, which has the potential to improve the effectiveness of media messaging across these platforms.

References

1. Kent ML, Taylor M. From homo economicus to homo dialogics: Rethinking social media use in CSR communication. Public Relations Review. 2016;42(1):60-7. doi:10.1016/j.pubrev.2015.11.003

2. Veil SR, Buehner T, Palenchar MJ. A work-in-process literature review: Incorporating social media in risk and crisis communication. J Contingencies Crisis Manag. 2011;19(2):110-22. doi:10.1111/j.1468-5973.2011.00639.x

3. Priansa DJ, Suryawardani B. Effects of e-marketing and social media marketing on e-commerce shopping decisions. Jurnal Manajemen Indonesia. 2020;20(1):76-82. doi:10.1017/dmp.2020.204

4. Singh M, Singh G. Impact of social media on e-commerce. Int J Eng Technol. 2018;7(2.30):21-6.

5. Miah MR, Hossain A, Shikder R, Saha T, Neger M. Evaluating the impact of social media on online shopping behavior during COVID-19 pandemic: A Bangladeshi consumers' perspectives. Heliyon. 2022;8(9):e10600.

6. Zulqurnain AL, Shabbir MA, Rauf M. To assess the impact of social media marketing on consumer perception. Int J Acad Res Account Finance Manag Sci. 2016;6(3):69-77.

7. Kumar J, Konar R, Balasubramanian K. The impact of social media on consumers' purchasing behavior in Malaysian restaurants. J Spat Organ Dyn. 2020;8(3):197-216.

8. Von Muhlen M, Ohno-Machado L. Reviewing social media use by clinicians. J Am Med Inform Assoc. 2012;19(5):777-81.

9. Hellemans J, Willems K, Brengman M. Daily active users of social network sites: Facebook, Twitter, and Instagram-use compared to general social network site use. In: Advances in Digital Marketing and eCommerce: First International Conference 2020. Springer International Publishing; 2020. p. 194-202.

10. Santos MLB. The "so-called" UGC: an updated definition of user-generated content in the age of social media. Online Inf Rev. 2022;46(1):95-113.

11. Salim S, Turnbull B, Moustafa N. Data analytics of social media 3.0: Privacy protection perspectives for integrating social media and Internet of Things (SM-IoT) systems. Ad Hoc Netw. 2022;128:102786.

12. Shahzad M, Qu Y, Zafar AU, Rehman SU, Islam T. Exploring the influence of knowledge management process on corporate sustainable performance through green innovation. J Knowl Manag. 2020;24(9):2079-106.

13. Lăzăroiu G, Neguriţă O, Grecu I, Grecu G, Mitran PC. Consumers' decision-making process on social commerce platforms: Online trust, perceived risk, and purchase intentions. Front Psychol. 2020;11:890.

14. Casteel A, Bridier NL. Describing populations and samples in doctoral student research. Int J Dr Stud. 2021;16(1):339-62.

15. Thompson SK. Sampling. 3rd ed. Hoboken: Wiley; 2012.

16. Lorenz-Spreen P, Oswald L, Lewandowsky S, Hertwig R. A systematic review of worldwide causal and correlational evidence on digital media and democracy. Nat Hum Behav. 2023;7(1):74-101.

17. Knief U, Forstmeier W. Violating the normality assumption may be the lesser of two evils. Behav Res Methods. 2021;53(6):2576-90.

18. Lai J, Zou Y, Zhang J, Peres-Neto PR. Generalizing hierarchical and variation partitioning in multiple regression and canonical analyses using the rdacca. hp R package. Methods Ecol Evol. 2022;13(4):782-8.

19. Todisco L, Tomo A, Canonico P, Mangia G, Sarnacchiaro P. Exploring social media usage in the public sector: Public employees' perceptions of ICT's usefulness in delivering value added. Socioecon Plann Sci. 2021;73:100858.

20. Jacobs R, Boyd L, Brennan K, Sinha CK. The importance of social media for patients and families affected by congenital anomalies: A Facebook cross-sectional analysis and user survey. J Pediatr Surg. 2016;51(11):1766-71. doi:10.1016/j.jpedsurg.2016.07.008

21. Van Aelst P, Toth F, Castro L, Štětka V, Vreese CD, Aalberg T, et al. Does a crisis change news habits? A comparative study of the effects of COVID-19 on news media use in 17 European countries. Digit Journal. 2021;9(9):1208-38.

22. Trainor KJ, Rapp A, Beitelspacher LS, Schillewaert N. Integrating information technology and marketing: Examining the drivers and outcomes of e-marketing capability. Ind Mark Manag. 2011;40(1):162-74.

23. Zaoui S, Zhou H, Hamou-ou-Brahim SA, Huang D. The impact of digital marketing and customization on service innovation: Case of Moroccan healthcare services companies during covid-19. In: 21st International Conference on Electronic Business (ICEB 2021). 2021.

24. McGrath S, Zhao X, Steele R, Thombs BD, Benedetti A, DEPRESsion Screening Data (DEPRESSD) Collaboration. Estimating the sample mean and standard deviation from commonly reported quantiles in meta-analysis. Stat Methods Med Res. 2020;29(9):2520-37.

25. Suryani W, Margery E. The influence of social media advertising, e-marketing, and product quality on purchasing natural cosmetics. Int J Chem Chem Eng Syst. 2020;5.

26. Yıldız E. Posttraumatic growth and positive determinants in nursing students after COVID-19 alarm status: A descriptive cross-sectional study. Perspect Psychiatr Care. 2021;57(4):1876-87.

27. Al-Azzam AF, Al-Mizeed K. The effect of digital marketing on purchasing decisions: A case study in Jordan. J Asian Finance Econ Bus. 2021;8(5):455-63.

28. Kanwal M, Burki U, Ali R, Dahlstrom R. Systematic review of gender differences and similarities in online consumers' shopping behavior. J Consum Mark. 2022;39(1):29-43.