

Investigating Obstacles to Social Media Engagement in Agriculture Among Farmers of Kullu District in Himachal Pradesh

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ABSTRACT

The fast growing development of social media has produced significant opportunities for improving agricultural communication and information dissemination. Though, the adoption of social media among farmers remains unpredictable. It is particularly in geographically diversified regions such as Himachal Pradesh. This study examines the obstacles to social media engagement among farmers in the Kullu district which focus on some variables that distinguish influencing factors, assessing the adoption barriers, and interrogating the role of socio-economic characteristics. Primary survey was employed to collect the data from small and marginal farmers. In this face-to-face interactions were acquired during the surveys by using a stratified random sampling approach. Data were evaluated by using descriptive statistics and inferential statistical techniques with the support of Chi-square test of independence, Mann-Whitney U test, and Spearman's rank correlation. Results indicate weak and negative significant association between perceived ease of use and perceived effectiveness of social media. Also, technical literacy and social media adoption by farmers ($p > 0.05$) indicates that these factors alone are not influencing farmers to adopt social media platforms. In terms of education level, it shows a significant association with the farmers' perception that social media has potential ($p < 0.05$) to improve their livelihood, which means more educated farmers (93%) showing a positive attitude towards adopting social media for their agricultural practices. This study concludes that there are multidimensional barriers that hinder farmers' engagement to social media. It is rooted not only in technological limitations but also in reasons related to farmers' awareness, trust, and content suitability.

Keywords: Adoption of Social Media, Agricultural Distribution, Digital India, Social Media in Agriculture, Technology Adoption.

INTRODUCTION:

The emergence of social media has remarkably transformed communication and information dissemination across various sectors, including the agriculture sector. In the context of the Kullu district, it is very important to understand the barriers to effective social media engagement among farmers is crucial for adopting social media platforms for agricultural development (Destari et al., 2024). The present study aims to identify and analyze obstacles such as technical literacy and infrastructure limitations to socio-cultural factors that challenge farmers to fully utilize social media for agricultural purposes. This research employs an analytical design to examine the relationships and trends among variables within the Kullu district. This research illustrates the mixed challenges blocking digital increase within this agricultural demographic. It is particularly concerned with the effective utilization of agricultural information dissemination and adoption of social media (Babu et al., 2025).

Numerous studies that explored social media adoption in agriculture that were focused on single platforms failed to fully account for the commercialization aspects of

agricultural practices (Sugandini et al., 2023). Therefore, this study adopts a comprehensive approach to comprehend how farmers in Kullu perceive and employ various social media platforms. The present study specifically examines farmers' engagement with various social media platforms, and the potential of these platforms. It enhances sustainable agricultural activities and market access in the region. This study explored variables such as internet connectivity and limited digital literacy of farmers in agricultural contexts. Here, knowledge gaps between modern agricultural techniques and market dynamics have been studied among farmers, but this study bridges those gaps in this specific geographically challenging region.

This research assumes the occurrence of some socio economic and technological barriers that affect the adoption and effective utilization of digital agricultural extension services. Despite the penetration of smartphones in rural India is growing with over 500 million users (Datareportal, 2026). But the farmers of Kullu district face socio economic realities that hinder their social media engagement. In recent years hilly terrains like Kullu faced power supply because of heavy rainfalls and landslides in this region. Also age factor

stopped the digital divide of farmers to adopt platforms like WhatsApp and YouTube that dominate dissemination of agriculture information. As apple cultivation and horticultures dominate the agro ecosystem of Himachal Pradesh having vulnerable climatic variability. Social media could revolutionize dissemination of information related to weather alerts, pest management and supply chain linkages that are yet considered as an obstacle for farmers.

Furthermore, in mountainous regions where traditional farming is deeply rooted there is less evidence in respect to how farmer innovativeness correlates with social media usage (Ćirić et al., 2018). According to existing studies, many forget the specific physical and policy based constraints faced by apple cultivators (Yasmin et al., 2023). This research will contribute a more precise understanding related to farmers that face difficulties to access new technologies. It is essential to understand that the enhanced digital literacy simplifies broader social media adoption among farmers (Nurfathiyah et al., 2024). By understanding these constraints, it is also important to create some policies and develop personalized interventions that support efficient digital platforms in agricultural practices. Eventually, it encourages sustainable development and economic empowerment within the region.

In previous studies, based on digital marketing played a crucial role in examining the role of digital marketing as an important tool for agricultural development. Also considered its potential to enhance market access and economic stability for farmers (Bilivogui & Feng, 2022). It has been shown that farmers' attitudes towards social media marketing in developing countries like India are growing. The present study aims to bridge the gap by exploring the specific factors that limit and influence farmers' attitudes towards social media adoption in Kullu district of Himachal Pradesh. This study examines how ease of use and perceived potential to change farmers' livelihood by adopting social media can influence farmers' intentions to adopt it for agricultural purposes. The main target of this study is to analyze influencing factors that encourage farmers to adopt social media for agricultural activities. Where some challenges are evaluated that might prevent social media from being widely adopted by farmers in Kullu region. Also, association between key socio-economic profiles and adoption of social media is examined for encouraging a more robust digital supported agricultural economy.

LITERATURE REVIEW

The adoption of social media among farmers is mainly motivated by the shift from passive information consumption to active digital agricultural extension. In research, adopting the Technology Acceptance Model highlights that perceived usefulness and perceived ease of use are the prominent predictors of adoption in particular when social media platforms offer real-time solutions for market volatility (Palaniswamy & Raj, 2022). A significant influencing factor is the mitigation of information imbalance regarding market prices by accessing platforms like Facebook and WhatsApp. Here farmers can easily receive daily price updates on their

mobile phones from various Mandis (sub-market) which significantly increase their bargaining power against brokers (Mishra et al., 2025). Furthermore, it has been shown that desire for peer-to-peer learning delivers as a catalyst as progressive use of Facebook and YouTube to share specialized horticultural techniques such as high density apple plantation and rigor pruning which are directly found to be positively related with the farmer's technical proficiency. The merging of social media platforms also allows for quick solution of crop diseases through the instant sharing of top quality images with agricultural experts and on these platforms which is highly effective for risk management (Sandeep et al., 2020).

Despite the possible benefits, some challenges related to specific regions and structural challenges hinder the larger engagement of farmers in digital platforms. In high-hill regions of Himachal Pradesh, topographical challenges form a significant connectivity gap, where fruits are often placed at an average distance of 2 km from the closest reachable road which complicates the logistics that digital information aims to simplify (Kumar et al., 2023). Logistical and economic reasons remain permanent in mountainous regions. Where approximately 79% of transport in these regions still depend on labour, disrupting the rapid progress of digital information. Furthermore, social media provides reports related to weather alerts, the inconsistent nature of changing weather patterns in districts like Kullu and Shimla often spreads information of digital warnings (Kaur, 2024). These factors are complicated by the digital divide where farmers of remote areas face barriers to Information and Communication Technology access as compared to urban regions (Mukhopadhyay & Mandal, 2019).

The literature underscores a significant correlation between some specific socio-economic variables and the tendency to adopt social media for agricultural activities. Age and education levels are consistently identified as the most influential predictive factors. Younger and more educated farmers indicate a significantly higher trend using more professional social media groups for agricultural entrepreneurship as compared to old and less educated farmers (Patel & Mallappa, 2022). It is also found that income level and landholding size also play an important role. Farmers with larger orchards are more capable to invest in top smartphones and data plans that directly lead to extension services (Madhushekar et al., 2023). Similarly, farmers with higher technical understanding and socio economic conditions are more likely to cross traditional distribution channels in support of digital direct marketing (J. Kaur, 2025). Conversely, livestock and farmers with less farmlands often perceive social media as a primary social tool rather than a professional information source. It indicates that the professionalism of social media use is largely dependent on a farmer's existing economic condition and market aspect (Mithun et al., 2025).

OBJECTIVES

Objective 1 To analyze influencing factors that encourage farmers to adopt social media for agricultural activities.

Objective 2 To evaluate the challenges that might prevent social media from being widely adopted by farmers in the region.

Objective 3 To investigate the relationship between key socio economic characteristics and adoption of social media.

HYPOTHESES

Null Hypothesis H₀₁: There is no significant relationship between the perceived ease of use and the perceived effectiveness of social media in agriculture.

Alternate Hypothesis H₁₁: There is a significant relationship between the perceived ease of use and the perceived effectiveness of social media in agriculture.

Null Hypothesis H₀₂: There is no significant association in technical literacy and social media as a source of agricultural information.

Alternate Hypothesis H₁₂: There is significant association in technical literacy and social media as a source of agricultural information.

Null Hypothesis H₀₃: There is no difference in education level based on farmers' belief that social media has potential to improve livelihood of farmers.

Alternate Hypothesis H₁₃: There is a difference in education level based on farmers' belief that social media has potential to improve the livelihood of farmers.

METHODS

Primary data was collected from the farmers of Kullu district that have been engaged in agriculture for years. Data was collected by face-to-face interactions with farmers to enhance understanding and accuracy. Kullu region features more diversified agro-climatic conditions which are ideal for horticulture and off-seasonal vegetables farming. In this survey, target population covered small and marginal farmers that have been actively engaged with agriculture. A sample of 133 respondents was taken using stratified random sampling. This sample size provided enough strength for non-parametric tests. Data analysis was conducted by applying both descriptive and inferential techniques. Spearman's rank correlation was used to assess the relationships between easy to use and perceived effectiveness of social media in agriculture. Similarly, Chi-square test of independence was adopted to find the associations between technical literacy and farmers using social media. Additionally, the Mann-Whitney U test was used to compare mean differences between education level and farmers perceive that social media has potential to improve their livelihood.

DATA ANALYSIS

Table 1. SOCIO DEMOGRAPHIC PROFILE

Sr. No.	Particular	Category	Frequency	Percentage
1	Gender	Male	124	93.2
		Female	9	6.8
		Total	133	100
2	Age	19-30 Years	26	19.5
		31-45 Years	53	39.8
		46-60 Years	47	35.3
		>60 Years	7	5.3
3	Education Level	No Formal Education	19	14.3
		Primary	22	16.5
		High School	26	19.5
		Secondary School	24	18
		Under Graduate	21	15.8
		Post Graduate	21	15.8
4	Main Crops	Apple	133	100
		Peas	104	78.2
		Potato	101	75.9

A sample of 133 farmers were taken from Kullu district. In this, 124 male respondents dominated the survey and only 9 females respondents participated out of 133 respondents. The age distribution highlights a largely mature and economically active population. In the age profile of respondents, most of the respondents belong to the age group of 31-45 years with 53 respondents followed by the age group of 46-60 years 47 respondents. Similarly, 26 respondents fall within the age group of 19-30 years old and only 7 respondents were from above 60 years age group. Age is also a major factor for adapting social media for agricultural activities.

Where, table 1 shows the educational profile is diverse. It ranges from no formal education with 19 respondents and primary education 22 respondents to high school 26 respondents. The secondary school having 24 respondents, where undergraduate and post graduate having equal 21 respondents. In terms of main cropping

patterns of the respondents, all 133 respondents reported cultivating apples as their primary crop. While a substantial proportion of respondents (104) also produce peas followed by potatoes with 101 respondents. It indicates that Kullu district's horticultural economy is prone to climate and unstable markets can be supported through digital platforms.

Objective 1 To analyze influencing factors that encourage farmers to adopt social media for agricultural activities.

Null Hypothesis H₀₁: There is no significant relationship between the perceived ease of use and the perceived effectiveness of social media in agriculture.

Alternate Hypothesis H₁₁: There is a significant relationship between the perceived ease of use and the perceived effectiveness of social media in agriculture.

Correlations				
			Ease of use	Perceived effectiveness of SM in agriculture
Spearman's rho	Easy of use	Correlation Coefficient	1.000	.073
		Sig. (2-tailed)	.	.403
		N	133	133
	Perceived effectiveness of SM in agriculture	Correlation Coefficient	.073	1.000
		Sig. (2-tailed)	.403	.
		N	133	133

Interpretation: Calculated p-value is .403 which is more than 0.05. Correlation analysis indicates a very weak positive relationship between perceived ease of use and perceived effectiveness of social media in agriculture. As $p > 0.05$, hence the null hypothesis is accepted, and the alternate hypothesis is rejected.

Conclusion: There is no significant association in between perceived ease of use and perceived effectiveness of social media in agriculture among farmers.

Findings: The finding shows that there exist a very weak positive correlation between perceived ease of use and perceived effectiveness of social media in agriculture. However, the relationship is not significant. The result indicates that farmers' perception of ease of use does not significantly influence the effectiveness of social media in

agricultural activities. Results also suggest that ease of use alone is not a predicting factor for the perception of effectiveness. Other factors like age, education, and social media experience have also impacted the engagement of social media in agriculture.

Objective 2 To evaluate the challenges that might prevent social media from being widely adopted by farmers in the region.

Null Hypothesis H₀₂: There is no significant association in technical literacy and social media as a source of agricultural information.

Alternate Hypothesis H₁₂: There is significant association in technical literacy and social media as a source of agricultural information

Technical Literacy * Social media Crosstabulation			
	Social media		Total
	No	Yes	

Technical Literacy	No	Count	11	42	53
		Expected Count	7.6	45.4	53.0
	Yes	Count	8	72	80
		Expected Count	11.4	68.6	80.0
Total		Count	19	114	133
		Expected Count	19.0	114.0	133.0

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.011 ^a	1	0.083		
Continuity Correction ^b	2.197	1	0.138		
Likelihood Ratio	2.945	1	0.086		
Fisher's Exact Test				0.127	0.070
Linear-by-Linear Association	2.989	1	0.084		
N of Valid Cases	133				
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.57.					
b. Computed only for a 2x2 table					

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	0.150	0.083
	Cramer's V	0.150	0.083
N of Valid Cases		133	

Interpretation: The cross-tabulation table results, technical literacy and the use of social media as a source of agricultural information shows that among technically literate farmers. In this 72 out of 80 respondents reported using social media as a source of agricultural information. Whereas, 42 out of 53 non-technically literate farmers also reported usage.

In results, the calculated p-value is 0.083 which is greater than 0.05. As $p > 0.05$, hence alternate hypothesis is rejected and null hypothesis is accepted. It indicates that the association between technical literacy and social media usage is not significant. Likelihood Ratio $p = 0.086$ and Fisher's Exact Test $p = 0.127$ have shown similar

results that further confirm the lack of significant association.

Furthermore, the strength of association measured using Phi and Cramer's V is 0.150 that suggests a weak relationship between the variables. In results it is shown that all expected cell counts are above 5 and assumptions are satisfied for Chi-square test that ensures the validity of the test results.

Conclusion: The statistical analysis found that there is no association between technical literacy and use of social media as a source of agricultural information. However, a higher number of technically literate farmers using social media for agricultural information is not strong enough to establish a significant relationship.

Findings: The findings highlight that association is not statistically significant ($p = 0.083 > 0.05$) between technical literacy and social media as a source of agricultural information. The strength is weak between the variables as reflected by low values of Phi (0.150) and Cramer's V (0.150). These results suggest that technical literacy alone is not a determinant factor in determining the adoption of social media as a source of agricultural information.

Objective 3 To investigate the relationship between key socio economic characteristics and adoption of social media.

Null Hypothesis H₀₃: There is no difference in education level based on farmers' belief that social media has potential to improve livelihood of farmers.

Alternate Hypothesis H₁₃: There is a difference in education level based on farmers' belief that social media has potential to improve the livelihood of farmers.

Descriptive Statistics					
	N	Mean	Std. Deviation	Minimum	Maximum
Education	133	3.36	1.437	1	5
Social media has potential	133	.93	.252	0	1

Mann-Whitney Test

Ranks				
	Social media has potential	N	Mean Rank	Sum of Ranks
Education	No	9	40.00	360.00
	Yes	124	68.96	8551.00
	Total	133		

Test Statistics ^a	
	Education
Mann-Whitney U	315.000
Wilcoxon W	360.000
Z	-2.236
Asymp. Sig. (2-tailed)	.025
a. Grouping Variable: Social media has potential	

Interpretation: As the mean education level of respondents is 3.36. It suggests a moderate level of education among farmers. A large majority of respondents 124 out of 133 believe that social media has the potential to improve farmers' livelihoods. While only 9 respondents do not share this belief.

The Mann-Whitney U test was conducted to interrogate whether there is a significant difference in education level between farmers who believe in the potential of social media and those who do not. The results indicate that the mean rank 68.96 of education is higher for those farmers who believe that social media has potential to improve their livelihood as compared to those who do not believe 40.

The test statistics reveal that the calculated p-value is 0.025 at 0.05. Based on the results, $p < 0.05$ so the null hypothesis is rejected, and the alternate hypothesis is accepted at 0.05 significance level. The negative Z value (-2.236) further highlights that the difference is in favor of the group that perceives social media has potential to change the livelihood of respondents.

Conclusion: The analysis concluded that education significantly influences farmers' belief towards the potential of social media to improve their livelihoods. Farmers with higher education levels are more likely to perceive social media as a beneficial platform for agriculture and improving their livelihood.

Findings: The results reveal that a significant difference exists in the education levels of farmers. This shows their belief in social media platforms that social media has potential to improve their livelihoods $p = 0.025 < 0.05$. It is predicted that those farmers who consider social media as a potential tool for their agricultural practices reveal a higher mean rank of education that further indicates they are comparatively more educated than those who do not share this belief. Most of the respondents agree with the potential of social media in enhancing their livelihoods. It suggests that higher educated farmers are naturally more welcoming to adopt digital platforms like social media and technological innovations that support the agriculture sector.

DISCUSSION

This study found some valuable insights into social media engagement among farmers in the Kullu district of Himachal Pradesh. This is a region largely dependent on its horticulture based agricultural system. Although, a large proportion of farmers perceived that social media has the potential to change their livelihoods and enhance agricultural practices. It is also found that actual effectiveness was constrained by some factors based on perception, education, and circumstance. The findings also suggest that the minimum use of digital platforms does not necessarily report meaningful adoption of farmers.

In particular, the negative significant relationship between ease of use and perceived effectiveness reports that farmers do not assess social media primarily on the basis of its ease of use. Rather than this, farmers emphasize the relevance and reasonable use of the information obtained by them. Similarly, technically literate farmers show significant rise in higher engagement with social media. The findings also show that technical efficiency alone does not significantly influence its adoption as a source of agricultural information.

In other finding education emerges as a more crucial factor that is shaping farmers' perceptions. Here, farmers having higher levels of education are more significantly able to adopt and understand the potential of social media. It suggests that empirical ability, openness, and awareness have a central role in digital adoption. Since educated farmers are rigged to understand, assess, and execute information in a substantial approach. But also it increases the tendency of incorporating social media into their agricultural practices. This does not only indicate the importance of access to technology but also the ability to use it effectively.

Socio demographic components of the respondents further support these observations. The middle aged farmers' dominance indicates a group with significant farming experience. However, farmers' strong trust on apple cultivation along with other main crops such as peas and potatoes, indicates its vulnerability to climatic and market-related concerns. In such a way that reliable

information disseminated timely through social media can play a substantial role in remodeling agricultural practices in this region of Himachal Pradesh. Furthermore, the findings recommend that having current digital interventions may not be adequately aligned with specific needs of farmers.

In discussion, the study indicates that the barriers to social media engagement in agriculture among farmers are not only technological but are also connected with awareness, educational, trust and informational quality factors. More integrated approaches are required to manage these challenges beyond improving usability. Such efforts are necessary for using the full potential of social media as an agricultural development tool and improving the livelihood of farmers.

CONCLUSION

Although a substantial share of farmers in Kullu district recognize the potential of social media to improve agricultural practices and livelihoods. This perception does not naturally translate into its effective and consistent adoption. The findings highlight that factors such as ease of use and technical literacy, which are often considered as influencing factors to technology adoption, do not significantly influence farmers' engagement with social media. This depicts that the barriers interrelated with social media adoption in agriculture enhance over basic usability and practical skills.

Comparatively, the effectiveness of social media as an agricultural tool emerges to depend more on the quality, and contextual applicability of the information being shared. Farmers are more likely to prefer content that is trustworthy, locally applicable, and practically useful. These factors are positively valued in a region where agriculture is closely attached to climatic uncertainties and market fluctuations. Regarding this, education emerges as an important factor, as found that more educated farmers demonstrate a greater ability to utilize the potential of social media. This indicates that the importance of cognitive and informational capacity in shaping positive attitudes towards digital platforms.

Overall, the study suggests that the barriers to social media engagement among farmers for agricultural use are multidimensional. It is rooted not only in technological limitations but also in reasons related to farmers' awareness, trust, and content suitability. Therefore, to enhance the role of social media in agriculture requires a more comprehensive approach that integrates improved access with reliable, localized, and need based information. These efforts strengthen farmers' awareness and capacity to engage with digital tools effectively. Addressing these broader challenges are crucial for applying the full potential of social media as a driver of agricultural development and improving the livelihood of farmers

REFERENCES

1. Babu, J. M., Yadav, A., & Negi, P. (2025). A Step Toward Digital Inclusion in Agriculture: Managing ICT Capacity-Building and Measuring Outcomes Among

Smallholder Farmers. *Indian Journal of Finance*, 68. <https://doi.org/10.17010/ijf/2025/v19i8/175234>

2. Bilivogui, P., & Feng, W. (2022). The Cardinal

- Role of Digital Marketing in Morocco's Agricultural Sustainable Development. Research Square (Research Square). <https://doi.org/10.21203/rs.3.rs-2095677/v1>
3. Ćirić, M., Carić, M., Kuzman, B., & Zekavica, A.. Farmer innovativeness and its impact on Internet and social media adoption. *Ekonomika poljoprivrede*, 65, 243-256. DOI: 10.5937/ekoPolj1801243C
 4. Digital 2026: India. DataReportal. <https://datareportal.com/reports/digital-2026-india>
 - 5.
 6. Destari, F., Handriana, T., Afandi, Moch. F., & Komariyah, S. (2024). Holistic analysis of social media user behavior in agricultural context: Bibliometric analysis and systematic review. *International Journal of Data and Network Science*, 8(3), 1659. <https://doi.org/10.5267/j.ijdns.2024.3.001>
 7. KAUR, M. (2024). Unveiling the link between changing weather patterns and apple output in Shimla, Himachal Pradesh, India. 10.21203/rs.3.rs-4481221/v1
 8. Kaur, J. (2025). Marketing performance and factors influencing farmers' choice for agricultural output marketing channels: The case of potato (*Solanum tuberosum*) in India. Research Square (Research Square). <https://doi.org/10.21203/rs.3.rs-7348432/v1>
 9. Kumar, A., Ranjan, A., Bharti, S. B., et al. Agricultural Extension's Key Role in Modern Farming: A Review. *Asian Journal of Agricultural Extension, Economics & Sociology*, 41, 475-485. DOI: 10.9734/ajaees/2023/v41i92066
 10. Madhushekar, B. R., Rani, V. S., Padmaveni, C., Reddy, M. M., & Kumar, B. A. (2023). Analysis of Farmer's Perception and Usage of Social Media in Agriculture. *International Journal of Bio-Resource and Stress Management*, 14, 1646. <https://doi.org/10.23910/1.2023.4972a>
 11. Mishra, A., Singh, J., Malik, J. S., & Maurya, A. S. (2022). Social media use profile of farmers in Haryana. *Indian Journal of Extension Education*, 58(3), 51-54. <https://doi.org/10.48165/IJEE.2022.58311>
 12. Mithun, G., Triveni, G., GRK, S., S, S. K., G, G. R., & B, P. K. (2025). Perception of livestock farmers towards social media as an information source in Andhra Pradesh. *International Journal of Agriculture Extension and Social Development*, 8, 75. <https://doi.org/10.33545/26180723.2025.v8.i9sb.2425>
 13. Nurfathiyah, P., Sarwoprasodjo, S., Muljono, P., & Matindas, K. (2024). The Influence of Environmental factors on the use of social media for e-commerce in ornamental plant farmers. *BIO Web of Conferences*, 123, 3007. <https://doi.org/10.1051/bioconf/202412303007>
 14. Palaniswamy, V., & Raj, K. (2022). Social media marketing adoption by agriculturists: A TAM based study. *International Journal of Professional Business Review: Int. J. Prof. Bus. Rev.*, 7(3), 8. <https://doi.org/10.26668/businessreview/2022.v7i2.537>
 15. Patel, P., & Mallappa, V. K. H. (2022). Predictive Factors for Farmers' Knowledge of Social Media for Sustainable Agricultural Development. *Indian Journal of Extension Education*, 55. <https://doi.org/10.48165/ijee.2022.58412>
 16. Sandeep, G. P., Prashanth, P., Sreenivasulu, M., & Madhavilata, A.. Social Media in Agriculture – A Profile Analysis. *International Journal of Current Microbiology and Applied Sciences*, 9, 2727-2736. DOI: 10.20546/ijcmas.2020.907.322
 17. Sugandini, D., Effendi, M. I., Sugiarto, B., Kundarto, M., & Kawuryan, S. H. E. (2023). Resistance to Agricultural Commercialization with Lack of Marketing Digital Adoption in Indonesia's Dieng Plateau. *International Journal of Sustainable Development and Planning*, 18(6), 1715. <https://doi.org/10.18280/ijstdp.180607>
 18. Yasmin, B., Roy, A., Mandal, M. H., et al.. Challenges and Prospects of Apple Cultivation in Himachal Pradesh. *Space and Culture, India*, 10, 53-68. <https://doi.org/10.20896/saci.v10i4.1252>