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Understanding Socio-Digital Dynamics: A Multifaceted Study of Social Media Use and Its Conditional Influence on Academic and Cultural Engagement Outcomes Among Post-Millennial Learners.

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ABSTRACT

The increased association of social media into the everyday lives of post-millennial scholars has increased significant interest in its academic and socio-cultural implications. This study examines the impact of social media usage on academic performance, stress and anxiety levels, and digital cultural engagement among learners in Navi Mumbai .This research paper is using a quantitative approach. Statistical analyses, including regression, t-tests, Chi-square, and correlation, which implies that social media usage does not have a statistically significant influence on academic outcomes, psychological well-being, or cultural engagement when considered in terms of overall usage patterns. The findings indicate that social media variables explain only a minimal variation in academic performance and show no meaningful association with stress levels or community bonding. These results suggest that the effects of social media are complex and are influenced more by qualitative factors such as purpose of use, content type, and user behavior rather than mere usage intensity, highlighting the need for a more complex and multidimensional understanding of socio-digital interactions.

Keywords: Social Media, Academic Performance, Cultural Engagement, Mental Wellness, Post-Millennial Learners, Data Analytics

INTRODUCTION

The increased influence of digital technologies has basically changed the view of education, communication and cultural interaction. Among these technologies, social media platforms such as Instagram, WhatsApp, and YouTube have become associated in the daily lives of post-millennial learners, commonly referred to as Generation Z. As a result, the academic horizon is increasingly influenced by socio-digital interactions that extend beyond traditional classroom boundaries.

Social media offers vast opportunities for academic engagement, collaboration, and knowledge sharing. Learners can access diverse educational content, participate in virtual communities, and develop digital literacy skills . Online discussion forums, educational influencers, and peer networks enable real-time information exchange, fostering both formal and informal learning environments. Consequently, social media has the potential to enhance academic performance by supporting self-directed learning, critical thinking, and global awareness.

However, alongside these benefits, the pervasive use of social media introduces significant challenges that may adversely affect learners' academic outcomes. Excessive engagement with digital platforms often leads to reduced attention span, procrastination, and diminished academic focus. The constant change of notifications and the tendency for multitasking can disrupt cognitive processes essential for deep learning. Furthermore, the prioritization of entertainment over educational content may contribute to declining academic discipline among students, raising concerns about the long-term implications of sustained digital exposure.

Beyond academic performance, social media also plays a crucial role in shaping cultural perceptions and identities among post-millennial learners. Exposure to diverse cultures, languages, and global perspectives can promote inclusivity and intercultural competence.

The concept of "socio-digital trade-offs" emerges as a critical framework for understanding these contrasting effects. While social media facilitates connectivity, creativity, and collaborative learning, it simultaneously introduces risks related to distraction, misinformation, and cultural dilution. The balance between these positive and negative outcomes is influenced by factors such as usage patterns, digital literacy, and individual self-regulation. Therefore, it becomes essential to examine not only the extent of social media usage but also the nature and purpose of engagement.

In this context, the present study aims to explore the multifaceted impact of social media on post-millennial learners, with a specific focus on academic performance and cultural outcomes. By adopting a comprehensive analytical approach, the research seeks to identify the underlying dynamics of socio-digital interactions and their implications for education and society. Understanding these trade-offs is crucial for educators, policymakers,

and researchers in designing strategies that maximize the benefits of digital technologies while mitigating their adverse effects.

LITERATURE REVIEW

Various studies have conducted on the impact of social media on students' academic performance and socio-cultural behavior, highlighting both positive and negative outcomes.Zerrouk et al. (2026) conducted a systematic review and meta-analysis on social media use and academic performance. The study focuses on excessive and problematic use of social networking platforms which is generally associated with lower academic performance, particularly when social media usage becomes habitual and uncontrolled. Amez & Baert (2020) reviewed multiple empirical studies and concluded that there is a predominantly negative relationship between smartphone/social media use and academic success, especially when measured through GPA indicators. Pyhältö et al. (2025) conducted a systematic literature review of 34 studies and reported that off-task use of social media and smartphones is negatively correlated with academic achievement among students. Lukose & Agbeyangi (2025) conducted an empirical study and observed that although social media can assist in academic work, it often acts as a major source of distraction, negatively impacting assignment completion and academic focus.

RESEARCH OBJECTIVES AND HYPOTHESIS

1. To examine the impact of social media usage on the academic performance of post-millennial learners.
2. To analyze the relationship between social media usage and stress/anxiety levels among students.
3. To investigate the influence of social media on digital cultural engagement and community bonding.

Hypothesis for the Study:

H_{o1}: Social media usage has no significant impact on academic performance.

H_{11}: Social media usage has a significant impact on academic performance.

H_o2: Social media usage has no significant effect on stress and anxiety levels.

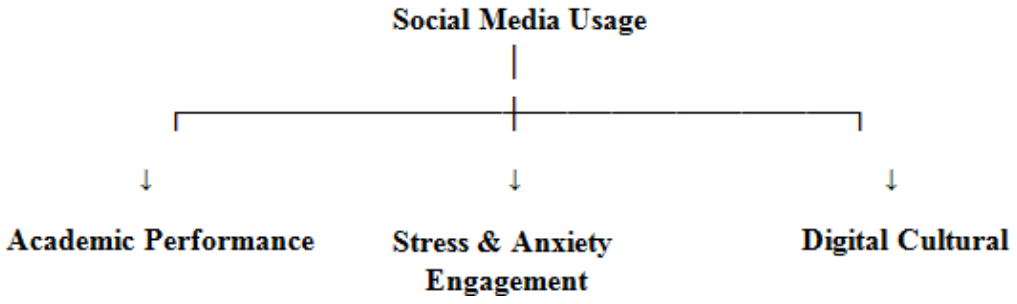
$H_1$2: Social media usage significantly affects stress and anxiety levels.

Ho3: Social media usage does not have a significant positive influence on digital cultural engagement.

H13: Social media usage has a significant positive influence on digital cultural engagement.

FRAMEWORK:

The study adopts a multi-variable analytical framework where social media usage is treated as the independent variable influencing three key outcomes—academic performance, stress and anxiety levels, and digital cultural engagement. Each relationship is examined using statistical models to determine the presence or absence of significant effects.



Hypothesis	Independent Variable → Dependent Variable Relationship	Suggested Test
H_{o1} / H_{11}	Social Media → Academic Performance	Independent samples t-test / Correlation/ANOVA
H_{o2} / H_{12}	Social Media → Stress & Anxiety	Chi_square test

H_{03} / H_{13}	Social Media → Digital Cultural Engagement	Spearman's correlation

RESEARCH METHODOLOGY

The study adopts a quantitative, descriptive and analytical research design to examine the relationship between social media usage and selected outcomes among post-millennial learners. The approach is cross-sectional, as data is collected at a single point in time.

Population: Post-millennial learners (e.g., undergraduate and postgraduate students)

Sampling Technique: Convenience sampling

Sample Size: 75

Data Collection method:

Primary Data collected using a structured questionnaire

Instrument includes Likert-scale items (1–5)

Sections:

- Social Media Usage
- Academic Performance
- Stress & Anxiety Levels
- Digital Cultural Engagement

DATA ANALYSIS AND FINDING:

Hypothesis 1:

H_{01}: Social media usage has no significant impact on academic performance.

H_{11}: Social media usage has a significant impact on academic performance.

Test Used:

- Independent Samples t-test (for comparing two groups)
- Simple Linear Regression
- ANOVA (if comparing groups)

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.171[a]	.029	-.013	.802	.029	.696	3	69	.557	1.824

a. Predictors: (Constant), How do you divide your social media time? , After using social media, how do you usually feel? , What is your primary purpose of using social media?

b. Dependent Variable: Average Academic Performance

The model shows a **very weak positive relationship** between the independent variables (how social media time is divided, feelings after use, and primary purpose of use) and academic performance, as indicated by **R = 0.171**. This suggests that these factors are only slightly related to academic outcomes.

The **R^2 value of 0.029** indicates that only **2.9% of the variation in academic performance** is explained by the model. This is a very small proportion, meaning that the selected social media variables have minimal explanatory power in predicting academic performance.

Further, the **Adjusted R^2 is -0.013**, which implies that the model does not improve prediction accuracy and is actually worse than using the mean value of academic performance alone. This suggests that the independent variables included in the model are not contributing meaningfully.

Finally, the **overall model is not statistically significant** ($F = 0.696$, $p = 0.557 > 0.05$), indicating that the independent variables, when taken together, do not significantly predict academic performance. Hence, the model is not suitable for explaining the relationship between social media usage and academic performance.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.342	3	.447	.696	.557[b]
	Residual	44.329	69	.642		
	Total	45.671	72			

a. Dependent Variable: Average Academic Performance

b. Predictors: (Constant), How do you divide your social media time? , After using social media, how do you usually feel? , What is your primary purpose of using social media?

Coefficients[a]

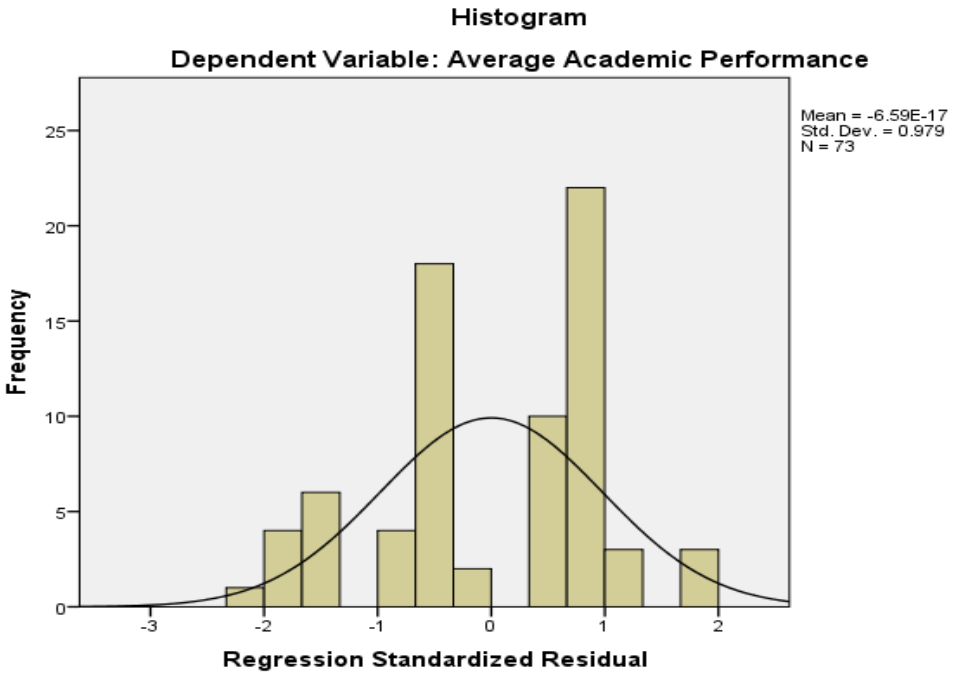
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.823	.550		6.954	.000	2.726	4.920
	What is your primary purpose of using social media?	-.065	.082	-.095	-.788	.434	-.229	.099
	After using social media, how do you usually feel?	-.091	.076	-.142	-1.197	.236	-.243	.061
	How do you divide your social media time?	.015	.130	.014	.112	.911	-.246	.275

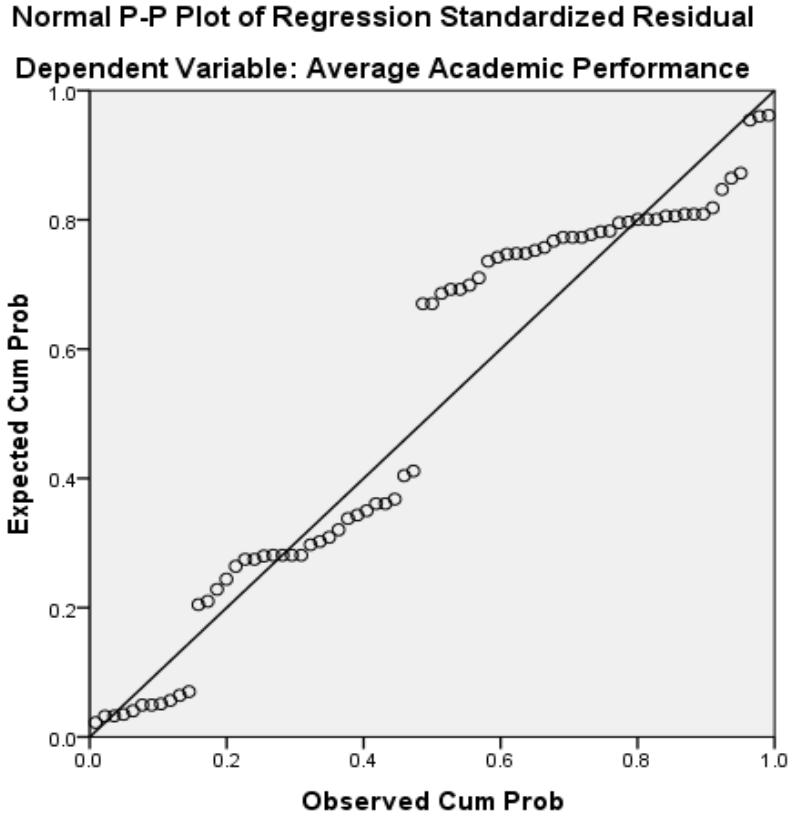
a. Dependent Variable: Average Academic Performance

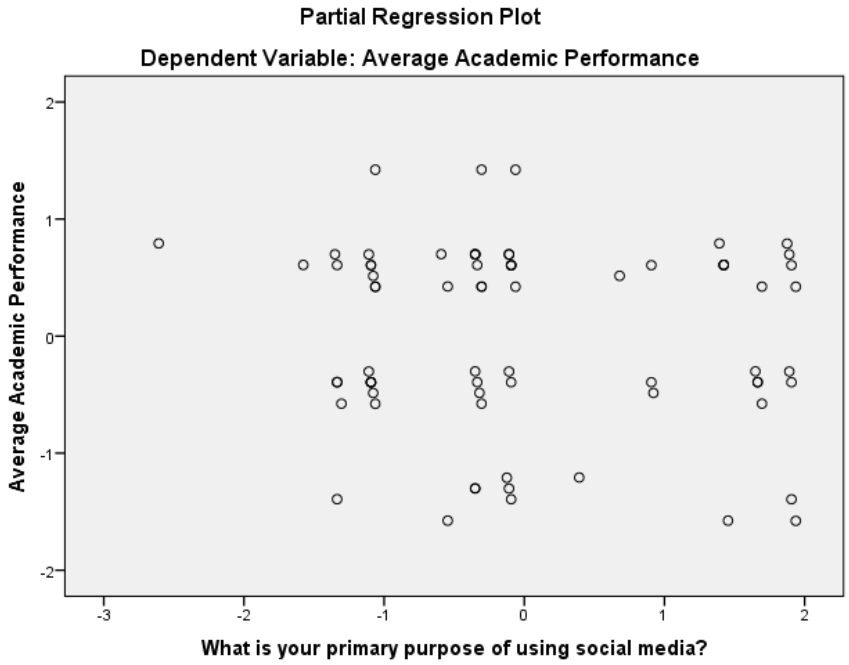
Residuals Statistics[a]

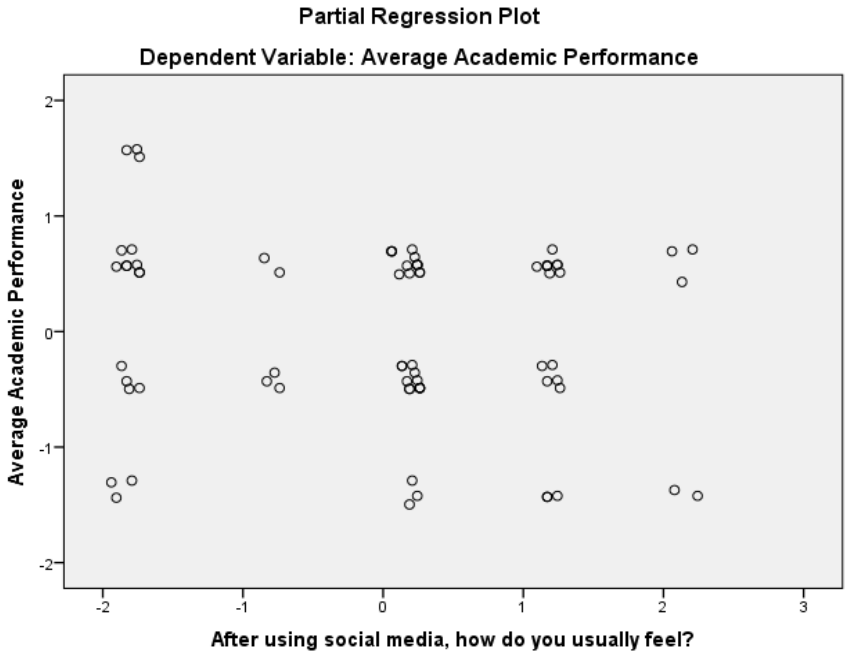
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.09	3.66	3.41	.137	73
Residual	-1.611	1.418	.000	.785	73
Std. Predicted Value	-2.361	1.835	.000	1.000	73
Std. Residual	-2.010	1.769	.000	.979	73

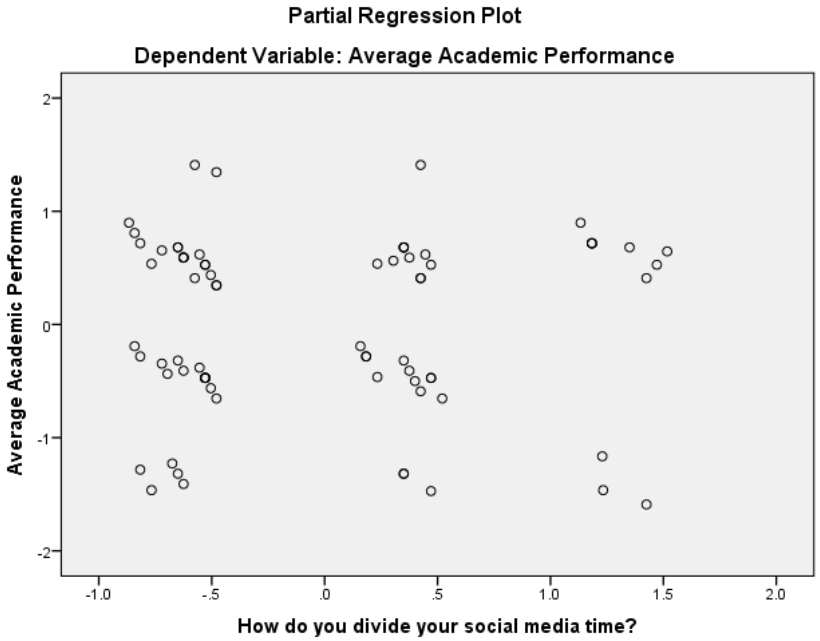
a. Dependent Variable: Average Academic Performance


Histogram
Dependent Variable: Average Academic Performance
Mean = -6.59E-17
Std. Dev. = 0.979
N = 73
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Average Academic Performance
Expected Cum Prob
Observed Cum Prob


Partial Regression Plot
Dependent Variable: Average Academic Performance
Average Academic Performance
What is your primary purpose of using social media?


Partial Regression Plot
Dependent Variable: Average Academic Performance
Average Academic Performance
After using social media, how do you usually feel?



When we used independent t test to find the significant impact of social media on Academic performance, the following was observed

Group Statistics

	How do you divide your social media time?	N	Mean	Std. Deviation	Std. Error Mean
Average Academic Performance	1	22	3.41	.854	.182
	2	51	3.41	.779	.109

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Average Academic Performance	Equal variances assumed	.348	.557	-.013	71	.990	-.003	.205	-.411	.405
	Equal variances not assumed			-.013	36.793	.990	-.003	.212	-.433	.428

An independent samples t-test was conducted to compare academic performance between two groups based on social media usage. Levene's test indicated that the assumption of equal variances was met ($p = 0.557$). The t-test results showed that there was no statistically significant difference in academic performance between the groups ($t(71) = –0.013$, $p = 0.990$). The mean difference was negligible (–0.003), and the confidence interval included zero, further confirming the absence of a significant effect.

Hypothesis 2:

$H_0$2: Social media usage has no significant effect on stress and anxiety levels.

$H_1$2: Social media usage significantly affects stress and anxiety levels.

- **Test Used:**
  - Chi-square test (for categorical variables)

To find this significance Chi-square test was applied and the following results were obtained:

Social media causes academic stress/anxiety * How many hours do you spend daily on social media? Crosstabulation

Count

		How many hours do you spend daily on social media?			
		High	Low	Medium	Total
Social media causes academic stress/anxiety	Moderate	4	12	8	24
	Strongly Agree	5	8	3	16
	Strongly Disagree	5	17	11	33
Total		14	37	22	73

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.464[a]	4	.651
Likelihood Ratio	2.394	4	.664
N of Valid Cases	73		

A Chi-square test of independence was conducted to examine the relationship between social media usage (measured in hours) and stress/anxiety levels. Since the **p > 0.05** → No significant association also **Pearson Chi-Square = 2.464, df = 4, p-value (Sig.) = 0.651. Hence There is NO statistically significant association between: Social media usage (hours) and Stress/anxiety levels.**

The results indicated that there is no statistically significant association between the variables ($\chi^2(4) = 2.464$, $p = 0.651$). This suggests that the amount of time spent on social media does not significantly influence students' stress or anxiety levels.

Hypothesis 3:

Ho3: Social media usage does not have a significant positive influence on digital cultural engagement.

H13: Social media usage has a significant positive influence on digital cultural engagement.

Test Used: Spearman's Correlation (for ordinal/non-normal data), various factors like usage of whatsapp, instagram, reel making, clicking photo and content creation was under social media usage and factors like social bonding, building community bonding etc was on the dependent variable side, so first the data was normalised and the correlation was evaluated.

For finding the hypothesis 3, independent variables were social media usage like photo reel video, instagram, youtube, whatsapp and dependent variables are sharing and feeling connected, building community bonding, social bonding etc. Spearman's correlation was calculated to find the significance between CM_Index (Community Bonding Index) and SM_index (Social Media Index) and the following results were obtained:

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.627	3.423	3.832	.409	1.119	.083	2
Item Variances	.220	.193	.246	.053	1.277	.001	2
Inter-Item Covariances	-.002	-.002	-.002	.000	1.000	.000	2
Inter-Item Correlations	-.010	-.010	-.010	.000	1.000	.000	2

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
7.2548	.435	.65956	2

Correlations

		SM_Index	CM_Index
SM_Index	Pearson Correlation	1	-.010
	Sig. (2-tailed)		.944
	N	52	52
CM_Index	Pearson Correlation	-.010	1
	Sig. (2-tailed)	.944	
	N	52	52

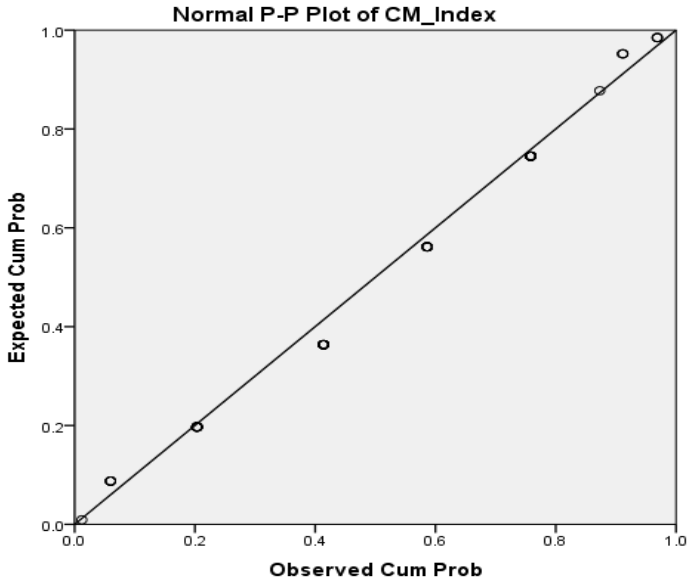
Correlations

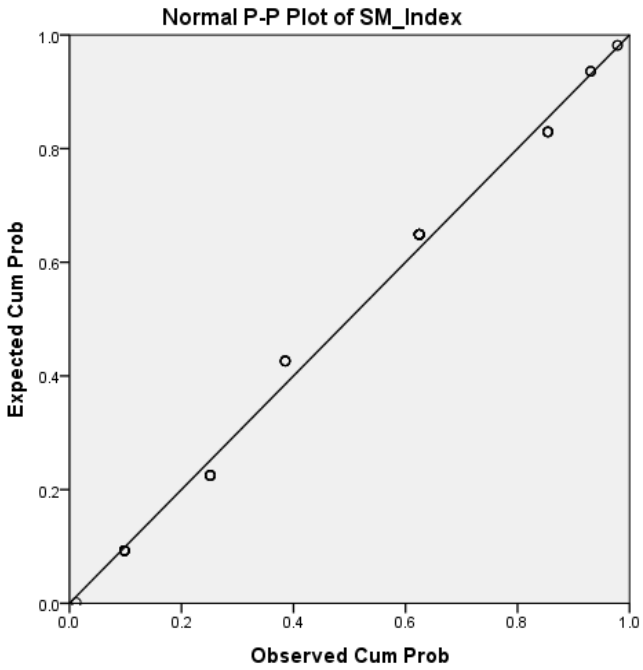
			SM_Index	CM_Index
Spearman's rho	SM_Index	Correlation Coefficient	1.000	.039
		Sig. (2-tailed)	.	.785
		N	52	52
	CM_Index	Correlation Coefficient	.039	1.000
		Sig. (2-tailed)	.785	.
		N	52	52

CONCLUSIONS:

A Pearson correlation analysis was conducted to examine the relationship between social media usage and cultural engagement. The results revealed a negligible negative correlation ($r = –0.010$) which was not statistically significant ($p = 0.944$). This indicates that there is no significant relationship between social media usage and cultural engagement among the respondents.

The absence of a significant relationship may indicate that cultural engagement is influenced more by qualitative aspects of digital interaction (such as type of content or emotional involvement) rather than overall usage intensity.





FINAL CONCLUSION:

Overall, the findings of the study indicate that social media usage does not have a statistically significant impact on academic performance, stress and anxiety levels, or digital cultural engagement among post-millennial learners. Social media usage alone is not a strong predictor, other qualitative factors influence outcomes. The results suggest that the influence of social media is more complex and may depend on qualitative factors such as the type of usage, user behavior, and contextual engagement rather than mere time spent or general usage patterns.

FUTURE SCOPE.

Instead of treating social media as a single construct, future studies can examine the impact of specific platforms such as Instagram, YouTube, and WhatsApp individually. This may help identify which platforms contribute positively or negatively to academic and cultural outcomes.

Overall, future research has the potential to provide a more comprehensive and nuanced understanding of the socio-digital trade-offs associated with social media usage by incorporating broader variables, improved methodologies, and deeper contextual analysis.

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