SOCIAL NETWORKING SITES AND TECHNOLOGY ACCEPTANCE MODEL: A SYSTEMATIC REVIEW AND META-ANALYSIS

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ABSTRACT

The Technology Acceptance Model (TAM) has been at the forefront of research on technology adoption in a wide range of studies. The present study examines the interrelationships between the core constructs of TAM and the moderating effects of age, sample size, SNS types, publication year, and location to assess TAM's suitability for the research pertaining to social networking sites. The methodology incorporates application of PRISMA to identify, screen, and include relevant studies. A total of 55 studies (N=24162) satisfied the inclusion criteria. In order to validate the relevant literatures, a random-effects meta-analysis was conducted to determine the average correlation among the stated variables along with subgroup/moderator analysis. The outcome of the current research work reflects that when participants perceive greater levels of usefulness or ease of use, they also tend to exhibit stronger behavioral intentions (SNS) towards the technology being examined. Additionally, this study demonstrates that many categories of constructs/variables, like location/cultural groups, sample size, publication year, SNS types, and age have a significant impact under TAM. The study offers insights for the design and introduction of new social networking platforms and emphasizes on the importance of customer centric product design and development.

Keywords: Tam, Meta-Analysis, Systematic Literature Review, Social Networking Sites.

INTRODUCTION

As of October 2023, the worldwide tally of internet users amounted to 5.3 billion, constituting an estimated 65.7 percent of the overall global populace. A significant proportion of the worldwide populace (61.4 percent) participated in social media activities, comprising 4.95 billion individuals. The increasing integration of technology in social interactions, particularly in relation to self-presentation on social networking sites (SNS), underscores the necessity for scholarly inquiry into emerging paradigms concerning media, socialization, and the dynamics of online interactions (Chang et al., 2022). The wide-ranging adoption of social networking sites indicates that users have accepted their utility in their personal, social and professional life. A voluntary acceptance and usage of social media must be driven by an individual's own intentions and motives.

Although TAM exercises great influence over the scholarly research on acceptance and usage of information system (Venktatesh and Davis, 2000), its conception was rooted in the design of system's features with no insights into the nature of social networking sites as driven by

individual usage patterns (Rauniar et al., 2013). As such, the factors leading to the adoption of social networking platforms differ from those that drive the adoption of traditional information systems and technologies due to the involvement of community based collective and interdependent behaviours on these platforms (Carlos and Soares, 2011). Researchers should reassess the existing research and build a context-based narrative of social networking sites' usage by many users (Rauniar et al., 2013).

It was found that contrary to what was proposed in the theoretical foundation of TAM, the primary TAM constructs namely perceived usefulness (PU) and perceived ease of use (PEU) have no effect on attitude or behavioural intentions (BI) of the social networking site (SNS) users (Curran and Lennon, 2011). However, several prior studies confirmed the presence of a significant link between TAM and social networking sites (Lane and Coleman, 2012) and suggested that TAM's ability to explain the adoption of a wide range of technologies and absorbing new variables as extensions of the original model supports its aptness for predicting the adoption of SNS. PEU and PU, the primary constructs of TAM, were found to be significant drivers of acceptance and usage by users in several TAM based studies in the SNS context (Weerasinghe and Hindagolla, 2018). Such conflicted research findings raise a concern about the validity of TAM as a theoretical underpinning of the studies examining adoption of the social networking sites (Al-Qaysi et al., 2020). Therefore, further investigation into the suitability of TAM for SNS-based studies is needed (Al-Qaysi et al.).

The present study focuses to address the above gap in the existing literature by carrying out a systematic literature review of the social media and social networking sites (SNSs) studies grounded in the theoretical framework of TAM. It examines the interrelationships between the core constructs of TAM i.e., perceived ease of use (PEU), perceived usefulness (PU) and behavioural intention (BI) with the help of systematic review and meta-analysis method (PRISMA) of literature survey & analysis. The method employed in this study has demonstrated increased statistical power and therefore, greater generalizability of the findings is likely to prevail. The present study adds to the extant body of literary works through investigating the effect of moderating variables such as sample size, cultural differences, age, time of publication and types of SNS on the interrelationships among TAM constructs.

The study on current research work holds significant importance in understanding the evolving role of social networking sites (SNS) in shaping technology adoption behaviours (Ma & Liu, 2004). In an era dominated by digital connectivity, SNS have become influential platforms that impact individual perceptions, attitudes, and behaviours towards emerging technologies (Tao et al., 2020). By systematically reviewing existing literature and conducting a meta-analysis, this study bridges the gap between the Technology Acceptance Model (TAM) and the pervasive role of SNS, offering a comprehensive understanding of how perceived ease of use, perceived usefulness, and other TAM constructs are influenced within the context of SNS. Moreover, the study contributes to the development of more effective communication and marketing strategies on SNS, ultimately fostering greater usage of innovative technologies in various segments.

Technology Acceptance & Social Networking Sites

Davis (1986) pioneered the large inventory of research investigations into adoption of technology by proposing the Technology Acceptance Model to demonstrate the reasons behind acceptance and rejection of information systems (Szajna, 1996; Ma and Liu, 2004). Anchored in the Theory of Reasoned Action (Fishbein and Ajzen, 1980), The Technology Acceptance Model (TAM) is a highly prevalent and comprehensive theoretical framework employed to analyse user

attitudes and actions in relation to technology (Ma and Liu, 2004; King and He, 2006; Carlos and Soares, 2011; Rauniar et al., 2013; Weerasinghe and Hindagolla, 2018; Naqvi et al., 2020; Lee and Lehto, 2013; Chen, 2019). Since its conception a little over four decades ago, TAM has emerged as a consequential theoretical framework (Weerasinghe and Hindagolla, 2018) that has been employed in a variety of research settings due to its simplicity (Carlos and Soares, 2011; Singh and Srivastava, 2019), generalizability (Rauniar et al., 2013) and accuracy (Naqvi et al., 2020). The Figure 1 stated ahead is provides a structural framework to Technology Acceptance Model (Davis et al. 1989).



FIGURE 1 TECHNOLOGY ACCEPTANCE MODEL - TAM

Source: Davis et al. (1989)

Earlier studies have been employing TAM to investigate the determinants of SNS adoption (Weerasinghe and Hindagolla, 2018) where it was confirmed that TAM is sufficiently efficacious for explaining the acceptance and usage of social networking sites (Willis, 2008). It has been underlined as a strong framework that was successfully applied in several studies aimed at explaining the adoption of SNS as a technology under a wide range of research settings (Weerasinghe and Hindagolla, 2018). Yet, a surfeit of previous studies involving TAM notwithstanding, empirical investigations so far have not been able to bring a conclusive and clear results to the fore as their findings differ in case of statistical relevance, direction, or degree of impact (Ma and Liu, 2004). Thus, the present study endeavours to address the below stated research questions:

RQ1: What is the strength of the association between core TAM constructs in the context of social networking sites?

RQ2: How does social networking sites usage intention vary under the influence of moderating influences over the TAM relationships?



Source: Author's own compilation

FIGURE 2 CONCEPTUAL FRAMEWORK

Source: Author's own compilation.

Further, Figure 2 reveals the stake of moderators under the conceptual framework of TAM. The following sections present the findings of previous research that assessed the association between generic constructs of TAM:

PU - PEU

The interrelationships among original constructs of TAM model is established (Rauniar et al., 2013). Moreover, PEU has been established as a vital predictor of PU (Lane and Coleman, 2012) as a system that is easier to use is perceived to be more useful (Venkatesh and Davis, 2000). In relation to social media, PU is expressed as the user's belief that a particular site can facilitate an individual in meeting his goal-based needs whereas PEU refers to the extent to which usage of the site is effortless (Rauniar et al., 2013).

PU and PEU – BI

Both PU and PEU have been found to have a strong effect on BI (Constantinides et al., 2013) and it explains a significant portion of PEU's effect on BI (King and He, 2006). TAM contended that PU along with PEU and PE determine the attitude toward social media which in turn positively influences the intention toward social media usage (Ngugen et al., 2021). Interestingly, several studies that took place earlier under varied research contexts such as information technology, adoption of technology in organizations (Venkatesh & Davis, 2000), world wide web (Agarwal & Karahanna, 2000), online shopping (Gefen et al., 2003), & mobile banking (Gu et al., 2009) proposed and confirmed the direct impact of PU and PEU on BI notwithstanding the exclusion of attitude.

Moderators of the study

(Yousafzai et al., 2007) states that TAM has been shown to be a strong model with excellent predictive validity; yet the outcomes of several works portray that in few instances, the model does not properly explain and justifies the phenomenon under investigation. In some instances, the predictive power of an independent variable and/or nature of the relationship may vary systematically as a function of one or more additional variables. This is where the significance of

moderators originates. In this way, the present study inculcates different set of moderators under TAM model framework.

Location (Culture): The human behaviour differs across different locations. In the same way, not all models fit ideally well across different cultural patterns. The TAM model was applied in research across different locations and countries, and it wasn't found to be universally suitable. The effects of Perceived Usefulness and Perceived Ease of Use were observed to be non-significant in the context of e-mail usage in Japanese nation (Straub et al., 1991). Further, a study reflected that the perceived ease of use played a comparatively extra vital role in Turkey than in the United States in the context of mobile phone service adoption (Mao et al., 2005). Hence, location as a moderator can contribute to the development of theories by highlighting the role of contextual factors in shaping relationships between variables. This can lead to the formulation of more comprehensive and robust theoretical frameworks.

Social Networking Sites (SNS): SNS platforms can play a significant role as moderators for research studies, particularly in the context of modern communication and information dissemination. The studies based on TAM have been implemented in multiple technological domains. It seems probable that perceived ease of use is playing a larger part in development and implementation of complex new technologies like electronic and voice mail as well as transactional websites (Addams et al., 1992, Aladwani, A.M. 2002). Social media breaks down geographic barriers, allowing researchers to engage participants from different parts of the world without the need for physical presence. This facilitates cross-cultural and cross-national research studies.

The above studies indicate towards a bifurcation of SNS – transactional websites and social media channels. The first type of SNS relates to websites such as MakeMyTrip, Trivago, OYO etc. whereas the second type refers to social media podium like Facebook, YouTube, Twitter etc. The present study follows this classification and uses SNS as a collective representation of transaction websites and social media platforms.

Participants Age: The TAM seeks to explain and predict how users perceive and accept new technologies. Hence, the researchers suggest that age can play a significant role as a moderator in research studies based on TAM, influencing the relationships and outcomes predicted by the model. It has been found that for younger students, the perceived usefulness of e-learning technologies had a stronger association with adoption intentions, whereas for older students, the perceived ease of use had a healthy association (Tarhini et al., 2014). Hence, different generations have varying levels of familiarity and comfort with technology.

Sample size: Sample size is a critical consideration in any research study, including those based on TAM. It refers to the number of respondents included in the study. It plays a significant role as a moderator, influencing the validity and applicability of the findings under investigation. Increasing the sample quantity will provide a clearer indication of the metaverse technology's acceptance. Further, a recent meta-analysis conducted on behavioural context emphasized upon inclusion of sample size for validating the study as a part of subgroup analysis (Srivastava et al., 2023). Hence, the size of the sample can impact the extent to which the study's findings can be generalized beyond the sample itself.

Publication Year: In addition to the above variables proposed as moderators, the present study looked at the time of publication as a possible influencer. It was also observed that there is a diminished emphasis on accounting for time delays and the influence of varying time intervals

between measurements especially in the backdrop of longitudinal studies (Card, 2012). Hence, publication year can act as a moderator in research studies based on TAM by influencing the relevance, context, and potential changes in technology and user behaviour over time.

In the light of the literature presented above and the research questions outlined earlier, the present study is undertaken with the following objectives:

1.To assess the strength among TAM constructs with respect to intention usage.

2.To examine the different set of moderators and their effects on usage intention under the framework of TAM.

METHODS

The specific details of a given systematic review were conveyed using the Preferred Reporting Items for Systematic Reviews and using the meta-analysis approach. This work mostly utilizes secondary data resources.

Selection Criteria/bases

The study followed PRISMA guidelines and PICOS methodology for paper selection, incorporating English-language research extensively discussing TAM (Davis, 1989). Studies were excluded if they lacked SNS intention reports, representative samples, or used varied interventions. TAM-based inclusion required reported correlations among perceived usefulness, perceived ease of use, and behavioural intention. All quantitative study designs meeting these criteria were considered.

Study Identification

The authors of this study cumulatively executed an investigation using a standard database i.e. Scopus. They use specific keywords such as TAM, social media, Social Networking, TAM and Systematic Literature Review, TAM & Meta-Analysis to identify and synchronize the various eligible studies. A cumulative number of searches were conducted between the months of April and October 2023. The researcher initially included 371 studies, that underwent a screening process spanning from 1989 to 2023. Moreover, the analysis incorporated 55 articles/studies spanning from 2010 to 2023. The reference lists consist of the total number of research publications that have been chosen for insertion in the reference grid of the necessary systematic literature review (McEachan et al. 2011) were carefully examined manually, following a methodical process.

RESULTS

Identification Stage

The search method conducted on Scopus, a significant electronic database, yielded a total of 371 records. The collection consists of 371 documents, including journal articles, theses, books, and conference proceedings (Nejad et al. 2004). In the second part of the identification stage, no identical entries were located, however 32 records were deemed ineligible by automated techniques utilized throughout the scopus search database phase. Following the keyword search step, the database automatically disregarded 32 studies. The implementation of PRISMA approach was assisted through the utilisation of the Endnote software.

Screening Stage

At first, there were 339 records that went through the screening stage. However, 199 of these records were eliminated since they did not have the TAM variables or did not use TAM as a theoretical framework. Additionally, this discrepancy of 140 was classified under the heading of "reports sought for retrieval." Of these, 31 reports were classified as "reports not retrieved" because the writers were unable to access them. This resulted in a discrepancy of 109, which was included in the "reports assessed for eligibility" category. Among these, 53 reports were rejected based on the criteria of "three valid reasons". Within reason 1, a total of 17 reports were removed due to the inadequacy of the constructs used in the stated investigations. Within reason 2, a total of 24 reports were discarded due to the absence of an explanation for the correlation. Thirteen reports were omitted under reason 3 because the concept of 'Intention' was not included in the studies cited as shown in Figure 3.

Inclusion Stage

The PRISMA is the appropriate methodological resource with respect to providing a rationale for the sample size. It is a collection of instructions that shows the quantity of studies that were identified, reviewed, incorporated and omitted at every step of the evaluation series. The PRISMA flow chart enhances lucidity & showcases the appropriateness of the sample size, as determined by the inclusion and exclusion criteria (Page et al., 2020). According to Lin (2018), a sample size ranging from 10 to 20 could yield appropriate findings for meta-analysis. Overall, fifty-five research works that matched the inclusion criteria were identified as shown in Figure 3. The pertinent data got drawn from journal papers or theses. Consequently, the fifty-five-research works were incorporated, comprising a combined sample size of 24162 participants. The comprehensive particulars of the screening procedure are visible in the PRISMA flowchart stated in Figure 3.



FIGURE 3 PRISMA

Source: (Page et al., 2020).

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		REV	IEW O	T F STUD	Table 1 DIES ON	N (TAM) MO	ODEL	
S. N.	Author (Citation)	N	PU - P EU (R)	PU -BI (R)	PEU - B I (R)	Construc t Name	Behaviour (Context)	Sample Details
1	Shi and Niu (2010)	77	0.55	0.45	0.26	SNS Intensity	SNS usage	Chinese respondents
2	Mahan (2011)	617	0.56	0.36	0.65	Behaviou ral Intention	Response to Sport Marketing via digital social media.	Online respondents
3	Pentina et al. (2012)	65	0.17	0.56	0.17	Intention to adopt SNM	Social Network Marketing	Business executives of Midwest
4	Braun (2013)	124	0.36	0.54	0.31	Intention to use	SNS usage	Older adults of Midwestern city
5	Chang and Yang (2013)	521	0.67	0.64	0.66	Behaviou ral Intention to use	Blog	Blog Users in Taiwan
6	Park et al. (2013)	852	0.66	0.45	0.32	Intention to using smartpho nes	Factors influencing smartphone use and dependency.	Seoul residents
7	Rauniar et al. (2013)	389	0.54	0.69	0.6	Intention to use	Social media usage	Public and private university students
8	Al-Rahmi et al. (2015)	132	0.84	0.73	0.72	Intention to use	Social media usage	Students and researchers of national university of Malaysia
9	Al-Rahmi et al. (2015)	723	0.84	0.74	0.77	Intention to use	Social media usage	Five research universities scholars
10	Logan (2017)	502	0.41	0.39	0.39	Behaviou ral intent	Young adult intention	Internet users
11	Ayeh et al. (2016)	118 5	0.68	0.65	0.7	Usage intention	Adoption of online hotel reviews	Research company's online database respondents
12	Zhao et al. (2016)	791	0.53	0.5	0.43	Continua nce usage	Social media loyalty	LINE users

13	El-Kasim and Idid (2017)	513	0.87	0.28	0.06	Behaviou ral Intention	Social media usage	Public relations practitioner s
14	Balouchi et al. (2017)	211	0.41	0.63	0.4	Behaviou ral Intention	Online tourist behaviour	Iranian online tourist
15	Al-Dwairi (2017)	299	0.29	0.4	0.25	Intention to adopt	Social commerce adoption	Jordanian respondents
16	Hussein and Hassan (2017)	388	0.45	0.62	0.39	Behaviou ral Intention to use	Customer engagement on social media	General population
17	Doleck et al. (2017)	214	0.38	0.47	0.26	Behaviou ral intention	Facebook acceptance	CEGEP students
18	Lisha et al. (2017)	611	0.54	0.62	0.67	Continua nce intention	Social networking	University students
19	Kutlu et al. (2018)	233	0.67	0.51	0.59	Actual usage	Social applications	Online respondents
20	Amadu et al. (2018)	200	0.69	0.68	0.52	Behaviou ral Intention	Social media	University students
21	Hansen et al.(2018)	318	0.36	0.4	0.26	Behaviou ral Intention to use	Social media use	UK consumers
22	Bailey et al. (2018)	296	0.62	0.24	0.06	Consisten tly using SM	SM behaviours	Columbian university & Some other universities students.
23	Hong (2018)	228	0.41	0.81	0.42	Behaviou ral Sustainab le intention	Facebook use	College students
24	Tripopsakul (2018)	357	0.8	0.82	0.76	Social media adoption	Social media	Entrepreneu rial students
25	(Alshurideh et al. (2019)	320	0.73	0.45	0.61	Intention to use	Social Networks Acceptance	University of Fujairah UG & PG students.
26	Alenazy et al. (2019)	111 8	0.41	0.35	0.44	Social media use	Social media	Researchers University students
27	Gunasagaran et al. (2015)	33	0.55	0.73	0.59	Behaviou ral Intention	Social media adoption behaviour.	Architectur e students

28	Salloum et al. (2019)	410	0.55	0.07	0.07	E- learning system acceptanc e	E-learning	British University, Dubai
29	Alghizzawi et al. (2019)	560	0.51	0.01	0.32	Tourist behaviour	Facebook	Tourists
30	Alshurideha and Kurdi (2023)	580	0.56 3	0.26 3	0.45 6	Intention to use social networks	Utilization of social media to teach.	Individuals studying at two UAE universities
31	Alshurideh et al. (2023)	532	0.82 5	0.87 2	0.51 7	Intention to online learning	Relationship between social media content and consumers repurchase intention.	University students at both private and public universities
32	Ajibade and Zaidi (2023)	560	0.57 1	0.45 6	0.56 3	Behaviou ral Intention	Social media adoption behavior.	Students and teachers from a public and private university
33	Chou et al. (2023)	289	0.22	- 0.01 4	0.18 8	Usage Intention	Application of Facebook media technology to teaching.	Undergradu ate hospitality students
34	Mukminin et al. (2023)	145 4	0.80 7	0.72 3	0.72 9	Behaviou ral intention	Social Media Use for English writing.	Pre-service English teachers
35	Jingga et al. (2023)	117	0.79 9	0.74 1	0.76 4	Behaviou ral Intention to use	Indonesians' use of streaming music.	The Java island, people make use of music streaming services.
36	Ishfaq and Mengxing (2021)	194	0.40 3	0.28	0.04 5	Intention	Use of internet-based services (IBS) Pandemic Period	IBS users of Pakistan
37	Kikawa et al. (2022)	152	0.92	0.91	0.82	Performa nce of business	SMM strategies are used by SMEs in Uganda to improve their commercial success.	SME owners or managers
38	Abu-Taieh et al. (2022)	857	0.91 5	0.53	0.10	Behaviou ral Intention	Effect of Social Networks on anxiety and depression.	Parents
39	Wang et al. (2022)	339	0.25	0.39	0.17	Visiting Intention	Customers' intended destinations	Small video portals featuring Universal

								Studios Beijing
40	Rahaman et al. (2022)	432	0.62 4	0.73 4	0.61 2	Purchase Intention	The effect of eWOM information on purchase intentions among social media users.	Students of various public and private universities.
41	Wang et al. (2022)	302	0.74 43	0.77 05	0.74 27	Behaviou r Intention	Adopting of Short Video Apps for making travel decision.	Adults (>18 years old), were able to understand Chinese
42	Hyun et al. (2022)	342	0.63	0.76	0.56	Actual usage of socialme dia for shopping	Social networking sites	SNS users
43	Alhumaid et al. (2022)	461	0.73 9	0.6	0.67 2	Intention to use	Social media acceptance by students in learning.	students studying in UAE Universities
44	Mukminin et al. (2022)	287	0.55 5	0.47 9	0.54 3	Social Media Use in Teaching	Social Media Use in Teaching English	EFL faculty members from ten Indonesian universities
45	Jung et al. (2021)	649	0.67	0.71 5	0.69 1	Sustainab le Behaviou ral Intention	Views of traditional Korean dancing held by customers worldwide	Customers from around the world who have viewed Korean dance music videos and songs.
46	Peng and Hwang (2021)	262	-0.01	0.46 3	-0.13	Motivatio n to use	E -learning system with social medial platforms.	Students
47	Al-Rahmi et al. (2022)	120 0	0.63 1	0.40 9	0.42 9	Behaviou ral Intention to use	The goal of students' behavior to utilize social media in higher education.	Students of public universities
48	Al-Qaysi et al. (2021)	655	0.86 4	0.89 1	0.85	Behaviou ral Intention	Social media in higher education	Students
49	Khan et al (2021)	265	0.31 3	0.66 8	0.28 6	Continua nce Intention	Health consumers' social media usage and acceptance behaviours	Health consumers

50	Salloum et al. (2021)	369	0.32 1	0.16 7	0.25 4	Intention to use	Pupils' acceptance of social media in education	Pupils' acceptance of social media in education
51	Al-Skaf et al. (2021)	350	0.32 1	0.16 7	0.25 4	Intention to use	Pupils' acceptance of social media in education	University students
52	Al Kurdi et al. (2021)	310	0.54 2	0.39 9	0.47 6	Intention to use	Social media's acceptance in education	University students
53	Habes et al. (2020)	180	0.33 6	0.25 3	0.23 5	Behaviou ral Intention	E -learning acceptance	Online university students
54	Allam et al. (2020)	481	0.73	0.6	0.66	Intention	Employees' knowledge-sharing behaviour	Large public, government -based organizatio ns
55	Zhao and Wang (2020)	256	0.02 1	0.1	0.07 3	Purchase Intention	User acceptance of health-related short- video advertisements	Users shopping experiences due to mobile live ads

The Table 1 reveals the review of studies conducted based upon Technology Acceptance Model. Under this, a total of 55 number of studies were reported on which additional analysis is done in the later stage of research paper. Further, the inter-correlation was reported among different relational construct of TAM along with sample size, construct name, behavior context and identification details of the sample.

Data Analysis

Under this segment of data analysis engrossed by the researchers, the study is analysed in two important sections. Section 1 deals with effect size of bivariate relationships with respect to fifty-five studies under inclusion. Section 2 deals with nitty-gritty of moderators' effect under TAM framework.

	EFFECT	SIZE OF BI	Table 2 VARIATE R	ELATIONSHIPS	8	
Association	Ν	К	R ₊	CI	Q	Significance
PU – PEU	24162	55	0.60	0.53 - 0.66	2826.85	***
PU – BI	24162	55	0.55	0.48 - 0.61	2637.54	***
PEU – BI	24162	55	0.48	0.41 - 0.54	2346.70	***
n = number of participants, and $r_{+} =$ random average co Note: ***Indicate 5% signi	k= number prrelation ficance leve	of effect size	es included in	the analysis, CI =	= 95% confid	ence interval, Q

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Source: Author's own compilation.

The Table 2 reveals the outcomes of association among TAM variables in the context of fifty studies under inclusion with (n=24162). The observed data was analysed using the meta essentials interface of Excel, which showed that TAM factors are linked to the variables that were mentioned. The association amidst Perceived Usefulness and Perceived Ease of Use is positive moderately associated (r+=0.60) followed by Perceived Usefulness and Behavioural Intention (r+=0.55) and the least in case of Perceived Ease of Use and Behavioural Intention (r+=0.48). The relationship amidst all is found to be statistically significant on account of higher Q indicating that participants who perceive technology as useful are somewhat finding easy to use. Overall, the data suggests that there are significant positive correlations between all pairs of variables.

Moderator Analysis

For the purpose of scrutinising the moderating effects on the Technology Acceptance Model (TAM), a selection of five moderators was made for thorough analysis. The study examined the potential moderating effects of five variables: location of study, sample size, publication year, participants' age, and sample size. A subgroup analysis was performed to evaluate the moderating effects of the specified moderators on the intention to use. The analysis was conducted based on total fifty-five studies under inclusion. For the sake of understanding, the terminologies involved are Perceived Usefulness (PU), Perceived Ease of Use (PEU) and Behavioural Intention (BI) and their abbreviated version is used in interpretation.

RANDO	Table 3 RANDOM EFFECTS AVERAGE CORRELATION STATISTICS BY LOCATION OF STUDY												
	Asian American Other Total												
Association	n	k	r+	Ν	K	r+	n	k	r+	n	K	r+	
PU-PEU	17318	37	0.60	4603	11	0.53	2241	7	0.69	24162	55	0.58	
PEU – BI	17318	37	0.48	4603	11	0.46	2241	7	0.48	24162	55	0.47	
PU – BI	17318	37	0.54	4603	11	0.55	2241	7	0.60	24162	55	0.55	

Subgroup analysis: Location / Cultural groups

Source: Author's own compilation.

The Table 3 presents the moderating influence of location study in the context of subgroup analysis. The subgroups have been categorised into three overarching groupings, each comprising a total of 24162 participants. The literatures underwent the inclusion criteria mainly belongs to 'Asian regions' (k = 37) followed by 'American regions' (k=11) and rest from 'other regions' (k = 7). It was found that the association between PU & PEU is strongest in other regions (r+=0.69) followed by Asian Regions (r+=0.60) and least in case of American Regions (r+=0.53). Similarly, in case of PEU & BI, the association is strongest in case of both Asian regions as well as other regions (r+=0.48) followed by American regions (r+=0.46). Lastly in case of PU & BI, it was observed that association is strongest in other regions (r+=0.60), followed by American regions (r+=0.55) and least in case of Asian Regions (r+=0.54).

Subgroup Analysis: Sample Size Groups

RANDOM EFI	FECTS A	VERA	GE COR	Table 4 RELATION	N STA'	FISTICS	BY SAMP	LE SIZ	Æ OF
	Sample S	Size < 4	100	Sample Siz	ze > 40	0	Total		
Association	N	K	r+	n	К	r+	Ν	К	r+
PU - PEU	7898	32	0.52	16264	23	0.69	24162	55	0.61
PEU - BI	7898	32	0.42	16264	23	0.54	24162	55	0.48
PU – BI	7898	32	0.55	16264	23	0.56	24162	55	0.55

Source: Author's own compilation.

The Table 4 reveals the sample size as moderating effect for the respective subgroup analysis. On the meta-essentials interface, an analysis was performed by dividing the participants into two subgroups: those with >400 participants and those with <400 participants. The reported association between PU& PEU is (r+ =0.52) in case of <400 sample size which relatively increases to (r+ =0.69) in case of >400 sample size. Similarly, in case of PEU & BI, the reported correlation is (r+ =0.42) in <400 sample size case which increases to (r+ =0.54) in case of >400 sample size. Lastly, the revealed association between PU & BI is (r+ =0.55) under <400 sample size increases to (r+ =0.56) in case of sample size over and above 400. Thus, the current research affirmed the impact of sample size on the research findings since the relationship between the TAM variables become stronger as the sample size goes up.

Table 5 RANDOM EFFECTS AVERAGE CORRELATION STATISTICS BY PUBLICATION YEAR OF STUDY									
	Less than	5 years		More th	an 5 yea	ars	Total		
Association	n	K	r+	n	K	r+	N	K	r+
PU - PEU	14283	30	0.60	9879	25	0.59	24162	55	0.59
PEU - BI	14283	30	0.47	9879	25	0.48	24162	55	0.48
PU – BI	14283	30	0.53	9879	25	0.58	24162	55	0.56

Subgroup analysis: Publication year of the study

Source: Author's own compilation.

The analysis conducted in the **Table 5** reveals a moderating influence of the publication year of the fifty-five papers under consideration. The analysis created two subgroups where one subgroup carries 30 studies that are less than 5 years old and other subgroup carries 25 studies that are more than five years old. The reported correlation between PU & PEU showed an almost identical relationship or say a very meagre and negligible difference for both recent (r+ =0.60) as well as older studies (r+ =59). The same was the case with PEU & BI where the reported association stood almost identical or say with a very negligible difference for both recent (r+ =0.47) as well as older studies (r+ =0.48). Lastly, the association between PU & BI was found to be much healthier and stronger in older studies (r+ =0.58) than in recent studies (r+ =0.53).

Therefore, it can be inferred that the year of publication catered as a significant moderator in the meta-analytical results.

Table 6 RANDOM EFFECTS AVERAGE CORRELATION STATISTICS BY SNS TYPE I & SNS TYPE II IN STUDY									
	SNS Ty	pe I		SNS Typ	e II		Total		
Association	n	K	r+	n	K	r+	N	K	r+
PU – PEU	6509	20	0.52	17653	35	0.63	24162	55	0.59
PEU – BI	6509	20	0.36	17653	35	0.54	24162	55	0.45
PU – BI	6509	20	0.48	17653	35	0.59	24162	55	0.53
	•	•	•		•	•	•	•	•

Subgroup analysis: SNS Type I & II

Source: Author's own compilation.

The **Table 6** provides insights into the average correlations between different TAM variables (PU, PEU, BI) within the context of different SNS platform types (I & II) as a final moderator and part of subgroup analysis. The subgroup I involves twenty studies under consideration whereas subgroup II involves thirty-five studies under observation. Further, the reported association between PU & PEU is (r + =0.52) in case of SNS I which relatively increases to (r + =0.63) in case of SNS II. Further, the reported association between PU & BI is (r + =0.36) in case of SNS I which subjectively increases to (r + =0.54) in case of SNS II. Lastly, the reported correlation between PU & BI is (r + =0.48) in case of SNS I which promisingly increases to (r + =0.54) in case of SNS II. Therefore, it can be inferred that transactional websites (SNS I) and social media channels (SNS II) served as a vital moderator in the meta-analytical results and has been inculcated by the authors of the current study as a standard moderator for conducting subgroup analysis.

Meta Regression: Participants Age

	Table 7 META REGRESSION: PU - BI									
	В	SE	CI LL	CI UL	В	Z-value	p-value	\mathbb{R}^2		
Intercept	0.58	0.15	0.27	0.88		3.81	0.000			
Moderator	0.00	0.00	-0.01	0.01	0.03	0.20	0.842	0.07%		

PU – BI:

Source: Author's own compilation.



FIGURE 4

REGRESSION LINE OF CORRELATION ON MODERATOR (PU – BI)

Source: Author's own compilation.

The meta-regression model in Figure 4 shows that the moderator variable does not have statistical significance in explaining the observed variation in the outcome variable. The intercept term is significant, but the overall model and residuals are not, indicating that the structural framework model does not cater a strong fit to the data. The combined effect size is 0.61, and there is low heterogeneity (T2 = 0.10) among the effect sizes. However, the findings of Table 7 reveals that the model expresses only a meagre portion of the variance in the outcome variable (R2 = 0.07%).

PEU – BI

Table 8 META RECRESSION: PEU - BI												
B SE CI LL CI UL B Z-value p-value R ²												
Intercept 0.59 0.15 0.29 0.89 3.90 0.000												
0.50%												

Source: Author's own compilation.



FIGURE 5

REGRESSION LINE OF CORRELATION ON MODERATOR (PEU - BI)

Source: Author's own compilation.

Like the previous relationship, the meta-regression model shown in Figure 5 suggests that the moderator variable is not statistically significant in expressing the variance in the outcome variable. The intercept term is significant, but the overall model and residuals are not significant,

indicating that the structural framework model does not cater a strong fit to the data. The combined effect size is 0.52, and there is low heterogeneity (T2 = 0.10) among the effect sizes. However, the findings of **Table 8** reveals that the model demonstrates a very tiny portion of the variance in the outcome variable (R2 = 0.50%).

PU –PEU

Table 9 META REGRESSION: PU - PEU								
	В	SE	CILL	CIUL	В	Z-value	p-value	\mathbf{R}^2
Intercept	1.21	0.02	1.16	1.26		50.25	0.000	
Moderator	-0.02	0.00	-0.02	-0.01	-0.38	-19.94	0.000	14.54%
Common Anthon?		1-41						

Source: Author's own compilation.





Source: Author's own compilation.

This meta-regression model shown in Figure 6 suggests that the moderator variable is highly statistically significant in expressing the variance in the outcome variable. The intercept term is also highly significant, indicating a significant effect when the moderator variable is zero. The entire model and residuals exhibit a high level of significance, indicating that the structural framework model provides a strong fit to the data. The combined effect size is 0.75, and there is low heterogeneity (T2 = 0.10) among the effect sizes. The model explains approximately 14.54% of the variance in the outcome variable, indicating a moderate level of explanatory power.

Overall, the data suggests that average age being a metric moderator is not significantly moderated in case of PU & BI and PEU – BI relationship. But both are explaining small proportion of the variance in the outcome variable not zero. In the last case, average age significantly moderated in relationship between (PU –PEU). The findings of Table 9 reveals that the model explains approximately 14.54% of the variance in the outcome variable, indicating a moderate level of explanatory power.

DISCUSSION

This study evaluates the validity of the Technology Acceptance Model (TAM) in the context of social networking sites using meta-analysis. It examines relationships among three TAM constructs: Perceived Ease of Use (PEU), Perceived Usefulness (PU), and Behavioral Intention (BI). Findings reveal strong positive associations between these variables, with PU–BI showing the strongest correlation, reinforcing prior research (King & He, 2006). Although some

literature invalidates the PEU–BI relationship (Ma & Liu, 2004), this study finds support, likely due to SNS similarity with internet applications. PU mediates PEU's effect on BI, making perceived usefulness crucial for user adoption (Szajna, 1996). Entrepreneurs entering the SNS industry must differentiate their platforms through unique features and value propositions. For instance, Instagram's success stemmed from appealing to younger demographics with distinct features, setting it apart from Facebook. These findings offer valuable insights into SNS adoption dynamics and technology acceptance patterns.

The study examines the moderating effects of five variables on the relationships between key Technology Acceptance Model (TAM) constructs, highlighting cultural differences in adoption patterns. Subgroup analysis indicates stronger TAM associations in Asia and other regions compared to the USA, likely influenced by descriptive norms among vast internet user populations. The perceived ease of use (PEU)–perceived usefulness (PU) relationship varies across market penetration stages, resembling pre-implementation in Asia and Europe, where SNS adoption remains ongoing. As full penetration occurs, the emphasis on PEU declines. These findings align with prior literature (Szajna, 1996), reflecting shifting evaluation criteria across IS implementation phases.

The study examines the moderating effect of SNS platform types—transactional websites and social media channels—on TAM relationships. Findings indicate stronger associations in social media studies due to their broader scope, encompassing various communication tools. A larger sample size enhances consistency, minimizing discrepancies across individual studies and reinforcing TAM constructs' interrelationships.

Implications

The current study enriches the existing body of literature on TAM by offering further support for the framework of relationships established among the core constructs of this model with the help of PRISMA. It further contributes to the current understanding of TAM as a theoretical framework by carrying out subgroup analysis to delineate the moderating effects of three different classes of variables i.e., characteristics of sample (age, culture), characteristics of the research work (sample size, year of publication), and characteristics of SNS (social media channels and transactional websites). Consequently, the present study not only coalesces the findings of individual studies conducted in different research settings, but it also delineates and explains the role of external variables in the relationships tested in those studies. The findings presented above add to the theoretical foundation of TAM by underlining the continued relevance of core TAM constructs for the adoption of modern technology-based products. They also support the merit of larger sample size for an empirical assessment of hypothesised relationships.

The study highlights the significance of user-friendly platform design, emphasizing ease of navigation for effective market penetration. Product managers must align design elements with demographic and cultural factors, ensuring compatibility across age groups. While younger users may engage with complex designs, older demographics prioritize simplicity for perceived usefulness. The findings affirm TAM's relevance in predicting user intention (Scherer et al., 2019), offering strategic insights for social media adoption, targeted marketing, and policy development. The study supports emerging technologies by strengthening organizational communication, crisis management, and feedback mechanisms. Policymakers can leverage these insights to promote technology adoption through awareness initiatives.

CONCLUSION

The current study undertakes systematic review as well as meta-analysis for tapping out a comprehensive understanding of the interplay between Social Networking Sites (SNS) and Technology Acceptance Model (TAM) for a period of 15 years. By synthesizing the findings of diverse studies (n=55), this research highlights how different SNS features relate with core constructs of TAM. The analysis reveals that SNS significantly influences users' technology acceptance behavioral intention by fostering trust, enhancing awareness, and shaping attitudes towards different dimensions of technologies. The extracted studies revealed standard correlation among TAM constructs. The meta-analysis provides strong empirical support for the widely accepted conclusion derived from qualitative studies: that the Technology Acceptance Model (TAM) is a highly effective and reliable predictive framework. The findings of this meta-analysis validate that the Technology Acceptance Model (TAM) effectively forecasts user behavior. Further, this strong relation underscores the evolving role of social platforms as intermediators of technology usage. Apart from this, the current study also identifies key moderators, such as cultural context, users age, sample size, publication year of study and SNS types that further refine and strengthen the applicability of TAM in the context of SNS. From an overall theoretical perspective, this research elongate TAM by incorporating social dynamics, providing a nuanced lens to traverse technology acceptance in the digital age landscape.

Limitations and Directions for Future Research

While utmost care was exercised to ensure the methodological sanctity of this study, the authors perceive certain limitations which could not be overcome and therefore, have implications for the generalizability of its findings. The first and foremost is the limitation embedded in the methodology employed in this study i.e., meta-analysis. As a tool of literature survey, meta-analysis synthesizes outcomes of multiple studies to offer generalized observations. However, these observations may not be suitable for application in a wider context as the studies included under meta-analysis are likely to have distinct research gap, populations and settings that lose relevance when applied outside the original context. Future research may utilize other techniques such as sentiment analysis to refine the understanding of the relationships among core TAM constructs.

Another area of advancement in future studies is the operationalization of cultural differences. The present study is a product of past studies which could be accessed by the authors, and which had empirically tested the interrelationships between the TAM constructs. As a result, it was difficult to ensure an equal representation of all cultures. Moreover, the present study classified the research papers on the basis of contingents (Asia, Europe and others, USA) in which they were conducted. It is noteworthy that these contingents are home to several countries with extremely diverse socio-cultural dynamics. Thus, future research should consider the appropriateness of such wide-ranging classification on the basis of contingents as the cultures included in one group under such classification may show significant differences in the mechanisms of technology adoption and acceptance. Researchers may also consider testing the statistical significance of the moderating effect of other variables that have not been included in this study such as gender and personality traits.

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