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Measuring Social Media User Intentions: Scale Development and Validation

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Abstract— *Social media usage has become a vital segment of B2C interactions. Though it is not as simple as it appears. It is important for marketers to understand why the consumers use social media. Users' experiences and expectations differ according to demographics, i.e. it differs with age, income range, gender, occupation and so on. Despite its growing importance, there is absence of a measurement scale that captures the dynamics and constructs that identifies the intentions behind social media engagement. The study seeks to address this gap by developing a scale with the application of exploratory factory analysis. Thus, scale was developed and latent constructs behind social media adoption were identified namely Informational Use, Pleasure, Social Interactions, Online Shopping, Educational and Reviews & Ratings. The scale then was extensively measured for reliability and both convergent & discriminant validity.The scale so developed adheres to both the reliability and validity tests. The scale may provide meaningful insights to the marketers in developing strategies to maintain the end users continued interactions with social media platforms.*

Keywords— ***Social media, User Intention Scale, EFA, Reliability, Validity***

I. INTRODUCTION

Social media (SM) can be broadly defined as networking applications built around web 2.0 technologies which allows dynamic interaction between the application and the user. It enables the users to post user generated content in the form of reviews, recommendations and remarks (Kaplan & Haenlein, 2010). The applications built around the technology are called Social Networking Sites (SNS). These social networking sites (SNS) together with other digital platforms are referred to as social media (SM). SM enables the users from varied demographics to engage in a dynamic interaction. SM is now not limited to only interaction between organisation and end users, but also between various stakeholders and users. This way a lot of community contributed content is created. SM has deeply entered our lives ranging from daily news feed, entertainment, shopping, education, recommendations and much more (Kapoor et al., 2018).

Given the depth and usage of SM; it has emerged as a significant marketing tool. It enables the organisation to effectively achieve greater customer engagement,. (Filo et al., 2015; Saxena & Khanna, 2013). SM presents the content not just orally and visually but interactively. The dynamic features help organisations to better interact and communicate with the users and thus build good brand impression and loyalty (Leeflang et al., 2014; Filo et al., 2015; Schultz & Peltier, 2013). Those organisations which have realised the power of SM and adopted the technology into their marketing strategies are bound to reap higher returns (Russell-Bennett, Wood, & Previte, 2013).

However, while deciding marketing strategy, a marketer has to take into consideration user engagement or social media engagement (O'Brien & Deans, 1995). Social media engagement is the quality of users experience with the medium that initiates and motivates the users for future interaction. Understanding various factors affecting user engagement is important at all levels. User experience with SM depends not only on the interface of the social media site but more importantly it may vary at the individual level. Users' experiences vary with the demographic composition of the society. Various demographic factors like age, gender ethnicity influence users experience. The study seeks to

develop a scale to measure the intention and purpose of usage of social media by the end users. These revelations may enlighten the marketers on how to formulate marketing strategies for enhancing and retaining users' social media engagement.

This paper is divided into sections including the present one. The first section gives an introduction to social media and its importance and lists the objectives. The second section reviews the existing scales developed by various researchers and highlights the research gaps. The research methodology is explained in the third section. The fourth section elaborates the results of scale development and testing. The conclusions, limitations and directions for future research are summarized in the last section.

II. EXISTING MEASUREMENT SCALES

With the tremendous advances in technology, it is possible to track how much time the users spend on social media and which websites they visit. However, it is not sufficient to simply quantify these numbers. The marketers need to identify the underlying purpose or need being satisfied through the usage. Few researchers in the past have worked on developing a scale for measuring the usage of SM. However, there is no comprehensive scale to measure the same. During the initial phases of development of social media; scales were specifically developed for popular network sites like Facebook. Ellison et al. (2007) developed a popular scale called Facebook Intensity Scale for measuring social capital (i.e. connectedness). Ross et al. (2009) developed a scale for facebook based on the 5-Factor Personality Model. Both the scales were used by many researchers (Jenkins-Guarnieri et al. 2013). A number of other researchers have also focussed on developing a scale especially for Facebook (Aladwani 2014; Bodroža & Jovanović, 2016). However, all these scales were confined to only one medium i.e. Facebook so they are not applicable to other social media sites.

Some researchers have developed scales which focus on frequency of use and user engagement with social media. Jenkins-Guarnieri et al. (2013) developed a 10 item scale called SM Use Integration Scale which measures the extent to which social media is a part of the social behavior and routines of users and their engagement determined by the emotional connect to social media. While initially developed for Facebook; the scale was later extended to different social media platforms. Shi et al (2014), created a scale on SNS usage which included two sub-scales; one that measured emotions i.e. affective experience and other featured usage (duration and frequency of use, number of friends etc.). Another such scale was developed by Gerson et al. (2017) who developed a 13-item scale to measure the Facebook usage of active and passive users. However, the authors observe that frequency of use indicates engagement but the same may not necessarily be true. Tuck & Thompson (2024) extended the work done by Gerson et al. (2017) and developed a scale classifying the users as active and passive based on the frequency of use and user engagement with social media. While it is important to identify the active and passive users as the same has implications for the marketers as well as the mental well being of the users; it is equally important to focus on why people use social media.

Some researchers have examined the purposive use of social media. Dumrongsiri, & Pornsakulvanich (2010) created an instrument with 25 items based on 6 motives behind the social media use. The motives were identified as passing time, friendship, staying in trend, relationship maintenance, entertainment and relaxation. Eid & Al-Jabri (2016) developed a scale that explored how chatting, informational content, file sharing, and enjoyment affected learning of university students in Saudi Arabia. However, these studies do not include constructs like shopping. Further, the scales have not been developed in the Indian context.

There are a few Indian studies which have attempted to develop a scale for measurement of social media use. One of the studies which uses motive as the focal point for developing an instrument of measurement was Bolar (2009) who used seven constructs to capture the motives behind the use of social media. Being an old study it does not include many of the dimensions which are relevant today. Gupta & Bashır (2018) conceptualized 4 constructs namely – academic, socialization, entertainment and informativeness and developed a 19-item scale to measure social media use. The study used University students as the sample. However, the study does not cover aspects like online shopping features offered by many platforms. It also does not include separately the user reviews of products which users tend to share with each other. Khan et al. (2022) developed and validated a scale of SNS with six dimensions. However, the study was conducted to assess the use of SM during the Covid pandemic i.e crisis period; and it was not tested during normal conditions. Mude & Undale (2023) built the work further and added another construct ‘shopping’. This instrument was also tested for validity and reliability.

Again, there is no agreement in literature as to what are the underlying constructs for measuring social media usage. Over the years, social media has evolved and is used for diverse purposes making conceptualization more complex. Further, most of the scales have been developed taking young adults (especially students) in the sample (Eid & Al-Jabri 2016; Gupta, & Bashır, 2018; Tuck & Thompson; 2024). But today social media is used by almost all age

groups. So for universal applicability, it is important to include people from different demographics while developing the scale. In this paper, we aim to develop a comprehensive scale which measures the use of social media based on purpose which can be used across diverse demographics. The same has implications for marketers who may use it to identify the target market and create a suitable marketing communication.

III. RESEARCH METHODOLOGY

Based on the existing literature review, consultations and discussions with two marketing experts of a University and 10 end-users, thirty two, 5-point Likert statements were developed.These statements were then put in the form of scale. The questionnaire was administered across social media platforms to 573 respondents based in Delhi and NCR using convenience and judgement sampling. Respondents were selected across varied age groups, gender, income range, city, academic qualification and occupation. For the purpose of study, age groups were divided into three generations. Generation X is defined as cohorts born duting 1965 to 1980, Generation Y as those cohorts born during 1981-1996 and Generation Z as cohorts born duting 1997 to 2012. The sample composition is given in Table 1. As per Cochran (1997) sample size determination formula for large population is

$$n = (Z^2 * p * (1-p))/ e^2 = 385$$

where n=sample size, Z-Score for desired confidence level (here 95%), p=estimated proportion (.50 in case of infinite population). After data cleaning 409 valid responses were obtained which satisfies the sample size requirement.

Table 1: Sample Composition

		Frequency	Percent (%)
Gender	Female	217	53.1
	Male	192	46.9
	Total	**409**	**100.0**
Age	Generation X	112	27.3
	Generation Y	134	32.7
	Generation Z	163	39.7
	Total	**409**	**100.0**
City	Metro/ Urban city	317	77.5
	Rural area	29	7.1
	Semi-rural area	63	15.4
	Total	**409**	**100.0**
Income Range	Above Rs 50 Lakh	25	6.1
	Below Rs 8 lakh	105	25.7
	Rs 12 lakh to Rs 2	119	29.1
	Rs 24 lakh to Rs 5	95	23.2
	Rs 8 lakh to Rs 12	65	15.9
	Total	**409**	**100.0**
Academic Qualification	Graduate	105	25.7
	Post Graduate	144	35.2
	Undergraduate	112	27.4
	Professional	48	11.7
	Total	**409**	**100.0**
Occupation	Business	63	15.4
	Consultant	3	0.7

	Home maker	15	3.7
	Professional	51	12.5
	Student	142	34.7
	Salaried Job	134	32.8
	Others	1	0.2
	Total	**409**	**100.0**

Exploratory Factor Analysis (EFA) further was carried out using SPSS 30 to find out and broadly define the constructs that define the purpose of social media usage. The scale then was measured for both reliability and validity tests. For Reliability testing, first, as per EFA Cronbach alpha for each construct is calculated. Instead of pretesting on a small set of data since it is the development of the entire scale, reliability and validity tests were carried out on the entire sample set. For reliability, further robust test in the form of composite reliability was tested.Validity including both convergent and discriminant validity for the entirely new scale was also measured to authenticate the scale.

IV. ANALYSIS AND TESTING FOR RELIABILITY AND VALIDITY

For developing and testing the scale, first exploratory factor analysis (EFA) is applied to identify the factors driving the intent behind social media use. Next we test the reliability to establish scale consistency. Reliability testing is done using cronbach alpha and another robust test - composite reliability. Lastly the scale is tested for validity to establish scale accuracy. Both the dimensions of validity namely convergent and discriminant validity are measured.

4.1 Exploratory Factor Analysis

Analysis begins with exploratory factor analysis. Since it's the development of new scale EFA helps to identify latent constructs/factors. EFA requires data to satisfy two assumptions.: sample size should be adequate and multicollinearity i.e. correlation among variables should be present.

Table 2 : KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.896
Bartlett's Test of Sphericity	Approx. Chi-Square	9401.326
	Sig.	.000

KMO value as indicated by Table 2 above, is .896 that is higher than .70 (Kaiser, 1974) signifying sample size is adequate. For Bartlett's test of Sphericity significant value is 0.000($p<.05$), signifying the presence of multicollinearity. Since both assumptions are satisfied; factor analysis can be carried out.

Table 3: Factors with Eigen Value Greater than 1

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	11.003	34.385	34.385
2	3.403	10.634	45.019
3	2.449	7.654	52.673
4	2.232	6.975	59.648
5	1.822	5.694	65.342
6	1.354	4.233	69.575

As indicated by Table 3 above, based on Eigen value greater than 1; six constructs are identified using principal component analysis. Eigen value measures aggregate variances explained by each construct. The statements included under the constructs along with their Factor Loadings are shown in Table 4.

Table 4 : Identification of Constructs/Factors on the basis of Rotation Component Matrix

Factor Name	Statements	Factor Loading
Factor 1: Informational Use	q_1: I use Social Networking sites (SNS) to explore the latest business world updates	.828
	q_2: I use SNS to discover the latest podcasts.	.852
	q_3: I use SNS to check recent news feeds.	.626
	q_4: I use SNS to find information about the topics that interest me.	.644

	q_5: I use SNS for sharing ideas, disseminating information and creating awareness.	.660
Factor 2: Pleasure	q_6: I use SNS for relaxation.	.836
	q_7: I use SNS for watching OTT	.749
	q_8: I use SNS for posting pictures and videos	.730
	q_9: I use SNS to play games	.770
	q_10: I use SNS to watch reels and shorts	.799
Factor 3: Social Interactions	q_11: I use SNS to stay in contact with family members	.767
	q_12: I use SNS to catch up with friends	.783
	q_13: I use SNS for reinforcing the existing people oriented relationships	.764
	q_14: I use SNS to search for new groups with similar hobbies.	.652
	q_15: I use SNS for networking	.670
Factor 4: Online Shopping	q_16: I use SNS for food delivery	.795
	q_17: I use SNS to shop groceries	.845
	q_18: I use SNS to purchase premium products	.848
	q_19: I use SNS as sources of product information	.626
	q_20: I use SNS to identify trends and engage with brands	.628
Factor 5: Educational	q_21: I use SNS to find solutions to educational / research concerns.	.769
	q_22: I use SNS to do educational/research project.	.866
	q_23: I use SNS for scholarly group discussions	.822
	q_24: I use SNS for complimenting my academic studies..	.781
	q_25: I use SNS for group based study.	.793
	q_26: I use SNS to watch educational videos or seek educational content	.823
	q_27: I use SNS to seek assistance from my mentors or subject experts.	.686
Factor 6: Reviews and Ratings	q_28: I use SNS to follow reviews of my trustworthy influencers before making a purchase decision.	.679
	q_29: I use SNS to look for reviews from friends/family before making purchase decision	.754
	q_30: I use SNS to check review & ratings given by end users of the product on the social media before final purchase decision	.721
	q_31: I have made unnecessary purchases on several occasions based on social media recommendations	.733
	q:32: I use SNS to post reviews & ratings of products and services used by me	.702

Based on the factor Loadings, Six Constructs/Factors namely: Informational Use, Pleasure, Social Interactions, Online Shopping, Educational , Reviews & Ratings are identified.

4.2 Reliability

Reliability refers to the consistency of the scale that is to produce similar results on repeated measurements under similar conditions. Cronbach alpha is tested for each of the

factor to test the reliability of the scale. As per Nunnally (1978); Cronbach alpha greater than or equal to 0.70 indicates reliability or good internal consistency between items in a factor.

Table 5 : Reliability Statistics for Factors

Factors	**Cronbach's Alpha**	**N of Items**
Informational Use	0.858	5
Pleasure	0.887	5
Social Interactions	0.886	5
Online Shopping	0.888	5
Educational	0.931	7
Reviews and Ratings	0.886	5

As can be seen from the Table 5 above, Cronbach alpha for all the factors is greater than .70 indicating the reliability of scale.

Composite Reliability

After carrying out EFA and preliminary reliability testing by Cronbach alpha, further robust tests of reliability in the form of composite reliability is carried out.

Composite Reliability (CR) = $(\Sigma\lambda)^2 / [(\Sigma\lambda)^2 + \Sigma(1 - \lambda^2)]$

where λ is the factor loading of an item.

The results are shown in Table 6 to 11 and indicate that all the constructs achieved composite reliability of more than the threshold value of 0.7.

Table 6 : Composite Reliability for Construct Informational Use

	Items	**λ**	**λ^2**	**1-λ^2**	**Composite Reliability=0.847428861**
Informational Use	q_1	0.828	0.685584	0.314416	**>.7**
	q_2	0.852	0.725904	0.274096	**Composite Reliability Achieved for Informational Use**
	q_3	0.626	0.391876	0.608124	
	q_4	0.644	0.414736	0.585264	
	q_5	0.66	0.4356	0.5644	
	Summation	3.61	2.6537	2.3463	
	summation of λ^2	13.0321			

Table 7 : Composite Reliability for Construct Pleasure

	Items	**λ**	**λ^2**	**1-λ^2**	**Composite Reliabilty**
Pleasure	q_6	0.836	0.698896	0.301104	**0.884188468**
	q_7	0.749	0.561001	0.438999	**>.7**
	q_8	0.73	0.5329	0.4671	**Composite Reliabilty Achieved for factor Pleasure**
	q_9	0.77	0.5929	0.4071	
	q_10	0.799	0.638401	0.361599	
	Summation	3.884	3.024098	1.975902	
	summation of λ^2	15.08546			

Table 8 : Composite Reliability for Construct Social Interactions

	Items	**λ**	**λ^2**	**1-λ^2**	
Social Interactions	q_11	0.767	0.588289	0.411711	**CR=0.84956885 >.7**
	q_12	0.783	0.613089	0.386911	**CR Achieved for factor social Interactions**
	q_13	0.764	0.583696	0.416304	
	q_14	0.652	0.425104	0.574896	

	q_15	0.67	0.4489	0.5511	
	Summation(Σ)	3.636	2.659078	2.340922	
	$(\Sigma \lambda)^2$	13.2205			

Table 9: Composite Reliability for Construct Online Shopping

	Items	**λ**	**λ^2**	**1-λ^2**	**Composite Reliabilty**
Online Shopping	q_16	0.795	0.632025	0.367975	**0.86697**
	q_17	0.845	0.714025	0.285975	**>.7**
	q_18	0.848	0.719104	0.280896	**Composite Reliabilty Achieved**
	q_19	0.626	0.391876	0.608124	
	q_20	0.628	0.394384	0.605616	
	Summation	3.742	2.851414	2.148586	
	summation of λ^2	14.00256			

Table 10: Composite Reliability for Construct Educational

	Items	**λ**	**λ^2**	**1-λ^2**	**Composite Reliabilty**
Educational	q_21	0.769	0.591361	0.408639	**0.922006**
	q_22	0.866	0.749956	0.250044	**>.7**
	q_23	0.822	0.675684	0.324316	**Composite Reliabilty Achieved**
	q_24	0.781	0.609961	0.390039	
	q_25	0.793	0.628849	0.371151	
	q_26	0.823	0.677329	0.322671	
	q_27	0.686	0.470596	0.529404	
	Summation	5.54	4.403736	2.596264	
	summation of λ^2	30.6916			

Table 11: Composite Reliability for Construct Reviews and Ratings

	Items	**λ**	**λ^2**	**1-λ^2**	**Composite Reliabilty**
Reviews and Ratings	q_28	0.679	0.461041	0.538959	**0.841812**
	q_29	0.754	0.568516	0.431484	**>.7**
	q_30	0.721	0.519841	0.480159	**Composite Reliabilty Achieved**
	q_31	0.733	0.537289	0.462711	
	q_32	0.702	0.492804	0.507196	
	Summation	3.589	2.579491	2.420509	
	summation of λ^2	12.88092			

Bagozzi and Yi (1988) suggested though CR greater than or equal to 0.60 is acceptable in exploratory research but CR, ≥ 0.70 indicates good reliability, For all the six factors CR>.70 is achieved indicating good reliability of scale.

4.3 Validity Measurement

Validity measures accuracy of the scale, It establishes how well a construct measures what is supposed to measure. Validity has two dimensions: convergent validity and discriminant validity.

4.3.1 Convergent Validity

Convergence validity within a scale refers to convergence in measurement. Bagozzi (1981, p. 375) defined convergent validity within a scale as "measures of the same construct should be highly intercorrelated among themselves and uniform in the pattern of intercorrelations." This can be further explained as that various items/questions of the latent construct or variable should be highly correlated to each other indicating all contributing to the measurement of the same construct. Fornell and Larcker (1981) highlighted that to achieve convergent validity alteast one half or more of the variances in the items/indicators is explained by the latent construct. Average variance extracted is used to establish convergent validity. If AVE>=.50 for the construct convergent validity is proved to be established.

$AVE=\Sigma\lambda i^2/n$

where λ is the factor loadings of an item and n is the number of items in a construct.

Table 12: Convergent Validity

Factors	λi^2	n	AVE	
Informational Use	2.6537	5	0.53074	>.50 for all the factors, Convergent validity achieved for the scale.
Pleasure	3.024098	5	0.6048196	
Social interactions	2.659078	5	0.5318156	
Online Shopping	2.851414	5	0.5702828	
Educational	4.403736	7	0.629105143	
Reviews and Ratings	2.579491	5	0.5158982	

As indicated by the Table 12 above , for all the constructs, AVE>.50 , indicating convergent validity being established.

4.3.2 Discriminant Validity

Bagozzi (1981) defined discriminant validity, as "cross-construct correlations among measures of empirically associated variables should correlate at a lower level than the within-construct correlations." This can be further defined as each item loads uniquely only on one construct and there are no cross loadings .

Table 13: Correlation Between the Various Constructs

Constructs	***Informational Use***	***Pleasure***	***Social Interactions***	***Online Shopping***	***Educational***	***Reviews & Ratings***
Informational Use	SQRT(AVE)=0.728					
Pleasure	.384	SQRT(AVE)=0.777				
Social Interactions	.375	.216	SQRT(AVE)=0.729			
Online Shopping	.359	.421	.293	SQRT(AVE)=0.755		
Educational	.474	.272	.324	.406	SQRT(AVE)=0.79	
Reviews & Ratings	.354	.547	.324	.545	.456	SQRT(AVE)=0.718

The criterion stated by Fornell-Larcker , uses Square root of Average Variance Extracted (AVE) as a criterion to assess discriminant validity. It mandates that the square root of the Average Variance Extracted (AVE) for a given construct be higher than the correlation between that construct and any other construct in the model. For

example, Table 13, depicts that for construct Informational Use Square root of AVE (which is .728) is greater than its corelation with other constructs: - Informational Use and Pleasure (.384), Informational Use and Social Interactions (.375), Informational Use and Online shopping (.359), Informational Use and Educational (.474), Informational Use and Reviews & Ratings (.354). The same holds good for all the constructs, hence discriminant validity achieved for the scale.

V. CONCLUSION, LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The study by carrying out EFA has been able to observe latent constructs that identify social media usage intentions among end users. Six constructs were identified namely: Informational Use, Pleasure, Social Interactions, Online shopping, Educational and Reviews & Ratings. The scale so developed has also fulfilled the various criterions for establishing the reliability and validity. The scale is thus considered fit to be used for further studies on exploring expectations from social media usage and thus framing relevant marketing strategies.

The sample is limited to Delhi and NCR and selected using convenience sampling which are important limitations. While attempt was made to include rural as well as semi-urban respondents; majority of the respondents belong to urban areas. In future, the researchers may test the scale across the country and include a more representative sample from rural and semi-urban areas. Future researchers may explore whether the social media usage varies for different demographic segments. Use of social media for market segments based on age groups or generations, gender, income groups or area of residence may be measured to examine differences in the usage. This may have policy implications for the marketers.

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