Adoption of Digital Marketing Technologies in Indian Healthcare Sector

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Abstract—This study aims at assessing the factors influencing the adoption of digital marketing technologies in the Healthcare Service Sector of India and to investigate the challenges as well as efficacy of digital marketing in Healthcare Sector in India. The study is based on a decomposed version of Technology Acceptance Model employing the PLS-SEM technique. The major constructs of TAM – Perceived Usefulness and Perceived Ease of Use have been measured as constructs decomposed into the their subdimensions as derived from previous literature and hence this study contributes to the existing literature which is lacking in this type of sub-dimensional analysis using TAM. Results reveal that both perceived usefulness and perceived challenges have a significant effect on attitude towards digital marketing and further the adoption of digital marketing technologies.

Keywords - Digital Marketing, PLS-SEM, Technology Acceptance Model, Indian Healthcare

I. INTRODUCTION

With the advent of digital media and social networking, businesses are more than ever required to market their products and put brand building efforts through digital marketing.[1] These efforts need the adoption of digital marketing technologies [2] and there is a need to study the factors that influence the employees who are involved in usage of these technologies directly or indirectly in an organization because any new change introduced in an organization must be supported by the team for it to become effective in achieving its objectives. Digital marketing is the use of technologies to help marketing activities in order to improve customer acquisition and satisfaction by matching their needs. Specifically, it may be defined as "Achieving marketing objectives through applying digital media, data and technology." [3]

The use of digital marketing technologies has transformed the mechanism of marketing communication with the consumers. As the penetration of computers and mobile devices grew manifold, it led to a significant growth of digital marketing spending.[4]

There are numerous benefits as well as challenges which one can think of when it comes to adoption of digital marketing technologies [5] and all of these affect the attitude of personnel involved in employing these technologies towards its adoption. Indian Healthcare Service Sector is a growing sector with many private organizations expanding their operations in the country. This has brought a paradigm shift in the way this industry has operated in past and now the healthcare providers must compete with each other to increase their customer base and revenue. This has given rise to the need for these organizations to adopt digital marketing technologies and to assess how the costs and benefits weigh against each other in the adoption of these technologies in the sector.

The willingness to adopt technology traditionally is explained by the technology acceptance model (TAM) [6] TAM has been applied to adoption of Digital Marketing by businesses [7,8,9,10]. The focus of this paper is to examine the effect of various factors influencing the adoption of digital marketing technologies in Indian Healthcare Industry using a decomposed framework of Technology Acceptance Model (TAM) [6] applying PLS-SEM technique using SmartPLS 4. [11]

II. LITERATURE REVIEW & RESEARCH FRAMEWORK

Research framework for the present study has been derived from a rigorous review of existing literature to arrive at the various factors affecting the adoption of digital marketing and its effect including the different mediating variables and antecedents. The study adopts Technology Acceptance Model (TAM) [6] as the theoretical basis to investigate the adoption of digital marketing.

The basic constructs of Perceived Usefulness and Perceived Ease of Use as propounded by TAM have been adapted for the study in a decomposed form with subdimensions of each serving as the independent variables in the model. This sub dimensional analysis is the contribution of this study to the literature as previous studies have taken these constructs at an aggregate level only without looking into the sub aspects of these.

The antecedents of digital marketing adoption is well documented in previous literature, but different studies have analysed specific factors without integrating them together. There is also a dearth of such studies for Healthcare sector in India. This study is an attempt to devise a comprehensive model incorporating various antecedents of adoption of digital marketing technologies in Healthcare in order to provide more insights to the existing knowledge in this area.

By integrating the factors studied by different studies into the subdimensions for measuring the constructs of perceived usefulness and perceived challenges, this study adds to the existing literature in presenting a more comprehensive analysis of the factors influencing the adoption of digital marketing techniques by Healthcare Service Providers in India.

i) Perceived Usefulness

TAM specifies perceived usefulness and perceived ease of use, as determinants of attitude towards behavioural intentions and IT usage. This study has adapted the perceived usefulness construct from TAM and decomposed it while measuring it using subdimensions from existing literature as items. Perceived usefulness (PUSE) is defined as the extent to which a person believes that using a particular system would enhance performance.

In the context of digital marketing, the perception of employees regarding its benefits in branding, customer engagement, market penetration, resource efficiency and revenue generation have been considered as items for measuring the PUSE construct. These advantages of digital marketing have been well mentioned in the existing literature [12].

Relative advantage of using a product or service was found to be a significant factor in determining adoption of new innovations. [13] In general, perceived relative advantage or usefulness is found to be positively related to the rate of adoption of a product, process or service. [14] In view of the advantages that digital marketing offers for an organization, it would thus be expected that individuals who perceive digital marketing as useful would be more likely to have a positive attitude towards adopting the same.

ii) Perceived Challenges

The Perceived Ease of Use construct in Technology Acceptance Model has been modified for use in the context of digital marketing challenges in the Healthcare Sector. Perceived ease of use represents the degree to which a particular system is perceived as being free of effort in being easy to understand, learn or operate.

The construct in this study was modelled as challenge in usage as most people seem to be more aware of challenges associated with digital marketing and can recall the same more easily instead of rating the ease of use of digital marketing technologies because the technical implementation of digital marketing is only known to the technical departments of an organization.

Challenges in adopting digital marketing are multifaceted [15] and include the knowledge constraints [16, 17], financial constraints [18], strategic limitations [19] and issues arising due to negative feedback online [20]. All these have been adapted from the cited studies and included as items to measure Perceived Challenges.

Attitude towards Digital Marketing & Adoption Measures

The Attitude towards digital marketing (ATTD) refers to how an individual feels regarding digital marketing and how much value one attaches to it. People who are less aware regarding digital marketing usefulness tend to have a lower importance assigned to it. [6] Therefore, perceived usefulness is expected to be a major antecedent of the attitude towards digital marketing because those who perceive digital marketing to be useful for the organization will be having a more positive attitude towards the same.

Similar reasoning follows for the adoption of digital marketing and hence there is expected to be direct as well as indirect relationship between the perceived usefulness, attitude towards digital marketing and its actual adoption. Perceived Challenges on the other hand are expected to have a negative effect on the attitude towards digital marketing. The measures of digital marketing adoption were adapted from the actual usage measures given by Davis (1989) [6].

III. METHODOLOGY AND ANALYSIS

A. Data & Methods

Purposive sampling technique was used to gather data from an online survey of healthcare employees in India using a structured questionnaire based on 5 point Likert Scale. All scale items were adapted from prior literature as mentioned in the previous section. Power analysis was used to calculate the required sample size for the study using G*Power software [21]. Actual sample size used for the study is 280 which is well above the minimum required size for 90% power at 5% significance level.

The research framework of this study attempts to analyse a structural equation model for evaluating the relationship of Digital Marketing Adoption with its different antecedents. Structural Equation Modelling (SEM), is a statistical technique widely used in modelling for various domains. It is operationalized as a combination of factor analysis and multiple regression or path analysis.

Structural Equation Modelling focusses on theoretical constructs, represented by the latent or unobservable factors. The relationships between the various latent constructs are represented by regression or path coefficients between them. Structural equation modelling provides a feasible framework for statistical analysis of complex models that include several multivariate procedures.

The PLS-SEM approach is preferred by researchers because it facilitates the estimation of complex models which are made up with multiple constructs, having different kinds of indicator variables and many structural paths. PLS-SEM also has the advantage of being a non-parametric approach not having assumptions related to distributional properties of the data.

But the most significant argument for the use of PLS-SEM is the causal-predictive approach to SEM followed in this methodology which emphasizes on prediction in estimation of models, designed to come up with causal explanations.

A path model comprises of two elements: first, the structural model which represents the causal-predictive relationships between the constructs, and second, the measurement models which represent the relationships between each construct and its respective indicators.

The structural model is also referred to as the inner model and the measurement models are at times, referred to as outer models in PLS-SEM. Assessment of path model is based on both structural theory and measurement theory, that is, the theoretical basis for the relationships between the constructs as well as the basis of the relationships between the construct and its indicators.

The measurement model assessment involves the examination of the internal consistency reliability, through the calculation of Cronbach's Alpha with higher Cronbach's Alpha values indicating higher reliability. Values above 0.60 are considered satisfactory in exploratory research, while the values between 0.70 and 0.90 are recommended for established constructs.

Cronbach's alpha was calculated to check for internal consistency reliability of the constructs and convergent validity was established through the calculation of Average Variance Extracted (AVE) [22]. Discriminant Validity of the various constructs in the model was established through Fornell-Larcker [23] and HTMT criterion [24]. Structural Model was then analysed for the significance of hypothesised relationships and explanatory power.

B. Results

Table I presents the results for internal consistency reliability and convergent validity for the constructs. All Cronbach's Alpha values were above .70, with AVE of each construct exceeding 0.5, thus establishing reliability and convergent validity for the scale [24].

Table I. Reliability And Convergent Validity

Construct	Values			
	Item Loadings		Cronbach's Alpha	AVE
Adoption of DM	ADOPT1 ADOPT2	0.779 0.854	0.719	0.624
Attitude towards DM	ATD1 ATD2	0.736 0.814	0.754	0.606
Perceived Usefulness	Branding Customer Engagement Market Penetration Resource Efficiency Revenue Growth	0.918 0.879 0.787 0.865 0.831	0.871	0.719
Perceived Challenges	Financial Constraints Knowledge Constraints Negative Feedback Strategic Limitations	0.729 0.812 0.819 0.786	0.794	0.726

Table II gives the discriminant validity results based on F-L criterion [23] and Table III presents the HTMT ratios which are all below 0.85, which establishes the discriminant validity of the constructs.[24]

Table II. Discriminant Validity (Fornell-Larcker)

	ADOPT	ATD	PUSE	PCHAL
Adoption of DM	0.768			
Attitude	0.623	0.895		
Perceived Usefulness	0.521	0.712	0.801	
Perceived Challenges	0.517	0.648	0.574	0.932

Table III. Discriminant Validity (HTMT)

	ADOPT	ATD	PUSE	PCHAL
Adoption of DM				
Attitude	0.460			
Perceived Usefulness	0.758	0.645		
Perceived Challenges	0.347	0.715	0.446	

Result of the structural model analysis are shown in Table IV. All the independent variables have been found to exert a significant effect on the dependent variables in the model. R square and Adjusted R square were found to be greater than 0.7 exhibiting good explanatory power of the model with 70% of the variation in endogenous variables being accounted for by the independent variables. SRMR was found to be below 0.08 which shows that model is having acceptable goodness of fit.

Table IV. Structural model results

Path	Coefficient	T Statistics	P Values
Perceived Challenges -> Attitude	- 0.118	2.501	0.012
Perceived Usefulness -> Attitude	0.368	5.607	0.000
Perceived Usefulness -> Adoption	0.491	8.125	0.000
Attitude -> Adoption	0.143	2.876	0.003
R Square (Adoption)	0.722		
R Square Adjusted (Adoption)	0.718		
R Square (Attitude)	0.705		
R Square Adjusted (Attitude)	0.701		
SRMR	0.064		

IV. CONCLUSION

The purpose of this study was to analyse the factors influencing the adoption of digital marketing technologies in the light of Technology Acceptance Model (TAM) by considering the various aspects of perceived useful-

ness and challenges on attitude towards adopting digital marketing technologies and the actual adoption of these technologies in Indian Healthcare industry. As expected, the perceived usefulness of the technologies was found to have a significant positive effect on the attitude as well as actual adoption. Positive attitude also leads to higher adoption of the digital marketing technologies. The way this study measured perceived usefulness paves the way for further research by developing scales based on these subdimensions and test for the individual relationships for deeper understanding as all the aspects related items had significant loadings.

Similarly, the different types of challenges were asked about in a specific manner which makes the measurement more reliable. Challenges were found to have a significant negative effect on adoption of digital marketing technologies. Therefore, healthcare organizations must make efforts to deal with the different types of constraints operating in their environment in order to improve the attitude of their employees towards adopting digital marketing technologies and hence effectively adopt them to realise their advantages in terms of revenue growth and brand building.

Organizations must train their non-technical employees also on the use of digital marketing techniques so that all the employees are on a common level when a concerted marketing campaign is run.

The findings of this study are significant for the healthcare service providers as well as the digital marketing companies which may provide the technology and expertise for the same. By taking into account the various aspects of the factors that affect the attitude and actual adoption, detailed plans can be devised for effective implementation of these technologies. Further research may be conducted in different sectors for establishing the generalizability of these results and qualitative research can be conducted to explore further dimensions of the perceived usefulness and challenges constructs.

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