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D2C-WEBCRED: A Comprehensive Instrument to Measure the Credibility of Direct-to-Consumer Brand Websites.

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ABSTRACT

Even though product and purchase-related information on websites are one of the predominant factors in consumers' decision-making processes to choose the right product, there exist limited research studies that assess the reliability of these information sources. Hence, this study is aimed at developing a multidimensional scale for assessing the credibility of direct-to-consumer (D2C) brand websites using source credibility theory. This study utilized a mixed-methods approach, including a comprehensive literature review, qualitative interviews with experts and consumers, and quantitative data analysis. The findings of the study support the development of a new scale consisting of three dimensions viz., information precision, responsiveness, and usability experience to measure website credibility. Each dimension consisted of several items that were assessed using a 5-point Likert scale. The scale's psychometric properties were examined through exploratory and confirmatory factor analysis, and the results indicated high levels of reliability and validity.

Keywords: Website credibility, D2C brand websites, source credibility theory, information authenticity, consumer decision-making

1. INTRODUCTION

In an emerging economy like India, the Internet has gradually evolved as an indispensable part of our day-to-day lives. The total number of internet users escalated from 239 million in 2014 to 560 million in 2018 [1]. According to the latest Statista report, India has 932.22 million active internet users and with time these numbers are expected to surge [2]. Today, consumers are using the Internet as a medium to conduct a wide range of activities [3]. Online shopping is one such activity that has gradually evolved over the years [4]–[6].

Technological innovations introduced by e-commerce companies and improved infrastructure envisaging logistics, broadband, and internet-equipped devices have revolutionized e-shopping and further enticed consumers to shift from conventional to digital channels [7]–[9]. The number of online buyers has surged at an unprecedented rate from 54.1 million in 2014 to 289 million in 2021 and is estimated to reach 378 million by 2025 [10].

In the early stages of digital commerce, the competition was restricted to a few domestic e-marketplaces (like Flipkart, Snapdeal, Myntra, Jabong, Shopclues, etc.). These online platforms acted as intermediaries between the companies and their potential online consumers [11], [12]. The ascending growth trajectory of e-commerce complemented by the burgeoning surge in online shopping brought India to the global limelight. Prominent multinational organizations like Amazon, Walmart (by acquiring Flipkart), and Alibaba forayed into the marketspace [12]–[14]. Several digital native ventures (like Nykaa, Pepperfry, Meesho, Paytm Mall, Urban Ladder, Bigbasket, Limeroad, boAt Lifestyle, Country Delight, Mamaearth, Lenskart, etc.) also emerged across varied e-commerce verticals to intensify the competition. In 2021, aggregate funding in the e-commerce sector escalated to USD 10.7 billion from a record low of USD 0.9 billion [15], [16].

The increased utilization of digital platforms and social media has led to a surge in content and information that users can readily obtain online [17], [18]. Digital technologies have empowered consumers to incessantly share information without attesting to its accuracy [19]. Hence business–marketers are exposed to severe challenges, as they need to consistently monitor the social media and digital platforms to disburse credible information to the potential customers for establishing the authenticity of their online channels. The source credibility theory advocates that the authenticity of these online platforms plays a predominant role in influencing the trust, perspective, and behavior of consumers toward the information sources. It is a relevant theoretical framework for interpreting the role of online information sources on consumer purchase decisions [20]. Misleading information and rumors often tend to perplex consumers which leads them to reject the brand and demean its reputation in the market [21] Businesses and marketers can overcome these impediments by providing relevant and authentic content to the potential customers and engaging them in appreciable ways. To deliver credible information, it is important to understand how customers actively seek information about products and services during the decision-making stages in the online buying process.

This comprehension will provide the opportunity to detect the spread of rumors and misinformation and will assist in implementing processes to corroborate the validity of the information.

During the decision-making phase, once the need for a product or service arises consumers must seek brand and product-related information from multiple online sources [22], [23]. These multiple sources can be search engines, websites, social media platforms (YouTube, Instagram, TikTok, etc.), reviews, and ratings on e-commerce platforms (Amazon, Flipkart, Snapdeal, Myntra). Information search further paves the way for the evaluation of alternatives at the consumers' disposal to culminate the purchase decision-making process [24]. Pertinent information sources are critical in assisting consumers in segregating products and brands into evoke, inept, and inert sets which will assist them in making a purchase decision [25]. The extent to which consumers perceive these online sources to be credible will determine how they can appropriately categorize the products and brands into the abovementioned sets [26]. Thus, credible online information sources are pivotal in persuading consumers to make purchase decisions in the virtual environment [22], [27]. In any emerging economy, the credibility of these online information sources also tends to exert a substantial influence on consumers' online purchase intention and behavior [28].

The direct-to-consumer (D2C) brand websites over the years have gradually evolved as one of the authentic online information sources [29], [30]. D2C brand websites are online platforms owned and managed by manufacturers or brands to sell their products directly to consumers sidestepping other e-commerce platforms or traditional retail channels [31]–[35]. It is an evolving strategy to evade intermediaries like electronic marketplaces and instantaneously interact with potential customers [32], [35], [36]. In the last decade, prominent consumer goods producers and retailers (like ITC, Marico, Titan, Samsung Electronics, The Shoppers Stop, Pantaloons, etc.) have also adopted the direct-to-consumer route to enhance their online businesses despite having a multi-channel presence [8], [37]–[40]. In India, the direct-to-consumer market is estimated to achieve treble traction and reach USD 100 billion by 2025 which certainly justifies the exponential surge in the number of direct-to-consumer brand websites. The concept of direct-to-consumer brand websites is not contemporary. In advanced economies like the United States and the United Kingdom, manufacturers, service providers, and digital natives embrace brand websites as a tool to educate consumers, sell online, and foster

relationships [41]. In India since the advent of the internet, conventional consumer goods manufacturers and retailers had corporate or company websites to inform the consumers about their product portfolio and service offerings. However, the utilization of brand or company websites by various digital natives and early e-commerce adopters for direct online selling to end users is an emerging trend. The D2C brand websites have emerged as a one-stop solution for consumers to accumulate authentic information for culminating online purchase decisions.

Although D2C brand websites are accepted as an emerging and ultimate authentic source of information understanding how customers perceive this source to be credible during the purchase decision-making process is still unexplored. Prior studies on direct-to-consumer brand websites are also limited to a theoretical outline of the direct-to-consumer (D2C) business model, merely focusing on the challenges and branding strategies of the D2C brands [42] or elucidating the advantages of the business model from the firm's standpoint [43]. In the Indian context, extant empirical studies did investigate online purchase intention and behavior of consumers from varied scientific standpoints [44]–[52]. Hence, to address the above gaps this research intends to identify the factors through which consumers evaluate the credibility of direct-to-consumer brand websites. The objectives of this research are three-fold. Firstly, we conceptualize direct-to-consumer (D2C) websites in the context of website credibility. Secondly, we incorporate the exploratory factor analytic approach to identify the first-order dimensions of direct-to-consumer (D2C) website credibility. Thirdly, we endeavor to validate subscales for the well-defined first-order dimensions of D2C brand website credibility through confirmatory factor analysis and establish the comprehensive "Direct-to-consumer brand website Credibility (D2C-WEBCRED)" scale.

2. LITERATURE REVIEW

2.1 Direct-to-Consumer (D2C) Brand Websites

In the early days of the Internet, consumer brands and retailers used their own company or corporate websites as a channel of linear communication with potential consumers. The entire purpose of having a company website was restricted to educating the consumers about the company, its product portfolio, customer service offerings, distribution, and retail store location [41], [42], [53]. The consensus was consumers

interested in a particular brand would visit the company or brand website to collect all the necessary information and then visit the retail or Kirana stores to purchase the product. This pattern of consumer purchase behavior witnessed a tectonic shift with the introduction of electronic commerce [12], [54]–[56]. More and more consumers got enticed by the electronic marketplaces and deliberately shifted to online channels for shopping [57]–[59]. Traditional consumer brands, retailers, and digital natives realized the future potential of digital commerce and hence focused on utilizing their brand websites to sell online.

Direct-to-consumer (D2C) brand websites can be elucidated as online direct sales channels administered by the consumer brand manufacturers and retailers through which they can circumvent the intermediaries and sell products directly to the end users [34], [35], [42], [60]–[62]. These websites enable manufacturers and retailers to design a platform for consumers to engage with the brands in an online environment [55], [63], [64]. Consumers can now vocalize their viewpoints and preferences directly to the manufacturers and retailers ensuring more pragmatic involvement in new product development, online merchandising, and pricing. Thus, in a nutshell, direct-to-consumer (D2C) brand websites have the potential to provide consumer goods manufacturers and retailers with a comprehensive apprehension of online consumer behavior and make them more self-reliant.

2.2 Website Credibility and its Conceptual Dimensions

Credibility is elucidated as "judgments made by a perceiver concerning the believability of the communicator" [65]. It is an age-old concept in academia that has been consistently investigated by researchers as a factor determining the message recipients' perception, conviction, and, behavior [66], [67]. However, interest in this vintage construct was resuscitated with the evolution and dissemination of contemporary communication and information technologies like the World Wide Web [68]. Websites have emerged as crucial sources of information for consumers to aid in the process of online purchase decision-making. They act as a medium of communication for firms to foster association with potential consumers [69]. A website is elucidated as a warehouse of information in an accumulation of webpages accessible through a web domain [70]. By consolidating these two terms we can advocate that website credibility is a judgment about the plausibility of the website as the predominant source of information with effective and

usable online content coverage [71]. In the context of online commerce, credibility is a principal e-tailing quality dimension [72], [73]. It can be further detailed as the extent to which consumers perceive websites as believable communication devices to gather actionable information for making an online purchase in the present or near future.

Website credibility is often associated with the authenticity of online information, and can consequently be expounded as a communication phenomenon for the consumers and firms. Over the years, researchers have undertaken diligent efforts to resolve the dilemma surrounding how consumers evaluate or assess the credibility of websites in miscellaneous research contexts [67], [70], [81]–[83], [71], [74]–[80]. The applications of website credibility in diverse research endeavors substantiate the multidimensional nature of the concept. Hence, emphasizing the need to adopt multi-item measures to encapsulate consumers' evaluation of website credibility. However, a major impediment is the paucity of a pertinent measurement instrument to assess the credibility of "direct-to-consumer" (D2C) brand websites. In the extant literature, trustworthiness, and expertise encompass the two major dimensions/items utilized by scholars to assess website credibility [76]. Several secondary factors have also been associated by researchers with the core dimensions to get a comprehensive understanding of website credibility from the perspective of the consumers seeking information in the digital environment.

2.3 Website Credibility and Website Information Precision (or Accuracy)

In the contemporary domain of direct-to-consumer electronic commerce, website credibility and website information accuracy (or precision) are intricately linked. Website credibility alludes to the level to which consumers discern a particular website as an authentic source of information. When direct-to-consumer brand websites emphasize furnishing accurate and unambiguous product details, it stimulates this notion of credibility.

In-depth product descriptions, accurate pricing, precise warranty details, and transparent return/refund policies cohesively contribute to a consumer's discernment of the direct-to-consumer brand website's authenticity. As the consumers traverse through the decision-making process, they are more apparently to believe assertions and feel optimistic about their acquisitions when furnished with exhaustive information regarding the products they

are contemplating [84]. Clarity concerning discounts, free shipping policies, and product availability further reinforces this conviction. Consumers, when led astray by imprecise information or obscure terms, are anticipated to minimize their interaction with the websites or transform into constant buyers [85].

Academic investigations accentuate this interrelation. Consumers tend to discern websites with high information standards, which encompasses accurate and comprehensive product information, as credible [86][87][88]. This credibility sequentially translates into considerable alacrity to engage in electronic transactions [89]. Inherently, by prioritizing product information precision (or accuracy) direct-to-consumer brands foster a sense of assurance and authenticity that is imperative for success in the dynamic electronic commerce environment.

2.4 Website Credibility and Website Convenience

Website credibility and website convenience, the two dimensions, are quintessential for the success of direct-to-consumer brands. While they might appear to be distinctive, they are rather acutely entwined, persuading one another and eventually impacting online consumer behavior.

Website credibility reinforces conviction and fosters dependability among consumers [68]. Credibility cues like information about multiple payment options, order confirmation and order tracking e-mails, customer service contact details, and product wishlist creation through add or save to cart option subscribe to forging consumer trust [90], [91][92][93][94]. A website that evinces transparent contact details permits consumers to conveniently reach out for assistance. At the same time, flexible payment options stimulate trust by dispensing customers with assured alternatives. Consumers will enhance their interaction with the direct-to-consumer brand websites and discern them as credible.

Convenience, on the contrary, pivots on enhancing the overall experience of the consumers during their purchase from these direct-to-consumer websites [95]. Functionalities identical to flexible payment options, order tracking, and product wishlist creation through cart personalization enhance the purchase process. A convenient website accredits customers to maneuver information and accomplish tasks competently, nurturing a positive perception of the consumers towards the direct-to-consumer brand

website. The coordination between credibility and convenience is irrefutable as they operate in tandem to determine consumer purchase behavior in the direct-to-consumer realm. The direct-to-consumer (D2C) brands can advocate a trustworthy and user-oriented digital experience, eventually paving the way for a productive customer journey.

2.5 Website Credibility and Website Usability Experience

In the current electronic commerce scenario, a user-oriented website is the premise of a trustworthy online existence for novice direct-to-consumer brands. An ergonomic website that emphasizes usability reinforces a brand's credibility. A gawky and perplexing website can ruin trust even before a visitor explores the content.

Bona fide product reviews, conspicuously promoted on direct-to-consumer brand websites, have exceptional contributions to its credibility[96]–[98]. Modern consumers are astute and rely deliberately on peer feedback to make enlightened purchase decisions. Authentic reviews from existing customers not only bestow social proof but also shape trust. When consumers encounter a mix of affirmative and practical feedback, it prompts that the brand is self-evident and esteems customer viewpoints. This further augments the comprehensive credibility of direct-to-consumer brand websites.

The design and attractiveness of the product pages of a direct-to-consumer brand are quintessential in forming both usability and trustworthiness [85], [99]–[101]. A visually attractive, precise product page that accentuates principal aspects, benefits, and consumer reviews can enthrall prospective buyers, making the purchase experience congenial and instinctive. When a website appears proficient and aesthetically pleasant, it bestows a sense of trustworthiness and professionalism, further reinforcing the credibility of the direct-to-consumer brands from the perspective of the consumers.

Accessibility across all digital devices is another crucial aspect where usability and credibility traverse [102]. In the modern digital world, consumers access websites from multiple devices like laptops, desktops, smartphones, and tablets. A direct-to-consumer brand website that warrants flawless functionality across all digital platforms indicates a commitment to render enhanced user experience. The technical proficiency reassures consumers that the brand is contemporary, user-centric, and trustworthy. The user-first perspective of the direct-to-consumer brands reinforces the credibility of their websites and their allegiance to furnish exclusive shopping escapades.

3. SCALE DEVELOPMENT METHODOLOGY

The methodology for this new scale development adheres to the Source Credibility Theory (1953) and Carpenter's (2017) scale development paradigm. Source credibility theory helps to evaluate the factors that aid in assessing the authenticity of information sources. And Carpenter (2017), suggests the first stage in the scale development process is to generate items that cohesively assess the abstract constructs under investigation [103]. The entire scale development methodology has been further elucidated in the consequent sub-sections.

3.1 Generation of Items

The study adopts an integrated deductive and inductive method to accomplish the intended research outcome. The deductive approach is adopted when the theoretical foundation and definitions form the basis for item development. The assessment and clarification of the theoretical foundation of constructs is imperative to derive the precursory factors. The inductive approach envisages generating items through qualitative research methods that encapsulate the respondents' perception of direct-to-consumer brand website credibility.

According to the deductive perspective, we examined an array of prior studies about online source credibility, website credibility, and consumer online purchase decision-making to understand the extent of the research. We discovered that the extant literature has a generalized application that contradicts our objective to investigate the credibility of e-commerce websites of de novo direct-to-consumer (D2C) brands. Through the inductive approach, we conducted semi-structured in-depth interviews with several participants who have purchased from company websites (emerging direct-to-consumer or established brands). The participants were students and industry professionals who frequently shop online. This integrated approach led to the identification of 24 items.

3.2 Developing and Administering the Interviews

The development and administration of the interviews was the succeeding process in our research agenda. We employed a non-probabilistic purposive sampling technique to select the desirable participants with relevant experience in online shopping from direct-to-consumer brand websites. We scheduled the interviews within 30 to 35 minutes timeframe. The meaning and definition of ‘direct to consumer (D2C) websites' was

elucidated to the interviewees before commencing the interview process. We then instructed the respondents to discuss the factors they considered crucial while purchasing online from a direct-to-consumer brand website. After the administration of the interviews, we employed content analysis to analyze the qualitative data. We reckoned those items that were repeatedly mentioned by the participants during the interviews. A total of 24 items/variables determined the overall direct-to-consumer brand website credibility as put forward by the participants.

3.3 Developing the Questionnaire

A well-structured questionnaire was prepared as a research tool using Google Forms to conduct the primary research. The survey instrument comprised 24 statements. A five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree") evaluated the items.

3.4 Scale Refinement

Any survey instrument is prone to measurement error because of varied reasons like complex language, obscurity in questions, questions entailing approximation, double-barrelled questions, and biased questions. Hence researchers must adhere to the scale refinement mechanisms that are appropriate for research approaches encompassing questionnaire surveys and item generations [104]–[107]. In our research, we implemented the scale refinement process in the following two phases.

1. *Expert Feedback*

The instrument comprising 24 items that originated from the implementation of the inductive and deductive approaches was entitled to an expert review to establish their validity. Content validity refers to the extent to which the instrument elements or items constitute the conceptual domain under probe [108]. To determine the content validity, we pre-tested the instrument with 12 participants, encompassing three academicians and nine industry professionals from varied consumer goods manufacturing companies and emerging direct-to-consumer brands. The academicians had relevant research experience in digital marketing, electronic commerce, and information systems. The industry professionals were proficient in managing the e-commerce division of de novo and established brands. We instructed the participants to evaluate the dimensional explicability, bias, and appropriateness of the instrument. Based on the critical assessment

furnished by the experts, we excluded six items (items 19 to 24 as mentioned in the appendix section) from the study while the remaining 18 items were retained and subjected to pilot testing.

2. Pilot Testing

The foremost step in scale purification is the estimation of Cronbach's alpha. Cronbach's alpha value determines the internal reliability of the scale [109], [110]. Hence, we conducted a pilot study comprising 30 participants to validate the comprehensive structure of the questionnaire [111]. The Cronbach's alpha value for all 18 items came out to be 0.88, which is above the universally accepted threshold of 0.70 [110]. After we conducted the reliability analysis, the subsequent action was to estimate the corrected item-to-total correlation. The universal rule of thumb posits an item-to-total correlation above or equivalent to 0.3 [112]. Adhering to the guidelines, we eliminated the following item 'the D2C brand website allows you to make a purchase using a guest login' (item number 13 as mentioned in the appendix) that did indicate a corrected item-to-total correlation below 0.3. After eliminating the variable the Cronbach's alpha value elevated to 0.89. Eventually, the remaining 17 items were retained and further subjected to exploratory factor analysis.

3.5 Sample Size, Sampling Procedure, and Data Collection

Over the years, researchers have debated the appropriate sample size required for conducting an exploratory factor analysis (EFA)[110], [113], [114]. The discrepancy in determining the minimum sample size for factor analysis is prevalent as its application is not straightforward and requires greater subjectivity [115]. Prior research by Comrey and Lee (1992) has further categorized and rated sample sizes for conducting a factor analysis as follows: 100-poor, 200-fair, and 300-good. Many researchers suggested that for conducting EFA the sample size should be at least 100 [110], [113], [116]. Sample size in the range of 100-200 was also reckoned relevant [117], [118].

Another approach to determining the minimum sample size is by adhering to the sample-to-variable ratio. However, a discrepancy exists among researchers in recommending a suitable sample-to-variable ratio that encompasses the following: 3:1, 6:1, 10:1, 15:1, and 20:1 [119]. In the context of our research, we have considered the 10:1 sample-to-variable

ratio. The number of variables in the study is 17. That implies the appropriate sample size should not be less than 170.

The respondents of this analysis comprised students and working professionals as they are highly technology-oriented and display a strong inclination towards online shopping [120]. LinkedIn was chosen as the appropriate virtual platform to gather data from the desirable sample suitable for this analysis [121]. A non-probabilistic sampling method was utilized to collect the responses from 2954 LinkedIn connections [122]. To ensure that all the respondents were able to comprehend what a direct-to-consumer brand is and were eligible to participate in this survey, we put forward the following questions for screening:

1. Do you frequently purchase products online? (Yes/No)
2. Are you familiar with the direct-to-consumer (D2C) brands? (Yes/No)
3. Have you purchased products from a direct-to-consumer (D2C) brand website? (Yes/No)

The data were gathered over 43 weeks and 306 responses were recorded. In the subsequent process, 88 responses were obliterated owing to deficient data or data quality concerns. Eventually, 218 supportable survey forms were retained for further analysis.

4. DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Exploratory Factor Analysis

After ascertaining the definitive scale items, we proceeded to conduct the exploratory factor analysis (EFA). EFA is the most frequently applied statistical procedure in assessing proposed scales [103]. In the context of EFA, the foremost step is to determine the factorability of the data. We adopted the following measures to ascertain the data factorability: Kaiser-Meyer-Olkin (KMO) test of sampling adequacy, Bartlett's test of sphericity (BTS) significance, and the correlation matrix. In our study, the KMO value of 0.879 is above the generally accepted threshold of 0.6 [123]. The BTS is also significant at $\alpha = 0.000$. The BTS outcome justified that the correlation matrix is not an identity matrix. We then examined the correlation matrix for inter-item correlations above the ±0.30 threshold. The correlation matrix obtained from the SPSS output satisfied the criteria. Hence, establishing the suitability of the data for conducting EFA [124].

Table 1. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.879
Bartlett's Test of	*Approx. Chi-Square*	2412.082
Sphericity	*degrees of freedom*	136
	Sig.	.000

Eventually, an EFA envisaging all the items/variables was conducted. We performed a principal components analysis (PCA) with oblique promax rotation. In the initial run, we applied the MINEIGEN criterion to extract the appropriate number of factors [125]. The three extracted factors accounted for about 63.67% of the total variance explained, above the generally accepted threshold of 50% [126]. We then applied the minimum cut-off criterion of factor loadings (above 0.5) to determine item retention and deletion [117], [127]. As the factor loadings of all 17 items were relatively high and above the accepted cut-off of 0.5, we retained them for further analysis. We re-run Cronbach's alpha test to determine the internal reliability of the individual sub-constructs. The alpha coefficient for the three sub-constructs was 0.898, 0.893, and 0.816. The above results further confirmed that the instrument is valid and reliable.

The Exploratory Factor Analysis yielded three factors. Factor 1 reflects those variables that measure the overall authenticity or precision of the product and promotion-related content available on the direct-to-consumer brand websites. While product-related information encompasses the price, description, features or attributes, warranty, variety, and availability; promotional content includes free shipping, discounts and offers, and return and refund policies. Consumers need accurate product and promotion-related information before initiating a purchase decision. Hence factor 1 is labeled as "website information precision (WIP)". Factor 2 represents the items that determine the expertise of the direct-to-consumer brand websites in furnishing information that facilitates the transaction process.

Table 2. Exploratory Factor Analysis

Latent Constructs and Items	*Cronbach's Alpha*	*Factor 1*	*Factor 2*	*Factor 3*
Factor 1	0.898			
The product descriptions on the D2C brand website are in-depth		0.779		
The D2C brand website provides accurate information about discounts and offers available		0.763		
The D2C brand website has a wide variety of products		0.735		
The product price mentioned on the D2C brand website is accurate		0.725		
The product warranty details on the D2C brand website are accurate		0.714		
The D2C brand website provides accurate information about product features and attributes		0.711		
The return and refund policy mentioned on the D2C brand website is accurate		0.703		
The D2C brand website is transparent on its free shipping policy		0.699		
The information regarding which products are available for purchase is updated on the D2C brand website		0.563		
Factor 2	0.893			
The D2C brand website informs you about the multiple payment options available			0.973	
The D2C brand website sends you an e-mail regarding order confirmation and order tracking			0.836	
Customer service contact information given on the D2C brand website is accurate			0.690	
The add/save to cart option on the D2C brand website helps you to create a product wishlist			0.570	

Latent Constructs and Items	*Cronbach's Alpha*	*Factor 1*	*Factor 2*	*Factor 3*
Factor 3	0.816			
The D2C brand website provides authentic product reviews				0.820
The product page design on the D2C brand website is appealing to you				0.815
The D2C brand website is accessible from all electronic devices				0.629
The search functionality on the D2C brand website helps you to navigate properly				0.615

These variables inform the consumers about the multiple payment options available on the website, order confirmation email, customer service contact details, and product wishlist created through add or save to cart feature. As much of the consumer-seller interaction is restricted in a virtual setup, direct-to-consumer brand websites must furnish consumers with accurate information about each stage of the purchase process. Thus, factor 2 in this study is labeled as "website convenience (WC)". Factor 3 encompasses those items that evaluate the usability experience that the direct-to-consumer brand websites provide to the end users. In the usability context authentic product reviews, attractive product page design, accessibility, and effective navigation through search function tend to establish the veracity of the direct-to-consumer brand websites. Hence, factor 3 in the context of this research is labeled as "website usability experience (WUE)".

4.2 Confirmatory Factor Analysis

We computed the confirmatory factor analysis as the next step in the scale development process to further validate the three-factor model [128]–[130]. AMOS 22 was used to conduct CFA centered on maximum likelihood (ML) estimation. The result connoted a rational fit for the suggested three-factor model as displayed in table 3 (CMIN/DF=2.303; RMSEA=0.077; RMR=0.045; GFI=0.891; AGFI=0.845; TLI=0.925; CFI=0.940). As the EFA envisaging all items/variables formulated on principal components analysis with eigenvalues above 1 and orthogonal varimax rotation did extract three factors, we performed a $\chi 2$ difference test to examine whether the three-factor model structure

significantly achieves a better fit. The $\chi 2$ difference test result adheres to the three-factor model structure.

Table 3. Calculated Statistics for the CFA Model

	Model Fit		*Absolute Measures*			*Incremental Fit Measures*		*Parsimonious Fit Measures*	*RMSEA*
	$\chi 2$	$\chi 2$/df	RMR	GFI	AGFI	CFI	TLI	PCFI	
CFA Model 1	248.136	2.298	0.045	0.891	0.845	0.940	0.925	0.747	0.077

Table 4. Confirmatory Factor Analysis

Latent Constructs and Items	*Item Labels*	*Factor Loadings (≥ 0.5)*	*CR*	*AVE*
Website Information Precision (WIP)			0.90	0.50
The product descriptions on the D2C brand website are in-depth	WIP1	0.705		
The D2C brand website provides accurate information about discounts and offers available	WIP2	0.700		
The D2C brand website has a wide variety of products	WIP3	0.658		
The product price mentioned on the D2C brand website is accurate	WIP4	0.711		
The product warranty details on the D2C brand website are accurate	WIP5	0.735		
The D2C brand website provides accurate information about product features and attributes	WIP6	0.734		
The return and refund policy mentioned on the D2C brand website is accurate	WIP7	0.832		
The D2C brand website is transparent on its free shipping policy	WIP8	0.675		
The information regarding which products are available for purchase is updated on the D2C brand website	WIP8	0.583		

Latent Constructs and Items	*Item Labels*	*Factor Loadings (≥ 0.5)*	*CR*	*AVE*
Website Convenience (WC)			0.89	0.68
The D2C brand website informs you about the multiple payment options available	WC1	0.802		
The D2C brand website sends you an e-mail regarding order confirmation and order tracking	WC2	0.901		
Customer service contact information given on the D2C brand website is accurate	WC3	0.833		
The add/save to cart option on the D2C brand website helps you to create a product wishlist	WC4	0.752		
Website Usability Experience (WUE)			0.82	0.54
The D2C brand website provides authentic product reviews	WUE1	0.880		
The product page design on the D2C brand website is appealing to you	WUE2	0.748		
The D2C brand website is accessible from all electronic devices	WUE3	0.602		
The search functionality on the D2C brand website helps you to navigate properly	WUE4	0.690		

Once we obtained desirable output from EFA and CFA, we re-evaluated the new scale to establish construct and discriminant validity. Construct or convergent validity exists if the composite reliability (CR) is above 0.7 or if the average variance extracted (AVE) exceeds the widely accepted threshold of 0.5. In our analysis, the AVE for the individual constructs was 0.50, 0.68, and 0.54. At the same time, the CR values for the three constructs were 0.90, 0.89, and 0.82. Thus, we can firmly advocate that convergent validity was established. Table 4 displays the CR and AVE values along with the individual item factor loadings.

5. CONCLUSION

The research study identified the factors through which consumers can assess the credibility of the "direct-to-consumer" websites of emerging and established brands. The

outcome indicates that all three factors have a holistic influence in assisting consumers during the purchase decision-making process. Establishing independent online sales channel(s) is exposed to numerous challenges for direct-to-consumer brands. Direct-to-consumer brands need to ensure that their online platforms (company websites and exclusive brand e-stores) can enrich the online shopping experience of the consumers. The results show that "website information precision" is predominant in enabling consumers to assess the credibility of product and promotion-related information furnished by direct-to-consumer brand websites. This certainly validates the need to make the interface more appealing to the consumers through appropriate product descriptions, attractive discounts and offers, a wide variety of products, accurate product pricing, authentic warranty information, detailed product features, and attributes, transparent return and refund policy, free shipping, and updated product availability. Academic and industrial experts have strongly asserted the importance of sharing the right information with consumers in the virtual environment, hence enabling the consumers to establish trust with the direct-to-consumer brand websites as a credible source of information. The assertions put forward by numerous experts are consistent with this research outcome. “Website convenience" tends to promote online shopping by easing the purchase process for the consumers and at the same time furnishing purchase process-related information to the consumers. The expertise of these direct-to-consumer brand websites in the context of being responsive can be ascertained through flexible payment options provided to the consumers, detailed order confirmation e-mail, customer service contact information, and cart customization through add or save to cart feature. The “website usability experience” of the direct-to-consumer brand websites to a great extent depends on the experience of the consumers while using these websites for gathering the required information. The verified product reviews, attractive product page design, accessibility to the website from all electronic devices, and search functionality for easy navigation are the attributes that ensure consumers can conveniently search for information about the products and services from the website itself.

6. THEORETICAL IMPLICATIONS

The foremost research contribution is the evolution of an authenticated measurement instrument for assessing the credibility of direct-to-consumer (D2C) websites by adhering to a unique steadfast process. In empirical research, any measurement instrument in a factual manner provides an infrastructure to conduct scientific investigations. The development of the scale in itself may have minimal contribution in corroborating a distinct hypothesized relationship, and hence may not assist in theoretical progress to that extent. But when applied in an emerging context it may yield valuable insights. The first

contribution of this D2C-WEBCRED scale is that, by commencing with the source credibility theory and venturing within and beyond the primary construct of trustworthiness, this paper exhibits how to apply the theory in assessing the authenticity of D2C brand websites. This approach is relevant as with the adoption and diffusion of electronic commerce, direct-to-consumer brand websites have gradually evolved. Hence it is imperative to measure consumers' perception of these websites as pertinent sources to seek information and make purchases.

Consumers often tend to use heuristics or cognitive shortcuts to assess the authenticity of websites. The D2C-WEBCRED scale can identify the definite cues or dimensions that consumers contemplate when making judgments about the credibility of these direct-to-consumer brand websites. This knowledge can further contribute to comprehending how consumers process digital information and the cognitive structure underlying their credibility evaluation. The third contribution of this scale is that it lays down the foundation that can provide better insights into consumer behavior in the virtual environment. A well-approved scale can identify factors that affect purchase intentions, trust formation, information seeking, and engagement with D2C brand websites of brands and e-tailers.

7 MANAGERIAL IMPLICATIONS

This research aims to provide a holistic framework for assessing the credibility of direct-to-consumer brand websites from the perspective of the consumers. Entrepreneurs, intrapreneurs, and managers need to acknowledge the complexities consumers encounter while accumulating the required information to purchase products online. In the present scenario, the World Wide Web is flooded with multiple information sources which may not be authentic. It has become imperative for direct-to-consumer brand websites to act as credible sources of information in the digital environment. Managers, who are industry outsiders with finite expertise in e-commerce have to rely on numerous third-party vendors like website developers, electronic commerce solutions providers, and logistics partners to build, manage, and deliver in the online environment. They need to have clarity on the factors that will entice consumers to visit and revisit these direct-to-consumer brand websites. The outcome of this research is also applicable to SMEs who are willing to foray into the virtual world of business. The future scope of this research extends to the online selling strategies that the de novo ventures and established consumer goods manufacturers should adopt. The effectiveness of electronic platforms and channels to conduct business online remains undisputed. With adequate tools at disposal and appropriate IS infrastructure, selling online has gained the much-needed impetus and popularity.

Online selling has emerged as a medium for generating revenues. The digital sales channel can be established by embracing the following three strategies [131] : (a) Direct Selling, (b) Reselling, and (c) Agency Selling. Direct selling is a strategy where a manufacturer establishes its online channel or platform to sell products directly to consumers. We may consider the example of a venture like boAT Lifestyle which has its website to sell directly to the consumers. In reselling strategy, the organizations dispense the products through an e-retailer who acts like a mediator. For example, Fit & Glow, a wellness and healthcare products manufacturer, sells its personal care brand 'Wow' through Purple.com, an Indian e-commerce start-up that is a one-stop e-marketplace for beauty products. A company embracing an agency selling strategy collaborates with a third-party player that operates an online platform (website) with enormous traffic and tends to sell its products through the website by paying a commission fee to the concerned party for the services rendered. Numerous well-known and emerging consumer goods manufacturers have their brand stores on Amazon.com. The Amazon brand stores provide them with the opportunity to display their exclusive collection of products and hence aggrandize their brand. With a plethora of options at their disposal managers must decide which online selling strategy will maximize their value and give them a competitive advantage.

Website development is another aspect that tends to determine the digital commerce strategic objectives of a firm. Hence, as de novo brands look forward to enhancing their virtual presence it has become imperative for managers to implement a seamless website development process. "A/B testing" is a widely popular technique applied to compare two versions of a website or application to determine better performance. The adoption of "A/B testing" has grown exponentially among electronic commerce companies, as they tend to cater to the day-to-day needs of their potential customers through digital channels (the World Wide Web or dedicated applications). "A/B testing" can amplify the authenticity of these D2C brand websites by furnishing empirical proof and data-driven comprehension of consumer behavior and preferences. Managers can conduct random experiments with actual users by utilizing disparate variations of the D2C brand websites' user interface (website design and layout), content, and functionality. This process will further aid in identifying the specific components that predominantly influence customer engagement, satisfaction, and conversions. While customer engagement and satisfaction tend to determine the overall customer experience, conversion rates are crucial for managers to understand what factors are driving website visitors to undertake a desirable action. These actions envisage making an online purchase, providing pertinent feedback about the product or purchase process through survey participation, and enrolling in the brand newsletter. Adhering to the "A/B testing" technique at the initial stages of website development will expedite managers to detect errors, and improve and kaizen their D2C electronic commerce infrastructure. By contrasting the two versions of the website,

managers can discover the pain points that users encounter while using the website. This facilitates managers to implement the necessary improvements and deliver a flawless user experience. While improvements are crucial, "kaizen" or continuous improvement is quintessential in fine-tuning the website and validating its credibility.

8 LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

There are several potential limitations and future research directions to consider when exploring the credibility of direct-to-consumer (D2C) websites. Firstly, a limitation of many studies on website credibility is that they use a relatively small sample of participants. Future research could address this limitation by using larger samples to increase the generalizability of findings. Secondly, future research could explore the credibility of D2C brand websites using a range of methodological approaches, such as experiments and observational studies. Thirdly, one direction for future research is to explore how specific design and content elements influence the perceived credibility of D2C brand websites. For example, researchers could investigate how the use of social proof, such as customer reviews, affects website credibility. Fourthly, future research could also explore the credibility of D2C brand websites within specific industries, such as healthcare and financial services. This could provide insights into how industry-specific regulations and norms affect website credibility. Fifthly, longitudinal studies that track changes in website credibility perceptions over time could be valuable in understanding how changes in website design, content, and other factors influence consumer perceptions of credibility. Finally, experimental studies adhering to a multidimensional A/B testing paradigm can be implemented in the future. This approach will shed light on all the factors that tend to influence consumers' perception of the authenticity of D2C brand websites.

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APPENDIX

The questions were evaluated on a 5-point Likert scale codified from 1 (strongly disagree) to 5 (strongly agree).

1. The D2C brand website is accessible from all electronic devices.
2. The search functionality on the D2C brand website helps you to navigate properly.
3. The D2C brand website provides authentic product reviews.
4. The product price mentioned on the D2C brand website is accurate.
5. The D2C brand website has a wide variety of products.
6. The product descriptions on the D2C brand website are in-depth.
7. The D2C brand website provides accurate information about product features and attributes.
8. The information regarding which products are available for purchase is updated on the D2C brand website.
9. The D2C brand website is transparent on its free shipping policy.
10. The product warranty detail on the D2C brand website is accurate.

11. The D2C brand website provides accurate information about discounts and offers available.
12. The return and refund policy mentioned on the D2C brand website is accurate.
13. The D2C brand website allows you to make a purchase using a guest login (item removed after pilot study for corrected item-to-total correlation inconsistency).
14. Customer service contact information given on the D2C brand website is accurate.
15. The D2C brand website sends you an e-mail regarding order confirmation and order tracking.
16. The D2C brand website informs you about the multiple payment options available.
17. The add/save to cart option on the D2C brand website helps you to create a product wishlist.
18. The product page design on the D2C brand website is appealing to you.
19. The D2C brand website did provide delivery at the exact location facility (item excluded after discussion with experts).
20. The D2C brand website delivered the product within the estimated timeframe (item removed after discussion with experts).
21. The D2C brand website communicated in case of any delivery delays and revised delivery (item removed after discussion with experts).
22. The product packaging provided by the D2C brand website was appropriate (item removed after discussion with experts).
23. The D2C brand website did provide delivery options that fit your requirements (item removed after discussion with experts).
24. The product delivered by the D2C brand website was undamaged (item removed after discussion with experts).

The following are the factor labels:

1. WIP – Website Information Precision.
2. WC – Website Convenience.
3. WUE –Website Usability Experience.

The following are the item labels:

1. WIP1 – The product description on the D2C brand website are in-depth.

2. WIP2 – The D2C brand website provides accurate information about discounts and offers available.

3. WIP3 – The D2C brand website has a wide variety of products.

4. WIP4 – The product price mentioned on the D2C brand website is accurate.

5. WIP5 – The product warranty details on the D2C brand website is accurate.

6. WIP6 – The D2C brand website provides accurate information about product attributes and features.

7. WIP7 – The return and refund policy mentioned on the D2C brand website is accurate.

8. WIP8 – The D2C brand website is transparent on its free shipping policy.

9. WIP9 – The information regarding which products are available for

purchase is updated on the D2C brand website.

10. WC1– The D2C brand website informs you about the multiple payment options available.

11. WC2 – The D2C brand website sends you an email regarding order confirmation and order tracking.

12. WC3 – Customer service contact information given on the D2C brand website is accurate.

13. WC4 – The add/save cart option on the D2C brand website helps you to create a product wishlist.

14. WUE1 – The D2C brand website provides authentic product reviews.

15. WUE2 – The product page design on the D2C brand website is appealing to you.

16. WUE3 – The D2C brand website is accessible from electronic devices.

17. WUE4 – The search functionality on the D2C brand website helps you to navigate properly.