



Digital marketing communication in global marketplaces: A review of extant research, future directions, and potential approaches



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ABSTRACT

Digital marketing communication, that is, communication through digital or electronic media among businesses and consumers, is growing rapidly, especially during the COVID-19 era. We propose a framework for analyzing digital marketing communication along four major dyads, business-to-consumer (B2C), business-to-business (B2B), consumer-to-consumer (C2C), and consumer-to-business (C2B). We review and summarize, for researchers and practitioners, the literature during 2000–2021 in these dyads along four major components: goals; channels, media, and platforms; content; and responses. We find that extant research in digital marketing communication pertains mostly to a specific, national level rather than a global level, despite the porousness of national boundaries for digital marketing. We derive important insights, identify key research gaps and questions in each of the dyads along these dimensions. We suggest approaches to address these research questions under three major components: substantive issues, data, and methods. These approaches can offer the insights that managers need to better formulate digital marketing strategies in local and global contexts.

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1. Introduction

Communications are integral to any marketing strategy (Ailawadi et al., 2009). These critical interactions among businesses and consumers increasingly take place through digital media and devices. We define digital media as media that rely on signals and data that can be discretely represented by a series of digits, unlike traditional or analog signals and data, which are continuous. We define a digital device as a unit of physical equipment that contains a computer chip or controller that is capable of processing digital signals. Because digital media get encoded in machine-readable formats that can be created, viewed, modified, or stored in digital devices, they can facilitate communication.

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Varied digital media and devices enable businesses and consumers to create, share, and evaluate diverse types and styles of content to achieve a range of digital communication goals. These goals range from providing and seeking information (e.g., Apple announcing the launch of its latest iPhone; a consumer visiting Apple's website to obtain more details and then posting a selfie with a recently purchased iPhone), to reviewing products, to complaining about a failed service for redress by the firm, and to warning other consumers about products.

We formally define digital marketing communication as communication through digital or electronic media among businesses and consumers. Unlike traditional marketing communication, digital marketing communication facilitates greater interactions or dialogs between the source and the recipient (Shankar & Malthouse, 2007). Examples of digital communication include online display advertising, search advertising (organic and paid), mobile communication, and word of mouth (WOM) communication through social media.

Digital communication's influence relative to that of traditional communication has continued to grow, especially during the COVID-19 era. The vast disruptions induced by the pandemic have made the benefits of digital communication even more salient. A CMO Survey suggests that more than 80% of consumers are more open to firms' digital offerings and value digital experiences with firms more highly as a result of the pandemic.¹ At the same time, the COVID-19 pandemic has decelerated globalization trends, at least in the short-term, creating digital communication challenges and exposing vulnerabilities in the global flow of people and trade. At the same time, it has also spawned new opportunities in digital marketing. The diffusion of communication technologies, the changing perceptions toward digital experiences, digital communications, e-commerce, and remote work could spur more digital cross-border interactions, creating opportunities for firms to enhance their digital global strategies.² To cater to this 'new normal,' firms are accelerating their digital transformation efforts.

Variation in how global firms implement digital marketing communication has also increased, though often without a clear direction based on meaningful strategic insights. Confusion appears particularly acute in global markets, for which the paths to purchase and service delivery options vary significantly (Nam & Kannan, 2020). For example, the available communication channels, Internet access, and retail formats differ substantially between emerging and developed markets. Thus, marketers face challenges in developing effective digital communication strategies across markets, revealing the need for better insights into what we know—and what we do not—in the digital marketing communication domain.

In particular, businesses and marketing managers face key questions pertaining to their digital marketing communication strategies: What are/should be the goals of the strategy? How can firms leverage communication channels, media, and platforms to maximize marketing communication effectiveness? Which content is appropriate for the communication goals? What responses do the digital communications elicit?

From the standpoints of both researchers and practitioners, to our knowledge, no systematic review of the literature that addresses these questions exists. We contribute by developing an organizing framework of digital communication and by comprehensively reviewing the literature through this framework. We summarize the key findings and managerial insights, identify the gaps in current knowledge, and propose useful and unique research directions. We offer potential approaches to pursue these directions, discussing the relevant substantive issues, data, and methods.

2. An organizing framework of digital communication research

Prior research is rife with applications of digital communication (Kannan et al., 2017). We structure these applications along two key dimensions, source and recipient that form the x- and y-axes, respectively in Fig. 1. We chose these dimensions because they are consistent with the sender and receiver elements in the sender-message-channel-receiver-noise-feed back model of communications (Weaver & Shannon, 1963). Digital marketing communication spans four dyads: **business-to-consumer (B2C)**, **business-to-business (B2B)**, **consumer-to-consumer (C2C)**, and **consumer-to-business (C2B)**.³ We select these four dyads because they are the most commonly used sender-receiver pairs in digital marketing communications. Within each dyad, we summarize prior research's key findings, highlighting the managerial insights and identifying the research gaps, in particular, in the global context. Based on the gaps, we list several important research questions and directions.

We extend related prior conceptual and review papers by providing a more comprehensive review of prior research (published in all leading marketing journals in the last 20 years) and by prioritizing the following relevant research questions within each dyad:⁴

- What is the primary *goal* of digital communication (e.g., to inform customers [business or consumers] or persuade them)?
- Which digital communication vehicles – *communication channels, media, and platforms* – are and should be used?
- What type of digital *content* is and should be communicated through the digital campaign, message, or post?
- How does the recipient (business or end consumer) *respond* to the digital communication (e.g., engagement, WOM, purchases)?

¹ https://cmosurvey.org/wp-content/uploads/2020/06/The_CMO_Survey-Highlights-and_Insights_Report-June-2020.pdf.

² <https://hbr.org/2020/05/will-covid-19-have-a-lasting-impact-on-globalization>.

³ We acknowledge that there are potential overlaps and spillovers across these dyads. We focus on the primary recipient within the proposed dyadic structure to simplify the exposition.

⁴ These related papers include that on mobile advertising (Grewal et al., 2016), on social media (Appel et al., 2020), on digital touchpoints (Kannan & Li, 2017), and on digital retailing communication (Grewal et al. 2021)..

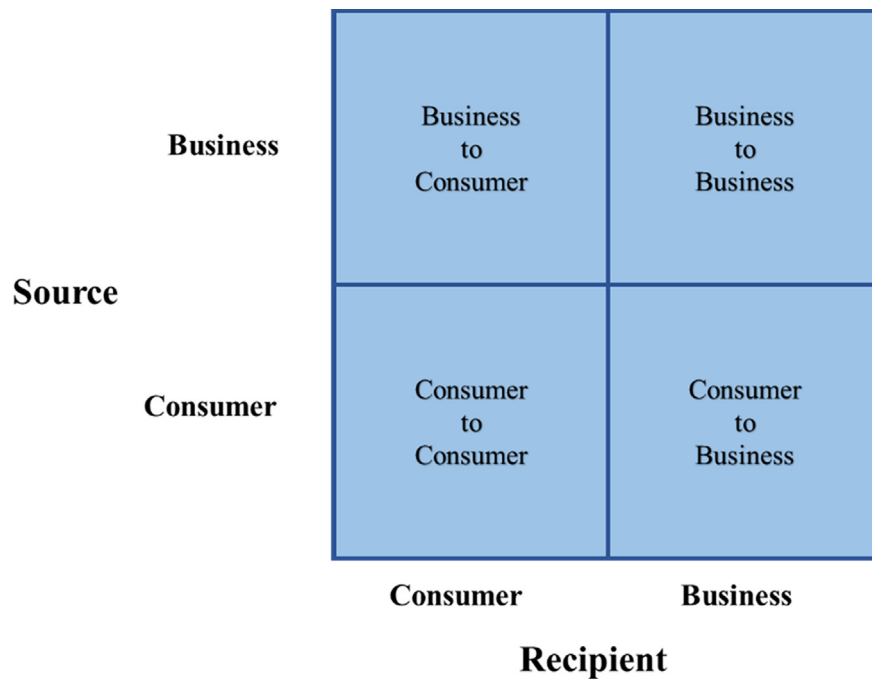


Fig. 1. Digital Communication Source-Recipient Dyads.

Our selection of these marketing-relevant questions is derived from the Shannon-Weaver model of communication (Weaver & Shannon, 1963). Specifically, communication goals, communication vehicles, content and recipient response map onto Shannon-Weaver model's sender component, channel component, message component, and receiver and feedback components, respectively.

We analyze articles primarily in the leading marketing journals that publish work on digital communication, *Journal of Marketing*, *Journal of Marketing Research*, *Marketing Science*, *Management Science*, *Journal of Consumer Research*, *Journal of Consumer Psychology*, *Journal of the Academy of Marketing Science*, *Journal of Interactive Marketing*, *Journal of Retailing*, and *International Journal of Research in Marketing* between 2000 and 2021. We carefully examine the keywords of and scan each article for digital, online, Internet, global, and related topics. Fig. 2 shows plots of the number of articles containing digital or global or both as keywords over the years. Although articles focusing on digital or global topics have steadily risen over time, articles emphasizing both these topics have stalled, underscoring the need for research involving both digital and global issues.

From our review, we derive and synthesize novel insights and recommendations for researchers and managers in specific and global marketing contexts for each dyad in Fig. 1. Specifically, we offer recommendations for businesses to improve digital communication by: (1) carefully formulating goals; (2) optimizing across communication channels, media, and platforms; (3) designing and delivering the content; and (4) measuring the responses to these efforts to gain relevant and actionable insights.

Our research contributes to the literature in three key ways. First, we provide a comprehensive review of digital marketing communication research. Second, we derive and summarize novel insights on digital communication that help managers formulate better strategies. Third, we identify critical research gaps, especially digital communication in the global context and offer researchers several useful directions for future research.

Before we begin the review, we (1) discuss major themes that we have identified in prior research on digital marketing communications and (2) note several key trends driving changes in such communications, which guide our discussion of prior work and directions for future work.

We identify five major themes in prior research: (1) website and static communication, (2) proliferation of social media, platforms, and devices (3) nascent but fast-growing mobile media, (4) use of analytics and new tools, and (5) emerging roles of trust, privacy, and regulation. Studies, especially during the early 2000s, focus on website effectiveness. Since then, a plethora of research has centered around social media, the main source of C2C and C2B communications. From 2015, there has been a heightened focus on mobile communications. Throughout the past 21 years, the use of analytics has been growing steadily. As digital communication is becoming more personalized, privacy, trust, and digital regulation are becoming more salient. We allude to these themes in our following discussions. Research on digital communication in the global context is sparse, so we highlight only a few global studies.

We also have identified several key trends driving changes in digital marketing communications. Heterogeneity across subcultures, cultures, countries, and regions together with rising concerns about privacy is forcing digital marketers to rea-

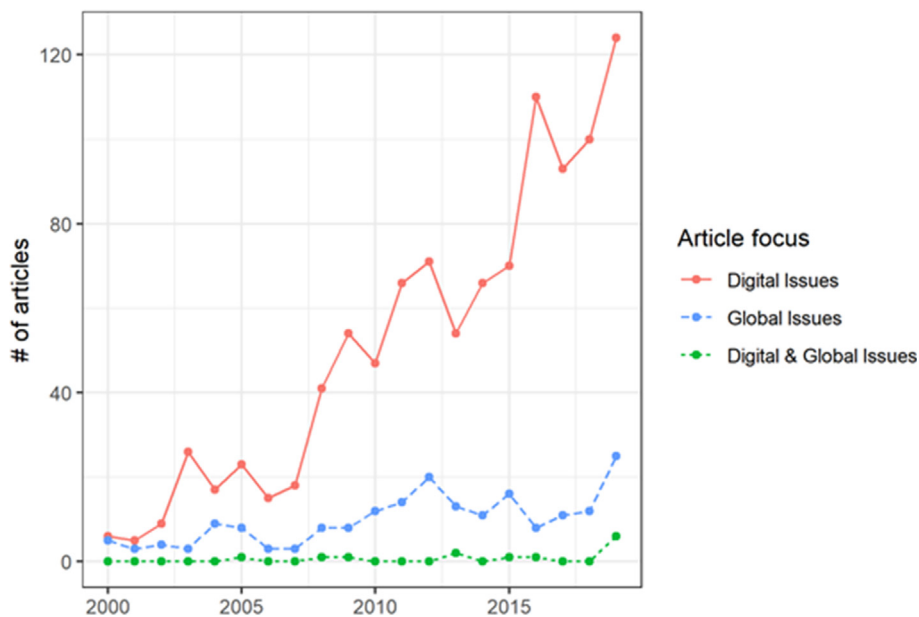


Fig. 2. Evolution of Number of Digital Marketing Communication Articles in Major Research Journals Focusing on Digital or Global Issues (2000–2021). Note: Journals considered: Journal of Marketing, Journal of Marketing Research, Marketing Science, Management Science, Journal of Consumer Research, Journal of Consumer Psychology, Journal of Academy of Marketing Science, International Journal of Research in Marketing, Journal of Retailing, and Journal of Interactive Marketing.

align their communication objectives with target audiences' needs and concerns. As regards channels, media and platforms, the proliferation of devices, touchpoints, and platforms is making way for more real-time, personalized, and automated communication, including computational advertising (Yun et al., 2020). Communication is also becoming more transparent and embedded within devices (e.g., the Internet of Things [IoT]⁵) or blurring the real and digital worlds (e.g., augmented reality). Digital communication content is transforming as well. In the COVID-19 era, content relating to public health is growing. Content is also becoming more informative, value-based, and emotional. Finally, with respect to responses, the emphasis is shifting to better attribution and more effective and efficient allocation of digital communication resources.

3. Business-to-consumer (B2C) digital interactions

3.1. B2C digital communication strategy

3.1.1. Goals

The goals of digital B2C communication depend on the stage in the shopper's shopping funnel and typically include enhancing awareness, engagement, experience, acquisition, or retention (Shankar & Hollinger 2007). The B2C literature is rich in articles that examine the roles of various goals for digital communication (see Table 1). However, there is a lack of research on activism (e.g., Body Shop, Puma, Patagonia, REI), which is emerging as a digital communication goal.

3.1.2. Communication channels, media, and platforms

B2C digital communications span several channels, media, and platforms and include display advertising, email advertising, search engine advertising, mobile advertising, and social and other earned media advertising.

3.1.2.1. Display advertising. Display ads can enhance brand recognition and trustworthiness (e.g., Aribarg & Schwartz, 2020; Bruce et al., 2012) as well as lead to improved purchase funnel outcomes ranging from awareness to interest to purchase intent (e.g., Goldfarb & Tucker, 2011). They affect offline sales more than online sales (e.g., Lobschat et al., 2017) and initially perform well in retargeting (e.g., Sahni et al., 2019). However, the effectiveness of display ads wears out quickly (e.g., Sahni et al., 2019), especially with higher ad frequency and recency. Möller and Eisend (2010) find that attitudes toward display ads and click intentions vary according to Hofstede's cultural dimensions, being less favorable in individualist countries. In the international context, a few studies investigate digital communication through vehicles such as websites (Steenkamp & Geyskens, 2006), emails (Kwak et al., 2006), social media ads (Johnston et al., 2018), and online car configuration sites (Bellis

⁵ IoT refers to interconnected computing or communication devices that share data over the Internet.

Table 1
Review of Selected Research on B2C Digital Communication.

Paper	Focus	Approach/Method	Main Findings
Kwak et al. (2006)	Consumer ethnocentrism with marketing efforts and personality traits	Survey	Ethnocentrism in emails provokes negative attitudes toward foreign advertisements and foreign products and lowers activities on foreign websites.
Steenkamp and Geyskens (2006)	How country characteristics affect perceived value of websites	Hierarchical linear modeling	The effect of privacy protection on perceived value varies with country characteristics and culture.
Möller and Eisend (2010)	Role of culture and sociodemographic in the effectiveness of display ads	Hierarchical linear modeling	Cultural dimensions (individualism, uncertainty avoidance, power distance and masculinity) influence attitudes toward displays ads and customer intentions to click.
Goldfarb and Tucker (2011)	Drivers of the effectiveness of online advertising	Linear probability model	The fit of ad and website content and an increase in the ad's obtrusiveness can enhance customer purchase intention. However, together they can have a detrimental effect due to elevated levels of privacy concerns.
Tucker (2014)	Relationship between internet users' perceptions of control over their personal information and intention to click on online advertising	Randomized field experiment	Higher levels of control can be conducive for higher CTR for personalized display ads. This influence is stronger for ads with higher levels of personalization and for customers who are more wary of their privacy.
De Haan et al. (2016)	Impact of different types of advertising on traffic, conversion, and revenue	Structural vector autoregression model	Content-integrated advertising is more effective than content-separated and firm-initiated advertising in driving traffic, conversion, and revenue.
Kireyev et al. (2016)	Synergy between paid search and display ads	Persistence time series analysis	A synergistic impact exists between paid search and display ads. Together, they improve overall effectiveness and ROI related to advertising.
Kumar et al. (2016)	Firm-generated content (FGC) and its influence on customer purchase metrics	Difference in differences model	FGC has a strong positive influence on customer purchase behavior, which varies based on customer experience, attitude toward technology, and social media usage. FGC also enhances the impact of email.
Bruce et al. (2017)	Role of ad format, message content, and targeting in digital ad performance over time	Zero-inflated count model	Dynamic formats of display ads persist for a longer time than ads with static format. Static format can still be effective for ads focusing on price incentives.
Lobschat et al. (2017)	How display ads influence online and offline behavior	Bayesian multivariate probit model	Customers with no recent interaction with the firm's website show enhanced level of website visits after exposure to display advertising, which also has a spillover effect on offline sales. Customers with recent online interaction with the firm also exhibit positive effects of display advertising in brand-building and offline purchase.
Zubcsek et al. (2017)	Effectiveness of colocation network neighbors on engagement in mobile promotions	Logistic regression	Customers' likelihood of participation in a marketing promotion activity is positively related not only with her history of engagement in such an activity but also with the history of her colocation network neighbors in such an activity.
Försch and De Haan (2018)	Effect of frequency and spacing of online display advertising on CTR	Random intercept model	The CTR of an ad is low when its exposure frequency is high and spacing is low. This result is especially true for large advertisers and campaigns that are less diverse.
Lee et al. (2018)	Effect of social media display ad content on Facebook engagement (likes, comments, shares) and CTR	Two-stage semiparametric model	Content related to brand personality is associated with increased consumer engagement, while directly informative content is generally associated with decreased engagement but can increase the CTR.
Johnston et al. (2018)	Behavioral implications of international social media advertising	Survey	Results confirm mediating effects of value and attitude on the relationship between social media advertising infotainment and credibility on message and social interaction behavior.
Sahni et al. (2018)	Role of personalization in email marketing and advertising outcomes	Randomized field experiments	Using noninformative advertising content such as customer-specific details in the email campaign can result in a higher level of clicks, sales conversion, and a lower level of request for unsubscribing from the email campaign.
Bellis et al. (2019)	Personalized customization experience and cultural information processing	Experiments	Information presentation in car configurators is culture-specific and its implementation leads to higher satisfaction and purchase intent.
Chae et al. (2019)	Consumer responses to display ad repetitions	Discrete choice model with finite mixture	Display advertising has heterogeneous wearout effects. Nearly one quarter of the consumers can exhibit advertising weariness, where additional ad exposures create negative marginal effects.
Dost et al. (2019)	Effect of online seeding marketing campaign (SMC) on sales	Regression model	Although SMCs in general have a positive impact on sales, they can have negative interactions when used along with other forms of ads. Firm-created WOM elasticities reduce by 0.6% to 2.3% for every 1% increase in other advertising activities. In contrast, SMCs result in complementarities with promotion activity (0.3% to 1.1% increase for 1% increase in promotional activity).

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Table 1 (continued)

Paper	Focus	Approach/Method	Main Findings
Osinga et al. (2019)	How mobile display ads influence offline and online sales	Quasi-experiment (DID model)	Mobile display advertising increases offline sales by 2%, but its effect on online sales is insignificant.
Sahni et al. (2019)	Effects of retargeted display advertising	Randomized field experiments	Retargeting customers causes a 14.6% increase in returning users. The effect of retargeting declines over time. Further, advertising in different weeks can complement one another.
Tellis et al. (2019)	Drivers of video ad sharing	Regression model	The content of videos has an important effect on subsequent video sharing. The effect of information-focused content and conspicuous brand placement on sharing is significantly negative. In contrast, ads with positive emotional content positively affect sharing. Ad length has a nonlinear relationship with subsequent sharing. When an ad is between 1.2 to 1.7 minutes long, it has the highest rate of sharing.
Danaher et al. (2020)	Relative importance of various media in multimedia advertising	Tobit Model with Variational Bayes approach	Communication from the focal firm through email and sometimes through catalog can negatively impact competitor firms, but paid search does not have the same influence. On the contrary, catalogs from competitors have a positive impact on focal firm's sales.
Raefieian and Yoganarasimhan (2021)	Targeting and privacy in mobile advertising	Machine learning model	A machine learning driven targeting policy boosts CTR by 66.8%. The ad network has an incentive to promote consumer privacy because its revenues are highest when it does not allow advertisers to behaviorally target.

Note: CTR = Click-Through Rate; DID = Difference-in-Differences.

et al., 2019). Research on the mechanisms by which display ads influence shopper attitudes and behavior in various stages of customer journey is still in its infancy.

3.1.2.2. Email advertising. Email marketing is a profitable tactic used by marketers. However, it has received limited research attention (e.g., Zhang, Kumar, & Cosguner, 2017; Zhang, Moe, & Schweidel, 2017). While email marketing increases customer lifetime value (CLV, Kumar et al., 2008), we do not know clearly how it shapes customer experience, engagement, or other outcomes in the customer journey.

3.1.2.3. Search engine communication. Digital communication through search engines consists of search engine optimization (SEO) and search engine advertising (SEA). SEO has its own logic and proprietary funnel structure, from search engine result page impressions to click-throughs to landing page visits to conversions to revenue (e.g., Ghose & Yang, 2009). With respect to the funnel stages, Rutz et al. (2017) show how SEA generates awareness and interest. Consumer typically search at the consideration stage, and search helps drive sales and conversions (e.g., Ghose & Yang, 2009, Li et al., 2016). SEA also has a significant effect on customer acquisition and CLV (Chan et al., 2011). However, no studies address the performance of SEA on branding goals or on the hierarchy of effects. We also lack insights on the linkages of search engine marketing with customer experience and customer engagement.

3.1.2.4. Mobile communication. Shankar and Balasubramanian (2009) propose a purchase funnel framework for understanding mobile communication, which has been extended to mobile shopper marketing (Shankar et al., 2010; Shankar et al., 2016) and to mobile advertising (Grewal et al., 2016). Mobile coupons increase unplanned spending (Hui et al., 2013), and geo-targeting enhances coupon efficacy (Dubé et al., 2017). Mobile display ads work better for higher involvement and utilitarian products (Bart et al., 2014). Behaviorally targeted mobile ads from a machine learning model substantially improve but do not maximize a mobile ad network's revenues, suggesting an incentive for the network to control behavioral targeting and protect consumer privacy (Raefieian & Yoganarasimhan, 2021). Narang and Shankar (2019a, 2019b) show that mobile app adopters buy more items more often and thus spend more. In a study of a hotel's mobile app, Gu & Kannan (2021) find that if the mobile app promotes search, overall spending can decrease, but the use of the app for mobile check-in mitigates this effect. Van Heerde et al. (2019) demonstrate that retailer mobile apps create incremental sales from distant and more offline customers. However, research on how mobile ads drive branding goals, help consumers progress along the funnel stages, support affect or cognition dimensions, or affect customer life cycle stages is scarce.

3.1.2.5. Social media advertising. Social media advertising comprises banner ads in social media platforms and firm generated content. Rapp et al. (2013) show that firm generated content drives retailers' brand reputation with customers, which in turn, drives sales and customer loyalty. With respect to the funnel stages, consumer exposures to firm generated posts affect awareness, consideration, purchase intent, and sales with varying effectiveness over time (e.g., Colicev et al., 2019; Kumar et al., 2016). Hinz et al. (2011) show that seeding strategies also impact the effectiveness of firm generated content. However, there is little research on: (1) how a firm's social media efforts drive consumers' affect, cognition, or conation; (2) how banner ads in social media impact different behavioral outcomes; and (3) new technologies such as VR and AR.

3.1.2.6. Media synergies. Digital communication may work synergistically, antagonistically, or in a catalytic way (Naik & Raman, 2003). For example, display ads enhance clicks and conversions following consumers' searches (Kireyev et al., 2016), but seed marketing campaigns and other forms of digital media may interact antagonistically (Dost et al., 2019). Yet, we lack studies on digital media interactions across customer journey stages, customer experience and engagement.

3.1.3. Content

Content significantly determines the effectiveness of digital marketing communication. The roles of interactive and different modalities of media is an emerging area of research. In general, studies analyze content by informative vs. non-informative content, static vs. dynamic/interactive content, cognitive vs. high-arousal content, and story-development.

With respect to the purchase funnel stages, static banner formats are more effective for price-oriented and retargeting ads, while dynamic formats enhance carryover rates (Bruce et al., 2017). For emails, non-informative content enhances opening rates by 20%, sales leads by 31%, and reduces unsubscribing behavior by 17% (Sahni et al., 2018). Other studies investigate SEA content using contextual content metrics along the search engine funnel stages and relate SEA content to awareness, interest, desire, and action (Rutz et al., 2017; Rutz & Trusov, 2011). For social media posts, Kanuri et al. (2018) suggest a targeted ad content algorithm that accounts for time-of-day effects (e.g., high-arousal content generates more click-throughs in the afternoon).

Content also drives engagement behaviors. Informative content reduces engagement and sharing (Lee et al., 2018), while content rich in humor, timeliness, amusement, anticipation, excitement, inspiration, and warmth increases sharing (Borah et al., 2020; Tellis et al., 2019). Informational content, however, may impact the valence of comments on firm generated content more than emotional content (Meire et al., 2019). Villarreal Ordenes et al. (2019) find that both rhetorical styles and cross-messaging strategies can enhance message sharing. In addition to rhetorical styles, video ads should contain a closed full-story development based on the Freytag's pyramid (Quesenberry & Coolson, 2019). High likeability at the beginning and especially at the end of a video ad is important to drive sharing (Shehu et al., 2016). Pictures themselves can have a mere

presence effect on engagement (Li & Xie, 2020). Nevertheless, we lack studies on the impact of digital media content on branding goals and customer experience as well as on content performance across the customer life cycle metrics.

3.1.4. Responses

The combination of communication goals, the proprietary digital media environment, and, to a lesser extent, the content conveyed define the measurement of consumer responses. An important distinction exists between attitudinal goals and behavioral goals. Whereas digital media allow behavioral goals to be measured through a plethora of KPIs based on logged consumer actions, attitudinal measurements still require consumer surveys. Digital media permit more immediate and more frequent surveying of consumers. However, despite the importance of attitudinal measures, this measurement lags the evaluation of behavioral data collection. Another interesting insight is that the attitudinal constructs of interest are often the same across all digital media (e.g., brand preference, awareness, interest) while the behavioral response measurements and their funnel interpretation are often unique to the digital medium (e.g., likes, click-through). The latter, combined with the rapid rise of new social media and the commercial interests of the media platform owners, hamper the emergence of media standards comparable to the offline media (e.g., reach, exposure, vehicle).

The hierarchy of effect dimensions, customer experience, and customer engagement goals are mostly attitudinal constructs that require consumer surveys for measurement. Customer life cycle goals are usually based on a firm's customer database in connection with the digital media employed. Digital media often define their proprietary measurement system for progression along the funnel stages. For display advertising, impressions, click-throughs, and conversions relate to the classic funnel structure (e.g., Goldfarb and Tucker, 2011). Emails are measured through reception, opening, click-throughs, and conversions (e.g., Bonfrer & Drèze, 2009). Search engines measure search volume, impressions, ranks, CTR, and conversions (e.g., Ghose & Yang, 2009), whereas social media relate more to the display advertising funnel measures plus likes and comments. For new media like AR, KPI systems have yet to be defined (e.g., Hilken et al., 2020). An important area that needs further understanding is the role of attributions in digital multimedia environments (e.g., Li & Kannan, 2014), effects across offline and online media (e.g., Naik & Peters, 2009; Osinga et al., 2019) and how consumer's privacy concerns shape responses (e.g., Johnson et al., 2020; Wedel & Kannan, 2016).

3.2. Research directions

Digital devices, media, platforms, and consumer behavior are evolving globally and spurring real-time, personalized, and often automated B2C communications. These key trends suggest promising the following future research questions, especially in the international context.

Goals:

- Brand activism (e.g., How should firms embrace digital brand activism and how should they mitigate the risks to their brands globally and locally?).
- Global customer lifecycle management (e.g., How do digital goals vary by the customer life cycle stages across countries and cultures?).

Channels, Media, and Platforms:

- Contribution of media (e.g., mobile) in consumer decision hierarchy (e.g., How do digital media drive purchase funnel and the hierarchy of effects across countries and cultures?).
- Digital media (e.g., email) and customer experience and engagement (e.g., How do digital media drive customer experience and engagement across countries and cultures?).
- Digital media synergies and allocation (e.g., What are the synergies across platforms? How do attributions and resource allocations differ in an international context?).
- B2C communication effectiveness on emerging media (e.g., How can firms use emerging digital channels such as AR, VR, and IoT to elicit positive consumer responses and sales?).

Content:

- Ad content in an international context (e.g., How does (1) informative vs. non-informative, (2) static vs. dynamic, and (3) emotional vs. cognitive vs. conative ad content drive branding, customer experience, and customer engagement across countries and cultures? (Liu and Shankar, 2015)).
- Impact of content type across media and devices in an international context (e.g., How does ad content interact with devices differently across countries and cultures?).

Responses:

- Differential impact of digital media on attitude vs. behavior, especially across countries and cultures (e.g., How do digital media drive attitudes and behaviors? How do international consumer characteristics moderate their effectiveness?).

Table 2
Review of Selected Research on B2B Digital Communication.

Paper	Focus	Approach/Method	Main Findings
Chen et al. (2002)	Role of information platforms in retail markets	Analytical/Game theoretic model	The presence of an infomediary (intermediary platform that serves as an information resource for customers) leads to lower market prices in general. The advantages that an infomediary creates for enrolled retailers depend on its reach. Enrolled retailers' profits follow an inverted U-shape to the infomediary's reach.
Iyer and Pazgal (2003)	Role of internet shopping agents (ISAs) on retail pricing	Analytical/Game theoretic model	Enrolling in an ISA website can result in an increase or decrease of retailer prices depending on the reach of the ISA.
Tucker and Zhang (2010)	Impact of display advertising on platform popularity	Randomized field experiment	The success of a two-sided platform depends on how information about the number of buyers and the number sellers are displayed. Many sellers signal potential to reach more buyers and attract more sellers.
Rapp et al. (2013)	Social media contagion effects and their impact on performance	Hierarchical linear model	Social media use enhances brand, retailer performance, and consumer loyalty. Brand reputation and service ambidexterity moderate the supplier social media effect on the social media usage by the retailer, which in turn influences social media usage of the customer.
Kim and Kumar (2018)	Dynamic effects of marketing communication content on future customer behavior	State space model (Dynamic Tobit-I framework)	Economic and relationship marketing content in email marketing can have different and dynamic effects on customer behavior.
Vieira et al. (2019)	Influence of the digital 'echovse' (paid media, owned media, search, display ads) on firm performance	Vector auto regression model	In emerging markets, firm-initiated media (such as owned media and digital inbound marketing) influence customer acquisition. In addition, earned social media creates synergies with owned media but does not with paid media.
Bill et al. (2020)	Effect of salesperson's social media use on customer loyalty	Hierarchical linear model	The B2B salesperson's social media has a more positive effect on customer loyalty for higher status customers and for smaller buy center customers.
Ludwig et al. (2021)	Effects of communication for gigs by buyers and sellers	Variety of models and experiments.	The roles of various communication elements in a call for bids influence the number of bids, and the communication elements in the bids influence bid success.

- Enhanced understanding of attributions across countries (e.g., How can better international attribution lead to better international budgeting practices and results?).
- Privacy (e.g., To what degree can privacy policies be standardized across digital media, countries, and cultures? Why should they differ, and how should they be differentiated?).
- Personalized automated real-time communication (e.g., How will computational advertising [Yun et al., 2020] redefine digital media use across countries?).

3.3. Summary

Overall, research on B2C digital communication is prolific, exhibiting all the major themes. But almost all of it relates to local contexts and does not fully leverage digital communication's global reach. Differences in cultures, digital media, and development stages offer scope for more research on global digital communication (Shankar & Narang, 2020).

4. Business-to-business (B2B) digital interactions

Digital marketing strategy is especially relevant in the B2B context given the value placed on customer metrics (Lam et al., 2004). Prior work on B2B digital communication has mainly focused on the dynamics in communications between suppliers and buyers and on B2B auctions as well as on the structural changes resulting from communication intermediaries or platforms. A summary of selected studies appears in Table 2.

4.1. B2B digital communication strategy

4.1.1. Goals

Unlike most B2C communication contexts, a B2B firm needs to customize its digital communications for buying center members – the various stakeholders involved in the organizational buying process. B2B firms use digital communication to reach more customers and prospects quickly and with greater impact and to lower the cost of communication (Shankar, 2021). They facilitate information sharing by firms (e.g., vendors, suppliers, intermediaries) without substantial temporal or geographic constraints. For example, digital communication systems make it possible for firms to communicate with buying center members in real-time, for partners to set negotiation parameters in advance, and for buying organiza-

tions to complete buying tasks without human involvement. Although much previous research on B2B digital communication strategy treats the customer as a single entity, it is important to understand the heterogeneity among the members involved in the buying process, especially in the context of a highly complex and global supply chain. Not much is known about how planning horizons and supply chain shocks affect goals in the global context.

4.1.2. Communication channels, media, and platforms

An important structural shift in B2B markets is the emergence of “infomediaries” who provide comparative information about sellers’ offerings in real-time and earn money for directing web traffic to the firm (Chen et al., 2002; Iyer & Pazgal, 2003). Depending on its power in the marketplace, an infomediary in a digital B2B marketplace may support collusion among firms because information asymmetry favors the infomediary (Gal-Or & Gal-Or, 2005) or enhance information transparency (even among competing firms), which would increase channel profits (Shaffer & Zettelmeyer, 2002). Although most studies of the effects of infomediaries rely on analytical/theoretical models, the available empirical insights are noteworthy. Tucker & Zhang (2010) assess the efficacy of displaying specific types of information on infomediary platforms and find that sellers prefer intermediary markets with many sellers as these markets tend to attract potential customers.

Relatively less is known about the role of social and digital media in B2B digital communication. Through a series of survey-based studies, Rapp et al. (2013) provide evidence for contagion of social media usage across suppliers, retailers, and consumers (business-to-business-to-consumer effect). Thus, a B2B supplier’s social media usage can lead to the buyer’s social media usage, which may positively influence consumers’ social media usage. For both suppliers and buyers, social media usage relates positively to performance. Rapp et al. (2013) also highlight the moderating effects of brand reputation and service ambidexterity on these contagion effects. B2B digital marketplaces rely on owned media (e.g., websites) and social media to make communication decisions. Vieira et al. (2019) describe the digital “echoverse” in B2B emerging markets, using data from an infomediary in Brazil. They find that owned media and inbound digital marketing play outsized roles in B2B customer acquisition; while social media complements owned media, it does not complement paid media. While the positive effects of social and digital media in B2B are apparent, their boundary conditions are not well understood. For instance, what kinds of channels and media are appropriate for which type of customer/buying center? Do similar media apply to different B2B markets and/or countries?

4.1.3. Content

B2B digital communication content differs from B2C content. In contrasting the social media content of B2B and B2C marketers, Swani et al. (2014) find that B2B marketers tend to use more emotional (cf. functional) appeals and highlight corporate branding more than B2C marketers. In a case study, Järvinen & Taiminen (2016) show how organizational processes for developing digital content and subsequent integration into the B2B selling process can produce better lead qualification. Luo & Kumar (2013) and Kim & Kumar (2018) offer dynamic perspectives on the effectiveness of marketing communication timing and content in B2B selling. Recent advances in analyzing unstructured data (text, image, and video) and computational linguistics present an opportunity for future work in B2B digital communication to gain deep insights into optimal content design for B2B digital communication. We also need more research on communication content differences between virtual sales and in-person sales.

4.1.4. Responses

From an operational or customer-facing perspective, digitization facilitates data capture, allowing empirical studies to address multiple B2B digital communication strategies that generate measurable customer responses (Kim & Kumar, 2018; Kumar et al., 2011; Luo & Kumar, 2013; Rapp et al., 2013). Kumar et al. (2011) propose a dynamic optimization framework for marketing communication (digital and non-digital) resource allocation and emphasize the importance of accounting for the long-term effects of marketing. Similar findings in other empirical domains (Luo & Kumar, 2013) stress the importance of understanding the dynamics (including hidden relationship states) of customer lifecycles for optimally allocating B2B marketing communication dollars. Several studies (e.g., Kim & Kumar, 2018) empirically test the implications of direct marketing communication. However, relatively few include digital media, and those that do typically investigate marketing communication in the aggregate without focusing specifically on the digital aspects of communication or one-to-one relationships. We also need more insights from B2B digital communication failures and more generalizable results across B2B contexts.

4.2. Research directions

B2B digital communications are undergoing rapid changes as digital sales pitches, social selling, and sales automation via artificial intelligence (AI) tools are on the rise. The COVID-19 pandemic has accelerated the adoption of these practices as firms use digital interactions to survive. With a large number of buyers moving from work-on-site to work-from-home, the role of virtual and social B2B selling is increasing.⁶ Furthermore, due to recent advances in AI, B2B firms have begun automating some of the selling and post-sale processes (especially lead qualification and customer support), allowing salesper-

⁶ <http://www.b2bmarketing.net/en-gb/resources/blog/how-drive-demand-self-isolated-economy>.

sons to focus on the relationship building aspects of B2B sales. Our review suggests several important issues that could be fruitful avenues for further research in B2B digital communication. These issues include the following:

Goals:

- Digital communication goals for global markets (e.g., How should planning horizons vary across geographic and cultural boundaries? How should a B2B firm reformulate its digital communication goals across global markets?).
- Digital communication goals in the presence of rapidly changing global supply chains (e.g., How do shocks [e.g., regulatory mechanisms like tariffs or disruptions created by global crises] to the global supply chain affect a B2B firm's digital communication objectives?).

Channels, Media, and Platforms:

- Global technology adoption and B2B communication strategy (e.g., What is the influence of global technology diffusion on the choice of B2B communication channels, media, and platforms?).
- Platform design and communication facilitation (e.g., How can communication platforms or infomediaries influence buyer–seller communication? How should an infomediary platform be designed to maximize interorganizational communication?).
- Costs of AI-driven communication (e.g., What are the direct and indirect costs of incorporating AI in B2B platforms, especially in emerging markets?).

Content:

- Standardization vs. localization decisions in B2B digital communication content (e.g., What cultural/economic/socio-economic factors govern the choice of standardization vs. localization of digital communication content across countries?). B2B business practices in emerging markets differ significantly from those in developed markets due to: (1) legal and regulatory differences, (2) differences in the relative size and nature of government and business buying, (3) the presence of informal interorganizational networks in emerging markets, and (4) political influences on business success in emerging markets (Shankar & Narang, 2020). These unique issues, combined with the exponential growth of digitization in emerging economies require innovative approaches to emerging markets.
- The role of virtual selling in B2B communication (e.g., How does virtual selling differ from in-person selling in complex selling environments? What is the future of virtual selling?).

Responses:

- Empirical generalizations of digital communication responsiveness in the B2B context.
- The impact of global B2B digital communication failures on firm outcomes.

4.3. Summary

In summary, research on B2B digital marketing is conspicuously scarce (especially relative to B2C), even though almost 90% of the value of e-commerce transactions involve B2B transactions. Prior studies address barely two themes, website effectiveness and social media, and rarely address global issues, despite the growing influence of globalization on digital marketing strategies. The role of digital communication has never been more critical given the highly dynamic and global marketplace. Our review reveals known insights, the potential gaps, and future research questions on B2B digital communication.

5. Consumer-to-consumer (C2C) digital interactions

Recent technological innovations enable consumers to become digital content creators who disseminate valuable data through various channels and social media platforms. Through these data, commonly known as user-generated content (UGC), consumers not only share their experiences with products and services but also vividly express different aspects of their personality for consumption by other consumers (see Table 3).

5.1. C2C digital communication strategy

5.1.1. Goals

The typical goals of consumers when they communicate digitally with others are to inform, entertain, consume, and express themselves (e.g., Peters et al., 2013). The breadth of the goals of C2C communications stands in contrast to those of the B2C and B2B dyads, which are much more focused on marketing. Consumers' communications with other consumers can be product-oriented (e.g., posting product reviews) and non-product-oriented (e.g., engaging in online communities ded-

Table 3
Review of Selected Research on C2C Digital Communication.

Paper	Focus	Approach/Method	Main Findings
Lam et al. (2009)	Influence of consumers' cultural values on their WOM behavior	Structural equation model	For effective brand communication strategies, marketers should consider the underlying cultural values in different markets as cultural values influence consumers' WOM creation and dissemination behavior.
Kumar et al. (2013)	Success of social media campaigns	CLV model	Using proposed measures for customer social influence (CIE) and social influence value (CIV), marketing managers can effectively evaluate the success of a social media campaign.
Tirunillai and Tellis (2014)	Reliable dimensions of customer satisfaction and quality from product reviews	Unsupervised LDA model	Using an unsupervised LDA model, one can reliably capture various objective and subjective dimensions related to customer satisfaction with quality. In vertically (horizontally) differentiated markets, objective (subjective) dimensions dominate, which are also similar (different) across markets and stable (unstable) over time with low heterogeneity across dimensions.
Homburg et al. (2015)	Role of active firm participation in C2C conversations in an online community	Logistic regression model	Through active engagement in customer conversations linked with functional needs or product-support, firms can positively influence customer sentiment, but such engagement has diminishing returns and can even be detrimental for customer sentiment.
Pauwels et al. (2016)	Influence of eWOM topics on firm performance and role of offline and online marketing communication channels in stimulating eWOM topics	Vector auto regression (VAR) model	Different types of eWOM (advertising-related, brand-related, purchase-related) have similar effects on online store traffic lift, but brand-related and purchase-related eWOM are twice as effective as advertising-related eWOM in lifting offline store traffic.
Stephen and Lehmann (2016)	WOM dissemination and diffusion of information	Experiments	Increasing the salience of externalities can improve WOM communication and speed up the diffusion of goods.
Meyners et al. (2017)	How social influence is influenced by geographic proximity	Experiments	In the context of both physical goods and services, both social proximity and perceived homophily can drive social influence.
Marchand et al. (2017)	Differential impact of microblogs and consumer reviews on product success	Simultaneous equation system model	Volume plays a more prominent role than valence in the context of the influence of microblogs and consumers reviews on product success. The impact of microblogs is more visible prior to launch, while consumer reviews are important both prior to and post launch.
Zhang et al. (2017)	How social media rebroadcasting behavior is influenced by content and user factors and their fit	Individual-level split hazard model	A user's decision to share the message in her network is driven not only by the message content but also by its fit with the user.
Kübler et al. (2018)	Influence of price and ratings on an app popularity and how this impact varies in different cultures	Dynamic panel data model and weighted least squares model	Both price and ratings sensitivities are influenced by cultural factors. Price sensitivity is more prominent in high-masculinity and high-uncertainty avoidance cultures. While higher ratings valence sensitivity is observed in high-individualism and high-uncertainty avoidance cultures, ratings volume sensitivity is more pronounced in high-power distance and high-uncertainty avoidance cultures.
Fossen and Schweidel (2019)	How eWOM about TV shows – called social TV activity – relates to ad response during the TV shows	Bayesian hierarchical regression	Online shopping is higher when ads are displayed on social TV shows, highlighting the importance of online social chatter. More affective ads saw the largest benefits.
Grewal and Stephen (2019)	Perceptions of reviews on mobile (vs. non-mobile) devices and their impact on purchase intention	NBD regression model and experiments	Reviews generated on mobile devices induce higher purchase intention due to higher levels of perceived efforts and credibility.
Ransbotham et al. (2019)	Impact of mobile on WOM content creation and consumption patterns	Unstructured data analysis (LIWC), Poisson and Linear mixed models	WOM content generated using a mobile device ranks high on affective appeal and concreteness. It is also less extreme but valued lower than non-mobile WOM.
Zhong and Schweidel (2020)	How firms can leverage C2C chatter on social media to monitor when and how the conversation about their brands shift	Multiple latent changepoints through a Dirichlet process hidden Markov model	Proposed model identifies shifts in conversations surrounding brands on social media, outperforming previous approaches. The approach can be used by firms to monitor C2C conversations about their brands and understand when and how the topic of conversation around their brands has shifted.

Table 3 (continued)

Paper	Focus	Approach/Method	Main Findings
Lee and Kronrod (2020)	How the strength of ties influences the propagation of WOM formed based on consensus language	Experiments	When WOM is expressed using words and expressions suggesting general agreement among a group, weak-ties are more effective than strong-ties as such language evokes perception of the consensus among a larger and more diverse group. Both financial and nonfinancial incentives can enhance the review writing process and positively influence reviews. This effect is weaker when incentives are weakly associated with review writing and when they the firm providing them is not liked.
Woolley and Sharif (2021)	How incentives influence the valence of reviews	Experiments	

Note: NBD = Negative Binomial Distribution; LIWC = Linguistic Inquiry and Word Count; WOM = Word of mouth.

icated to various interests and hobbies). Across these various forms of C2C communication, they influence each other both actively and passively (Appel et al., 2020).

While prior research explores the goals and motivations driving C2C communications (e.g., Stephen & Galak, 2012), rising concerns over online privacy (Bleier et al., 2020), the growing role of influencer marketing (Zhang, Kumar, & Cosguner, 2017; Zhang, Moe, & Schweidel, 2017), and the need for a global understanding of C2C communications, all raise important new questions about UGC generation and dissemination that inform the research directions we propose below.

5.1.2. Communication channels, media, and platforms

Consumer motivations help shape the media and platforms used in C2C communications. If consumers mainly seek to inform others, they may post reviews on dedicated review sites or a focal company's website. Instead, if their goal is to explicitly exert influence, they may actively pursue the designation of an "influencer," often through social media or their own dedicated blogs. New technologies also impact the channels and media utilized in online C2C interactions. For example, communication infrastructure innovations and Internet penetration encourage new consumer trends, such as microblogging, which have had substantial influences on UGC creation and its perceived value. AR technology embedded in smart devices also facilitates C2C communications by establishing social empowerment, though a recommender's impression management tactics and persuasion goals can hinder this process (Hilken et al., 2020; Hoyer et al., 2021). However, there is a dearth of research that links the different media and platforms in which C2C communications occur and that examines the causal impacts of their characteristics on UGC behaviors. In particular, as new platforms consistently emerge, there is a need for a unifying framework to examine the impact of C2C chatter across these vehicles.

5.1.3. Content

Deriving actionable insights from UGC remains a challenging task due to the unstructured format of its content. Research on the synergies of different content types is in its early stages. Advances in machine learning (ML) and AI promise faster progress in analyzing UGC multimedia content and spur fruitful avenues for future research on C2C content (Shankar, 2018). For example, Li et al. (2019) apply ML to extract two standard measures of video content, which effectively predict the success of Kickstarter projects.

Decoding the clutter to define meaningful dimensions at product, brand, or customer levels is essential for determining both the relevant content and the impact of UGC. By studying product reviews from multiple online platforms, Tirunillai & Tellis (2014) identify the latent dimensions of customer satisfaction. They find homogeneous and stable objective (vs. subjective) dimensions in markets that are vertically differentiated and the opposite in those that are horizontally differentiated. Homburg et al. (2015) also strive to derive the functional and social needs expressed in conversations on online forums.

C2C content about products or services can also vary by product life cycle stage. For example, before the launch of a product like a new electric car, its features and price may generate online buzz on social media channels. Once launched, C2C content may shift to the sharing of online reviews and blogs. In the growth stage of the category, C2C communication may concentrate on posts of comparisons of different brands on auto portals such as TrueCar and Edmunds. In the mature stage, C2C communications may primarily involve online discussions of trading and used car buying gleaned from sites such as CarMax and AutoNation. Both financial and nonfinancial incentives can positively influence the content of online reviews with the effect being weaker for weaker incentives and undesirable brands (Woolley & Sharif 2021).

5.1.4. Responses

UGC has significant effects on important firm and customer-centric outcomes. For example, posts with high quality images increase social media engagement (Li & Xie, 2020), but the extent of sharing is driven by message content and its fit with the user (Zhang, Kumar, & Cosguner, 2017; Zhang, Moe, & Schweidel, 2017). Nudging consumers to share WOM with higher-connectivity friends in their social network spurs faster UGC dissemination (Stephen & Lehmann, 2016).

C2C communications can also impact responses beyond online engagement. For example, Hennig-Thurau et al. (2015) cite a negative effect of microblogging on early adoption of new movies, while other studies have found a positive link between reposts of firm microblogs and television show viewership (Liu et al., 2016). Customers with greater influence promise higher ROI for social media (Kumar et al., 2013), although C2C research on influencer marketing is still in its early stages and is a fruitful avenue of future work.

The device used in C2C generation can moderate its impact on various outcomes. For example, mobile UGC prompts higher immediate purchase intentions and is associated with greater perceived credibility (Grewal & Stephen, 2019), though positive attitudes toward mobile WOM dissipate over time (Ransbotham et al., 2019). Marchand et al. (2017) study the combined impact of mobile WOM and eWOM on product sales and suggest that eWOM is more effective. However, the volume of mobile WOM appears to have a stronger effect before the launch of a product; its valence has no discernable impact. Colicev et al. (2019) also link volume and valence with the marketing funnel stages and find that both UGC dimensions are impactful during the awareness and satisfaction stages, with valence dominating volume in all the stages. These works advocate further investigations of the impacts of UGC on various outcomes at different stages in the product life cycle.

Lam et al. (2009) study the effect of cultural values on WOM behavior among social in- and out-groups, but the small sample limits the ability to conclusively establish the relevance of cultural factors in global C2C contexts. Kübler et al. (2018) show how cultural dimensions inform the valence and the volume of user ratings across 60 countries. In countries marked by greater individualism and uncertainty avoidance, the popularity of an app depends more on the valence in user ratings; in contrast, volume is more influential in countries that feature higher power distance and uncertainty avoidance. Meyners et al. (2017) show that social proximity affects social influence, especially for more distant acquaintances, defined as known people with whom the focal consumer has had fewer previous interactions.

5.2. Research directions

Several key trends are driving rapid changes in C2C digital communications. Consumer perceptions of C2C interactions are shifting. Influencer marketing is becoming increasingly impactful, an effect the pandemic has further amplified.⁷ Additionally, concerns over privacy and negativity on C2C platforms are having significant impacts on the generation of C2C, effects that are likely to vary across countries. New tools to gain insights from C2C communications (e.g., ML, AI) are also emerging. The changing C2C environment fuels the need for additional research. To generalize extant findings in an international context, we need country-level measures that are comprehensive and that can capture the dynamic nature of differences across countries. In particular, research should address the following issues.

Goals:

- Impact of privacy concerns on UGC or C2C goals (e.g., How do external privacy shocks such as changes to a platform's privacy guidelines and data breaches impact UGC goals? How do these effects vary across countries?).
- Causal effect of cultural dimensions on UGC goals.
- A deeper understanding of network effects (externalities) on UGC goals and identification of the right type of influencers across countries.

Channels, Media, and Platforms:

- Synergistic impacts of UGC across platforms (e.g., What methodological tools can explore such synergistic impacts? How do these impacts vary across countries? What framework will help academics and practitioners evaluate new C2C media and platforms as they emerge?).
- Influence of various digital channels or platform-level factors (type, size, composition, functionality, diversity) on UGC behaviors (e.g., How do changes to platform characteristics impact C2C communications across countries?).
- Monitor C2C to improve user well-being (e.g., How can social media platforms discourage cyberbullying and hate speech without restricting freedom of speech at a global scale?).

Content:

- Synergistic impact of different UGC formats (text/image/video) on outcomes (e.g., What are the impacts of static vs. dynamic media in C2C communications? What tools can be developed to efficiently analyze UGC videos? How does the introduction of new content types such as Twitter Stories impact the effectiveness of or consumer preferences for existing content types for the platform? How do these vary across international markets?).
- Means to extract relevant dimensions and insights from UGC across countries (e.g., How can new ML and AI tools improve coding of emotional language? How can ML and AI tools be leveraged to extract timely managerial insights from C2C communications?).
- Authenticity of UGC across countries and cultures, especially for influencer marketing.

⁷ <https://www.forbes.com/sites/charlestaylor/2020/07/30/is-covid-making-marketing-influencers-more-influential/#12585aa74200>.

Responses:

- Greater clarity about the role and impact of various formats of UGC at different stages in the product life cycle.
- Cross-country impacts of C2C behaviors (e.g., How do the sticky properties of C2C communications vary across the world? How do cultural dimensions moderate the impacts of UGC behavior on various outcomes?).
- Influencer marketing (e.g., How does influencer marketing impact non-engagement outcomes such as consumer shopping and purchase behavior?).

5.3. Summary

Research in this domain mainly addresses UGC. The findings from relevant studies offer interesting insights into how the users of digital devices, media, and platforms have exploded and how engaged they are. They also show that consumers extensively communicate with one another through user groups, networks, and communities. Many consumers have turned into influencers or brand and firm advocates; their communications often cut across borders, user groups, and subgroups. Yet, research in the global context is rare, other than a few studies of cultural differences across countries, leaving much room for continued research.

6. Customer-to-business (C2B) digital interactions

Much C2B digital communication is indirect since consumers may not have opportunities to communicate directly with firms; thus, it is often realized through reviews, comments on websites, survey feedback, and click behavior. C2B digital communications closely overlap with C2C communications as their content could be relevant for both businesses and consumers. For example, product reviews provide feedback to both the firm and other consumers.

Changes in technology are altering C2B digital communications. A particularly relevant digitalization-related trend is the emergence of sharing economy-based platforms (e.g., Airbnb, Uber) and other review platforms (e.g., Amazon, TripAdvisor), making these intermediaries critical members of digital communications. Product and service providers must closely monitor such platforms to find customer-initiated communications, which offer a gamut of opportunities for analyses that firms can use to adapt their strategies to enrich customer experiences throughout the customer journey. We summarize selected research contributions in [Table 4](#).

6.1. C2B digital communication strategy

6.1.1. Goals

The typical goals of C2B digital communication are to provide feedback to businesses and seek resolution to customer problems. A central focus of C2B communication research is consumer WOM, reflecting the growing efforts by firms throughout the supply chain (e.g., manufacturers, retailers, service providers) to provide consumers with ready opportunities to share their thoughts with businesses through different avenues such as the firms' own sites, online review sites, and social media platforms. The key objective in C2B communication is to make the firm aware of and address consumer questions, concerns, and complaints in the speediest, most cost-efficient, and most effective fashion possible. These goals are particularly salient when consumers' main intent is to complain. Examining nearly half a million posts on 89 brand communities, [Herhausen et al. \(2019\)](#) highlight that by using sophisticated analytical capabilities firms must closely monitor consumers' negative posts, some of which might be designed to go viral and create firestorms. However, relatively little is known about how firms can cost-effectively decipher customer goals in C2B communication.

Consumers typically expect tailored responses to their concerns. Much research has focused on customer complaints, especially through product reviews. However, consumer feedback and information sharing with the firm with the intent of helping firms create better products and services are emerging as important elements of C2B communications. Addressing this goal presents a good opportunity for future C2B digital communications research.

6.1.2. Communication channels, media, and platforms

Consumers' rapid adoption of mobile technology (e.g., smartphones, tablets, wearables) and data consumption have sparked an interest in determining how their communication patterns with firms differ across devices. Such insights are crucial for firms to formulate effective mobile advertising strategies. Customer-initiated communications on mobile devices are more affective, concrete, and less extreme than their communications through other means ([Melumad et al., 2019](#)). Customers also exhibit more self-disclosure on smartphones ([Melumad & Meyer, 2020](#)). In the international context, [Tang \(2017\)](#) shows that individualism, power distance, and uncertainty avoidance largely define local buyers' attitudes toward eWOM and their resulting effects on firms' market shares. Cultural mindsets may also influence buyers' attitudes to interacting with firms through various digital channels. Marketers could leverage customer inputs targeted at firms by to encouraging co-production (e.g., online banking, online check-in) and co-creation (e.g., P&G's "Connect + Develop" platform, "My Starbucks" idea platform). More insights are needed on differences and interactions among C2B digital communication media and platforms, including IoT.

Table 4
Review of Selected Research on C2B Digital Communication.

Paper	Focus	Approach/ Method	Main Findings
Bart et al. (2005)	Linkages among website and consumer characteristics, online trust, and behavioral intent	Finite mixture structural equation model (SEM)	Main drivers for online trust vary across different website categories. Privacy and order fulfillment are key for high information risk and involvement sites. In contrast, navigation is critical for information-intensive sites and brand strength is important for automobile and financial services where user-involvement is high.
Ma et al. (2015)	Drivers of customer's compliments and complaints online and how firm interventions impact these behaviors	Dynamic choice model	Customer complaints are spurred by redress seeking. Firm service interventions improve customer relationships. But these actions also encourage more complaints later, leading to firms underestimating their returns on service intervention
Pauwels et al. (2016)	Influence of eWOM topics on firm performance and the role of different offline and online marketing communication channels in stimulating eWOM topics	Vector auto regression (VAR) model	Different types of eWOM (advertising-related, brand-related, purchase-related) have similar effects on online store traffic lift, but brand-related and purchase-related eWOM are twice as effective as advertising-related eWOM in lifting offline store traffic.
Wang and Chaudhry (2018)	How firms' responses to online travel reviews influence future review ratings	Difference-in-Differences (DID) model	Firms' responses to negative (positive) reviews have a positive (negative) impact on future review ratings.
Grewal and Stephen (2019)	Perceptions of reviews generated on mobile (vs. non-mobile) devices and their impact on purchase intention	NBD regression model and experiments	Reviews generated on mobile devices induce higher purchase intention due to higher levels of perceived efforts and credibility.
Timoshenko and Hauser (2019)	Identifying user needs from UGC on customer product needs and desires using machine-learning methods	Convolutional neural network (ML) model	Compared to conventional methods, identification of customer needs from UGC using machine-learning methods is likely to be a more valuable and efficient approach.
Hollenbeck et al. (2019)	Impact of online reviews on advertising spending	Regression discontinuity design model	Online review ratings can function as a substitute for advertising spending, but this substitution is more conducive for lesser-known brands and in less differentiated markets, where ratings assume greater importance. Rating platform popularity also plays a vital role, and network externalities drive perceptions of the firm.
Herhausen et al. (2019)	How firms can contain the impact of online firestorms	Multilevel model	Virality of a potential firestorm depends on the arousal level of negative eWOM and strong association of the sender with brand community based on structural ties and linguistic style. Based on the arousal state and timing of response, firms can customize their responses and contain the firestorm.
Sunder et al. (2019)	Herding effect in online rating environments	Regression model	In the online rating environment, herding effect has a positive impact on rater's response, but this impact is lower for experienced raters, friends' influence become more prominent. Rater's experience also plays an important role when there is a lack of harmony among reference groups. Firms can suppress the herding effect by focusing on both the breadth and depth of their product portfolios.
Melumad and Meyer (2020)	Role of smartphones in consumer willingness for self-disclosure	Text mining model and experiments	Consumers display a higher level of willingness for self-disclosure on smartphones. This effect holds across a range of online communications, including C2B contexts.
Hydock et al. (2020)	How consumers' attitudes toward a brand influence their willingness to engage in C2B communications	Lab and field experiments	Consumers with positive (vs. neutral) attitudes toward a brand are more likely to engage in C2B communications, while those with negative attitudes (vs. neutral) are not more likely to share communications with the brand. The latter result is driven by competing mechanisms influencing the behavior of unhappy customers: desire to vent increases sharing but an aversion to criticize deters sharing.
Grewal et al. (2020)	Impact of handheld scanners on consumer purchase behavior	Field experiments	Use of handheld scanners can trigger purchases which are unplanned. Such behavior is triggered by both cognitive (e.g., sense of control) and affective (e.g., shopping experience) factors and can be subdued based on budget limitation.

Table 4 (continued)

Paper	Focus	Approach/Method	Main Findings
Allard et al. (2020)	Conditions under which negative reviews can work in favor of the firm	Experiments	Based on its perceived fairness, negative WOM can evoke empathy for the targeted firm. The level of empathy depends on contextual factors such as consideration of the reviewer's viewpoint and conditions promoting the experience of empathy.
Dzyabura and Peres (2021)	Visual identification of brand perceptions	Image tagging tool & LDA	The Brand Visual Elicitation of Perceptions tool helps identify prototypical brand visuals, relate to brand associations and personality, and discover commonalities across brands.

Note: LDA = Latent Dirichlet Allocation.

6.1.3. Content

When UGC takes the form of feedback and reviews, it can be valuable for firms (Timoshenko & Hauser, 2019). However, monitoring customer-initiated communication is a daunting task because consumers can produce content so readily and easily. Social media research (Herhausen et al., 2019; Villarroel Ordenes et al. (2019)) highlights how text mining capabilities, derived from linguistic-based dictionaries, offer a useful way for firms to analyze the content in consumers' digital posts and develop suitable responses. A brand visual elicitation of perceptions tool, comprising an image classifier and an LDA model can be used for identifying prototypical brand visuals, brand associations, brand personality, and commonalities across brands (Dzyabura & Peres 2021). In a sense, any form of C2B communication is an important feedback mechanism that firms can use to determine their marketing mix strategy (Du et al., 2015). However, not all C2B content is useful. For example, fake reviews can harm consumers and mislead firms. Unfortunately, distinguishing real and fake reviews is still a challenge. Furthermore, an organized analysis of C2B communications content across different communication avenues does not exist presumably because of the ever-expanding volume of "big data."

6.1.4. Responses

Appropriate firm responses are the most commonly desired outcomes of C2B communications. Several attributes of C2B communications may impact other customers' engagement, including the tone of language, topics discussed, poster characteristics, and use and quality of images (e.g., Ma et al., 2015; Yazdani et al., 2018; Li & Xie, 2020). This engagement in turn affects firm responses. But other responses are also pertinent. For example, online interfaces tend to enhance the flow states of customers (Novak et al., 2000), their trust with the firms (Bart et al., 2005), and their choice processes (Mandel & Johnson, 2002). Customer likes of digital posts raise sales effectiveness and lower digital products' returns (Schulz et al., 2019).

Hollenbeck et al. (2019) report firms use good ratings as substitutes for advertisements. But to do so, firms must understand the various drivers of rating behavior and define ways to influence online opinions, including product offerings (Sunder et al., 2019) or timely intervention (Wang & Chaudhry, 2018). Focusing on co-production, Haumann et al., (2015) find that intensity can be detrimental to customers' satisfaction with the co-production process, but firms can mitigate this impact through value-enhancing and intensity-reducing communication strategies. Similarly, authentic creation narratives from customers can help expand adoptions of co-created innovations (Wang et al., 2019). Peters et al. (2013) offer a framework of metrics and guidelines for managing all social media communications, including C2B communications. However, there is scant research on firm responses and co-creation efforts in response to C2B communication (especially mobile and IoT) and an absence of a framework of firms' responses to C2B communications organized by communication goals, media, and content.

In their co-creation initiatives, firms should consider country-of-origin and local market effects; the success of such endeavors depends on active participation, and cultural values can influence willingness to participate in activities with in- and out-group members (Lam et al., 2009). Cultural factors such as power distance may also influence consumers' willingness to participate and purchase co-created products (Paharia & Swaminathan, 2019). Very few studies focus on local market-specific factors, despite their seemingly vital role in determining which C2B digital media and communication strategies will be optimal in a global context.

6.2. Research directions

Generalizable research efforts in the following unaddressed areas will be crucial to expanding our knowledge of C2B digital communication:

Goals:

- Firms' understanding of customer objectives (e.g., How can firms cost effectively decipher the objectives of C2B communications across countries?).

- Improved offerings (e.g., How consumer digital feedback for creating better offerings differs from consumer digital complaints? How can firms leverage this feedback across countries?).

Channels, Media, and Platforms:

- C2B communication through IoT (e.g., How can firms leverage data from consumers' use of IoTs? How does this vary across countries?).
- C2B interactions among different devices (e.g., How can firms use the integrated data from the use of mobile, wearables, and IoT devices to formulate strategies?).

Content:

- Integration of content across different content types, media, and interfaces (e.g., How can firms integrate content from owned and earned media, especially across countries?).
- Detecting fake reviews (e.g., How can firms detect fake reviews and formulate effective strategies to counter them?).

Responses:

- Firm responses to customer communication through mobile devices (e.g., How do consumers use different types of mobile devices, IoT, and connected home devices to communicate to the firms? How can firms learn from and act on such communications?).
- Cocreation and coproduction initiatives (e.g., What are the drivers of success of C2B based co-creation initiatives, which include interface designs and tools? What cultural, socioeconomic, and psychological factors affect these outcomes?).
- Automation of monitoring and response to C2B (e.g., What automation strategies are effective for firms to monitor and respond on social media, mobile, and IoT devices?).
- Framework of C2B communications (e.g., Can we develop an effective organizing framework for analyzing firm responses to C2B communications?).

6.3. Summary

Relative to C2C communication, research on C2B digital communication is somewhat limited, focusing mainly on the social media theme. This gap is surprising since digital channels, media, and platforms offer multiple ways for customers to communicate with the firm. C2B communication can facilitate new product development, modifications of offerings, demand predictions, delivery, customer satisfaction, and loyalty. As in the case of other communications, research on C2B communication in the global setting is sparse, even though it represents a cost-effective and direct opportunity for firms to better serve customers around the world.

7. Potential approaches to address future research questions

A summary of the future marketing research directions appears in [Table 5](#). We organize these directions by the four dyads and by the components of digital marketing communication. We outline some ways to approach these future research questions. We discuss these suggested approaches under three important elements: substantive issues, data, and methods and models.

7.1. Substantive issues

Across the four dyads, the substantive issues for future research exhibit several common themes. First, there is insufficient research on the commonalities and differences in the use and the effectiveness of digital media across international markets. One way to move research in this area is to systematically analyze data from multiple countries on the same digital communication campaigns across a common set of communication platforms. Different firms may have different people responsible for digital marketing communication in global markets. For standardized global brands such as those for perfumes and smartphones, a global digital communications executive will be most appropriate. In contrast, for customized global brands such as those for food and other culturally-sensitive products and services, the responsibility could be decentralized across countries.

Second, research on emerging media and platforms such as IoT, wearables, VR and AR, is nascent. Because these vehicles are not yet in the mainstream, the key issues relating to them can be best addressed through experimental data. With the surge in IoT, communication among digital devices needs to be studied in greater depth. The effectiveness of communication across devices calls for integration of fields such as signal processing, network analysis, and marketing. It also highlights the need to understand the links between IoT communications and how they influence customer outcomes (e.g., value, satisfaction) and firm outcomes (e.g., performance).

Table 5
Summary of Future Research Directions.

Element	B2C	B2B	C2C	C2B
Goals	<ul style="list-style-type: none"> Standardized/localization of B2C digital communication across different goals. Growth in the role of brand activism and its role in digital media. 	<ul style="list-style-type: none"> Multichannel communication planning and execution for global markets. Varying digital communication strategies between buyer and seller in the presence of rapidly changing global supply chains. 	<ul style="list-style-type: none"> Explore the role of privacy concerns on C2C interactions. Evaluate the effect of culture on UGC generation and dissemination. Understand the interaction between C2C communication and product adoption. Investigate network effects (externalities) in UGC creation, dissemination, and identification of the right type of influencers. 	<ul style="list-style-type: none"> Assess the drivers of success of cocreation and coproduction. Understand how cocreation and coproduction can be managed.
Channels, Media, & Platforms	<ul style="list-style-type: none"> A comprehensive model of omnichannel media effects and attribution. Resource allocation across different digital media. B2C communication effectiveness on emerging digital channels such as IoT devices. 	<ul style="list-style-type: none"> Global technology adoption and B2B communication strategy. The direct and indirect costs of implementation of technology enabled selling processes (such as AI) in emerging markets. 	<ul style="list-style-type: none"> Understand the influence of various digital channels or platform-level on UGC generation. Recommend social media monitoring methods to improve user well-being. Evaluate the synergistic impact of UGC across various types of platforms. 	<ul style="list-style-type: none"> Gain insight into C2B interaction on different devices (e.g., mobile, wearables) as well as the role of IoT. Evaluate the cross-channel effects in C2B content generation (earned vs. owned media). Determine the impact of device/interface design in reducing privacy concerns and increasing depth of self-disclosure.
Content	<ul style="list-style-type: none"> Deeper insights on real-time content, mobile advertising. Explore the role of mobile communication in creating synergy between advertising and promotions. Effectiveness of digital communication during product harm crises. Can timeliness and personalization arrest the adverse effects of product harm crises? Understanding the role of personalized vs. computational/automated targeted communication in digital media. 	<ul style="list-style-type: none"> The role of virtual selling (content, frequency, and effectiveness) in B2B digital communication. The role of infrastructure, ecosystem, and supply chain factors in influencing global digital communication. 	<ul style="list-style-type: none"> Extract relevant dimensions and insights from UGC (e.g., improved emotion coding, ML tools). Evaluate synergies between different types of UGC formats (text/image/video) on various outcomes. Understand the role of authenticity of UGC, especially in the context of influencer marketing. Assess the impact of new content types on existing C2C communication formats. Design UGC content. 	<ul style="list-style-type: none"> Develop an integrated view of the different types of content generated in C2B interactions. Formulate effective strategies for firms to automate monitoring and responding to C2B, especially on social media, mobile, and IoT devices.
Responses	<ul style="list-style-type: none"> Better understanding of attribution and budgeting practices across countries and cultures. 	<ul style="list-style-type: none"> Empirical generalizations of digital communication responsiveness. The impact of digital communication failures in the global B2B marketplace. 	<ul style="list-style-type: none"> Develop a greater clarity about the role of various UGC formats at different stages in the product life cycle. Evaluate the dynamic impact of UGC on various firm- and customer-centric metrics across product categories. 	<ul style="list-style-type: none"> Changes in customer behavior with the adoption of mobile devices (e.g., smartwatches, voice assistants, new-age smartphones) and device switching among different types of mobile devices more relevant to the IoT, such as connected home devices. The drivers of the success of cocreation and coproduction initiatives, which might include interface designs and tools or cultural, socioeconomic, and psychological factors.

(continued on next page)

Table 5 (continued)

Element	B2C	B2B	C2C	C2B
			<ul style="list-style-type: none"> • Understand the role of cultural dimensions in UGC dissemination. • Evaluate the role of microblogs and reviews in impacting the launching of a new product. • Understand the sticky properties of C2C communication across the world. 	<ul style="list-style-type: none"> • Understand how product lifecycle and customer technology adoption can affect C2B engagement. • Impact of C2B feedback on B2C communication strategy

Third, as customers use different media and platforms seamlessly to browse, engage, or purchase, synergies or cannibalization across these media and platforms need greater attention. Extant research focuses more on the separate effects of different media and platforms because it is complicated to analyze them together in the broad settings that existing studies typically examine. Future work could focus on analyzing the combined effect of these vehicles in a narrow setting that is more feasible. New work can extend the investigation to devices as well, especially the interaction between digital devices and digital media.

Fourth, digital communication attribution needs greater research attention. Attribution modeling is still the holy grail of digital marketing spending and allocation decisions. Although it is still challenging to develop a comprehensive approach to attribution, future research could take cracks at different slices of this problem. For example, the causal effects of digital marketing efforts or spending in one medium or platform could be determined through controlled experiments. After generating a critical mass of studies, the global attribution problem can be solved through a meta-analysis of such studies.

Fifth, there is an implicit trade-off between standardization and customization of digital marketing messages. While media and channel fragmentation allow for greater personalization, brands should also create a strong and consistent position across customers. One way for brands to achieve a balance is to identify a core brand position that cuts across the audience and add personalized content using differential messages, media, and platforms.

Finally, what will be the theme of new substantive issues going forward? [Lamberton & Stephen \(2016\)](#) identify the role of digital, social media, and mobile marketing strategies for the three five-year periods from 2010 to 2015 as a facilitator of individual expression, a decision support tool, and a marketing intelligence source, respectively. These themes suggest a movement from passive to active communication toward gaining competitive advantage. Extrapolating these themes forward, the emerging theme for digital communication could be analytics-driven digital communication in a digitally transformed post COVID-19 world.

7.2. Data

Data is the new oil in the digital marketing landscape. Not only are data formats and sources proliferating, but various tactical aspects related to data curation, storage, access, and analysis are also becoming more challenging. To address important future research questions, we must do a better job of grappling with data challenges by establishing more data protocols.

First, researchers should strive for data integrity. Reliable and accurate data are central to a rigorous analysis and effective decision-making. With more digital data being collected by big tech companies like Google and Facebook, marketers and researchers will need to conduct appropriate data audits to ensure that data quality is maintained.

Second, digital marketing academics and practitioners should collaborate to create acceptable metrics and standards. Single source data are helpful in ensuring standardization. Syndicated data could ensure some standardization and cost sharing when the cost of collecting and storing the exponentially growing data become prohibitively high for individual firms.

Third, to better understand the effects of digital communication, researchers should triangulate using different data types, such as desktop clickstream data, mobile clickstream data, transaction data, and attitudinal data.

Fourth, because data on international digital marketing campaigns are difficult to obtain, researchers could partner with platform companies, trade associations, and marketing and advertising organizations to collect such data. They could supplement such data with web or social media scraped data across countries.

7.3. Methods and models

To tackle the substantive future issues, researchers need to enhance current methods as well as use new methodological tools. Current methodologies include, econometric models, structural equation models, and experimental methods. Given the continuing rise in data volume, the use of ML models that can more deeply explore digital media data will be on the rise. Newer ML models such as auto-ML (the automated process of applying ML from raw datasets to production level) and deep learning models, including generative adversarial network (GAN) models, hold promise for tackling hard problems such as normative digital communication allocation decisions. Furthermore, field experiments are increasingly easier to perform in digital channels and platforms, so they will also likely grow in popularity. Moreover, experiments may serve as an initial data source for emerging digital communication vehicles, such as wearables, VR, AR, and IoT devices, for which secondary data may not be easily available to all marketers.

Marketers want to both understand the drivers of and predict the effects of digital communication. Thus, the need for causal modeling of the drivers on outcomes is key. One approach is causal ML modeling (e.g., [Narang et al., 2021](#)), which allows researchers to combine ML models with causal models that use panel, quasi-experiment, and field experiment data to deeply understand the effects of the drivers. To further cross-country research, researchers can leverage events that impact only some countries (e.g., introduction of General Data Protection Regulation [GDPR], social media platform shutdowns). Such events present interesting contexts and serve as useful natural experiments for researchers to perform cross-country analyses.

8. Conclusions

We have reviewed representative research across the B2C, B2B, C2C, and C2B dyads on digital communication in local and global contexts. Within each dyad, we derived and summarized key prior findings and identified the crucial gaps in the goals, vehicles, content, and responses linked to digital communication. Most research pertains to a national level rather than a global level, despite the porousness of national boundaries for digital marketing. Managers lack insights to standardize their digital marketing strategies at a global level. We have identified pressing questions that warrant additional research across all the dyads. We have highlighted the research gaps and provided potential approaches by which researchers can address these gaps. We hope these avenues spur vibrant future research in digital communications.

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