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Identifying sources of noise within the networked interplay of marketing messages in social media communication.

Abstract

Social media networks include multiple platforms, devices, human & non-human actors with varying functionalities, making message noise inevitable. The constructed nature of message noise and its influence on shaping meaning is documented; however, the types of noise and how this noise operates within the network requires exploration to enhance understanding. Drawing on observations made during a 21-month Netnography of a service brand's hashtag community, we collected a data set comprising 1,000 screenshots from Instagram and Twitter. Results reveal social media message meanings are interrupted by the network creating noise at five key interception points. Findings reveal three different types of noise that emerge within the network. This includes technical, material and architectural noise. Findings contribute to managing effective communication and identify variables that have not previously been discussed. This helps marketers and advertisers to understand the operationalisation of noise type and noise interception in the social media environment, offering practitioners a competitive advantage and the opportunity to support consumers in overcoming technological barriers when accessing marketing messages in the digital realm.

Keywords: Social Media Communication, Platform Functionality, Technology Devices, Message Meaning, Message Noise, Network Configuration, Service Brands.

1.0 Introduction

Social media is a popular environment for contemporary consumer interactions with marketing messages (Appel, et al., 2020; Shanahan, et al., 2019; Vrontis et al., 2021). Social media technologies have not only altered how consumers share information and communicate with each other, but also how they connect with brands and generate meaning from online marketing material (Dolan et al., 2019; Keiningham, et al., & Zaki, 2017; Schivinski, & Dabrowski, 2016; Tafesse & Wood, 2021; Zhang, et al., 2021; Zollo et al., 2020). However, brand communication on social media is not simply an interplay between a focal brand and a consumer but involves a host of other potential actors that intervene in the message construction and dissemination process across multiple stages (Viglia, et al., 2018). For example, various social media platforms, access devices, technologies, and other users (Orazi et al., 2017; Dibb & Carrigan, 2013; Mani & Chouk, 2019) can play a vital role in the shaping of social media marketing messages, therefore, impacting the re-interpretation of those messages (Beverland, 2021; Pongsakornrunsilp, & Schroeder, 2011; Ramaswamy, & Ozcan, 2018; Tajvidi, et al., 2017). Despite this significance, we know little about how the network of

actors (both human and non-human) in the social media ecosystem interact during the message-meaning co-creative process. Understanding the network actor interplays is essential to marketers in shaping their marketing communications (Namisango et al., 2020; Viglia, et al., 2018; Xiao et al., 2022). In particular, knowing the origins and nature of message noise allows social media marketers to respond to undesirable message mutations and ensure consistency of meaning produced by marketing and advertising messages online.

Social media platforms are different from one to another in their expressive, communicative, and social capacities (Ashman et al., 2021; Kozinets, 2019; Rosário, & Loureiro, 2021; Smith, Fischer, & Yongjian, 2012) and a diverse set of factors help disseminate messages communicated across social media networks (Chung, Woo, & Lee, 2020). Therefore, current research asserts that meanings of social media messages are co-created within a network of interactions (Viglia, Pera & Bigne, 2018) that combine a range of human and non-human actors and such co-creative pursuits lead to countless opportunities for message reinterpretation and distortion (Dibb & Carrigan, 2013; Zhang, et al., 2021). Accordingly, as co-creating consumers interact and engage with the network of actors (Chan & Li, 2010; Miguel, 2016; Singh et al., 2022), there is an inherent expectation of social media marketers to accept the complexities involved in message re-interpretation and distortion that are instigated by multiple network interactions (Zhang, et al., 2021). Referred to as “noise” within communication and transmission literature (Shannon, 1949), the distortion of social media messages relates to particular consequences that result from complex network interactions that typify message exchange (Fox, & Lind, 2020). However, little attention is devoted in the extant literature towards understanding the nature of message “noise” and the role of actor interplays in the process of social media message dissemination (Pampapura, et al., 2022). For example, viral message mutations are defined as changes to the functional and structural components of messages during one or more stages of the replication process whereby the message passes from one person to the next, primarily through electronic means (Fox, & Lind, 2020; Kaplan & Haenlein 2011). Yet, we do not know the nature and different types of message noise that prevail in the social media marketing ecosystem. In addition, we understand that human and non-human interactions implicate message noise and wield changes to the functional and structural elements of a message, which can alter the original communication, yet we do not know how those actors, such as various technological devices and software platforms converge with message senders and receivers to mutate those functional and structural aspects of the original message. Therefore, we argue that this limited attention to various actors that converge

to create unintended message noise risks an oversimplified understanding of social media message communication and interpretation.

Building on communication and social media marketing theories (Dahl, 2021), we respond to these research gaps by investigating the network-constructed nature of message noise and its influence on shaping and reshaping message meaning during social media communication (Dainty, Moore, & Murray, 2007). Specifically, drawing from a two-staged netnographic research process (Kozinets, 2019) that spanned over 20 months, we investigate two research questions. First, how do different actors that comprise social media communication networks contribute to the creation of message noise and what is the nature of such noise that typifies social media networks? We refer to message noise as the external and internal barrier that has the propensity to interfere with and alter functional and structural elements of social media messages during the communication process (Huckfeldt, et al., 2014). Second, how do these multiple actors converge within the social media ecosystem to influence message reinterpretation and interfere with the original communication, distorting message meaning? We understand social media network actors as the different human and non-human participants that converge and interact with each other (Abarashi & Edirisingha, 2022; Latour, 2007) and implicate social message meaning construction. As such, investigating social media message communication and interpretation from a network perspective allows us to understand the nuanced interactions between various social media network participants during the communication process (Kozinets, 2010, 2021; Kolli & Khajeheian, 2020; Lugosi & Quinton, 2018; Huckfeldt, et al., 2014). Next, we review the extant literature on consumer message interpretation and the role of technological mediums in message re-interpretation to ground this empirical study.

2.0 Literature Review

Hall's (1980; 2003) encode-decode model proposed that effective communication was a one-way process; therefore, any noise or erroneous readings of a message were attributable to the receiver's lack of interpretive ability. Since then, communication studies have evolved to explain the two-way interactive processes where the co-creation of meaning (Abeza, O'Reilly, et al., 2020) is formed through the senders' semantic choices and the receivers' interpretive strategies. The notion of more complex effective communication processes introduces the potential for disruption by various forms of noise (Chan & Li, 2010; Miguel, 2016; Fox, & Lind, 2020; Kozinets, et al., 2010; Roth-Cohen, et al., 2019; You & Hon, 2021). This study

adopts the circle of communication framework but expands it for the digital era by focusing on how different actors in the social media ecosystem interact, share and create meaning.

2.1 Consumers and the web of message interpretation

Networked, empowered, and active consumers are increasingly co-creating value with brands. Particularly service brands, where meaning is created via experiences and interactions between the brand, the consumer and other consumers (Black & Veloutsou, 2017; Prahalad, & Ramaswamy, 2004). The social media network of a consumer is complex and typically includes multiple platforms, devices and other human as well as non-human players (e.g., hardware and software of the technologies) with varying functions, capabilities and intentions (Castelo, Schmitt & Sarvary, 2019; Chouk, & Mani, 2019). Social media platforms have experienced exponential growth in their user bases (Statista, 2022) and consumers undertake various activities on such platforms (Greenwood, et al., 2016; Nunan, et al., 2018). For example, consumers rely on many social media platforms (e.g., Facebook, Instagram, Twitter, YouTube, etc.) to construct identity (Grewal, Stephan, & Coleman, 2019), understand themselves (Zhao, Grasmuck & Martin, 2008), interact with others (Farmaki, et al., 2021; Hajli, 2014), reach out to dispersed family and friends (Epp, Schau & Price, 2014), and to assist with their consumption decisions (Galati, Tinervia, Tulone, & Crescimanno, 2019; Xiang & Gretzel, 2010; You & Hon, 2021).

Accordingly, we know the interpretation of marketing and advertising messages on social media platforms and technologies is not simply determined by an initiator of the original marketing message but is influenced by a host of other actors that contribute to the co-creation of user-generated content (Knoll & Proksch, 2017; Livas, & Skotis, 2022; Malthouse et al., 2016; Namisango, et al., 2022). As these platforms act as networked applications, interactivity, interoperability and collaboration provide new opportunities for consumers' engagement with messages (Kundu & Chakraborti, 2020). This results in consumers on these platforms becoming more integrated with these technologies and likely to possess multiple roles across disparate networks that they are members of, creating practical complexities for marketers in communicating with them (Lugosi & Quinton, 2018; Muller & Schurr, 2016).

2.2 Medium technological differences and message interpretation

Previous studies (Klinger & Svensson, 2015; Puntoni, Schroeder, & Ritson, 2010; Schultz

Utz, & Göritz 2011) suggest that the medium matters more than the message, this means how a message is delivered and perceived is crucial for any engagement with that message. The act of choosing a medium reflects the intention of the communication and becomes not only a vehicle for communication but part of the message meaning itself. This was a fairly simple process before social media, however, communication on social media platforms is both reliant on the capabilities and limitations of the platforms, access devices and the human participants in shaping interaction (Appel et al., 2020; Bajde, Kos Koklic & Bajde, 2015; Bruns, 2007; Van Dijck, 2013).

There is a multitude of social media platforms with various functionalities (e.g., social networking, text messaging, shared photos, podcasts, live streaming, etc.) (Dahl, 2021) being used on numerous devices. Facebook, Instagram Twitter, Tik Tok and YouTube provide a range of different user functionalities (Anderson, 2020; Hazari, 2022; Kietzmann, et al., 2011) and the choice of platform has implications for the type of message that is communicated (Weinberg & Pehlivan, 2011; Yang, Basile, & Letourneau, 2020). Moreover, the devices used to communicate social media messages on the platforms cannot only facilitate the depth and richness of interaction and message exchange, but also shape how users engage with and interpret the content being displayed (Lugosi & Quinton, 2018; Namisango, et al., 2022; Xiao, et al., 2022). Highly integrated technologies of these sophisticated devices provide consumers with increasingly personalised interfaces (Farrington & Alizadeh, 2017; Hsiao, & Chen, 2018) and an increasing proportion of this consumer-directed social media communication is mediated through technological devices individuals hold (e.g., mobile phones & tablets) or wear (e.g., smartwatches) (Hadi & Valenzuela, 2020). This means that in addition to the social media platform and the interface design such as screen size etc., as well as the usage context (location, ambience, and user action) of the access device, there are a wealth of actors operating within a network which could impact consumers interpretation of marketing messages (Banerjee, Xu, & Johnson, 2021; Perren & Kozinets, 2018).

Undoubtedly, social media platforms have enhanced the interactional capacities of non-human technologies and engender new co-creational potentials, as users become embedded within their social networks (Bruning, Alge, & Lin, 2020; Ramaswamy & Ozcan, 2018). Technology that enables these interactions continues to advance, as such, action within the communications process has shifted away from the communicator/initiator to other parts of the network (Whang, et al., 2022). This includes receivers/consumers and a host of other intermediaries that make up the communications process. Therefore, the challenge lies in how to account for

these dynamics in a complex environment. Previous research (Fox & Lind, 2020) on message noise has revealed the processes consumers go through online when sending marketing messages viral, this includes attachment, penetration, replication, and release. Others have compared platform messages (Chung, Woo, & Lee, 2020; Kundu, & Chakraborti, 2020; Xiao, et al., 2022) and interface mobility of devices (Banerjee, Xu, & Johnson, 2021). This study expands the scope of this conversation by examining the different types of overarching noise and the disruption points of this noise within a network, to understand how social media platforms and devices distort potential marketing message interpretation. We explore the challenges these multiple actors bring to the social media communication process and the impact this has on marketing message meaning. We build a holistic understanding of marketing messages in a social media network by focusing on the consumer, the type of message and the channel or interface the message appears on.

3.0 Method

Our research approach was qualitative and presents insights gained through the adoption of a twenty-one-month netnographic study. Netnography is rooted in participant observation, uses conversations as data and studies interactions and experiences manifesting through digital communications (Kozinets 1998). Furthermore, netnography aids researchers in considering how multiple human and non-human actors interact in an ecosystem, allowing researchers to question how these dynamics shape the ways that users engage with the content being displayed, which in turn can change whom people interact with, and how message meaning is co-created (Kozinets, 2017; Lugosi & Quinton, 2018; Ramaswamy & Ozcan, 2018). Compared with other computational research techniques, the unique value of netnography is that it offers the researcher an opportunity to understand complex social phenomena, construct a clear narrative around these phenomena and develop themes from a consumer and network perspective (Kozinets, 2019; Thanh & Kirova, 2018).

3.1 Sample and Context

Our research draws on a UK higher education services brand. Higher education is a service (Guilbault, 2018) with diverse customers and stakeholders (future employers, government, society), (Ostrom et al., 2011) who are increasingly being communicated with and advertised to online (Torabi, & Bélanger, 2022). This is because university student consumers are typically aged between 18 and 24 (GOV.UK) and are the largest user group of social media users (Statista, 2020). We aligned our data collection with the marketing and student admission

journey of a university brand in England. Communication via social media was a significant part of the marketing campaign between the university brand and the student consumers, which enabled us to measure the ‘noise’ in these social media exchanges. The data was collected on two social media platforms: Instagram and Twitter. The selection of these platforms was dictated by the brand. The university marketing team deemed the aforementioned platforms as the most suitable for the communication goals of their marketing campaign and the student admission journey.

3.2 Data Collection

Following Kozinet’s (2019) netnography guidance, data collection developed through the logical steps of planning and entrée, data collection, data analysis, interpretation and representation. We began data collection by observing potential students’ interaction and sharing of experiences with the university and each other. We first identified the sender’s (university marketing) original messages, which they had not adapted before sending across multiple platforms. In the first stage, we observed how students engage with university mediated marketing communications on social media platforms and took extensive field notes (x 2 notebooks x 100 pages of introspective field notes and the observational records) to incorporate a description, reflection, and analysis of what was observed. In the second stage, our data set comprised 1,120 screenshots from Instagram (7,000 followers at the time of data collection) and Twitter (28,000 followers at the time of data collection). We captured relevant screenshots of all posts (posts off-topic were discarded) containing a hashtag which the university marketing team identified as the main driver of online informational exchange between the university and students. Cognisant of the complexity of social media communication in the web 2.0, and evolving 3.0 (Rudman, & Bruwer, 2016) era, the screenshots were collected and observed across the two chosen social media platforms (Twitter and Instagram) and on three different devices (mobile phone, tablet, and desktop). Hence, for a single message that used the relevant hashtag we collected screenshots on both social media platforms and all three technology devices (smartphone, tablet, and desktop PC).

3.3 Data Analysis

Focussing on the conceptual model developed in the same research context by Chauhan and Pillai (2013), we generated initial codes from the data set by examining 1. Content type, 2. Content agility, 3. Context day of posting and for the customer engagement on the journey 4. The number of likes and comments. These codes were the building blocks for themes and

larger patterns of meaning were then derived using the six-stage thematic analysis (Braun & Clarke, 2006, 2012, 2013). The written reflections we recorded to complement the screenshot data proved to be invaluable in our understanding of the communication process. From the 1,120 screenshots and the reflective field notes, we generated an initial 600 codes. These codes which describe the key themes of interaction were refined to four key areas of discussion surrounding the pre-purchase of the service (see Figure 1), this included accommodation, apparel, facilities/landmarks and course of study. These themes were used as a vehicle to assist in the understanding of message content strategy, credibility, identifying actors involved in the network and how these functional and structural elements contribute to noise and the types of noise generated.

Insert Figure 1

In our coding discussions, we realised that we (the individual researchers) had assigned different codes to the same post. Initially, we thought that this was the result of the different interpretive strategies that we had each individually adopted in our analysis. But, as the coding differences were discussed to reach a consensus, we focused on how these posts had been accessed, we recognised that the access devices (smartphone, tablet, or desktop PC) had provided us with a different version of the message from a single social media platform. This exposed the role of social media platforms and access devices and how they interplay within the context. The discussion of our findings elucidates this complexity further.

4.0 Findings and Discussion

By using the key themes of interaction (see Figure 1) from the service brand's social media ecosystem, we were able to identify three dominant types of noise: 1. Technical noise, 2. Material noise and 3. Architectural noise. Furthermore, findings respond to the second research question that investigates the involvement of multiple actors in the construction of social media message noise by uncovering how different network compositions shape consumers' ability to interpret and make sense of social media marketing messages. Figure 2 diagrammatically illustrates the role of various human and non-human participants that converge on social media platforms and contribute to the emergence of message noise. Next, we respond to our research questions and discuss our key findings.

4.1 How do different actors that constitute social media communications networks contribute to the generation of message noise and what is this noise?

To answer this question, we discuss our findings concerning 3 types of noise that emerged in our data set.

1: Technical Noise

Technical noise refers to the capabilities and limitations of both the software and hardware of technologies that comprise the network. This includes the social media platforms and the access devices (Vorderer, et al., 2016) and the physical parts of technologies (the hardware) and the software instructions (Wang & Kim, 2017) which inform how the technology systems operate. In addition, this includes how these converging hardware and software determine the sense-making ability of human actants within those networks. Although our aim is not to provide an exhaustive list of actors, our findings allow us to better understand the divergent capacities of software and hardware that comprise the platforms and shape social media marketing messages. For example, we collected data on an iPhone (just one of three devices we used) this is made up of several relations between smaller actors such as interface design, plastic, metal, microphone, speaker, buttons, workers/designers, and humans that call and message each other. It forms a network comprised of a combination of human and non-human entities (Trusov, et al., 2009), who produce, design and use the device in many different ways. Beyond the hardware and software platforms, our findings also reveal a social media network that assembles a range of technical actants that can include profile aesthetics of other human actors, customer designs, advertisements, newsfeed designs, chat options, notifications, media settings, data repositories, and various filters. These collective interplays between various social media platforms, devices and consumers are important to the construction of technical message noise at the interface of social media communication.

Prior research explains that different technical integrations of individual actors make up the collective interface of social media communication (Kane, et al., 2014; Viglia, et al., 2018). We argue that such structures create communication intent categories that assist conversations between individual actors, whilst feeding back to the network as a collective. For instance, the technological anatomy of a particular platform shapes how other platforms, consumers/users and their access devices can interact with each other. Also, message noise can emerge as a consequence of such technological incompatibilities between various non-human actors and lead to fibrous disseminations between human and non-human actors. For example, our findings demonstrate that there was very little engagement (likes, retweets, and peer-to-peer discussion) for a post on Twitter (based on the key themes of interaction), but the same post

generated peer-to-peer discussion on Instagram, resulting in ten times as many likes in some instances. From past research, it could be argued that user preference and greater presence of numbers could be a factor here (Kircaburun et al., 2020), yet the fact is that our focal brand's Twitter account had 28,000 followers at the time of data collection compared to 7000 of their Instagram followers. What our data further reveals is that Instagram's technical interface encourages students to take photos/videos and share them instantly with friends on other social networking sites, providing a rich source of social-semiotic data (Kress, 2009; Eagar & Dann, 2016). On the contrary, Twitter's technical interface, which encourages predominantly textual interaction, restrains use for brief status updates and the creation and consumption of news (See Screenshot 1 which demonstrates a user uploading a photograph in text format to suit the needs of Twitter rather than solely post to Instagram). This signifies that message noise should not be reduced to a particular receiver's capacity to interpret a message along preordained social categories and meanings, as frequently considered in prior literature (Hall, 2003). Instead, our findings clarify that the technical infrastructure determines the heterogeneity of the network and the variant potentialities of network actors, such as the social media platforms, individual human preferences (i.e., normative cultural behaviours, language requirements, representation of personalities, routines/rituals) and aesthetics of physical environments (context of message sending/receiving), within which these interactions occur.

2: Material Noise

The material noise concentrates on the material intentionalities (Dant, 2008) and design features of software and hardware that form social media networks. For example, our findings reveal that the technological capabilities and limitations of platforms and devices shape the intention as well as methods of engagement of the human actors. Adapting the theorisation of materiality by Borgerson (2009), we refer to materiality in social media networks as the user's socio-cultural knowledge and how the interactive technology (capabilities and limitations) changes users' behaviour, experiences and relationships between the actors. These platform and device capabilities/limitations can influence the likelihood of certain human and nonhuman reactions, make a particular behaviour seem more achievable, and provide information on the choice of behaviour (Reviglio & Agosti, 2020). Particularly, themes from our findings witness that the product design features of access devices shape the material intentionality of users. In addition, our findings also emphasise that the socio-cultural knowledge of how these devices are used is impacted by the material dimensions of access devices, software features and hardware configurations. Both these features limit or promote

a certain way of interacting with those devices, such as determining the user's selection of access devices, formulation of communication objectives and selection of social media platforms. This decides what type of messages can or cannot be communicated on those devices, therefore, adding to the message noise.

Our participants used a range of access devices (Twitter for iPhone/Android) to visit different social media platforms and engage with the brand and with other student consumers. Findings reveal that the material noise emerging from the materiality of network actants and the normative socio-cultural knowledge of how access devices are intended to be used bring another layer of complexity to noise in social media communication interfaces. For example, student consumers prefer to access some platforms on certain access devices and messages are better visible on certain platforms due to their screen sizes/resolutions and interface mobility, design and context (Banerjee, et al 2021). Furthermore, certain devices and accompanying storage capacity may facilitate the convenient sharing of a picture message, whilst having an actual keyboard might facilitate ease of typing a textual message (See screenshots 2 and 3 – this student consumer has preferred to keep on the same platform using the same device for two types of messages, despite the platform limitations surrounding image sharing). As Dant (2008) argues, product design features determine material intentionality, shaping how others interact with objects. Here we argue that it is both the material intentionality of access devices as well as the accepted cultural knowledge of how these design features must be used to create a source of message noise. It adds another restriction that implicates how and (motivations) why consumers interact with access devices.

3: Architectural noise

Our findings reveal technical noise, both the hardware and software of platforms and devices influence user decision-making, plus the material noise, which includes material intentionalities and the socio-cultural knowledge of the user that make up a black box of social media messaging communication. This creates a dynamic cloud of interactive noise, which produces a complex environment to communicate social media marketing messages. Therefore, architectural noise refers to the fluid and evolving architecture of the network interactions and how the capabilities/limitations of the technical noise and the materiality noise shape the ecosystem.

Just as humans prefer to interact in specific ways using specific devices to communicate specific messages, so do the other non-human actors such as the medium in which those

interactions were formed and/or certain algorithmic representations of known preferences. Our findings show that the coming together of various students in the brand's social media ecosystem, their access devices, and social media platforms in these technologically driven social networks, is fluid and ever-evolving. We know the actors constituting social media networks often change (Border, Hennessy & Pickering, 2019). In addition, the news preferences of users also change over time (Fletcher & Nielsen, 2018) and social media platforms may receive new features via platform functionality upgrades (Krishen et al., 2018). The network here can be seen as a very dynamic cloud of evolving interplays and shifting relations between moving parts that form the network as a whole. However, they also create a lot of noise that challenges the interpretation of the message. Furthermore, access devices may become outdated, therefore, limiting their ability to display upgraded social media platforms effectively, whilst their design features may also falter over time. Consequently, this dynamism of the network architecture challenges the clarity of message communications. For example, a student who is a message recipient in one instant may also become a re-creator of the same message at another time but the devices and platforms that they use in doing so may be re-configured (See screenshots 4 & 5 which illustrates a user recreating the same message across two different platforms to configure with the functionality of the platform). Findings demonstrate that if we posit an active message recipient who then also becomes a message source (noise) when they respond to the original message (in this case from the university brand), they are engaged with platform capabilities and may be actively restructuring messages (distortion) for platform functionality. Therefore, what becomes important is making sense of different levels of engagement across multiple actors within a network, which includes the message, technological capacities/limitations, social media platform functions, access device and human involvement and how each mobilises the other (Bajde, 2013). Whereas platform capabilities have been assigned as the driving force of such interaction in previous research (Bonsón et al, 2012; Davenport et al 2014), our findings demonstrate that action emerges from different compositions of network interaction between the actors.

4.2 How do message noise and interplaying actors shape and re-shape message meaning in the network?

The identification of technical, material, and architectural noise adds layers of complexity to marketing message interpretation depending on the nature of platforms, material intentionalities of access devices, and communication objectives of consumers who transmit those messages from one to another. Figure 2 demonstrates how a singular marketing message

that is transmitted by a sender is changed during multiple stages of the communication process and how some of the re-interpretations feedback to the sender. We emphasise that our model should be understood as a constantly evolving network of interactions that often relies on the dynamic roles of multiple actors during many interception points. The model helps to graphically illustrate multiple points of message interception and reinterpretation and to better understand the role of the network-constituted noise in shaping marketing message meaning. Moreover, although there are many social media platforms and access devices at the disposal of senders and receivers today (Zollo et al., 2020; Dolan et al., 2019), we consider the network interplays between, one sender, one receiver, two other consumers, two platforms (Twitter and Instagram) and two access devices (mobile phone and personal desktop computer) to maintain the simplicity and clarity of our model. Therefore, it is important to note that the addition of new access devices, platforms as well as other consumers would add additional layers of interactions and complexities, therefore, bringing more opportunities for message noise and distortion.

Insert Figure 2

As illustrated in the framework (Figure 2), material and technical noise intercept the message during five key interception points and the architectural noise exerts an overarching intermediating influence that empowers or restrains the agency of media platforms and access devices. The amount of distortion that can occur during each stage depends on the number of devices, social media platforms, and consumers engaged at the stage and the construction of the network (architectural noise). In this scenario, communication begins with a sender, the university brand, and a message they intend to communicate to an intended receiver. They post this message on two social media platforms (Twitter and Instagram). This brings the first interception point with the propensity to create platform distortion (PD), resulting in two possible interpretations (PD1 and PD2) of the sender message (SM). Each platform-distorted sender message can be accessed by the receiver using two different access devices (mobile phone and/or personal computer). This is the second interception point and it can create device distortion (DD), resulting in four different types of sender message reinterpretations (e.g., PDDDSM1, PDDDSM2, etc.). What this clarifies is that the mere presence of two access devices and two media platforms produces four possible combinations of message reinterpretations that the receiver can be exposed to. The receiver then transmits their interpretation of the message (RIM) via two access devices (a mobile and desktop personal computer). This is the third interception point in the communication process creating platform

distortion and resulting in two possible interpretations of the receiver-interpreted message. These messages are then posted on two social platforms (Twitter and Instagram) creating the fourth interception point involving platform distortion and interpreting the message in four different ways. Those messages are then picked up by two other consumers of the brand. These two consumers also have their attitudes and behaviours toward preferential access devices as well as social media platforms. They are also connected via these interrelationships between access devices and media platforms. The framework views the role of these two consumers as a lens that disperses a particular message into multiple different potential interpretations. Whilst some of these messages may not become relevant due to extreme distortion of meaning, some of these messages may find their way back to the sender as credible and useful message feedback.

As depicted in our framework, the technical and material noise impact the shaping of message meaning at different interception points (refer to screenshots 4 & 5). The user in this example demonstrates that the constituted noise (notably the platform and device capabilities/limitations) implicates message meaning, because not only does the user adopts two different platforms for the same message, but the user also alters this message. Further, our findings also illustrate that the presence of technical, material and architectural noise produces different versions of a message when the message content include various forms such as video and image. The presence of these varied formats of information (technical noise) across intentionalities of multiple devices (material noise) leads to elevated levels of architectural noise, therefore, creating higher risks for message consistency and engagement (Zhang et al., 2021). For example, a tablet provides a link such as pic.twitter.com/MFOW9bXMgx (See screenshots 6 & 7), to another page for a photograph or a video, depending upon how it was uploaded or accessed. On a smartphone this photo is displayed as an image without the barrier of selecting a link (See screenshots 6 & 7) (which then directed the user to an Instagram page to view the original photograph), thus increasing engagement, evidenced by 'likes' and 'comments'. These functional capabilities and limitations of both social media platforms and access devices shape how consumers engage with the content being displayed and subsequently interpreted. Therefore, the choice of access device by the recipient of the (social media) marketing message has demonstrated that this action will not only impact the way the shaping of the message is interpreted by the receiver, but the access device choice will also impact how future messages in the network are shaped. This is important for consumer choice in today's marketplace. We know that the path to the

discovery of a product or service has changed (Vrontis, et al., 2021), choices are influenced by the technology-augmented process (Keding & Meissner, 2021) and a reflection of the consumer preferences of the medium used to form those decisions (Melumad et al., 2020; Jessen et al., 2020). This study extends research by shedding light on the nature of these human-technology interactions.

5.0 Conclusions & Implications

In this study, we explored the role of diverse social media network actors, such as social media platforms, access devices, technologies and interacting consumers (Orazi & Vredenburg, 2017; Dibb & Carrigan, 2013; Mani & Chouk, 2019), in the construction of message noise and distortion of message meaning. In doing so, we responded to two research questions that looked into the nature of message noise prominent in social media networks and how different actors contribute to the construction of noise and implicate the ability of consumers to interpret message meaning. Responding to the first research question, our findings contribute to existing research by revealing three types of message noise that are prevalent in social media platforms: technical noise, material noise, and architectural noise. Furthering the understanding of message noise as an attribute of various functions of platforms/access devices (Ashman et al., 2021; Kozinets, 2019; Rosário, & Loureiro, 2021; Smith, Fischer, & Yongjian, 2012) and users' choice of these mediums (Zhang, Chau, Wang & Luo, 2021), our network view of the social media communication ecosystem (Latour, 2005) reveals a more cohesive and interconnected understanding of social message noise. We found that senders and receivers inadvertently contribute to the creation of noise merely through their choice of communication platforms and devices. These choices create noise in the form of platform distortion (PD) and device distortion (DD) which become a part of the intended message through the modification of its proposed formatting and/or meaning. Specifically, we posit that the message noise experienced by consumers on social media platforms is a convergence of technical capacities of software and hardware makeup, material intentionalities of software and hardware design features, and the ever-evolving architectural compositions of the network interactions. And the presence of such interacting types of message noise brings layers of complexity to the interpretation of marketing messages.

Responding to our second research question, we contribute to the advancement of current research that argues for the importance of further understanding the network actor interplays and its criticality in shaping marketing communication (Viglia, et al., 2018). Our research

shows that the disparate interplays between actors in social media network interfaces create message noise and distortion. In particular, our findings demonstrate that the interdependent nature of message noise elements (Pampapura et al., 2022) and the variegated potential of converging network actants contribute to multiple levels of marketing message mutations. Our framework (Figure 2), demonstrates five key interception points that have the propensity to distort the intended message meaning, hampering consumers' opportunity and ability to interpret those messages. Whether it is a textual message, visual imagery, or a video clip, a platform's technical make-up as well as an access device's material intentionality, determines how a particular message is going to be transmitted and received. We found that the initial reshaping is largely unnoticed, with actors responding to the message they receive. However, when responding to a message some receivers chose the platform they perceived most suitable to their message. The actors demonstrated that the platform's functionality impacted how they retrieved a message, and this informed how they operationalised this knowledge to maintain their message's meaning. In consequence, message meaning interpretation on social media platforms becomes intertwined within the network, making it relational and contextually dependent. Therefore, we argue that the social media message meaning construction and interpretation is an organic, immersive, and co-creative experience that is frequently outlined by overlapping types of message noise and instigated by converging interplays that exist between multiple network actants.

5.1 Implications

Scholars of communication studies, netnography, and practitioners of social media marketing may find the results of this research useful in multiple ways. The notion of heterogeneous layers of noise has practical implications, some of which are out of the control of digital marketing practitioners. For instance, the platforms and devices that create technical noise will continue to evolve and be consumed at a faster pace than digital marketers can proactively respond to. However, material noise offers a competitive advantage to digital marketers who can support their consumers to overcome technological barriers to accessing a message. For example, this may include creating links from one platform to another to provide exposure to multiple versions of a message. Alternatively, digital marketers may adopt practices to persuade the consumer to learn how to overcome material noise by creating a desire to access the intended message on the original platform.

The identification and mapping of the noise in this study also have theoretical and methodological implications. Our model reveals several levels of noise at various intersection points each with the potential to modify the message's meaning and its forward journey in the communication cycle, which suggest a previously unnoticed level of theoretical complexity in understanding and explaining noise. This theoretical complexity creates methodological challenges and opportunities. Netnographers are now tasked with exploring the source of a message as well as its meaning. Digital marketing scholars now have to analyse the impact of unintentional non-human and human choices on consumers' interpretation and misinterpretation of intended messages.

5.2 Limitations and Future Research

The constant evolution of technical noise simultaneously creates limitations and areas for future research. A limitation of our sample and the service industry context of a higher education institute is that the university student consumers' age group tends to be digital natives who are conversant with multiple platforms and devices. Furthermore, these service brand consumers were reliant on accessing many of the intended messages in the initial interaction stages. Future studies should explore other consumer groups and brands in different industries to produce more nuanced, critical and informative accounts of consumers' meaning making experience with brands and emerging technology.

We conducted this study on multiple platforms and devices but were aware that their functionality was constantly changing. Thus, we encountered the same evolving authentic limitations as digital marketing practitioners. Future research can make functionality comparisons across platforms and devices to inform digital marketers. In this rapidly evolving area of interactive technologies, attention should be paid to emerging platforms (i.e., Tik Tok), emerging devices (i.e., Smartwatches/Voice Assistants) and their influence on consumers' communication experiences. Scholars should focus on how the capabilities and limitations of platforms and devices shape the different stages of message meaning. This will not only reveal how the shaping of the message is received by the consumer, but it will also reveal how future messages in the network are shaped because message meaning is not isolated, it is interdependent.

Finally, although we discussed our findings with digital marketers to evaluate their originality and implications, future research should engage with digital marketing practitioners in a focused way. In-depth interviews with digital marketing experts would advance understanding of the types of message noise and nuanced interplays between various actors, especially how they are operationalised and mobilised by individual consumers. The aim would be to explore potential practical and theoretical solutions to monitor and evaluate how these new forms of noise are changing the communication cycle. We would suggest that digital marketers who understand architectural noise's emerging and evolving complexity are likely to gain a competitive advantage.

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Appendices

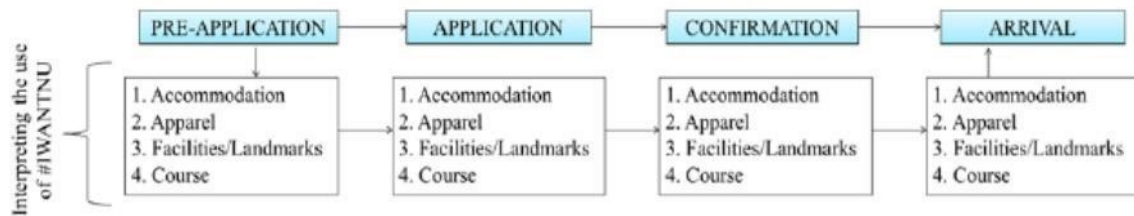


Figure 1 – Illustrates the key themes of interaction within the hashtag community

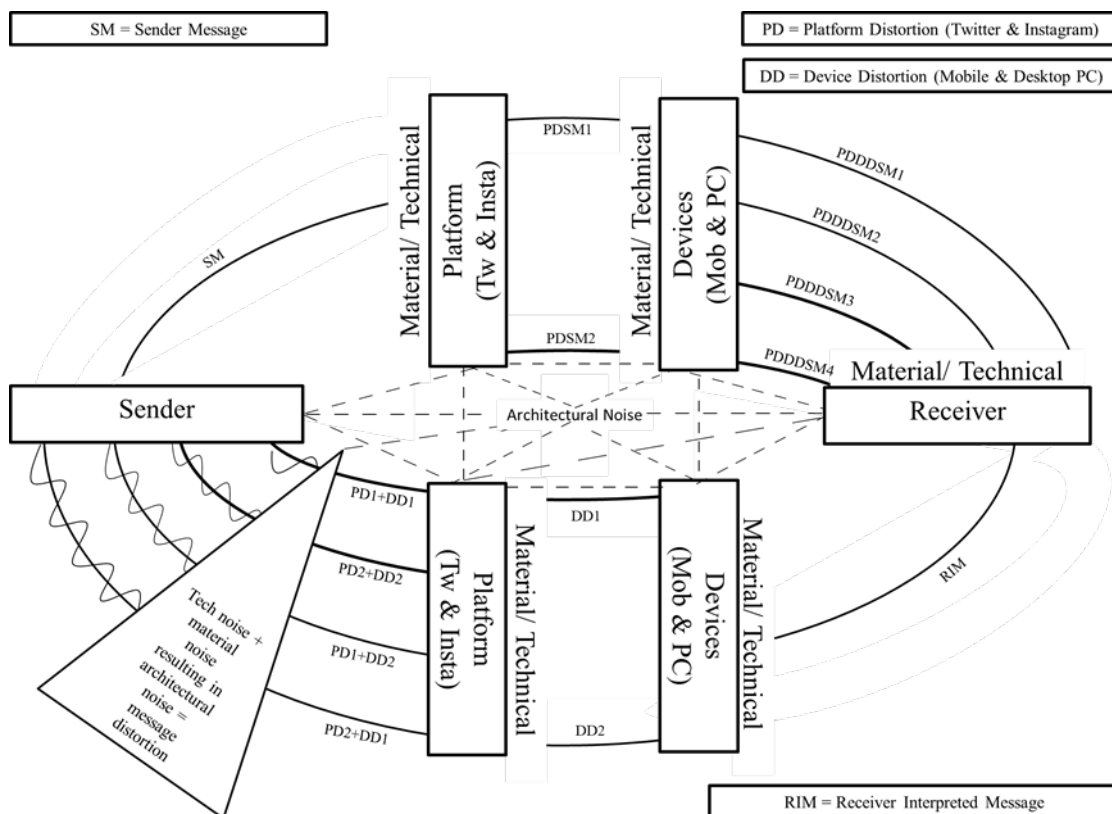


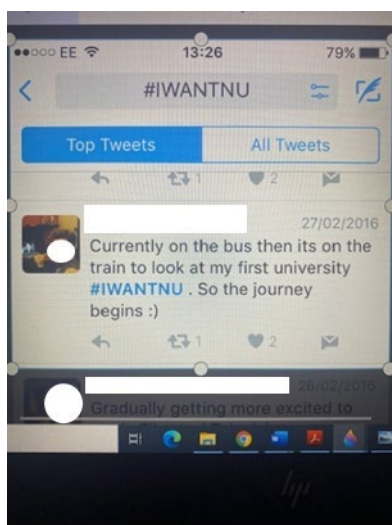
Figure 2 – Model of network constituted noise within the web of social media message exchange

Data Screenshots

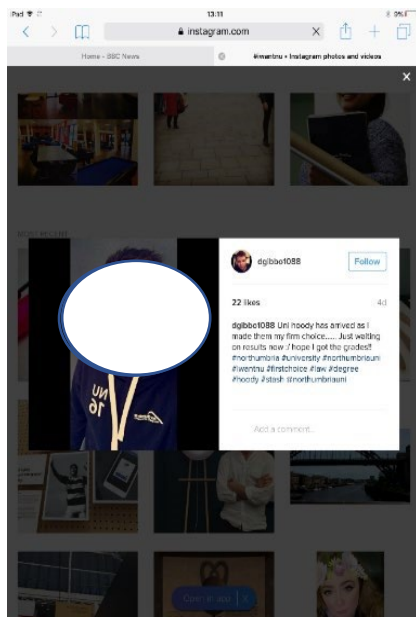
Screenshot 1



Screenshot 2 & 3



Screenshots 4 & 5



Screenshots 6 & 7

