A CRITICAL REALIST INSPIRED MULTILEVEL RESEARCH METHOD: COMBINING NETNOGRAPHY AND SOCIAL NETWORK ANALYSIS TO STUDY CONSUMER BEHAVIOR IN ONLINE COMMUNITIES

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Abstract:
Framed by the philosophy of critical realism, this methodological article proposes a research design involving a case-study approach that combines netnography with social network analysis to study consumer behavior and social interactions in online communities. This research strategy holds to a critical realist stratified emergent ontology, in which the empirical domain, comprising the experiences and perceptions of consumers, is qualitatively analyzed through a form of ethnography adapted to the online environment. The actual domain is explored through a quantitative method based on graph theory that investigates structure and agency processes by analyzing the patterns of social interaction. It is argued that this dualist approach allows researchers to inquire into the deepest level of reality or the real domain and to focus on structures and generative mechanisms as objects of inquiry. The philosophical reasoning for combining netnography and social network analysis is discussed as well as the quality of the research work in terms of reliability, validity, and potential for generalization.

Keywords: netnography, social network analysis, case study, critical realism

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1. Introduction

The development of the internet and mobile communication technology contributed to the emergence of online communities as platforms where consumers can share common interests and hobbies, provide and receive information, participate in firm activities and co-create value. An online community can be defined as a virtual space, based on information and communication technology, for community users with different interests and hobbies to interact online, generating content and establishing relationships in the process of communication and interaction (Bagozzi & Dholakia, 2002; Koh & Kim, 2004). Online communities are shaping consumer behavior and creating real technocultures characterized by a strong connection between firms, brands, products, and the consumer (Skandalis, 2023; Wang et al., 2023).

Several authors highlight the need to further explore the convergence of consumer activities with digital technologies whereby reality and fantasy are blended (Kozinets, 2002; Skandalis et al., 2016). However, the complexity of technology-mediated communication and other forms of interaction in online communities is difficult to unveil based on traditional research methods (Skandalis et al., 2016; Skandalis, 2023). Given the structure-technology-agency relations that occur within online communities, this is a research topic with phenomenological characteristics that impose challenges for mainstream research methods (Kempton, 2022). This paper proposes a methodology design rooted in the critical realist paradigm that is considered appropriate to disentangle the intricate nature of consumer interactions in online communities. The proposed research design uses a multiple case study approach involving a mixed methods solution that includes netnography combined with social network analysis (SNA).

Online ethnography extends traditional ethnographic study from field observation and face-to-face researcher-participant interaction to the virtual field of the internet (Reeves et al., 2013). Online ethnography refers to multiple online research methods that adapt ethnography procedures to study communities and cultures created through computer-mediated social interaction (Cova and Antone, 2016). Among these methods, netnography is the most prominent since it presents a specific set of procedural guidelines to conduct an ethnography of an online community (Caliandro, 2014). On the other side, SNA provides a widely accepted approach across social sciences to analyze complex relationship structures involving large amounts of data (Kimmerle et al., 2013; Teixeira, 2014). SNA is not a formal theory but rather an approach for researching social structures and agency processes that make use of a set of tools and techniques to analyze how the topological (or structural) properties of networks, and the positions of individual actors within the network, influence its overall dynamics (Zhang, 2010). While netnography permits a deep exploration of complex social interactions by analyzing consumers' behavior in online communities (Brennan et al., 2015), SNA is a suitable method to explore the structure based on the network configuration or morphology of social interaction in online communities, and the roles played by individual members (Baptista et al., 2020).

This paper is organized as follows: after this introductory section, the next two sections provide an overview of netnography and SNA. The fourth section explains the philosophical underpins of the proposed research design, and the final section presents the article's conclusions.

2. Netnography

Ethnography is among the most well-established approaches that can be found within qualitative inquiry in social sciences. Its roots can be traced back to nineteenth-century Western anthropology studies of small rural societies, where ethnography was understood as a descriptive account of a community or culture (Reeves et al., 2013) and was mostly seen as a complement to ethnology, which refers to the historical and comparative analysis of non-Western societies and cultures (Savage, 2000; Hammersley and Atkinson, 2007). The ethnographic approach was later adopted in the 1940s by the Chicago School of Sociology (Hammersley and Atkinson, 2007; Reeves et al., 2013) and applied to a variety of research work in urban settings in their studies of social life and urban ecology (e.g., Wright, 1940; Whyte, 1943; Drake and Cayton, 1945; Suttles, 1968).

Ethnography does not have a standard, or a well-defined meaning, being often confused with other labels such as qualitative research, participation observation, qualitative inquiry or fieldwork (Savage, 2000; Hammersley and Atkinson, 2007). The term has been applied with different meanings, including the identification of a philosophical paradigm, a methodology, a method, a process, or a written account of a particular ethnographic project, meaning the product of a research work (Savage, 2000). Bronislaw Malinowski is commonly regarded as the first author to systematize the ethnographic method (Hammersley and Atkinson, 2007; Gobo and Molle, 2017). In his book Argonauts of the Western Pacific: An Account of Native Enterprise and Adventure in the Archipelagoes of Melanesian New Guinea, Malinowski (1922) describes the main objectives of ethnographic fieldwork as follows: i) to grasp the organization of the community and the anatomy of its culture; ii) to assert the imponderabilia of actual life and individuals' behavior; and iii) to collect statements, characteristic narratives, typical utterances, items of folk-lore as documents of native mentality.

According to Reeves et al. (2013), ethnography generally refers to a form of social research having the following key characteristics: i) emphasis on the exploration of social phenomenon instead of setting out hypotheses about it; ii) focus is usually on a few cases, generally fairly small-scale, such as a single setting or group of people, to facilitate in-depth study; iii) data collection is, for the most part, relatively unstructured, meaning that it does not involve following through a fixed and detailed method, with coding categories being generated out of the process of data analysis; iv) analysis of data privileges the interpretation of meanings and human behavior in everyday contexts, in the field, rather than under conditions created by the researcher; and v) the product of ethnography usually takes the form of verbal descriptions and explanations. Reeves et al. (2013, p. 512) further assert that the central aim of ethnography is "*to provide rich, holistic*

insights into peoples' culture, views, and actions, as well as the nature of the location they inhabit, through observation and the collection of testimonies, to understand the way the group sees the world".

Developments in ethnographic inquiry have resulted in specific methods adapted to the online environment. Netnography was developed by Kozinets and first applied by the author in a study of X-Philes culture, meaning online groups of fans of the X-Files television show that aired in the 1990s (Kozinets, 1997). Kozinets (2002, p.62) defines netnography as a *"written account resulting from fieldwork studying the cultures and communities that emerge from online, computer-mediated, or internet-based communications, where both the fieldwork and the textual account are methodologically informed by the traditions and techniques of cultural anthropology".* The netnographic method is inherently flexible, naturally exploratory, less expensive, and less time-consuming than traditional ethnography enquiry, allowing researchers to study cultures and communities that emerge through computer-mediated communications (Kozinets, 2002). Netnography allows extracting of the voice of a specific community when face-to-face field research methods are not suitable for reasons of cost, time, and geographical constraints (Sadovykh et al., 2015) and is particularly suitable to study online communities supporting marginalized, at-risk, and anonymity-seeking people or those with niche concerns and interests (Costello et al., 2017).

Netnography is a useful research method for marketing as it involves a deep exploration of complex social interactions by analyzing people's online discourses and practices related to marketing-oriented issues using online spaces as fieldwork sites (Brennan et al., 2015). Heinonen and Medberg's (2018) systematic review revealed that netnography had been applied to a variety of topics across different marketing research fields, including consumption and brand communities, consumption experiences, brand management, co-creation, product development, open innovation, consumer identity, authenticity, anti-consumption, destination branding, and online word-of-mouth, among others.

3. Social network analysis

Despite its current popularity, SNA has its roots in the 1930s. The psychiatrist Jacob Levy Moreno is considered the pioneer of SNA (Marsden and Lin, 1982; Hummon and Carley, 1993; Freeman, 2004). Moreno systematically studied ties linking social actors and used illustrations of networks to represent social interactions, denominating these as sociograms when studying relationships between prison inmates (Moreno et al., 1932) and researching residents in a reform school for girls (Moreno, 1934). According to Scott (2007), network analysis has its origin in three main research areas: the sociometric approach, the Harvard approach, and the social anthropologist perspective

The sociometric perspective was introduced in the 1930s and applied quantitative methods based on graph theory to inquire into the evolution and organization of groups, mostly producing research on the structural properties of networks based on

mathematical models of topology and the application of graph theory (e. g. Lewin, 1936; Lewin and Lippitt, 1938; Lewin et al., 1939). The Harvard perspective, which gained traction during the 1940s and 1950s, pioneered inter-relational models and cliques and developed algebraic models of groups and matrix models of network analysis (e.g. Mayo, 1933; Warner and Lunt, 1941; Homans, 1950). The latter approach, the social anthropologist perspective, emerged in the late 1050s and focused on the analysis of structural relations, reinterpreting concepts from graph theory, such as network density, cliques, and clusters, under an anthropological, sociological, and psycho-analytical perspective, to identify social groups in social networks, while also providing a qualitative approach to collect data amenable to SNA, and, most importantly, demonstrated the potential of mixing network analysis with qualitative methods in sociological research (e.g. Barnes, 1954; Bott, 1955; Barnes, 1969; Mitchell, 1969).

Freeman (2004) identifies a fourth important research stream in the development of SNA, which began in the late 1990s when physicians Duncan Watts, Stevan Strogatz, Albert-Lásló Barabási and Réka Albert began publishing on SNA. According to Freeman, there was a "*revolutionary change*" when Watts and Strogatz (1998) addressed the concept of small worlds concerning the patterns of acquaintanceship linking pairs of persons. The authors speculated that any two stranger persons in the USA are linked by a chain of acquaintanceships involving no more than six intermediaries, originating the famous expression that gained widespread interest "*six degrees of separation*". Watts and Strogatz (1998) later concluded that some biological, technological, and social networks can be highly clustered and yet have small characteristic path lengths behaving like small-world networks. Another influential research in SNA was Barabasi and Albert's (1999) examination of the degree distribution on large-scale networks (world wide web, screen actors who worked together on films and links between generators, transformers, and substations in the USA electrical power grid) and their conclusion that these distributions were extremely skewed, following a power law distribution.

By the end of the 1990s, network analysis methods and possibilities were well-established and formalized (Baggio et al., 2010; Albrecht, 2013). Currently, the trending form of SNA consists of a series of mathematical techniques that analyze the patterns of connections, or ties, among actors in the network and draws on graphic imagery to reveal and display the patterning of those links (Freeman, 2004; Leonard et al., 2015).

SNA is grounded on a relational rather than an individualistic approach (Isba et al., 2017). Instead of focusing on the study of individual actors, the SNA approach considers the unit of analysis to be the connections between actors and not the actors themselves (Stewart and Abidi, 2012; Gruzd and Haythornthwaite, 2013). In the marketing discipline, consumers' networking interactions related to product experiences and use and product development are important research areas (Antoniadis et al., 2014). Consequently, network theories have been applied to a wide range of marketing issues, including viral marketing, word-of-mouth, relationship marketing, tourism marketing, consumers' information search, leadership influence, diffusion, and adoption of new products and services (e.g., Mattsson, 1997; Achrol and Kotler, 1999; Webster and

Morrison, 2004; Antoniadis et al., 2014; Yanga et al., 2010; Möller, 2013). However, until the turn of the last century, few marketing studies applied quantitative SNA techniques. Webster and Morrison (2004) suggested that the general avoidance of SNA within marketing academia was related to the intense data requirements needed to perform SNA and difficulties in mastering the network analytic models and the cumbersome software that was first made available. As a result of social media and social network sites' importance since the beginning of the century, SNA has gained some popularity among researchers, a phenomenon that can also be observed in marketing research (Antoniadis and Charmantzi, 2016).

4. The reasoning for combining netnography and social network analysis

Different theoretical considerations and perspectives on reality and knowledge, which result from personal epistemology assumptions (ways of inquiring into the nature of the world) and ontology (nature of reality), imply distinct views about the research work, the structure of reality and the sources of knowledge, resulting in "*niche paradigms*" that often oppose scientists in the academy (Rousseau, 2014). The conflicts between researchers that advocate different philosophical perspectives run deep and are a subject of substantial discussion among academics. Furthermore, the philosophical influences may not be self-recognized since researchers often follow the methodological traditions and perspectives passed by those who teach them or the research traditions imposed by the dominant paradigms (Easterby-Smith et al., 2012).

Social science research has three main ontological stances: realism, relativism, and nominalism. Realism emphasizes that the world is concrete and external and that reality exists independently of the researcher (Rousseau, 2014). In realism, researchers believe in a single and objective truth and that facts exist and can be revealed (Cruickshank, 2003). Conversely, relativism assumes that reality is socially constructed and that individuals develop subjective meanings of their personal experiences, giving way to multiple realities (Hugly and Sayward, 1987). In relativism, it is recognized that scientific laws are created by people who are embedded in context. Thus, science depends on the observer's viewpoint, and there is no single truth but multiple truths (Easterby-Smith et al., 2018). The nominalist positioning further suggests that there is no truth, that facts are all human creations, and that research questions should concern how people construct different versions of the truth (Easterby-Smith et al., 2018).

As noted by Crotty (1998), epistemological and ontological philosophical issues tend to emerge together, and because of their mutual influence, it is difficult to separate them conceptually. Epistemology relates to the nature of knowledge and is concerned with what constitutes acceptable knowledge in a given research context (Carson et al., 2001). Epistemological positions are characterized by a set of assumptions about the specificities of knowledge and the best ways of reaching knowledge, providing answers to the question: "*What and how can we know?*" (Wiling, 2013). There are two main contrasting epistemological perspectives in social sciences: positivism and social

constructionism; other philosophical viewpoints tend to fall between these two (Easterby-Smith et al., 2018).

Positivism holds that the social world exists externally and that its properties can be measured through objective and reliable scientific methods rather than being inferred subjectively through sensation, reflection or intuition (Crotty, 1998; Carson et al., 2001). Positivism in human sciences typically establishes the "truth" through collecting and analysing objective data and supports quantitative methods, hypothesis testing and deductive reasoning (Carson et al., 2001). When applied to social sciences, positivist researchers believe that, as in natural sciences, social phenomena can be captured by accurate empirical observation and exhibit law-like properties; as such, positivists are concerned with making claims about generalization of results for a population (Lee and Jones, 2015). Within this logic, social data and analysis should be kept value-free without any external influence maintaining an objective distinction between facts and value judgements (Healy and Perry, 2000). Positivism in social sciences has been criticized by researchers that outline the complex, interactive and dynamic social processes that characterize human social behavior (Avenier and Thomas, 2015). According to Lee and Jones (2015), positivism ignores situated meaning in favor of reporting reductionist results and is unsuitable for theory development because it limits findings to a low level of abstraction of tractable issues.

The social constructionist position is directly opposed to the positivist stance. It stems from the notion that reality is socially constructed, determined by people rather than objective and external factors (Easterby-Smith et al., 2018). For constructionists, knowledge is relative, adaptive and active. The role of the researcher is to unveil the different constructions and subjective meanings that people attach to their experiences, behavior and surroundings, with no pre-conceived notions of what forms of experiences are to be expected (Easterby-Smith et al., 2018; Lee and Jones, 2015). The social-constructionist perspective assumes that people´s understanding of the "real world" is inseparable from one´s values, beliefs and interpretations (Gergen, 1992). Researchers working from a social constructionist stance embrace the notion that the researcher is part of the study environment and brings a plethora of prior knowledge, including beliefs that will inevitably influence the way the study is conducted and conclusions are drawn (Rocco et al., 2003). In social constructionism, data and knowledge representations tend to be based on detailed accounts of a written-spoken word and ideographic symbolic action with a focus on detailed, rich, and thick descriptions written directly and somewhat informally, contrasting with the formal and more passive reporting of positivist research (Lee and Jones, 2015). The social constructionist paradigm is also the target of criticism. First, there are some claims of a move towards idealism and dogmatism, since findings often lack concrete evidence (Lee and Jones, 2015). Additionally, data collection within the constructionist paradigm can take up a great amount of time and resources; analysis and interpretations of data may be difficult because they depend on the intimate tacit knowledge of the researcher; and

interpretations may lack credibility with external publics, such as decision-makers (Easterby-Smith et al., 2018).

Based on the description provided, the links between ontology, epistemology research methodologies and methods and data collection and analysis techniques are evident. A realist ontological stance emphasizes the concrete and external nature of the world, epistemologically implying that objective reality can be inquired in search of true answers. In accordance, positivist epistemologies hypothesize about the nature of objective truth and use predominantly quantitative data and research methods to deduct objective causal relationships. In contrast, relativist ontology recognizes the existence of multiple truths, depending on the observer's viewpoint. Thus, it is often associated with constructionist epistemologies, and research methods that better ascertain multiple viewpoints are preferred. For this reason, qualitative research tends to prevail.

Kincheloe and Tobin (2009) point out that positivist epistemologies dominate social science scholarship. A situation that the authors attribute to the western ethnocentric view of academic research and the step-by-step solutions of "how to do research" presented in some universities. In Marketing academia, the dominant epistemological approach has also been positivism, focusing on logical empiricism, scientific research methods and explaining rather than questioning the marketing system (Gordon and Gurrieri, 2014). The dualist divide between constructionist incommensurability and rigid positivist assumptions about data hinders understanding online communities as a complex system of structure and agency (Lee and Jones, 2015). In this paper, we argue for applying a multiple case study approach, which combines netnography and SNA to research consumer behavior in online communities. Next, we present the philosophical reasoning for such approach.

Critical realism is ontologically connected with the metatheory of transcendental realism (Bhaskar, 1978) and seeks to bridge some long-standing divisions within social sciences between positivism and constructionism (Al-Amoudi and Willmott, 2010; Sorrell, 2018). Although the explicit adoption of critical realism has been relatively rare amongst marketing scholars, Rees and Gatenby (2014) highlight that the philosophical underpins of realism have been present in a large range of management and organizational research, including institutional theory and industrial studies.

Bhaskar's philosophy of critical realism (Bhaskar, 1978; 1998) offers a holistic and integrated account of the nature of reality (ontology) and the status of knowledge (epistemology). Coherent with transcendental realism, critical realism lays in a "structured ontology", which differentiates between three strata of reality: i) the empirical domain, which comprises the experiences and perceptions that people have of what happens; ii) the actual domain, which comprises the events that do occur in the world, independently of whether or not they are observed or detected; and iii) the real domain, which is considered the deepest level of reality and comprises the generative mechanisms that cannot be detected directly, but that have real consequences for the individual and societies (Bhaskar, 1978). Critical realist approaches span the apparent 'irreconcilable' gap between positivism (realist-informed) and social constructionism

(relativist-informed) since it is based on the view that there is an objective reality. Still, that reality is mediated by individual perceptions and cognitions (Fleetwood and Ackroyd, 2004). As explained by Sorrell (2018), from a critical realist perspective, the primary objective of scientific research is not to predict or to interpret but to explain. According to Bhaskar (1978), the initiator and main philosopher of critical realism, the objective of science is to uncover the nature and also the structure of the entities under study, to identify and explain their causal properties concerning their structure, and to use this understanding to explain particular events in terms of contingent combinations of entities and their associated properties, explaining the deep level of reality.

In critical realism, unlike natural and physical objects or physiological structures, social structures are understood as mental interpretations carried out by imperfect humans (Lee and Jones, 2015). Structure is a general term involving several compositions, including technological and social structures, meaning groups of people organized through social means (Kempton, 2022). The social structures have emergent causal properties that derive from the relationships established between participant members and the artefacts of which they are comprised but which are mediated through the individual agency (Elder-Vass, 2010). The resulting structured interactions give the social entity causal powers (e.g., the power of an online community to enforce norms or obligations or to impose a shared narrative) that affect social agents' actions. Social entities, through social structure, enable, constrain and motivate the actions of participant members (Rees and Gatenby, 2014). Social entities are, in turn, either reproduced or modified by the actions of members (Sorrell, 2018). Critical realism proposes a complex view of the social world in which individuals are neither absolute passive products of social structures nor entirely their creators. Rather, they are placed in an iterative and naturally reflexive feedback relationship, being influenced and influencing the social structures (Rees and Gatenby, 2014).

Concerning the causal mechanisms in the social world, critical realists do oppose positivist philosophical stances that understand causality as a simple regular succession of empirical events (Bhaskar, 1978). First, these regularities are relatively uncommon within the social world, and second, reliance upon them reduces the researcher's understanding of causality to the level of the empirical rather than the real (Sorrell, 2018). Causality in critical realism is understood as an inherent property of social entities, deriving from the structure and creating a tendency to reproduce certain outcomes. Positivist identification of empirical regularities (e.g. through regression models) may provide evidence for the operation of particular causal mechanisms in particular circumstances but fails to explain the mechanisms involved (Bhaskar, 1978). The notion of generative mechanisms is considered by Bhaskar (1978) central to realist ontology. Such generative mechanisms can exist beneath the empirical surface in the real domain and, therefore, are not directly observable. For realists, explanation depends on identifying the generative mechanism and how they work and discovering if they have been activated and under what conditions (Eastwood et al., 2019). The critical realist process of "*retroduction*" explains causality through the postulation of these generative

mechanisms, which can account for and contextualize the discourses of the specific social agents being investigated and search for connections between subjective interpretations, actual events and deeper causal explanations (Rees and Gatenby, 2014).

Critical realism has no preference for a particular research method; the choice depends upon the research questions and the nature of the relevant entities and causal mechanisms under research, with mixed methods approach being encouraged (Sorrell, 2018). This pluralistic epistemology promotes mixing quantitative and qualitative data to move toward a comprehensive explanation of events (Lee and Jones, 2015).

SNA is especially well-suited for the analysis of social structures informed by a critical realist perspective because it enables a quantified visualization of social structures and allows the analysis of how individual and collective agency is embedded in and at the same time constrains social structure, thus capturing the interplay of agency and structure, that forms an essential epistemological argument of critical realism (Pryke, 2012). However, to leave the analysis at this level would be insufficient from a critical realist perspective, as it merely examines the 'domain of the actual' and, as such, cannot establish the hidden dynamics of the multi-relational stratified nature of social relations in online communities (Rees and Gatenby, 2014). Qualitative research methods involving case studies and ethnography are considered an appropriate approach to uncover such complex and contingent mix of entities and mechanisms that explain particular events in the social world (Avenier and Thomas, 2015; Sorrell, 2018). According to Rees and Gatenby (2014), ethnography, informed by a critical realist perspective, provides a well-established way of clarifying relationships in social structures based on the observation of behavior, to reveal emergent patterns of interaction and generative mechanisms at the societal level. SNA and ethnographic enquiry, combined within a realist framework, thus explore the effects of structure and generative mechanisms that arise from social interactions in online communities and their influence on individuals' behavior.

Considering the classical theoretical divide between qualitative and quantitative research and the limitations of a case-study approach in terms of the generalizability of the results, critics may reasonably question the quality of the research work produced when adopting this mixed research methodology. Research quality is based on principles such as reliability, validity, and generalization, which are essential in research work that intends to be recognized as rigorous. However, these mean different things within the various research traditions (Easterby-Smith et al., 2012).

Reliability is concerned with the degree of consistency of research findings (Saunders et al., 2009). As explained by Avenier and Thomas (2015) in critical realism, and similarly to pragmatic constructivism and interpretivism, the principle of reliability mainly concerns the cognitive path that leads from the empirical material to the research results; researchers have to provide readers with the means to follow the entire cognitive path. More specifically, researchers must be transparent about controlling and checking their interpretations throughout the research process. These principles can be followed in the proposed framework by clarifying the research procedures for data extraction and

analysis, including the specificities of the coding procedures, the different levels of participation of the researchers in the process and how inferences were drawn.

From a critical realist perspective, validity is not a property of the data but a logical assessment of the relationships between data and events; thus, making a statement about validity in critical realism involves assembling a chain of arguments about the quality of information the measurement gives about events (Smith and Johnston, 2014). Measurement validity can be achieved in SNA by adopting a set of appropriate and well-established measures of network analysis. Concerning the validity of netnographic studies, McMillan and Schumacher (1997) highlight the value of researchers' immersion in the context under study to enhance the validity of qualitative research. This can be achieved through a prolonged and intense engagement in the online community under study, during the cultural entrée and the active phases of the netnographic study, and through the tasks of manual content and thematic analysis (instead of automated alternatives), providing a great level of familiarity with the online communities under study. Other specific procedures suggested by Kozinets (2010) included a discerning selection of the online communities to study, triangulation of cases (e.g. dual, or triple case studies) and triangulation of data sources (archival data of forum messages and participant-observation techniques involving direct interaction with online community members), member checking and thick descriptions.

Research based on case studies is seen as suffering weaknesses when it comes to justifying the potential for generalization (Avenier and Thomas, 2015). Case studies do not allow for positivist generalization from the characteristics of a sample to those of the population. However, the specific meaning of generalization, and hence the way it is justified and evaluated, depends on the researcher's epistemological framework (Avenier and Thomas, 2015). Qualitative case studies allow for rich and naturalistic data to be analyzed, and multiple case study approaches allow for contrasting findings from individual cases to identify idiosyncratic and logical tendencies (Yin, 1994). Under critical realism, case study methodologies are considered a suitable approach to uncover the interaction of structure, events, actions, and context to identify causal mechanisms (Wynn and Williams, 2012). Here, we argue that the proposed research design is best served with a multiple case study approach involving two or three online communities. The option for a multiple case study approach, in contrast to a single case study, is based on the principle it allows some level of control of environmental variation (Eisenhardt, 1989). A multiple case study approach involving the collection and in-depth analysis of qualitative data combined with the analysis of social networks may reveal contextual factors and mechanisms that would otherwise be undetectable. Therefore, a different form of generalization is sought, rather than statistical generalizability; the aim is to identify logically generalizable findings rather than probabilistically (Popay and Williams, 1998). According to Rees and Gatenby (2014), once a generative mechanism or process is identified in critical realism, generalization from case studies is possible if the specific mechanism is recognized as operative in other similar situations. As explained by Avenier and Thomas (2015), in critical realism, generalization concerns the degree of

abstraction of the explanatory model elaborated and generality is not seen as a feature of the empirical domain but as a property of the necessary relations in structures operating in the real domain, resulting from the uncovering of the underlying essence of things, or a movement "from surface to depth". As such, case studies are generalizable insofar as they provide an explanation of the causal relations which are at play.

5. Example of application of the proposed research design

Next, we provide a brief example of applying the recommended research design (Baptista et al., 2019; Baptista et al., 2021). The study's objective was to understand the nature of support interactions in online health communities (OHC) of consumers of uncertain health treatments. The study involved the analysis of an OHC of e-cigarette consumers and an OHC of women that recur to menopausal hormone replacement therapy (HRT). Note that e-cigarettes are recommended by UK Health authorities as an auxiliary method to quit smoking, and that despite the controversy surrounding HRT, the UK National Institute for Health and Care Excellence is generally favorable to the use of HRT.

Over 12 months, starting in October 2016, the researchers conducted intermittent participant-observational fieldwork by joining both online communities in a passive role without introducing their presence. In October 2017, after formally announcing the study to the online communities, two years of members messages were retrieved. In phase two of the study, the forum messages were analyzed through SNA. The researchers constructed 2-mode networks based on reply-to relationships. The network analysis involved the calculation of key network measures such as network density, network diameter, network reciprocity, clustering coefficient, and the average shortest path length, the production of network visualizations, the modulization of random networks for comparison purposes, and the evaluation of scale-free and small-world characteristics.

Results of the study confirmed informational support as the most frequently requested (and provided) category of support in both online communities. It was also found that members of the communities are guided by formal and informal community norms when they socially interact in the forums and that members need to enact these norms if they want to be integrated within the communities. Finally, and most importantly, the analysis of common discourses in the forums revealed that online discussion conformed to suit the forums' shared and accepted narratives emphasizing the supposed health benefits of e-cigarettes and HRT. Through SNA, it was possible to conclude that the online communities are controlled by a central group of users responsible for most of the information provided, and that dictate the pro-treatment discourses imposed in the forums. Using the proposed research design, it was possible to uncover how these virtual communities are serving as platforms of social support for groups of individuals that are subject to uncertain health risks due to their treatment options and put in evidence collective processes of information selection in the online

communities, that can hinder the main objective of the OHCs, that is to function as platforms for knowledge acquisition.

6. Conclusion

This paper makes a methodological contribution by suggesting combining specific research methods in consumer behavior research in online communities and explaining the corresponding theoretical underpins. It is proposed that critical realism offers a suitable meta-theoretical paradigm for exploring the underlying generative mechanisms that shape social interaction in online communities in which the pluralistic epistemology, which permits the merging of netnography and SNA methods, allows researchers to better capture the effects of structure and social interactions, without following in the incongruences and contradictions of using distinct research paradigms. Unlike positivism which regards experimental methods as the main source of causal inference, in critical realism discovering a generative mechanism is considered the main route for establishing causal connections. The combination of deep qualitative analysis through netnography and the study of the structure of social interactions through SNA allows researchers to uncover the generative mechanisms and agency processes that explain the social system in place that affect consumer behavior in online communities. By uncovering the nature and structure of online communities, researchers can identify their causal properties with reference to their structure and use this understanding to better explain consumer behavior.

Conflict of Interest Statement
The authors declare no conflicts of interest.

About the Author
Nuno Baptista (Baptista, N.) earned his PhD in Marketing and Strategy from UBI. He holds a Master's degree in International Management from the University of Liverpool and a degree in Management from ISCTE. He is Adjunct Professor of Economics and Management at the School of Social Communication of the Polytechnic Institute of Lisbon, Assistant Professor of Marketing and Strategy at the Lusíada University of Lisbon and an integrated researcher at NECE-UBI, having several publications in reference academic journals. Its main research interests include Business Strategy and Social Marketing.

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