INTRODUCTION

The media and creative industries are facing a plethora of radical challenges due to hugely disruptive effects of digitization on product and service attributes, business models, market dynamics, and consumer behaviour.

These disruptions require all players in the media industry, including production, distributors, suppliers, and aggregation to engage in experimentation with new approaches to formats, business models, value propositions, designs, and production procedures, while concurrently providing more easily definable and monetizable conventional products and services to the remaining mainstream media markets.

One might expect a rich literature and ample empirical insights into the important issue of media entrepreneurship in the digital domain. However, our own review of this literature concludes that neither a clear picture of the relationship between interactivity and its efficacy on the business value of an organization in the digital era has emerged from previous studies, nor has there been much attention given to issues of online interactivity as a means of promoting entrepreneurial success, an appealingly audience-centric and outcome-based metric. Although creating business value from interacting with customers in the digital marketplace is far from being a new academic proposition (Armstrong & Hagel, 1996; Amit & Zott, 2001; Zeithaml, 1988), the issues warrant closer study from an integrative perspective (Jiang et al., 2010; Yadav & Varadarajan, 2005a & b) to reconcile limited and contradictory findings. These result from a variety of deficiencies such as:

- inconsistent conceptual definitions of online interactivity (is it part of technology, content, or user perception?)
- different units and levels of analysis i.e., the question of identifying a locus of interactivity (does it reside in the infrastructure, distribution and/or end-user technology, the communication structures and processes, in the perceived consumer control over the media and communication process and/or in the success or satisfaction such interactions can yield?),
- a lack of conceptual clarity of the media entrepreneurship (ME) construct and its extension to Digital Media Entrepreneurship (DME), whereby research into ME in the creative industries can help organize phenomena in ways that the levels of environmental pressure for innovation, the organizational and entrepreneurial level to properly act on innovation, the strategic choice and decision-making level to initiate and sustain activities of product and process innovation, and the impacts of up- and downstream stream practices for innovation success of media organizations, start-ups and creatives become better visible and understandable,
- a largely inconsistent base of theory for examining relations and interdependencies between the above-mentioned factors, and accordingly, a lack of data to test these relations empirically.

In order to clarify its connection to media entrepreneurship, the authors first undertake a comprehensive and necessarily interdisciplinary literature review on the concept of online interactivity. This study draws from disparate academic fields such as media and communication theory, computer-mediated communication (CMC), marketing, advertising, and entrepreneurship research, and thereby systematize, link, and extend familiar definitions, characteristics, types and dimensions of interactivity from extant literature in these fields. By delineating the central properties of (online) interactivity, it seeks a conceptual bridge between interactivity and its potentials for creating business value for organizations in an e-commerce context. By reviewing the scholarly debate in interactivity in the context of digital media entrepreneurship, it also generates the scientific claim for analyzing desirable future research thrusts regarding entrepreneurial implications of interactivity on the business value that may result from

interactions between the main participants in the electronic marketplace: the business firm and the customer.

Essentially, the authors will develop propositions as first principles of a (still to be built) conceptual model analysing the efficacy of interactive media applications and services on the business value of user integration in the digital marketplace.

The study is organized as follows: First, it provides a literature review on interactivity. This review will proceed along the three dominant research traditions focusing on the interactivity phenomenon: *technology*, *communication process*, and *user perception*. The study then turns to discussions about the relevance of interactivity on media entrepreneurship and business value. By reviewing some relevant literature on this relationship, it highlight gaps in the debate.

Reviewing Interactivity and Identifying its Relevance to Digital Media Entrepreneurship

Interactivity was coined as *the* buzzword during the late 1980s and early 1990s when the multi-media euphoria fascinated politicians, economists, researchers and users alike. Since then, however, there has been little agreement among researchers on how interactivity should be conceptualized (Bucy, 2004; Heeter, 2000; Neumann, 2008; Gleason, 2009). Therefore, it is difficult to develop concrete knowledge regarding its constituent factors and consequences for computer-mediated communication in the electronic marketplace. This makes the prospect of synthesizing and integrating the literature on online interactivity rather elusive.

Some of the confusion about this construct comes from lack of agreement as to its nature, role, and effects (Rafaeli & Ariel, 2007; Johnson et al., 2006; Bucy, 2004). Rafaeli (1988) observes: "Interactivity is a widely used term with an intuitive appeal, but it is an underdefined concept. As a way of thinking about communication, it has high face validity, but only narrowly based explication, little consensus on meaning, and only recently emerging empirical verification and actual role" (p. 110). Similarly, reflecting upon how interactivity is used within the context of new media, Heeter (2000, p. 2) pointed out that interactivity is an "overused, underdefined concept," referring to it as basically everything a human does.

Three traditions of interactivity research

Notwithstanding these difficulties in conceptualizing interactivity, scholars developed three dominant conceptual traditions (Heeter, 2000; Jensen, 1998; Kiousis, 2002; McMillan, 2006; McMillan, 2002; Quiring & Schweiger, 2008): the *Human-to-computer* tradition, the *human-to-human* view, and *human-to-content* view of interactivity.

First, the *human-to-computer* tradition or the interactivity as technology tradition sees interaction between humans and the computer itself (or other types of new media systems) as central to new media. Being rooted in human-computer interaction (HCI) research (Baecker, 1980; Baecker & Buxton, 1987; Guedj ten Hagen, Hopgood, Tucker, & Duce 1980; Hartson, 1998; Nielsen, 2000), it defines the interaction between a single human and a single computer as the most elementary form of interactivity (Shaw et al., 1993). Interestingly, while many online interactions are between a single user and a remote "cloud-based" network application (as in the case of an Amazon.com purchase), the user's interaction is with the application's user interface itself, and in this case is perceived to be an individual interaction.

The second school of thought identifies interactivity as *human-to-human* communication process at the heart of which lies computer-mediated interaction between humans. Rooted within CMC theory, this view refers to themes of interpersonal interaction, symbolic interaction, and social interaction (Goffman, 1967; McMillan, 2006). Underlying constructs on this dimension are: *reciprocality of participants* (also discussed as *reciprocity*, *participation*, *mutual action*, *action-reaction*, and *two-way communication*; Ha & James, 1998; Gouldner, 1960; Johnson, Bruner, & Kumar, 2006) *exchange of (symbolic) messages* Rafaeli & Sudweeks, 1997, *para*. 8),

active user control (Rice & Williams, 1984), *immediacy of feedback* (Dennis & Kinney, 1998), and *participation* (defined by Laurel as "how immersed you are in the experience"; Laurel, 1991, p. 21).

And third, interactivity is viewed to have anthropomorphic properties (Quiring, 2009). Here, interactivity refers back to *action* and in the social sciences whereby action is presupposed to depend on an active human subject intentionally acting upon an object or another subject. Interaction with objects and the creators of these objects modify their actions and reactions due to the actions by their interaction partner(s) (Jaeckel, 1995). Seen this way, interactivity is understood as a subjective mode of perception and cognition, and a resultant outcome of how a receiver actively interprets and uses mass and new media messages. In the CMC literature, two key themes have emerged under this rubric: individual experiential processes of interactivity (McMillan & Hwang, 2002; McMillan, 2000; Downes & McMillan, 2000), and perceptions of individual control over both presentation and content (Bezjian-Avery, Calder, & Iacobucci, 1998). To this end, these positive perceptions are dependent on an individual's satisfaction with a (generally) successful online interaction (Croxton, 2014). Gleason (2009) describes satisfaction as the defining outcome of a successful interactive communication event. Indeed, if the user is not satisfied, can the interaction ultimately be considered successful?

Interactivity and online media

The term *interactivity* is typically attributed to personal, face-to-face communication (Bretz & Schmidbauer, 1983; Duncan, 1989; Durlak, 1987; McMillan, 2006). Face-to-face communication between people typically is interactive, as are telephone conversations (Carey, 1989). Durlak (1989) even claimed that interpersonal communication, and especially face-to-face communication, is the ideal type of interactive communication: "Face-to-face communication is held up as the model because the sender and receiver use all their senses, the reply is immediate, the communication is generally closed circuit, and the content is primarily informal or 'ad lib'" (p. 744). The importance of interactivity as *distinctive* variable of mediated communication has grown with the emergence of the world wide web (Bucher, 2002; Bucher, 2004; Huhtamo, 1998; Jensen, 1998; Kiousis, 1998; Manovich, 2001; Morris & Ogan, 1996) and other digital media such as interactive digital television (Jensen, 2005) and mobile media (Gao, Rau, & Salvendy, 2009; Lee, 2005).

Online media add complexity to interactivity. Heeter (2000) observed seven central aspects about interactivity when tracing developments from traditional to new, that is digital and online media:

> "(1) information is always sought or selected not merely sent;
>
> (2) media systems require different levels of user activity (i.e., users are always active to some extent);
>
> (3) activity is a user trait as well as a medium trait. Some media are more interactive than others; some receivers are more active than others. the extent of responsiveness to the user;
>
> (4) person-machine interactions are a special form of communication;
>
> (5) continuous feedback is a special form of feedback in which behavior of all users is measured on an ongoing basis by a source (e.g., Facebook and Twitter) or gatekeeper (e.g., cable operator); and
>
> (6) the distinction between source and receiver is not present in all media systems; and
>
> (7) media systems may facilitate mass communication, interpersonal communication, or both".

Similarly, Steuer (1992) came to define interactivity as "the degree to which users of a medium can influence the form or content of the mediated environment" (p. 80). Steuer considered

interactivity (and *vividness*) as an experiential antecedent to *tele-presence*. Tele-presence, on its part, is defined as a sense of presence in a mediated environment, wherein the user experiences the computer-mediated environment as less mediated than it actually is (Steuer, 1992; Klein, 2003).

Apart from more theoretical backup, studies in web design have tried to verify the effects of interactivity on media offerings. Dholakia et al. (2000), for example, focused on interactivity as it affects revisits to websites. Following an extensive literature review in CMC research on interactivity, they identified six key dimensions of the interactivity construct: *user control*, *responsiveness*, *real-time interactions*, *connectedness*, *personalization/customization*, and *playfulness*. Focusing on revisits, they proposed a framework that traces the effect of interactivity dimensions through intermediate stages of perceived interactivity, social presence, empowerment, and satisfaction. A closer look at the relationship between interactivity dimensions and revisits takes into consideration four types of websites – shopping, entertainment, information and communication.

However, it took until the advent of new information and communication technologies (ICTs) that the concept of interactivity was scholarly discussed more explicitly. Here, Rafaeli (1988), an often-cited expert in interpersonal and group computer-mediated communication, focused on the concept of *responsiveness* as interactive exchange and argues that interactivity is "an expression of the extent that, in a given series of communication changes, any third (or later) transmission (or message) is related to the degree to which previous exchanges referred to event earlier transmissions" (p. 111). On Rafaeli's (1988) reading, interactivity is defined as a property of the communication process itself rather than a medium, although the medium "may set upper bounds, remove barriers, or provide necessary conditions for interactivity levels" (pp. 119-20). Stressing the notion of interactivity as technology feature, Kiousis (2002) suggested that "interactivity is an attribute of the channel through which the dynamic interdependence between senders and receivers in communication becomes possible" (p. 359). In his concept explication concerning interactivity, Kiousis (2002) assigned three central dimensions to interactivity: (1) the information technological structure of the medium; (2) the context of communication settings; and (3) the perception of users. With regard to human users, interactivity additionally refers to the ability of users to perceive the experience to be a simulation of interpersonal communication and increase their awareness of tele-presence. While computer mediated, interpersonal conversations that take place through text messaging and applications such as Skype are widely considered to be "real" conversations and not mere simulations at all.

Operationally, interactivity is defined by three factors: technological structure of the media used (e.g., speed, range, timing flexibility, and sensory complexity), characteristics of communication settings (e.g., third-order dependency, i.e., A's response to B depends on B's prior response to A's initial communication acts, and social presence), and an individual user's perceptions (e.g., proximity, perceived speed, sensory activation, tele-presence and, ultimately, satisfaction).

User control is conceptualized as one key component of interactivity. Lombard and Snyder-Duch (2001) defined "interactivity as a characteristic of a medium in which the user can influence the form and/or content of the mediated presentation or experience. It is not dichotomous (a medium is not just interactive or not), but can vary in degree (from not interactive to highly interactive) as well as type (different aspects of the form and/or content that can be influenced by the user)" (p. 2). For them, "central to the idea of interactivity is the concept of control, either of elements of the physical world or of information". Rafaeli (1988) recounted further key elements of interactivity: Bi-directionality, quick response, bandwidth, user control, amount of user interactivity, ratio of user to medium interactivity, feedback, transparency, social presence, and artificial intelligence (p. 115). To this list, Gleason (2009) added user satisfaction as the ultimate outcome of the communication event.

Croxton (2014) offers an interesting parallel in the way online instructors should approach their student "customers." She observes that a thoughtful approach to interactivity in online courses can enhance student satisfaction. "Instructors must consider the different learning styles

and preferences of their students and work to... promote student learning and satisfaction. Online instructors may find it useful to better understand who their students typically are and design course interactions based on the overall demographics of their students.“ Such a customer-centered approach to the use of interactivity might be equally beneficial for entrepreneurs as well.

However, all these dimensions would fall short of explaining the intuitive appeal of interactivity that captures the ultimate essence of interactivity: User and content-oriented qualities that go beyond mere user responsiveness and reaction (p. 110). Rafaeli and Sudweeks (1997) put it as follows: “We note that communication is mostly about and for the purpose of interaction. Interactivity places shared interpretive contexts in the primary role. Interactivity describes and prescribes the manner in which conversational interaction as an iterative process leads to jointly produced meaning. Interactivity merges speaking with listening. And it is a general enough concept to encompass both intimate, person-to-person, face-to-face communication and other forums and forms” (Rafaeli & Sudweeks, 1997; *para*. 7).

Relevance to digital media entrepreneurship

The field of media entrepreneurship (ME) has lately experienced a strong increase in scholarly attention (see, Achtenhagen, 2017 for an overview; Hang, & van Weezel, 2007, Khajeheian, 2017). By itself, entrepreneurship more generally is defined as an endeavour around discovering and/or creating opportunities by people and firms. Often, this has meant to discover a new and profitable way of making business and finding a way to exploit it (Shane & Venkataraman, 2000).

Media entrepreneurship is defined as “the creation and ownership of an enterprise whose activity adds an independent voice to the media marketplace” (Hoag, 2008, p. 74) or similarly, as the way in which “new ventures aimed at bringing into existence future media good and services are initially conceived of and subsequently developed, by whom, and with what consequences” (Achtenhagen, 2008, p. 126).

In the present context, the authors favor the following more extensive definition of entrepreneurship as applied to the media: “Media entrepreneurship is taking the risk to exploit opportunities (creation/discovery) by innovative use of (radical/incremental/imitative) resources (ownership/control) in transform of an idea into activities to offer value (creation/delivery) in a media form (content/platform/user data) that meets the need of a specific portion of market (businesses or consumers), either in an individual effort or by creation of new venture or entrepreneurial managing of an existing organizational entity, and to earn benefit (money/attention/favorite behaviour) from one of the sources that is willing to pay for (direct consumers, advertisers, data demanders or any customer of generated information of consumers).” (Khajeheian, 2017, p. 102). From the creator’s (entrepreneur’s) perspective, this outcome-based orientation is consistent with the satisfaction attribute of a successful online interaction (Gleason, 2009; Johnson et al, 2006).

Still, how does interactivity advance theoretical insights into economic analyses of interactions between media firms and audiences, if at all, and what role do entrepreneurs play in it? What actions and decisions are needed, if not required, on the side of entrepreneurs for online interactivity to be exploited in full?

Naturally, discussing the role online interactivity may play in a media entrepreneurship context is broad and rather scattered, and hence covers structural, processual, and experiential dimensions across various dimensions. Historically, entrepreneurial activities in media firms have a record even before their emergence within the field of digital media (Hang, 2016; Hang & van Weezel, 2007). Yet the development of media entrepreneurship as an area of study is significantly entwined with that of digital technologies and electronic media (Hang, 2019; *in press*). The ubiquity and pervasiveness of digital media made almost every person a potential audience and customers of the value that media firms and their entrepreneurs produce. Entry barriers have been significantly removed and production cost has been dramatically decreased. Moreover, co-creation of media products has become an established strategy that makes customers loyal (Khajeheian & Ebrahimi, *forthcoming*). In a similar manner, user-generated content has converted

consumers into prosumers of media content (Medina, Sánchez-Tabernero, & Arrese, 2016) and helps the organizations and firms to deliver the products and value that customers are seeking, and thus increase the interest of advertisers.

Such positive outcomes suggest a positive correlation between these business goals and the satisfaction perceived by users in fulfilling these very goals online (Song & Zinkhan, 2008). In such an environment, media entrepreneurs are confronted by a plethora of both challenges and opportunities in content generation, value delivery, data analysis, advertising, and innovation to business models. Improved customer relationships through audience interaction triggered by online interactivity represent a valuable and desirable outcome.

REVIEWING INTERACTIVITY AND ITS IMPACTS ON BUSINESS VALUE

Now, what types and dimensions of computer-mediated online interactivity create value for both media organization and consumer in the digital media marketplace? And what role does entrepreneurship play as driver/mediator and/or inhibitor of this relationship? The following key arguments have repeatedly been voiced as major drivers of the impact online interactivity may have on business value propositions of a media firm when applied and implemented by media entrepreneurs.

Potential impacts of interactivity on media entrepreneurship: Some key propositions

Reviewing the extant literature on interactivity and business value has illustrated the complexity of studying the relationships between these two concepts. The following sample propositions offer a suggested research direction in analyzing potential impacts of product and service offerings in online interactivity (on the levels discussed above) on processes of value creation and enhancements of media firms and the role of entrepreneurship in intensifying or loosening this relationship.

Proposition 1 [P1]: Interactivity enhances consumer choice and thus perceived user satisfaction. This has a positive impact on business value. Media entrepreneurship can actively support this positive impact.

Reviewing the interactivity concept has shown that it potentially offers greater product choices for consumers by offering a wider range of options for consumption to customers.

Proposition 1 is supported by the following arguments as drawn from literature review: First, that interactivity enhances consumer choice is plausible if one considers the importance of the *technology* dimension of interactivity when predicting a positive impact relationship between interactivity and consumer value [see Proposition 1.1 in Table 1]. Following the "interactivity as technology" school of thought, which focuses on functions of features, interactivity is based on how many and what types of features are available for online users of a website to fulfill interactive communication [Proposition 1.1] (Steuer, 1992; Sundar, 2004). A range of theories from neighboring disciplines such as marketing science, journalism, and advertising support this proposition (Deuze, 2003; Ghose & Dou, 1998; Liu, 2003; Woodruff, 1997; Wu, 2006). There, greater choice would improve the general attractiveness of a website by improving the consumer's choice options and active control over the type of product sought after and selected [Proposition 1.2]. Amazon's ubiquity as the first choice for online purchases across an increasingly broad range and variety of product categories aptly illustrates this point.

On closer inspection, however, interactivity sub-dimensions as discussed in the review may each impact differently on consumer value. *Bi-directionality*, *bandwidth*, and *synchronicity* may serve as necessary *but not sufficient* conditions for interactivity [Proposition 1.3]. As exemplified

by Song & Bucy (2009), "it might be possible that one perceives communication through asynchronous e-mail as more interactive than synchronous communication through Instant Messenger (IM) even though objectively (technologically) the opposite appears true" (Song & Bucy, 2008, p. 7). Further, *timeliness* as interaction speed is perceived as a positive predictor of interactivity-induced business value [Proposition 1.4]. However, when defined as communication speed, the construct becomes particularly valuable for the consumer (Kiousis, 2002). In fact, consumers may wish to determine their own message timing and thus increase their control over technology and communication process [Proposition 1.5] (Downes & McMillan, 2000; Kiousis, 2002). Again, such timelessness is one of the main appeals of online shopping itself. Consumer value may thus eventually depend on the perceptual aspects of interactivity that may mediate the effects of technology on certain outcomes (Bucy & Tao, 2007).

Past research has also indicated that greater complexity of choice available may influence consumer choice difficulty and choice overload [Proposition 1.6] (Ariely, 1998; Ariely, 2000; Heeter, 1989, Kim & LaRose, 2004). Interactivity thus also implies that consumers may have to afford higher amounts of effort to seek, self-select, process, use, and respond to information (Stewart & Pavlou, 2002; Heeter, 1989). In this case, consumers may have to undertake (significant) cognitive activities when trying to satisfy some need or goal (e.g., navigating the website and sorting and prioritizing information from it) (Heeter, 1989; McMillan & Hwang, 2002; Zaichkowsky, 1985). This may act as a further impediment on consumer value effectiveness [Proposition 1.7].

Proposition 2 [P2]: Interactivity enhances perceived product and service quality and thus user satisfaction and perceived communication effectiveness. This has a positive impact on business value. Media entrepreneurship can actively support this positive impact.

Scholars widely recognize that interactivity enhances perceived product & service quality (Chen & Yen, 2004; Hsiu-Fe, 2007; Svensson, 2003; Yoo et al., 2010), and perceived communication quality and process satisfaction (Lowry et al., 2009; Croxton, 2014) [Proposition 2.1].

Proposition 2 is justified by the following arguments: First, product and service quality improvements are viewed to be triggered by various forms and levels of interactivity that allow consumers using an online shopping environment to access higher product quality and variety, gain greater control of their shopping experience, and experiences higher levels of satisfaction through more convenient shopping environments (Ariely, 2000; Chen & Dubinsky, 2002; Chen & Yen, 2004).

When linked with the interactivity concept, this proposition is mainly supported by the CMC dimension of interactivity [Proposition 2.1]. Seen this way, message-based approaches define interactivity of a particular communication message as directly responsive to, or contingent on, a previous message received (Rafaeli, 1988). As aptly exemplified by Sundar (2007): "(…) in a chat room if both people post messages without acknowledging each other's messages, then it is non-interactive. If one interactant posts a message that is a direct response to another's postings, then it is considered to be reactive. If the latter interactant then responds to this posting in a manner that takes into account not only the latest posting but also those before them, then it is considered to be responsive. For a message exchange to be fully interactive, the messages should have a flow or coherence, i.e., they can be threaded together in sequence" (p. 95) [Proposition 2.2]. When consumer experience features of interactivity which provide for bi-directional and multidirectional communication, they may feel a sense of increased control not only over the communication process, but also over timing and choice of subject (Bordewijk & van Kaam, 1986) [Proposition 2.3]. Jensen's *conversational interactivity* underpins this rationale (Jensen, 1999).

Proposition 3 [P3]: Interactivity enables participation and interpersonal communication. This has a positive impact on business value and the potential for an increase in a user's perceived satisfaction. Media entrepreneurship can actively support this positive impact [Proposition 3.1].

Interactivity builds, facilitates and enforces interpersonal computer-mediated communication between and among participants, thereby activating and engaging them. This includes all forms of CMC processes "by which people create, exchange, and perceive information using networked telecommunication systems and facilitate encoding, transmitting, and decoding messages" (December, 1996; as cited in Romiszowski & Mason, 2004, p. 398; Soukup, 2000).

Proposition 3 builds on the following arguments: If websites or many social media platforms make it easy for users to add information, then they empower users by making it easier for them to add information [Proposition 3.1]. Further, the degree to which interactive media systems facilitate interpersonal communication between specific customers is said to be correlated with interactivity. E-mail addresses and Twitter handles can make communication easy between participants in the electronic marketplace [Proposition 3.2]. Discussion forums and live chat areas attract and keep consumers at a website. The easy opportunity of real-time chats with sales and service personnel is a clear enhancement of many online shopping sites. Further, interactivity encourages the publishing of end-user's own contributions and commenting on other people's, thus increasing both the content of a website and the rate of end-user engagement on various levels [Proposition 3.3]. Encouraging participation may, however, solely reside in the mind of the consumer interacting with technology. Laurel (1991), for example, made participation an experience of *feeling* mediated by a computer interface: "You either feel yourself to be participating in the ongoing action of the representation or you don't" (pp. 20-21) [Proposition 3.4]. Similarly, the feeling of satisfaction is either perceived by an individual user or not, depending on his or her success in achieving the desired outcome (Gleason, 2009) [Proposition 3.5].

Proposition 4 [P4]: Interactivity customizes products, services, and exchange processes between business firm and consumer. This has a positive impact on business value and customer satisfaction. Media entrepreneurship can actively support this positive impact.

Customization on a website may lead to a more interactive experience for the consumer (McMillan et al., 2003). Once consumers have disclosed relevant information, an interactive website may use the collected information and then tailor it to the consumer's preferences.

Proposition 4 is justified on the following grounds*:* By defining *involvement* as a hybrid facet of technological and perceptual interactivity, consumers may feel higher perceived sensory, cognitive, and affective affiliation with product and website content [Proposition 4.1]. This potentially improves their perceived value of the website (Kalyanaraman & Sundar, 2006) and thus generally improves website stickiness, i.e. the website's ability to retain online customers and prolong his/her duration of each stay.

On the sell-side, interactivity is said to constitute new generation of web-based interactions, which, in turn, drive emerging interactive business models (Tredinnick, 2005; Wirtz et al., 2010). By developing an ongoing learning relationship with customers, business firms can tailor their product and service portfolio not only to the actual customer needs, wants, and preferences, but also according to their contribution to the business firm's economic success (Melville et al., 2004; Rangaswamy & Pal, 2003; Tseng & Piller, 2003). Interactivity may thus influence the strategic decisions of business firms in producing, delivering and exchanging products in accordance with the dynamic preferences of their consumers in the hope of enhancing user satisfaction [Proposition 4.2]. Taking this argument further, business firms may achieve cost efficiencies when they intensify orientation towards customers by integrating them into various value creation processes (Lampel & Mintzberg, 1996; von Hippel, 2002). The customer, on its part, benefits from integration when his/her social valuation of the product exceeds the price actually paid [Proposition 4.3].

Proposition 5 [P5]: Interactivity lowers transaction costs. This has a positive impact on business value. Media entrepreneurship can actively support this positive impact.

Past research has shown that interactivity affects transaction processes and outcomes, as it may reduce the transaction costs between and among the market participants (Bakos, 1991; Benjamin & Wigand, 1995; Brynolffson & Smith, 2000; Cordella & Simon, 1997). Conceptually introduced in Coase's 1937 paper *The Nature of the Firm* (Coase, 1937) which analysed why firms exist, what determines the number of firms and what firms do, and later attributed to the work of Williamson (1975, 1985), transaction costs are generally defined as costs incurred when using the market mechanism in buying or selling a good or service. Williamson based transaction cost theory on two assumptions of human behaviour (*bounded rationality* and *opportunism*, i.e., results from human limits to cognitive abilities and imperfect information) and three key dimensions of transactions (*asset specificity*, *uncertainty*, and *frequency*) (Williamson, 1975). *Asset specificity* terms the significance of certain assets that support a specific transaction (i.e., Williamson mentioned four types of asset specificity: *site*, *physical asset*, *human asset*, and *dedicated asset specificity*). *Uncertainty* is embodied in any kind of future action and *frequency* describes how often a specific transaction takes place. The magnitude of these five parameters determines the scale of transaction costs occurring. Typically, the *frequency* of a transaction lowers transaction costs due to economies of scale, while all other four parameters have an increasing effect whereby asset specificity carries most influence (Williamson, 1981).

Proposition 5 is supported by the following arguments: Extant literature on interactivity suggests that interactivity drives up the frequency of interaction and thus transactions (because of open standards, anyone can interact with anyone else), reduces transaction uncertainty (by providing a wealth of transaction-specific information), and leads to reduction in asset specificity (for example, through lower site specificity the next site is only "one click away") (Amit & Zott, 2001) [Proposition 5.1]. Surprisingly, however, interactivity-induced e-commerce transactions may lead to counterintuitive effects on transaction costs involved. Offering interactivity-driven B2C e-commerce goods and services may involve transaction costs that exceed efficiency thresholds on both sides of the transaction (Williamson, 1975; Williamson, 1996). This "interactivity paradox" would negatively affect the welfare of both business firm and consumer (Bucy, 2004b) [Proposition 5.2]. The business firm may thus wish to ensure that the consumer's additional costs are kept as small as possible, while the benefits he or she experiences through interactivity have to be clearly perceptible (Piller, 2002).

Proposition 6 [P6]: Interactivity widens the range of strategic management options for competitive positional advantages of media firms in the digital domain. This has a positive impact on their business value. Media entrepreneurship can actively support this positive impact.

Proposition 6 relies on the following arguments: Interactivity widens a business firm's strategic options because it may help achieving product and distribution channel differentiation, thereby reducing the pressure of competition from identical products or close substitutes (Bakos, 1991; Bakos, 1997) [Proposition 6.1]. For customer integration to be successful, hybrid product differentiation and cost reduction strategies are necessary to reconcile the cost advantages of standardized production with the disadvantages of customization (Reichwald & Piller, 2000). Interactivity management may thus imply that business firms find e-business strategies that integrate market opportunities, sufficient resources to implement these strategies, and e-tailing objectives that fit their plans (Varadarajan & Yadav, 2002) [Proposition 6.2].

The following Table 1 offers an integrative view on dimensions of interactivity and their relations to potential business value impacts including contingencies. Propositions to explain these relations are indexed accordingly.

Table 1. Dimension of interactivity and business value impacts including contingencies

Interactivity Dimensions	Business Value Impact	Contingencies
Technology structure	• Interactivity enhances consumer choice and thus perceived consumer value [P1] • Greater choice leads to higher website attractiveness improving consumer choice options and active control [P1.2] • *Bi-directionality*, *bandwidth*, and *synchronicity* as necessary but not sufficient conditions for interactivity [P1.3] • *Timeliness* as positive predictor of business value [P1.4]	• Consumer value contingent upon adequate transmission technology infrastructure and interactive features offered by a website [P1.1] • *Timeliness* as positive predictor of perceived consumer value [P1.5] • Greater choice as negative predictor when consumers face choice overload [P1.6] • Greater choice as negative predictor when consumers face considerable cognitive costs [P1.7]
Communication process	• Interactivity enhances perceived product and service quality and thus consumer satisfaction and perceived communication quality and satisfaction [P2] • Consumer value contingent upon CMC dimension [P1.2] • Message-centric interactivity is fully effective if communication flow is achieved [P2.2] • Interactivity enables participation and interpersonal communication, thus potentially enhancing user satisfaction [P3] • Consumer feel empowerment when being able to add information [P3.1] • Interactivity facilitates interpersonal communication [P3.2] • Interactivity encourages participation and consumer co-operation [P3.3]	• Consumer value contingent upon increased control over communication process, timing and choice of subject [P2.3] • Participation is a mere perceptual category [P3.4] • Optimal transaction cost efficiency level contingent upon both producer and consumer [P5.2] • Interactive e-business strategies contingent upon integration of market opportunities, sufficient resources to implement these strategies, and e-tailing objectives that fit business plans [P6.2]

	• Interactivity customizes products, services, and exchange processes between business firm and consumer [P4] • Interactivity drives strategic decisions of business firms in tailoring their offers toward dynamic consumer preferences [P4.2] • Interactivity enables customer integration [P4.3] • Interactivity lowers transaction costs [P5] • Interactivity drives up the frequency of interaction, reduces transaction uncertainty, and leads to reduction in asset specificity [P5.1] • Interactivity widens the range of strategic e-commerce management options for competitive advantage [P6] • Interactivity helps achieving product and distribution channel differentiation [P6.1]	
User perception	• *Involvement* enhances sensory, cognitive, and affective affiliation with product and website content [P4.1] • By enhancing consumer choice, online interactivity enhances perceived user satisfaction [P1.1] • Interactivity enhances perceived product and service quality and thus user satisfaction and perceived communication effectiveness [P 2.1] • Interactivity enables participation and interpersonal communication, potentially leading to an increase in a user's perceived satisfaction [P 3.1] • Satisfaction is either perceived by an individual user or not, depending on his or her success in achieving the desired outcome [P 3.5].	

	• In light of dynamic preferences of their consumers, the use of interactivity to enhance user satisfaction may influence the strategic decisions of business firms in producing, delivering and exchanging products [P 4.2]	

Source: The authors

To summarize, the relationship between the concepts of interactivity and business value is a complex one. These sample propositions suggest potential impacts (both positive and negative) of product and service offerings in online interactivity on processes of value creation and the role of media entrepreneurs in this process. There remains much research to be done, but the benefits of such scholarship can be considerable for both businesses and their customers.

CONCLUSION

The present refinement of the concept of online interactivity has driven home a gallery of themes from various scholarly perspectives. Although there are disciplinary differences in observing, defining, and interpreting interactivity, which obviously makes comparisons of different studies difficult, the authors insist on analysing the interactivity construct from these multiple sources in order to provide pointers for discussion in bridging the concept of interactivity with the concept of business value in electronic commerce research. Alas, the literature on electronic commerce has yet to treat the concept more systematically. The problems are manifold, but the biggest seems to be the nature of the concept of interactivity itself, which remains multi-faceted and difficult to operationalize.

This paper used the scholarly dominant three-dimensional view of conceptualizing interactivity. It conceptualized interactivity as an intrinsic attribute of the communication technology or format, as constituent part of a social interaction and communication process between users or between users and technology interfaces and designs, and, third, as process of subjective user perception. Together, these three dimensions yield user satisfaction in a successful online communication event (Gleason, 2009). Meanwhile, this three-dimensional approach has become canonical standard in researching the phenomenon of interactivity (Bucy & Tao, 2007; Gleason, 2009; McMillan, 2005). Clearly, interactivity is a complex and ambiguous concept, one covering a broad area of tools, processes, and perceptual practices in online communication.

While theorizing on interactivity itself is subtle and sophisticated, skepticism as to its epistemological value of analyzing its value for media entrepreneurship in the digital marketplace prevails (Agrawal, Kumaresh, & Mercer, 2001; Zipkin, 2001). Ultimately, research into its value needs to confront this deficit because interactivity seems to be conditional for economically efficient and thus entrepreneurship and, therefore, successful audience integration in digital environments.

In advancing our theoretical understanding of how interactivity adds value to a media firm's digital activities of audience engagement and integration, triangulation from multiple sources has evidenced that interactivity can have significant value on various levels for media entrepreneurs because, essentially, companies that effective support and employ interactivity can dynamically adapt to customer preferences and buying behavior.

Economically, by reducing transaction costs in interactive media settings, business firms may gain competitive advantage, widen their product range through adding more interactive features, offer richer and new content channels to customers, or integrate once passive consumers into the production processes of their ventures in various ways. This, in turn, may leverage consumer trust and loyalty in the online brand of the producer's offering (Gefen, 2000; McWilliam, 2000). Online retailers and other media entrepreneurs may incorporate features to take advantage of the Internet's two-way communication affordances such as customer service, e-mail inquiries to sales representatives, discussion forums for customers, voice and video applications, and social media-based interactions and campaigns.

And customers, on their part, are set to experience higher degrees of (cognitive and affective) involvement with the products and services portfolio offered (Franz & Robey, 1986; Hartwick & Barki, 1994; McMillan, 2002; Tseng & Piller, 2003). Content quality, control, convenience, and costs may well be the determinants for an effective integration. These determinants are driven by further constituents of a successful and satisfying relationship: The object of integration, the communicative relationship between the business firm and the customer, the depth and familiarity of this relationship,

the customer's goal and motivation to interact, and the governance of this exchange (Song & Zinkhan, 2008).

But while Internet-enabled business exchange is said to lead to transaction costs efficiencies (Bakos, 1991; Benjamin & Wigand, 1995; Cordella & Simon, 1997; Piller, Moeslein, Stotko, 2004; Reichwald & Piller, 2009), the authors argue that, although interactivity may potentially reduce these transaction costs, these would remain contingent upon different forms and practicalities of interactivity.

On the side of the audience, the effectiveness of these forms and practicalities of interactivity will much depend on perceived values, which are themselves driven by a bundle of antecedent forces. It seems obvious that the mere availability of interactive features and technologies do not inherently constitute interactivity by nature. Interactive features may be present on a website but "without necessarily eliciting the *perception* of interactivity. Rather, its features and interactive functionality hold the *potential* to yield the perception of interactivity for individual users under certain circumstances" (Gleason, 2008, p. 14). Indeed, even an interactive offering may not be satisfying if it is not desirable to that particular customer. The principles of (business? entrepreneurship?) still apply.

Finally, more research that improves the validity of analysis by generating better testable propositions (i.e., hypotheses) is needed. This would suggest establishing a conceptual modelthat postulates effects among the technological, communicative and perceptual determinants of interactivity alongside the three different types of interactivity and the perceived impacts on value on both sides of the equation, i.e., the consumer as well as the business firm.

Ultimately and essentially, a more nuanced investigation needs to be made into the transaction cost effectiveness of interactive media and communication technologies in electronic commerce settings of customer integration in the digital marketplace, since these costs can become critical for overall economic success. Such is the nature of media entrepreneurship in today's digital domain.

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