

XXVI. International RESER Conference: Digital Marketing Innovations and their role in service ecosystems, the exchange of value and social impact.

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This paper presents a discussion of results from an ongoing project, specifically providing an in-depth case study of a digital marketing innovator playing an important role for online brand engagement within its service ecosystem and how they are helping to facilitate the exchange of value and have a positive social impact. In particular, examples of focal company's digital marketing innovations are examined to understand: what roles various actors are playing, how the ecosystem is structured and what precisely is being exchanged. This manuscript offers a different perspective of digital marketing innovations from a traditional brand-centric view, to stimulate businesses and service providers to think out of the box and include the evaluation of the social impact of their technological innovations.

Key words: service ecosystem, digital communication, innovation, sustainability.

1. Introduction

Marketing innovations are important to the value exchange within service ecosystems and this paper explains some of the ways this can occur. The digital world we currently live and conduct business within has fundamentally changed the way people interact, including stories consumers share and the ways brands engage those consumers (Blazevic et al., 2013). This network of consumers, brand firms, retailers and related organizations serving each other can be thought of as a service ecosystem (Iansiti; Levien, 2004).

Although the Internet provides a platform that theoretically can help this ecosystem operate, to a brand the dynamic digital environment with constant interaction between consumers can appear quiet chaotic (Edelman, 2010). Consumers interact via numerous social media applications, using both text and image-based narratives creating communities, where traditional marketing is insufficient and as such, companies are trying to rethink their marketing strategies in the digital domain focusing more on relationship-based interactions with their customers (Thiago; Verissimo, 2014). Despite increased attention on, and investments in social media, brand building has become challenging demanding significant effort and frequently resulting in very little payoff (Holt, 2016). There is a need for service innovators that can make

sense of this chaos and alter the way companies think about their roles in the ecosystem (Akaka; Vargo; Lusch, 2012; Akaka; Vargo, 2014).

Companies and their brands are part of consumers' stories online and innovative technologies using big data analytics can facilitate these conversations/brand narratives through interpretations of what is being shared (King; Racherla; Bush, 2014). To remain relevant on the Internet brands should target crowd-cultures, shifting from trend followers to innovative ideologists being inspired by customers' cultural flashpoints (Holt, 2016, 48). Flashpoints refer to shifts in direction of microcosms within the ecosystem that erupt via social interactions. Innovations can help firms not only engage in the conversations and sell more product in relevant ways but also capture novel ideologies and receive consumer insights to improve products and services.

Within the service ecosystem firms produce outputs and inputs from services which become part of customers' value creating activity (Lusch; Vargo; Tanniru, 2010). One emergent narrative among customers focuses on a concern and value for society at large. In their strive toward continuous improvement, companies can possibly identify ways that can contribute positively to society, so enabling multiple actors to provide and receive greater value as a result of their innovations. It is well known that "value is always uniquely and phenomenologically determined by the beneficiary" (Vargo; Lusch, 2008, 7), but understanding what is valued and helping to create value for this new dynamic consumer world is challenging. A missing link today is answers to questions like how can firms make sense out of the complexity of conversations online, how can firms optimize new technologies addressing them to the right goals, and how can firms provide core values to those that interact and the society in general?

2. Literature

A service ecosystem is comprised of a network of organizations exchanging service for service, as they each help to create value for themselves and other network members using processes that have been referred to as integrated value chain management (Flint; Mentzer, 2006). However, if we look more closely at this service ecosystem, we notice that it is not limited to organizations: consumers are also part of it; both business customers and consumers are always co-creators of value in supply chains and networks (Vargo; Lusch, 2008, 7). Consumers are key actors in this ecosystem as they influence and exchange value with some of these organizations such as brand manufacturers (and their brands) and retailers. They also interact with each other exchanging and creating social value in part through the communication about the brands they use and retailers from which they acquire products. Service dominant logic (Vargo; Lusch, 2004. Vargo; Akaka, 2012) would argue that in actuality this service ecosystem is nothing more than a network of service integrating actors exchanging and leveraging operant and operand resources. In this paper, an important aspect of ecosystems we wish to highlight is this network of actors and specifically, customer networks. This is shown in Figure 1, which serves as a framework for guiding our thinking and the literature review.

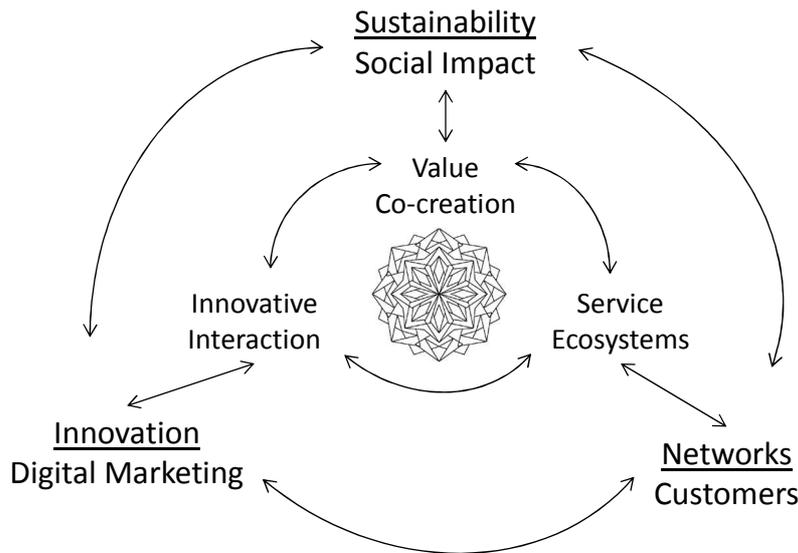


Figure 1. Framework of theoretical connections between service ecosystems, digital innovation and social impact

In order for organizations to effectively make healthy contributions to their ecosystem, including customers, they must adopt an orientation that values sharing knowledge, collaborating and integrating with other network members co-creating value; this is known as a supply chain orientation (Stank; Davis; Fugate, 2005. Hult; Ketchen; Adams, 2008). Moving counterclockwise from ecosystems and networks in Figure 1, we consider value co-creation first. Service Dominant Logic (SD Logic) highlights that each entity within ecosystems is part producer and part consumer of services and value, and as such they are always a form of co-producer. Flint and Mentzer (2006) break this down into concepts such as co-design, co-production, knowledge co-creation, and co-creation of value propositions. One powerful concept drawing a great deal of attention currently in practice and research is the co-creation of sustainability.

Sustainability can refer to the long-term health of the ecosystem, which includes economic health of the system as well as individual actors, environmental health, and social health, including all actors driving and impacted by decisions made by members of the networks. When an organization shows concern for sustainability it is thought to have a sustainability orientation. A sustainability orientation refers to the extent to which an organization embraces all aspects of the triple bottom line of sustainability, namely economic, environmental and social impact of the organization (Beske, 2012. Beske; Land; Seuring, 2014). That said, much sustainability research tends to focus more on environmental aspects and somewhat ignore social aspects. Here in our paper we wish to highlight the social impact actors within an ecosystem can and do have.

When firms embrace both a sustainability orientation and a supply chain orientation, they are considered to be high in sustainable supply chain orientation (SSCO) (Signori; Flint; Golicic 2015). It is argued that such an organizational orientation is likely one of the best for the overall health of a service ecosystem. However, early research suggests that most organizations are on a variety of journeys toward such an ideal and not many have achieved it yet (Signori; Flint; Golicic, 2015), maybe this is due to them not fully understanding the dynamics of an ecosystem.

Social actors constantly interact and exchange service for service in their ecosystems. They exist in a dynamic symbolic series of interactions constantly determining what they value, and changing what they value (Flint, 2006). Within this chaotic ecosystem there exist actors who play specific and specialized roles (Fyrberg; Jürjado, 2009). For example, some actors provide a platform that enables the ecosystem to function. The Internet would be such a platform, although no single entity controls or provides the Internet. Rather a sub-network of organizations provide the hardware and software that serve as the portal to, and infrastructure for, organizations and consumers to access the Internet. But these organizations merely provide the infrastructure, like a pipeline network provides the infrastructure for water flow throughout a metropolitan district. With the Internet, the piping system connecting actors together has exponentially more routes and connections than a water pipeline and is constantly changing. In this scenario, innovation has to be conceptualized as the "recombination of a set of practices, processes and symbols to serve a human purpose, and this recombination occurs through both value proposition and value determination phases" (Akaka; Vargo, 2014, 381). Firms must continue to learn and improve how they serve others in a value network (Lusch; Vargo; Tanniru, 2014, 21). This need has created an opportunity for another type of technical service actor that has emerged to help make sense of the information flowing through the service ecosystem's network. Such an actor would offer a powerful innovation to help the ecosystem thrive, specifically a digital marketing innovation (see Figure 1).

When consumers interact with each other they often create brand communities wherein lies collective value that requires innovative methods for uncovering insights (Schau; Munix; Arnould, 2009, 40). We can envision the customer actors, the services they consume offered by organizations (e.g., brands, retailers) and the services being exchanged among themselves as in constant motion much like the crystals in a kaleidoscope (the image at the centre of Figure 1). If you look through a kaleidoscope from the wrong end (backwards) the crystals appear as a jumbled chaotic mess. When you spin the tool, they simply continue to appear chaotic. Look through the correct end, and patterns emerge, even as the tool turns. The digital marketing innovation that is needed is like the kaleidoscope tool, helping to make sense of the interaction chaos. But what would this look like? We must better understand what these specialized actors are doing, if they are emerging. Specifically, a research priority is to better understand the processes of resource integration these specialized innovative actors adopt and think about the resources required for them to contribute positively to society (Luca; Hibbert; McDonald, 2016, 210).

3. Objectives and Methodology

3.1. Objectives

According to SD Logic all actors are service integrators; service is always exchanged for service. Service ecosystems may require platforms that enable the network to thrive and/or facilitate these service exchange flows. Thus, research questions (RQs) that arise include:

- RQ₁: What roles are various actors playing within service ecosystems? What might a structure of the ecosystem look like?

- RQ₂: What precisely is being exchanged?
- RQ₃: How are service providers facilitating (or harming) this exchange? How is society benefiting (or being harmed) by this exchange?

This paper will provide a start to answering to these questions.

3.2. Methodology

The study represents an in-depth case study of a technical service innovator that involved numerous meetings with the firm over a period of three years. The case study resembles ethnographic work data collection in that it relied on participant observations, in-depth interviews and casual conversations with the business owner and key managers, observation of operations, and review of documents and business tools used by the organization. These procedures are consistent with well established case study approaches in management (Eisenhardt 1989; Yin 1994). We interpreted field notes and interviews to create a model of how such a firm is helping to, and can further assist in helping to, create value for consumers, brands, themselves and society.

Specifically, we adopted an approach from grounded theory (Strauss and Corbin 1990) known as constant comparison where we tacked back and forth between field notes, data and the literature to understand the role this tech service innovator was playing in its service ecosystem, as well as the processes taking place as value was being exchanged between them and other actors in the system. We also recognized that as researchers become immersed in an ethnographic case study, they often connect with organizational participants in ways that allow them to see subjectively and emotionally deeper into the organizational members and their intent for the organization (Kisflavi 2006). Thus, the extended time period over which the case organization was engaged allowed for a variety of examples to be discovered and analysed.

4. Results

This paper presents a discussion of results from an ongoing project, specifically providing an in-depth case study of a digital marketing innovator playing an important role for online brand engagement within its service ecosystem and how they are helping to facilitate the exchange of value and have a positive social impact. In particular, examples of the focal company's digital marketing innovations are examined to understand: what roles various actors are playing, how the ecosystem is structured and what precisely is being exchanged.

Maxfone is a small Italian ICT (Information & Communication Technology) company that since 2008 has specialized in 3.0 digital communication services and technologies for companies. Their principles are based on cooperation and knowledge with customers with whom they created solid and positive relationships. Every innovation emerged both from advanced technical knowledge of their own and market driven insight from observing customer problems. In many cases innovative solutions are co-created with customers. Maxfone's mission is to shape communication

with new perspectives that help to realize the full potential of the web with a futuristic view of Internet applications and flexible, dynamic up-to-the-minute services.

In this paper we analyze this case firm as a technical service innovator who clarifies complex data for their clients. They are part of an active service ecosystem. Their innovation approach relies on partnerships with universities, local associations, and professional networks, with which they have frequent connections. Thanks to the style of open exchange of knowledge and co-creation of value, their relationships are positive and long term. The top manager of this company believes in networking and is also playing an important role in a local industrial association. If we look back to our theoretical framework in Figure 1, we recognize that in this case study the service ecosystem includes a network between companies, a university, associations and business customers as first tier relationships, and that social media help the direct connection with consumers and other audiences including them in the same network.

Maxfone is playing an important role in its networks, offering the most innovative technologies, services and methods to efficiently increase companies' brand reputation on the web and social media. For them, "digitalization is the new communication frontier: for this reason it is important and necessary to structure and plan this process in order to succeed in the best way." They also realized that the technological solution is important but it is not enough because it needs to be oriented to creating mutual benefits for all parties involved, consumers included.

The situation that gave rise to Maxfone was one where brands were aware that thousands of consumers were telling stories to each other that involved and sometimes were about their brands, but these narratives came in many forms and were constantly emerging and morphing. It was nearly impossible to see what was being said clearly, to generate insights, to use the insights or to relevantly tap into the conversations. A digital marketing innovation was needed, both to make sense of big data, and to enhance the online innovative interaction skills of companies. Maxfone then developed proprietary algorithms (with a strategic tool called SocialMeter Analysis, recently exported to Austin, Texas, through a subsidiary named Instant Media Analyzer) that enables them to not only make sense of the narratives but also enable brands to speak directly to consumers in relevant ways. Maxfone monitors (with live streaming) text messages, Tweets, blogs, Facebook and similar posts, Instagram images, and other social media applications where posts and conversations are occurring. These data are mined at Maxfone and screened to generate a live stream of data focused on a client brand and its parent firm. This stream then enables Maxfone clients and Maxfone on behalf of its clients to engage consumers in relevant and empathetic ways as they post about events and interactions with the brand. SocialMeter Analysis not only pulls together relevant conversations but also, with ad-hoc observatories, helps clients make sense of the conversations by developing insights to perceptions, emotions and behaviours. Then Maxfone moved beyond text to simply capture images where client brands were appearing. Over time, Maxfone was able to generate insights to the behaviours associated with the images in real time (with a service called Photostream by SocialMeter Analysis). The real time analytics aspect is revolutionary and critical if brands are to tap into the conversations, events and behaviours appropriately; timing is critical for relevant participation. The hypertextual analytics tool is patented in part because it not only helps to make sense of complex streaming data in real time but also removes unnecessary and even potentially damaging data such as erotic or personal identifying/privacy threatening images. To further refine their tool, Maxfone promoted or supported events to raise awareness of what it was doing and encourage consumer activity across a variety of media, creat-

ing an even more intense data environment helping to take the analytic tool to another level.

Reading this case study through our theoretical lenses in Figure 1, the role of this technological service provider of innovative digital marketing solutions for interaction become clear. Maxfone demonstrated that brands could jump into conversations in real time in relevant and not overt marketing ways. As a result, client brands have realized a number of benefits. First, they have realized significantly higher rankings in social media metrics. Additionally, Maxfone was able to help companies to deliver a more insightful social media experience and service to consumers. This also led to development of real time customer profiling and a more effective move of traditional social events into the digital space, significantly expanding the events' impacts. For example, during one event consumers from across the globe participated in conversations digitally claiming "We're here, guys! We're part of you!" Additionally, when live feed text and image content is fed to client websites, consumers remain on site significantly longer, especially if the application might display one of their own posts soon. In some cases, the average dwell time on a site went from two minutes to twenty, or two seconds to two minutes. Finally, brands have been able to develop new product improvement ideas through these engagements. The benefit to consumers is that they begin to feel that the brand and firm are listening to them, which in turn builds trust and helps to strengthen real inter-personal relationships.

In addition, Maxfone decided to create a service for citizens not driven by a commercial goal, one where they developed an application to help Maxfone play a role of social observer, looking beyond what consumers were saying directly to understand a variety of needs. For example, during a natural flooding disaster, they were able to tap into, stimulate and use conversations in the digital space about those in need of assistance and became a key enabler for critical aide getting it efficiently to the most appropriate places. This service had a significant social impact and it is part of the sustainability philosophy of this company.

As an overview, we offer six very brief case examples of the role this technical service innovator has played in its ecosystems (see Tab. 1).

<i>Case examples</i>	<i>Profit/Non-profit</i>	<i>Extent of impact</i>	<i>Network structure</i>	<i>Value being exchanged</i>	<i>Social impact</i>
1) Banco Alimentare Veneto, #colletta15	Non-profit	Regional	Association, citizens, firms, tech service provider	Food, time and place utility	Real time food needs update, community connectivity
2) #Alluvioni	Non-profit	Local (relief area)/National	Association, citizens, public services personnel, tech service provider	Facilitating real time emergency response (flood relief),	Community wide, perception of safety
3) Mila	Profit	National	Firm/brand, consumers, tech service provider	Insights to consumer behaviour, product innovation, brand awareness	Strengthen firm's sustainability orientation, more suitable products for consumers, support of local

					businesses
4) Zonin1821	Profit	International	Firm/brand, customers, consumers, influencers (chefs), employees, tech service provider	Interaction facilitation, brand narratives, consumers engagement	Dissemination of wine culture
5) Consorzio di Soave	Profit	Local/regional	Firm/brand, customers, consumers, tech service provider	Sharing of culture, style and values, event engagement, region awareness, origin protection, terroir reputation	Community engagement
6) Zuegg and Romeo&Juliet Marathon	Profit and Non-profit	Local/national	Firm/brand, consumers, local municipality, event organizers and sponsors, tech service provider	Event engagement, healthy fruit culture exchange, brand awareness	Support local community events

Table 1: Case examples descriptors: network structures, values and social impact

The first case, Banco Alimentare Veneto, involves a non-profit organization that collects food and repurposes it for those in need. By sharing consumer stories about what they had to share as well as those being served/helped and making sense of the conversations, clarity turned into action, stimulating significantly higher participation. Specifically, on the 28th of November 2015, Banco Alimentare Veneto launched the charity event (and hashtag) #colletta15, aimed at promoting the collection of food for those in need. When buying food in grocery stores, customers were invited to make small donations of food products that were then repurposed by Banco Alimentare and, while doing so, take pictures of these moments and share them with the official hashtag. What Maxfone did was exploit the potential of digital emulation to enhance the reach and success of the charity event. By means of the Photostream service, Maxfone collected and monitored the narratives and visual stories shared by the benefactors of Banco Alimentare. These stories came from all over the Veneto region, and were then promoted and posted on the Banco Alimentare Veneto, Maxfone and Photostream websites, as well as on their Facebook, Twitter and Instagram pages. The resulting online popularity led to a chain reaction and to a shared will of emulating the beneficial actions that boosted both public awareness and the amount of collected goods.

The second case #Alluvioni is used during natural flooding disasters: Maxfone was able to tap into, stimulate and use conversations in the digital space about those in need of assistance and become a key enabler for critical aid getting efficiently to the most appropriate places. Social networks are increasingly imposing themselves as the first and most efficient means of communication when it comes to natural disas-

ters and acts of terrorism. This process began back in 2009, when Twitter changed its prompt from “what are you doing” to “what’s happening”. Rather than looking inwards, users started looking outwards, thanks to a prompt that encouraged them to describe what they saw around them. These tools have then been improved and refined, to such an extent that, at present, Facebook and Twitter are the first tools to which people turn not only to discuss bad things happening, but also to seek aid and assistance. The situation, however, is still one where first intervention and security services are incapable of isolating irrelevant data (noise) and exploit the benefits of real-time interaction, through social media, with those in need of assistance. This is why services like Maxfone’s SocialMeter Analysis and Photostream seem to be bound to represent the new frontiers of an on-line-prompted first intervention. This service has already been tested during a recent flooding in Texas, which proved that narratives and pictures shared by the people can help critical aid and that real-time interaction is a key factor in those cases where prompt intervention can save lives.

The third case, Mila, is a consortia of 2700 small dairy farmers in northern Italy (south Tyrol) and uses the Photostream to generate insights to consumer behaviour and preferences, to innovate products, and stimulate brand awareness. The partnership between Maxfone and Mila began in March 2016 and involves both the activation of the Photostream and management of Mila’s social network official accounts (Facebook, Twitter and Instagram). By means of the Photostream, Mila is now able to collect in one place (and screen on its website) the visual content spontaneously shared by its customers. Such tool allows Mila to observe and investigate the way in which customers use products and find out e.g. the most common food pairings with cheese, what people dunk in their milk, where they eat their yogurt and the most appreciated flavours. This information is then used by Mila to meet the needs of its customers when it comes to launching new products, partnerships or innovate them. Furthermore, new communication strategies applied by Maxfone to the Mila social network pages have revealed a previously ignored demand for Mila products that comes from far outside south Tyrol, and that extends to Italy’s central regions. On a daily basis, customers would ask information on where to buy the Mila products in their city. This is what pushed Mila to start working on a search engine that, within a few months, will be embedded on the Mila website, allowing visitors to find the nearest seller and the products available, even far away from south Tyrol.

Zonin1821, the fourth case example, is a large Italian multi-brand wine producer with heritage that goes back seven generations through nearly 200 years. They want to be close to their clients and, by promoting high-quality Italian wine, they are endeavouring to celebrate their country’s culture. They use social media as a unique and effective way “to stay in tune with the world”. Zonin1821 first activated the Photostream for the 2015 edition of Vinitaly, Italy’s most important wine fair, held in the city of Verona once a year. Given the unexpected success met by the tool in terms of engagement, the brand then decided to embed it into its website, as part of a bigger project aimed at renewing the brand and making it more appealing. The Photostream now serves a call to action function for the thousands of users that access the website every day, and who are invited to share their Prosecco moments with Zonin. This tool is increasing the user’s residence time on the website as well as the amount of data shared on social network and related to Zonin, as well as the brand’s popularity among younger generations.

The fifth example is Consorzio di Soave, a consortia of wine producers and grape-growers that is instrumental to the economic health of the entire community. Con-

sorzio di Soave bought the Photostream for the 2016 edition of Vinitaly with the aim of collecting, through the hashtag #soavewine, the visual stories shared by visitors. During the fair, the Photostream was displayed on a wide screen that stood out from every corner of the hall. The power of this call to action worked so well that Consorzio di Soave ended up being the most active (and talked about) consorzia/brand of that year's Vinitaly.

The last case is related to the Romeo&Juliet Half Marathon and Zuegg. On 2015 Valentine's Day, the city of Verona hosted the Romeo&Juliet half marathon, an event partially sponsored by Zuegg. The Photostream was activated, displayed on a large screen in Piazza Bra, Verona's most important square (the square where the Arena is located) and runners were invited to share their moments with the hashtags #fruit-lovers and #Zuegg. The success achieved by the Photostream made runners feel more connected with the brand Zuegg, which, rather than being just one of the many sponsors, became the protagonist of the runners' pictures, thus increasing its levels of engagement and popularity.

These six vignettes demonstrate only a few ways in which a firm such as a service provider can innovatively achieve numerous ecosystem social benefits. Their platform is able to make sense of a highly chaotic and dynamic text and image intensive amalgamation of narratives by helping clients, be they large brands, non-profits, small local businesses or social aid workers find relevant and meaningful stories in which they could participate. However, in this case, insights were generated to consumers' perceptions, emotions, and behaviours helping clients be more sensitive, empathetic and knowledgeable which when used wisely, helped clients play more meaningful roles within their ecosystems. This case study offers a different perspective of digital marketing innovations from a traditional brand-centric view, to stimulate businesses and service providers to think out of the box and include the evaluation of the social impact of their technological innovations.

5. Discussion

We stated several research questions for this project. The first was to determine the roles various actors were playing and provide a depiction of the ecosystem structure (RQ₁).

We provide Figure 2 in partial answer to this question, which pulls together all that we have discussed. Not all actors are equal as a basic value network may be depicted; actors play different roles. The ecosystem literature calls out those actors who provide platforms that assist the entire ecosystem as one such special role, such as the Internet. Sometimes these are considered keystones to the ecosystem. However, as we discovered, some actors are assisting value exchange within the system by helping to make sense of dynamic and complex information flowing (online conversations and User-Generated Content) between other actors on this keystone platform. This means that at times the introduction of one actor may necessitate the emergence of others. The digital innovator described here played an important role through personal relationships with top managers enabling the creation of connections between many actors, helping to create additional value exchanging networks within the ecosystem. Thus, firms like this are not only big data sense makers but also relationship facilitators. We also discovered that universities and similar knowledge centres pro-

vide a unique role as participant observers within the system but also examiners of it, helping to guide other actors. Actors such as these can exist on a different plane (level), that is a more generic network of supporting actors that can assist specific project focused networks.

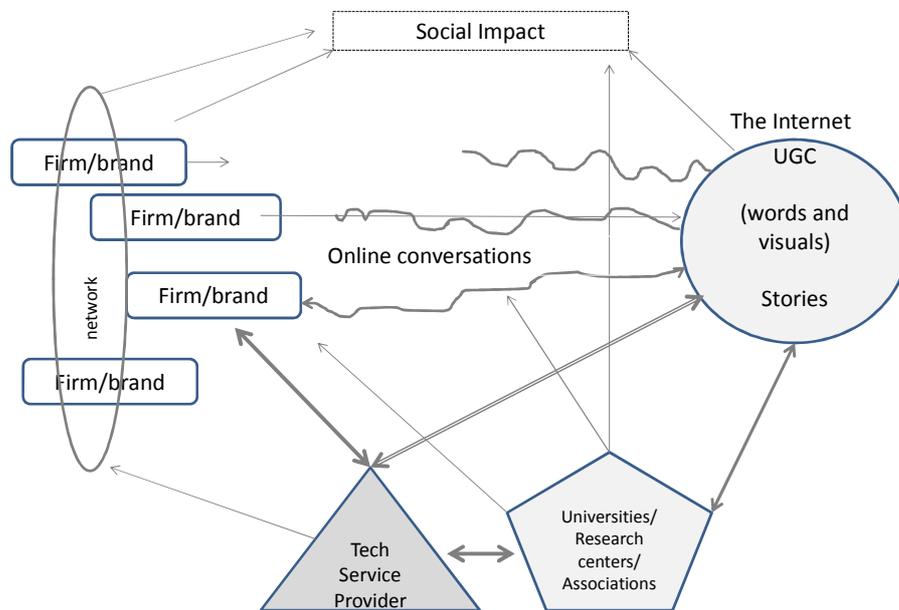


Figure 2. The structure of a service ecosystem in the digital era

The second research question was to describe what was being exchanged in a deeper way than simply stating generically that “value” is being exchanged (RQ₂). We discovered that beyond traditional exchanges such as products, services and currency, consumers exchange stories and when they do, indirectly they offer insights to other actors. These insights to perceptions, emotions and behaviours, enable actors to more deeply penetrate the local micro-cultures and even potentially see flashpoints of change, be they behaviours, attitudes or even ideologies. To be specific, “information” is being exchanged between consumers and due to the public aspect of their digital interactions, they share information about their behaviours and opinions both consciously and unconsciously. For example, they sometimes provide insights to the social issues they care about. By extension brands have an opportunity to create greater value in the form of social services to the broader ecosystem.

To the third research question, our insights to the case firm’s experiences suggest that when brands merely use consumer information to find ways to sell more product for financial gain, they wind up potentially hurting the ecosystem in a way (RQ₃). Capitalism may argue that each actor should serve its own needs and as such the system will thrive. However, society has needs that are not served by this model. There is an opportunity due to being allowed a privileged access to conversations as well as superior resources to do more than simply advance commerce. There is clearly potential for technical innovators to simply use these insights to narratives, some even private, to generate profit for clients. But there is potential to go much further, respect consumers’ privacy and serve the greater good of society.

We discuss a few ideas next, such as ‘local microcosms’ and the importance of time. Within an ecosystem there are planes of smaller networks that can be referred to as

societal microcosms. These may be digital microcosms spread out geographically or physically local social networks that also interact digitally. By gaining insights to local microcosms, firms can assist local communities in ways they might not have been able to before these advances in technology.

Some issues are time sensitive. They may be crisis situations or fleeting opportunities. Technology innovators making sense of digital narratives must generate insights in time to react and help others react.

By assisting local initiatives, larger social causes and reacting in real time, technical innovators, as well as brand manufacturers, can accelerate their social sustainability initiatives.

6. Conclusion

6.1. Theoretical implications

Theoretically this project brings together service ecosystem and sustainability research. In particular, we focus on the specific role certain digital innovation actors can play to assist their ecosystems by facilitating value exchange in new ways, some of which can involve social sustainability benefits.

Our work highlights a few points. First, it is clear that service ecosystems in the current digital era need more than platforms to facilitate information exchange. They need also actors who make sense of the resulting information flow and more, facilitate productive value exchanges. Second, there are members of service ecosystems who are sometimes forgotten (e.g., universities and agencies, even consumers) and sometimes providing value (sharing) unconsciously; not all value exchanges are depicted in social network maps. Third, by focusing on the digital aspects of a contemporary service ecosystem we discovered has an hyperdynamic nature. The rapid pace of constant change within a digital ecosystem cannot be overstated. As such, actors must be highly adaptive. Finally, geolocalization has clearly emerged within the digital era expanding the notion of microcosms beyond geographically centralized. Making sense of the many local microcosms forming and operating requires digital innovator actors.

In the digital era, service ecosystems can potentially have many more actors than in years past. Activity is intense, fast-paced, and involving a far higher percentage of a network simply due to advanced and changing connectivity options. We have discovered that some innovators can actually influence the number of actors engaging and the quality level of their interactions.

6.2. Managerial Implications

Managerially this project is helping brands adopt a different perspective. Brand firms traditionally have sought to gain access to consumers' narratives in order to find more effective ways to sell to those consumers. However, if brands see access to consumers' narratives as a privilege and find ways to become part of consumers' conversations in relevant ways, brands will begin to learn about issues that are important to those consumers. They will discover that brands are actually a small part

of their larger lives and much of what consumers care about are ways to contribute to a healthy society. Armed with this knowledge, brands can find ways to serve society directly or by directing funds to social causes, be they local or not. When brands recognize that they are part of the ecosystem and have tools that give them privileged insights, product sales will be a natural outcome of serving society rather than the primary goal.

Our insights and depiction of a service ecosystem may help organizations restructure their own networks and even inspire managers to arrive at a common social goal for the ecosystem or some microcosm of it. As a result, firms can become part of a system measuring their impact at the societal level as well as the corporate level. In particular, digital innovators who help make sense of seemingly chaotic data could realize greater power by activating people (managers and consumers alike) to move toward social causes.

Finally, this project helps to address one of the Marketing Science Institute's 2016-2018 priorities (no. 4) which states that we need "new data, new methods, and new skills – how to bring it all together?" The kind of digital innovator we provided insights to helps by integrating big data analysis with real time managerial decision making, identifying the trade-offs between managerial judgment and insights from consumers and customers. They are the kind of actor that can assist in the comparison and contrast that must take place between big data-driven insights and managerial heuristic-driven insights.

In this paper, we have tried to move the conversation along regarding contemporary service ecosystems emphasizing the need for a specific kind of actor and by showcasing an example of one that has emerged.

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