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A WEB 2.0 COMO UM NOVO CANAL DE DIFUSÃO PARA INOVAÇÃO: O ESTUDO DE CASO DE PRODUTOS DE ENERGIA RENOVÁVEL

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Abstract: Nowadays, social web and social media are considered as new communication channels that enable the diffusion of new products and innovations, such as: renewable energy products. In addition, renewable energies become the new alternative source of energy that insures environmental benefits, economic returns and social welfare. Hence, we will focus in this study on the impact of the use of web 2.0 and social networks in the diffusion of renewable energy products.

Keywords: Renewable Energy Products Diffusion, Innovation Diffusion, Renewable Energy, Web 2.0.

Resumo: Atualmente, a web social e a rede social são consideradas como novos “canais de comunicação” que permitem a difusão de novos produtos e inovações, por exemplo: produtos de energia renovável. Além disso, as energias renováveis tornaram-se nova fonte alternativa de energia que assegura os benefícios ambientais, o retorno econômico e o bem-estar social. Com isso, o foco deste estudo concentra-se no impacto do uso da web 2.0 e as redes sociais na difusão de produtos de energia renováveis.

Palavras-chave: Difusão de Produtos Energéticos Renováveis, Difusão da Inovação, Energia Renovável, Web 2.0.

INTRODUCTION

In this research, we will focus on several concepts: “innovation diffusion”; “social networks as a new alternative marketing communication strategy to diffuse renewable energy products” and “renewable energy technologies”. The following section will be devoted to the concept of innovation diffusion.

Innovation diffusion

This concept has been historically studied by Everett Rogers (1995, 2003). Diffusion is defined as the process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 2003).

Rogers (2003) noticed that the four main elements in the diffusion of innovations are: the innovation, communication channels, time and social system.

He asserted that the innovations-decision process is essentially an information seeking and information processing activity in which an individual is motivated to reduce uncertainty about the advantages and disadvantages of innovation. It involves time in the sense that five steps usually occur on a time –ordered sequence of: knowledge, persuasion, decision, implementation and confirmation. He highlighted that five perceived attributes of innovations by individuals help to explain their different rate of adoption:

Relative advantage: is the degree to which an innovation is perceived as better than the idea it supersedes, or, in other words, the degree to which the innovations is perceived as advantageous.

Compatibility: is the degree to which an innovation is perceived as being consistent with the existing values, past experiences & needs of potential adopters.

Complexity: is the degree to which an innovation is perceived as difficult to understand and use.

Trialability: is the degree to which an innovation may be experimented with on a limited basis. Indeed, new ideas that can be tried on the instalment plan will generally be adopted more quickly than other innovations.

Observability: is the degree to which the results of an innovation are visible to others. In fact, the easier it is for individuals to see the results of an innovation, the more likely they will adopt it.

Indeed, innovations that are perceived by individuals as having greater relative advantage, compatibility, trialability, observability and less complexity will be adopted more rapidly than other innovations.

The rate of adoption is another important concept in the diffusion of innovation. It is described as the relative speed with which an innovation is adopted by members of a social system. It is usually measured by the length of time required for a certain percentage of the members of a system to adopt an innovation.

Most innovations have an « S – Shaped rate of adoption » varying in the slope of the « S » according to the innovation (from innovation to another). Indeed, some new ideas diffuse relatively rapidly, and the S-curve is quite steep. Other innovations have a slower rate of adoption, and the S-curve is more gradual, with a slope that is relatively lazy.

Moreover, Rogers (2003) described social structure as an additional important concept. It refers to the patterned arrangements of the units in a system. In addition, it allows one to predict behaviour with some degree of accuracy. So, it represents a type of information, in that it decreases uncertainty.

Concerning communication structure, Rogers identified this concept as the differentiated elements that can be recognized in the patterned communication flows in a system.

Similarly, homophily is defined as the degree to which two or more individuals in a system talk with others who are similar to them. Thus, a complete lack of communication structure in a system would be represented by a situation in which each individual talk with equal probability to each other member of the system. Besides, a communication structure is often created in a system in which homophilious sets of individuals are grouped together in cliques.

As opposite to homophily, heterophily appears as the degree to which two or more individuals that interact are different in some attributes, such as beliefs, education, social states...In addition, Rogers (2003) stressed that opinion leadership has an important effect in the innovation diffusion process. It is defined as the degree to which an individual is able to influence other individuals' attributes or overt behaviour informally in a desired way with relative frequency.

Furthermore, opinion leadership is maintained by the individual's technical competence, social accessibility, and conformity to the system's norms. Likewise, influential persons can express the system's structure and lead in the spread of new ideas or head an active opposition.

Rogers (2003) underscored that opinion leaders are: more exposed to all forms of external communication and thus, are somewhat more cosmopolite; have somewhat higher socio-economic status, are more innovative, have a unique & influential position in their system's communication structure: they are at the center of interpersonal communication Networks.

Concerning communication networks, Rogers (2003) underlined that it consists on interconnected individuals who are linked by patterned flows of information.

An opinion leader's interpersonal networks allow him or her to serve as a social model whose innovative behaviour is imitated by many other members of the system.

In the same vein, a change agent is described as an individual who influences client's innovation decision in a direction deemed desirable by change agency. The change agent usually seeks to obtain the adoption of new ideas but may also attempt to slow down diffusion and prevent the adoption of undesirable innovations. They often use opinion leaders in a social system as their assistant in diffusion of innovations. Additionally, Rogers defined an aide as a less than fully professional change agent who intensively contacts clients to influence their innovation decision. Aides are usually homophilious with the average client.

The innovation diffusion was explained also by the Actor-Network Theory (ANT). Callon (1986) and Latour (1987) asserted that the ANT shaped the diffusion through a process called "translation".

This process analyses the innovation within the context in which it evolves. Context is considered as a constituent element of innovation rather than a source of explanation. It is not a separate element of innovation and it does not determine innovation unilaterally as if people were embedded in an "iron cage" (DiMaggio and Powell, 1983; Latour, 2005). Context is inseparable from localized management

actions and interactions within actornetworks. Both have to be analysed simultaneously. Thus, change is embedded in the confluence of various organizational and extra-organizational factors (Briers and Chua, 2001).

Actor Network Theory (ANT) sees the “success” of any innovation as a paradox. This success depends on many factors other than its pioneers – usually the users – and on their expectations, on their interests and on the problems facing them (Lowe, 2001).

The translation process emphasizes the existence of a cluster of links that bind the innovation with all those who use it. Pioneers must recruit allies to participate in producing the innovation but pioneers also have to control allies’ acts and gestures to make their actions predictable (Lowe, 2000). The problem is that if allies are recruited, they might transform the innovation into something completely new and different. Indeed, controlling them will be more difficult. Consequently, adopting an innovation implies adapting it and this adaptation is the result of a collective construction effort (Preston et al., 1992). Therefore, ANT regards the development of any innovation more like a complex process with multiple, cumulative and conjunctive progressions of convergent, parallel and divergent activities rather than a linear, sequential model.

Besides, the process of translating an innovation implies that interactions are created between actors who make alliances in order to pursue some goals rather than others in the change process (Chua, 1995). These alliances form “actor networks” made of both human and nonhuman actors (such as technical artefacts). Non-human allies are given a voice through “spokespersons” who contribute to the building of the network. Networks become stronger and stronger as they incorporate human and non-human allies. At the end, this construction is successful if sciences and technologies, or in our case

renewable energy products as innovations, acquire a solid and sound appearance (Latour and Woolgar, 1979).

Otherwise, translation involves four processes that are intertwined and interact with each other. These are “problematization”, “interessement”, “enrolment” and “mobilization” (Callon, 1986). Problematization refers to actors’ efforts to convince others to subscribe to their own view by showing they have the correct solutions. Problematization is equal to external elements such as cultural and discursive resources (Ezzamel, 1994). Interessement is the construction of the interface between the interests of the various stakeholders and to the strengthening of links between these various interests (Lowe, 1997).

Interessement corresponds to successful thanks to allies and spokespeople who reproduce the whole of society in miniature and speak for the non-humans (Lowe, 2001). Enrolment is the creation of alliance networks, the aim of which is to build up agreement among the stakeholders concerning their interests. Finally, mobilization refers to the monitoring of the various interests so that they remain more or less stable (Mouritsen, Larsen and Bukh, 2001).

In addition to these four processes, “trials of strength” can take place at anytime (Latour, 1987). To be successful, system builders must fight

against “counter actors” and defeat their “anti-programs” (i.e. competing innovations). Battles can take place on five fronts: with other members of the network, with competing networks, with clients, with non-human actors, and with powerful economic forces (Jones and Dugdale, 2002). During these battles, the innovation is modified or adapted in response to trials. Trials consist in questions being asked by counter actors that help develop the innovation in a more acceptable way. In the end, the translation process works if the actornetwork supporting the innovation represents, in all its richness, complexity and diversity of interests, society as a whole, in such a way that the solution made acceptable (through trials of strength) to the former will also be acceptable to the latter (Latour, 1987).

Web 2.0 & Social media: an alternative marketing communication strategy to diffuse Renewable Energy Products & Brands as an innovation

O'Reilly (2005) described Web 2.0 as a collaborative web development platform that refers to the cumulative changes in the ways software developers and end-users achieve benefits from the web. It is a second generation of the worldwide web, describing a series of technologies based on seven underlying principles, i.e.: the Web as platform, harnessing collective intelligence, data is the next Intel inside, end of the software release cycle, lightweight programming models, software above the level of single device, and rich user experiences.

Web 2.0 has been also used to describe any technology that promotes sharing and collaboration (Metz, 2007). It refers to a new trend in communication technology that allows internet users to transition from the static to the dynamic web technologies both in using and developing web applications. Based on the easier access to the internet through computers, cellular, and handheld devices, web 2.0 tools enable users by facilitating user to develop user-centred web applications to participate, add, control, and share information interactively and interoperably (O'Reilly, 2009).

Moreover, Web 2.0 represents a transition from Internet-enabled delivery of content (Web1.0) to participation-based Internet communities (Adebanjo and Michaelides, 2010). It is assimilated generally to web tools that, rather than serve as a forum for authorities to impart information to a passive, receptive audience, actually invite site visitors to comment, collaborate, and edit information, creating a more distributed form of authority in which the boundaries between site creator and visitor are blurred (Oberhelman, 2007). Abram (2005) considered Web 2.0 as more about the human aspects of interactivity.

It's about conversations, interpersonal networking, personalization, and individualism. It is not just about networked social experiences, but about the distribution and creation of web content itself, characterized by open communication, decentralization of authority, freedom to share and reuse, and the market as a conversation.

According to Alexander (2006), the interactive and readwrite natures of Web 2.0 technologies could facilitate users' participation that builds user-centred virtual communities and many collaborative societies simultaneously. He affirms that, by participating in such a virtual community, users can learn about each other's culture, religion, beliefs, traditions, and views on contemporary issues which could help them in building a global democratic society. Similarly, O'Reilly (2007) asserted that the interactivity of the web 2.0 technology allows individual users to create data shared by other users. Thus, Web2.0 represents the platform to convey software that is continually updated through user interaction (O'Reilly, 2005). Similarly, consumers have been increasingly engaging themselves in an active and explicit dialogue with manufacturers of products and services and can address and learn about businesses either on their own or through the collective knowledge of other customers (Prahalad and Ramaswamy, 2000). This collective knowledge is available to the whole system, which is an enhanced network of traditional suppliers, manufacturers, partners, investors, and customers. Likewise, Hagel and Armstrong (1997) defined Online communities as an aggregation of people who share a common interest and communicate through electronic mailing lists, chat rooms, Internet user groups or any other computer-mediated mechanism (Williams and Cothrel 2000).

Online communities involves anonymous interaction, issue based affiliation, no tie outside of online space and weak ties (Kozinets, 1999). Archivili, Nambisan and Watt (2008) noticed that the motivations of some consumers to join these communities could be represented by the desire to develop their expertise or to gain indirect access to the experiences of others, which in turn influences their experiences of a particular brand, service or organization.

Communities' members are active and deeply involved in updating, articulating and re-articulating their consumption activities and allowing the other members to learn from each other and help form collective knowledge and memory systems that transcend the information and skills of any single individual (Kozinets, 1999, Ardichvili, 2008; Prügl and Schreier 2006; Hung & Yiyan Li, 2007; Jeppesen & Molin, 2003; Leadbeter and Miller 2004).

Customers can also be considered as powerful communities that can exercise a powerful influence on the market. Li, an analyst for Forrester Research, believes that Web 2.0 reflects the essence of a new generation of marketing where technology is viewed as empowering communities, not institutions (Cooley, 2007). The power of such communities derives in large measure from the speed with which they can be mobilized.

The phenomena of "word of mouth" and "viral marketing" are transforming the management of brands by involving consumers' collective personalized experiences (Prahalad and Ramaswamy, 2000). In the case of Netscape, Yahoo!, Amazon, eBay, E Trade, or Excite, customers who forged and legitimized the evolving identities of those

companies and gave them meaning as brands in the new economy. Smart companies are finding ways to mobilize customer communities.

Prahalad and Ramaswamy (2000) gave the example of the site of “The Dutch giant Philips Electronics” which makes it easy to exchange program files, codes, other information, and manufacturers of audio-video products post their software code to help people save programming time. The hackers, in exploring ways to make the product more user-friendly, benefit both the consumers and the company. Philips tapped into and mobilized a self-selected community created independently by consumers.

Besides, Kucuk and Krishnamurthy (2007) claimed that the web makes the consumer powerful among four dimensions: “Technologic”, “Economic”, “Social” and “Legal”. We will assert on the economic and social power.

The economic power source is represented by the access to better value and markets and the ability to construct economic value (e.g. C2C markets), while social power source embodies the ability to access to one’s social network (such as family and friends), to communities or to experts. These researchers underlined that consumers can actively construct value in markets by researching any product or service, taking advantage of the transparency of the Web and the relative lack of monopoly power to enhance their bargaining power with companies.

Hence, consumers are able to access the best values in the markets due to the web features, which are called “bargaining power”. Consumers has also a social power as they communicate with each other to create solutions among themselves, besides being well organized to create pressure on a company (e.g. regarding its unethical actions in the markets) and push the company changes its decisions (such as contacting the company directly with a complaint or creating social pressure on the company’s operations).

According to Cheema and Kaikati (2010), word-of-mouth information sharing is a crucial component of the marketing process, as consumers tend to greatly rely on the advice of others when making purchase decisions, especially when purchases are financially or psychologically risky (Gershoff & Johar, 2006).

In addition, word-of-mouth has been shown to be even more effective in influencing purchase decisions than traditional advertising channels (Godes & Mayzlin, 2004) and retaining customers over time (Trusov, Bodapati and Bucklin, 2009).

According to Dick & Basu (1994), consumers are motivated to spread information via word-of-mouth communications when they are highly committed to the firm.

Indeed, Trusov et al. (2009) asserted that the advent of the Internet has increased the ability of individuals and potential future customers to interpersonally connect with one another, thereby creating a powerful means through which product information can be rapidly disseminated and products be more cost-effectively adopted by the market.

Hence, word-of-mouth marketing is quickly becoming a driving force behind all strategic marketing campaigns as the wide variety of social media outlets are increasing in prominence and maturity, and act as crucial resources for informing influencers' decisions.

In terms of the online world, networks of friends tend to be the best suited for rapid dissemination of word-of-mouth referrals, as opposed to other types of stakeholder networks (De Bruyn and Lilien, 2008). However, Dellarocas (2006) underlined that more public forums are also effective, whereby users are connected through some common interest and trust others' opinions. Acar and Polonsky (2007) underscored that opinion leaders have the ability to greatly influence the beliefs, behaviours, and values of consumers, and they are able to effectively reach masses of individuals through blogs and social networks. Thus, social networking sites have provided marketers with new and efficient ways of reaching deeply into their target market to communicate their message (Trusov et al., 2009).

Hence, De Matos & Rossi (2008) stressed that: managers can thus encourage positive word-of-mouth communication and favourable recommendations among online communities by increasing consumers' commitment to the company. This increased commitment can be achieved by aligning customer values and identities with those of the organization.

Christodoulides (2009) highlighted that, as postInternet branding is mostly about facilitating conversations around the brand, the characteristics of social media provide excellent brand engagement and development opportunities. For instance, through the use of social media, media brands can develop one-on-one conversations between the consumers and the characters or the content creation crews (e.g., producers, writers, etc.), incorporate a feedback mechanism for consumers to express their opinions about certain content and even involve the consumers in the creative process.

Besides, Reyneke (2010) asserted that gathering brand visibility data in social media is essential: how sociable it would be important for those who manage brands to have a good idea of what is being said about these brands in social media, how frequently it is being said, and in what particular media it is being said. This type of data would give the brand manager an indication of the visibility of the brand in social media.

In most cases, the brand manager would be interested in the social media visibility of their own brand, but would probably also want to make comparisons with the performance of similar or competitive brands.

Renewable energy technologies

Renewable resource technologies are defined as electricity produced from other than a conventional power source provided that a power source utilizing more than 25 % fossil fuel is not included (the California Energy Commission, 1997). Kozloff (1994) mentioned the diverse types of renewable energies as follows:

Photovoltaic cells convert solar radiation directly into electricity. Photovoltaic systems include rooftop and freestanding arrays.

Thermal electric technologies produce electricity by concentrating sunlight into a working fluid or engine (such as parabolic troughs).

Wind machines convert the kinetic energy of wind into rotational energy that drives electricity generating turbines.

Biomass is primarily wood, wood wastes, and wood byproducts, but also agricultural wastes & municipal solid waste, and is combusted to produce both heat and electricity.

Geothermal energy is heat trapped up to 3000 ft below the surface of the earth. At the present, hydrothermal energy –steam, hot water, and hot brine located within 900 ft of the earth's surface-is the primary form used commercially for generating electricity and heating buildings.

Hydropower is a moving or falling water used to generate electricity- a mainstay of the industrial revolution in the US and represents one of the most important renewable energy technologies for electricity today.

Bang et al (2000) tried to determine the consumer's concern, knowledge, belief, perception and attitude towards renewable energy. Using the Reasoned Action Theory advanced by Fishbein and Ajzen (1975), Bang et al (2000) established the following results:

Consumers who express a higher level of concern about the environment are more likely to be willing to pay more for renewable energy.

Consumers who have stronger beliefs about positive consequences of using renewable energy tend to be more willing to pay a premium for renewable energy than consumers who have a weaker belief about the positive consequences of using renewable energy.

Consumers who are more knowledgeable about renewable energy tend to be more willing to pay more for renewable energy than consumers who are less knowledgeable about renewable energy.

Beliefs about renewable energy are positively related to attitude toward the act of paying more renewable energy.

Concern and Knowledge are both positively associated with willingness to pay more.

Consumers are highly concerned about the environment and hold strong general beliefs about the efficacy of green products.

They are not particularly knowledgeable about specific environmentally friendly alternatives like renewable energy because they are not usually engaged in extensive search and elaborate cognitive processing.

Building up strong beliefs, which are the building blocks for stronger and more stable attitude, will be more effective at stimulating the behaviour of purchasing renewable energy by setting up promotional materials and advertisements that appeal to consumer rationality, rather than focusing purely on consumer emotions.

Promotional programs that employ appropriate central cues, such as the salient consequences of using renewable energy or specific statistics that make the current environmental problem more tangible and relevant

will be more effective in fortifying consumer beliefs than campaigns based on emotion.

Concerning marketing strategies to promote renewable energies, Menegaki (2012) set up a marketing mix based on social marketing strategies to enhance the adoption of renewable energy innovation.

The product is a proposition for renewable energy source

Indeed, renewable energy should be presented and promoted as a proposition/message/promise instead of a product stressing the strengths and opportunities incorporated in renewable energy (like the reduction of pollution).

Menegaki (2012) underscored that this social marketing proposition must be such that will lead the consumer to perceive renewable energy resources as a unique combination product to satisfy his needs.

He underlined that the value proposition is a statement about the experience customers will gain from this market offering and from the relationship with the supplier.

He stressed that the brand must represent a promise about the total experience.

He maintained that, by using and promoting renewable energy sources, firms will be different from their competitors and provide benchmarks in their industry.

The price for renewable energy source

Menegaki (2008) highlighted that the disaggregation of the renewable energy source value generates six value components: The direct use value (for electrification); The indirect use value (renewable energy source save fossil fuels for other purposes and reduce oil demand pressure);

Option use value (people save non-renewable energy for future use); Bequest value (people bequeath a cleaner environment to the next generation); Existence value (people enjoy a cleaner environment today); Intrinsic value (with renewable energy source deployment, fossil fuels resources remain intact).

The consumer, realizing the above value aspects, will state a more informed and higher willing to pay.

Menegaki (2008) brings to light that the price to be paid to a renewable energy source generator should at least be equal to: the avoided cost of electricity on a low voltage grid of a distributor to which we add a premium reflecting the renewable energy source, social and environmental benefits and the manner in which it is financed.

The place renewable energy sources for

Since "Place" in the social marketing mix is the accessibility to the product, it should be emphasized that access can be perceived both as

availability and affordability (such as the availability of renewable energy source to rural isolated household).

Menegaki (2008) focused on the following measures that must be taken to improve liberalization of energy markets: To ensure transparent information on applicable prices and tariffs and on contractual terms and conditions; Facilitate switching; Put in place efficient treatment of complaints and out of court dispute settlements.

Bills need to arrive to consumers frequently enough and they have to be transparent to guide consumer choice.

Consumers can hence become more active players in the market with the introduction of smart metering that produces exciting new and valuable societal, health and environmental benefits, such as enabling consumer to better manage their energy usage, reduce their carbon or receive bills based on actual consumption (Menegaki, 2008).

Promotion for renewable energy source

Social communication also takes place through social networking which falls under the heading “Publics». According to Menegaki (2012), promotion encompasses all the things that invite one to buy renewable energy source. Indeed, the marketer can communicate directly with consumers through blogs, online videos, and news releases replete with the keyword language used by consumers. Thus, consumers can find in the web interesting stories about renewable energy source at the moment they need them. Hence, setting up a blog space where consumers will share their success stories, while their queries will be answered by the state or specialized organizations is a key point for the promotion and advertisement of renewable energy sources (Menegaki, 2012).

Publics

This element of marketing mix contains social networking, citizen participation and word-of-mouth communication for the dissemination of energy efficient behaviour. Viral marketing is, indeed, an essential part of the “Publics element” but again its efficacy depends on the computer literacy existent in each country. The « Publics » element uses campaigns targeted to citizens by deploying media, radio and television means as well as various social networks (Menegaki, 2012).

Partnerships

Partnerships are considered to substantiate among the state, businessmen, banks, universities and research agencies. This cooperation can spawn benefits through the synergies developed among institutions or countries. Examples: regions, municipalities and distribution utilities, oil and car industries, town and country planning agencies, public procurement authorities, industry associations and farmers’ associations.

Menegaki (2012) mentioned that partnerships enable Identification and exchange of best national practices (or the indication of bad practices so that repetition of mistakes can be avoided in the future) among countries. In addition, green funds, public renewable energy funds, soft loans are examples of co-operation that can be offered by banks and financial institutions.

Policy

It is the conclusion and establishment of various other elements of the marketing mix. Good policy making requires a competent representation of consumers.

According to Menegaki (2012), various forms of policy have been suggested at different times and adopted: flexible depreciation of renewable energies' investments; favourable tax treatment for third party financing of renewable energies;

Start-up subsidies for new production plants and favourable buy-back electricity rates; new job creation as well as financial incentives for consumers to purchase renewable energy source equipment and services.

Menegaki (2012) underscored that promotion of renewable energy sources through specific legislation, fiscal measures for consumers to purchase renewable energy source equipment and systems, market incentives in order to help increase the market share of renewable energy source, Research & Development and targets are regarded as policy.

Purse strings

Financing is a very serious challenge for the promotion of renewable energy source, because subsidies and infrastructure are the milestones. Financial support instruments for renewable energy source are twofold: governmental incentives (investment subsidies, feed-in tariffs, payback regulations and tax regulations, favourable depreciation of renewable energy source investments and tax treatment, start-up subsidies for new RES production plants) and other financial resources.

Moreover, each state should finance investments in research and technology development, while larger and institutional organizations such as the World Bank. This is very crucial because Europe has put in place legislation to promote renewable energy source but is now faced with insufficient integration of intermittent power sources such as solar and wind into the electricity grid, running the risk of destabilizing it Menegaki (2012).

As a conclusion, we can establish the following table by comparing "the specificities of the adoption of an innovation process" and "the features & characteristics of social networks, social media and web 2.0".

Table 1
comparison between diffusion of innovation characteristics & social media features (common and different characteristics)

Characteristics of the diffusion of an innovation process	Characteristics of social media
Lead users in the diffusion of an innovation	Leaders of opinion
Social structure	Social networks: beliefs, preferences, needs
Word of mouth & viral marketing	Virtual word of mouth & Viral marketing
Knowledge sharing	Viral knowledge sharing
Communication network	Viral communication network

Conclusion

The major contribution of our study lies in expanding our theoretical knowledge by realizing an investigation in a broad review of the literature on new concepts and numerous fields: marketing, management of innovations, renewable energy and Information' systems. Indeed, including the use of social media to enhance the adoption of renewable energy products as an innovation can generate positive results for businesses in a context characterized by increased competition. Thus, Social media target thousands of users since this is the trend of the moment, by the virtual world it creates, by the values it conveys, by the messages it tries to pass which are related to beliefs, culture, preferences and people's experiences or by the atmosphere it creates and could excite the curiosity and the playfulness of the social media user.

It also could influence attitudes and perceptions of its brands and products shared within social media and make the difference compared to competitors. On the other hand, our study has helped broaden the application of existing relationships in the field of literature related to the social media, the diffusion of an innovation, the renewable energy and the communication.

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