

# Communicating Sustainability Through Social Media in the Italian Universities Context

Marta Musso, Roberta Pinna, Pierpaolo Carrus  
University of Cagliari, Cagliari, Italy

The research purpose is to analyze how social media can be adopted to communicate sustainability by universities. More precisely it is to investigate whether the online platforms are used to support and in what way the main communication functions with reference to sustainability. The methodology adopted is qualitative, a content analysis regarding the sustainability messages posted by universities from the sample of six Italian universities selected for research from the list of Italian University Network for Sustainable Development. The study confirms the three main functions of universities social media with regard to the sustainability communication. They consist mainly in information, action, and community creation. In particular, the results show that universities mostly use the social platform to for the action and communication function. Whilst, more rarely, universities use the social platform to feed and activate stakeholders, through dialogue, in community building, trying to create strong links between individuals and groups specific sustainability issues of common interest. The limits of the research, refer to characteristic of the sample of the selected universities essentially, and to the implicit subjectivity of method adopted. It highlights the need for universities to develop a more specific relational orientation, consistent with the characteristics of social media, capable of promoting inclusive processes of the various stakeholders aimed to create active involvement in the sustainability strategies and practices of the university. The study provides important insights into the sustainability communication carried out by universities. The study offers an original interpretation of social communication for sustainability in the university sustainability sector.

*Keywords:* sustainable development, social media, universities, communication functions

## Introduction

Starting from Rio Declaration on Environment and Development (1992), the international community committed to making every effort to ensure sustainable development for the benefit of present and future generations. Years after the adoption of the 2030 Agenda by the 193 member countries of the United Nations, including Italy, it can be argued that a growing awareness worldwide of the need for an integrated approach to address complex economic, social, environmental, and institutional challenges in order to shift to a sustainable development model is present. Higher Education Institutes (HEIs) have a special responsibility and play a key role in building more sustainable societies, through the formation of future generations and in

---

Marta Musso, Ph.D., Research Fellow, Department of Economics and Business, University of Cagliari, Cagliari, Italy.

Roberta Pinna, Prof., Department of Economics and Business, University of Cagliari, Cagliari, Italy.

Pierpaolo Carrus, Prof., Department of Economics and Business, University of Cagliari, Cagliari, Italy.

Correspondence concerning this article should be addressed to Marta Musso, Department of Economics and Business, University of Cagliari, Viale Sant'Ignazio 74, Cagliari 09123, Italy.

the dissemination of knowledge within society (Brundtland Report, 1987). In literature (Lozano et al., 2015; Sady, Žak, & Rzepka, 2019; Eizaguirre, García-Feijoo, & Laka, 2019) there is large agree that the great challenges posed by Sustainable Development Goals (SDGs) require a profound cultural change about our lifestyles and ways of thinking and acting and the SDGs provide a unique opportunity to higher education institution to demonstrate their willingness and capability of playing an active role in the development of their respective countries and in contributing towards global sustainable development. To deal with this important responsibility, in February 2016 in Italy was created the Italian University Network for Sustainable Development (RUS), the first experience of coordination and sharing between all Italian university committed to the topic of environmental sustainability and social responsibility. The main goal of RUS is to promote and communicate the culture of sustainability and good practice in the field, both within and outside the Universities, in order to increase, through sharing skills and experiences, the positive environmental, ethical, social, and economic impact of the actions which are currently implemented by its member. In the last years, Italian universities are starting to adopt communication strategies for sustainable development with the aim to sensitize in the direction of the problems linked with the sustainable development, accelerate people's behavior in adopting responsible actions, persuade people to change their behavior, and generate enthusiasm in the community. The growing interest in sustainability issues has led HEIs to adopt appropriate channels both to communicate their commitment and to engage with their stakeholders, especially in an online context. Because of the rapid development of technologies, online communication channels such as social media are becoming popular platforms for communicating sustainability information (Huang, Clarke, Heldsinger, & Tian, 2019). In the HEIs field, social media represent a critical innovation not only because they allow institutions to quickly disseminate information to large audiences, but also because they engage communities in sustainability initiatives and build communities (Barnes & Lescault, 2011; Cho, Schweickart, & Haase, 2014). In management literature, scholars have examined how organizations have communicated information about sustainability in their websites (Siano, Conte, Amabile, Vollero, & Piciocchi, 2016; Cornelissen, 2011; Nejati, Shafaei, Salamzadeh, & Daraei, 2011) but there are still few studies (Carpenter, Takahashi, Cunningham, & Lertpratchya, 2016) what examined if HEIs are communicating about sustainability practices through social media and if they use social media not only as information function but also in order to encourage the adoption of sustainability behaviours among students, faculty members, and staff and to promote the creation of an online community. The purpose of this study is to fill this gap by analysing how social media can be adopted by Italian universities in order to effectively communicate their commitment to sustainability to stakeholders. In particular the purposes of this study are to (1) investigate if the Italian universities use social media platforms in their communication strategies for sustainable development, (2) by employing Lovejoy and Saxton's conceptual framework (2012) of the organizational communicative functions of social media (information, action, and community), explore how HEIs view social media as a communication tool. To address this research gap, we explored the communication strategies of six HEIs that joined the Italian University Network for Sustainable Development (RUS) analyzing their social media platform content. The study is structured as follow: a literature review is presented at first, including theme as online communication for sustainability, digital communication, and social media, then the research methodology is described together with the data collection and the coding procedure. So, the results and discussion have been analyzed and at the end conclusions and practical implications are reported.

## **Theoretical Background**

### **Sustainable Development and Communication Strategies in HE Institutions**

During the last decades, the application of the sustainability paradigm to the HEI context received a growing interest in the managerial literature (Wright, 2002; Alshuwaikhat & Abubakar, 2008; Ferrer-Balas, Buckland, & DeMingo, 2009; Golinelli & Volpe, 2012; Von Hauff & Nguyen, 2014; Wals, 2014) and universities are considered to be an important change agent and a key players in society. Several HEIs in the world have embraced the values of sustainability, as protection of the environment, to improve the well-being of society, the economic development based on knowledge, social equity. In the educational context the sustainability issue has become a necessary and responsible strategy. There are many international and national initiatives that ask universities worldwide to assume responsibility for sustainability development by integrating sustainability in their core functions: research, education, operation & governance and external leadership. In Italy was created the Italian University Network for Sustainable Development (RUS), composed by 73 Univerisity with the the main goal to promote and communicate the culture of sustainability and good practice in the field, both within and outside the Universities, in order to increase, through sharing skills and experiences, the positive environmental, ethical, social, and economic impact of the actions which are currently implemented by its member. In this perspective, changed the role of the HEIs, from their “traditional” roles as educational infrastructure and research institutions, to “new” roles as drivers for innovation and disseminating and mainstreaming sustainability thinking within society (Lozano et.al., 2015). In this context, universities have the opportunities to engage with society, both globally and locally, and get them to think about they can help to improve society, by bringing about social, economic, and cultural change. In Italy, the increasing interest of the HEIs about sustainability development has encouraged institutions to embrace the opportunity to incorporate sustainability in their mission, into core functions, initiatives, report and to communicate them to key public. In this perspective, HEIs have adopted appropriate communication strategies in order to communicate how the institution acts to improve its economic, environmental, and social effectiveness and efficiency. External communication with the stakeholders is a must in the HEIs sustainability strategies in order to provide legitimacy in sustainable development and because sustainability si a complex issue that requires overcoming specific regarding to societal communication (Newing et al., 2008; Genc, 2017).

Communication about sustainability refers to processes in which information and opinions regarding sustainability issues are exchanged and debated. Siano (2014) defined sustainability communication as “the set of strategies and actions put in place by HEIs in order to disseminate correct knowledge of issues related to economic, social, and environmental sustainability, to promote dialogue with the relevant public in order to facilitate the process to build agreement and to activate lifestyle changes”. In this perspective, the communication strategy is more than dissemination of information, but it includes processes of dialogue and discourse of sustainable development and becomes a narrative construct in which the discourse serves to frame and perform specified sustainable actions (Newing, Schulz, Fischer, Hetze, Laws, Lüdecke, & Rieckmann, 2013; Siano, 2016). In light of this, sustainability communication plays a crucial role because it can encourage and motivate people to adopt cleaner production technologies, transports, materials; accelerate people’s behaviour in adopting responsible actions and persuade the people to change their behaviour (Bucur & Petra, 2011). In literature some scholars (Newing et al., 2013) show that there are three different perspectives about sustainability communication: communication of sustainability, communication about sustainability, and

communication for sustainability. While communication of sustainability focuses on the transmission of information with the aim to persuade other, communication about sustainability refers to processes of dialogue in which information and opinions regarding sustainability issues are exchanged and debated. Finally, communication for sustainability has the objective to facilitate societal transformation towards the normative goals of sustainable development. HEIs, for example, are making efforts through the development of recycling and energy awareness campaigns, supporting student's sustainability projects, and more actively involving key stakeholders in sustainability efforts. The characteristic of reciprocity is relevant because the sustainability communication requires a necessary participation so that information can be shared and can help to build consensus (Siano et al., 2016; Newig et al., 2013). In the recent decade, despite the growing interest in sustainability issue, communication practices in HEIs field have only recently received attention. Indeed, despite the need by HEIs to promote public participation and to stimulate behavioral shift (Reilly & Hynan, 2014; Gomez & Chalmers, 2011, Siano, 2012), there are still few studies who have analyzed how social media can be adopted by universities in their sustainability initiatives. While some researches (Amey, Plummer, & Pickering, 2020) have showed the role of website for disclosing sustainability information, there are few studies that analyzed what are the main communication functions of social media platform with reference to sustainability. Two are the contributions in this field: the works of Lovejoy and Saxton (2012), that identified the organizational communicative functions of social media, and the works of Carpenter et al. (2016) that investigated the perceived function of social media held by the top sustainable universities in the USA.

#### **The Use of Social Media in HEIs Sustainable Communication Strategies: From Information to Engagement**

Among the online tools that are most commonly used by organizations, a crucial role is played not only by corporate website, but also by social media platform. Social media platform (e.g. Facebook, Twitter, Instagram, etc.) refers to technology-facilitated dialogue conducted through platforms including blogs, wikis, content sharing, social networking, and social bookmarking and they provide new opportunities to address barrier such as a lack of engagement and awareness (Carpenter et al., 2016). It differs from traditional media in that it allows for a two-way interactive experience between organizations and stakeholders, rather than media outlets broadcasting information to the masses with no direct reaction or response (Kaplan & Haenlein, 2010). As some author (Cornelissen, 2011) point out, online communication becomes a "key relational driver" that connects the organization with its stakeholders, helps develop trusted relationships with them, and enhances corporate reputation. In Italy, like in the world, Facebook is the most used social media platform and the 45% of the world's population are now social media users (Global Digital Report, 2019).

In the HEIs context, social media represent a critical innovation not only because they allow institutions to quickly disseminate information to large audiences, to promote and encourage the culture of sustainability and good practice among stakeholder, to create awareness about sustainability issue, and to influence follower's behaviors, but also because they engage communities in sustainability initiatives and build communities (Huang et al., 2019). In fact, social media platforms allow HEIs to engage in multi-stakeholder dialogue, and allow important opportunity for sustainability communication. This means that social media are strategic tools not only for disseminate information but also in order to create dialogue and engage public. Heldman, Schindelar, and Weaver (2013, p. 5) defined social media engagement as "a multi-way interaction between and among an organization and digital communities that could take many forms, using social media channels to facilitate that interaction".

In the last few years, some scholars have paid a growing attention to understand how the use of social media by HEIs can support the need to encourage the adoption of sustainability behaviors among students, faculty members, and staff and to be more engaged with their public (Carpenter et al., 2016). Sustainability messaging is shared in a way that creates opportunities for information to be acted on by the audience, thereby opening a dialogue with the organization that allows both parties to work collaboratively to address issues affecting the sustainability behaviors of the audience. From a sustainability perspective, these conversations can lead to varying levels of engagement. Feedback mechanisms, such as buttons or quizzes, facilitate more participation from users of social media and encourage a discussion among users with relatively few access or content creation barriers. Studies have shown that students through social media can, not only, to share their experiences through discussion forums, chat rooms, and instant messaging, or online consultation with a qualified staff but to express themselves, share their stories, learn from others. Engagement is a key element in mobilizing and building communities. In fact, social media platforms enhance the opportunities for dialogue, making it more intense and frequent, they encourage the sharing of information and knowledge, contribute to increasing the trust deriving from greater informality and ease of relationships, not only between students but also between these and the HEI staff, creating in fact a cognitive and emotional context that allows students to feel part of a community. Empirical researches on public and non-profit organizations indicate (Carpenter et al., 2016; Campbell, Lambright, & Wells, 2014; Lovejoy & Saxton, 2012) that organizations seem to employ social media platform for three purpose: information, community, and action. Lovejoy and Saxton (2012), based on a content analysis of tweets sent by 100 of the largest nonprofit organizations in the USA found that the three functions represent a “hierarchy of engagement”, starting with information, then community and action at the top. Information are the initial form of engagement. Through social media platforms sustainability leaders disseminate information about the organization’s activities, projects, events, reports, sustainability policies, and progress with the aim to increase awareness about environmental issues or university activities among their audiences, including students, faculty members, and staff (Williams, Page, & Petrosky, 2014; Velazquez, Munguia, & Sanchez, 2005) and represent the first step in changing behaviors (Djordjevic & Cotton, 2011). According to the literature, one of the main functions of social media is the dialogic relationship building. In other words, the kind of activities that Lovejoy and Saxton (2012) defined as “community” is unique to social media platform because this is function that allows organizations to create an online community with the stakeholders. In other words, it is through interactivity characteristic of social media that organizations’ leaders can build relationship and stimulate the dialogue with their public, which are crucial to the success of university sustainability efforts (Barlett & Chase, 2004). If used effectively and efficiently, social media platform can promote discussion and dialogue (Castronovo & Huang, 2012), engage stakeholders (Newell & Dale, 2015) and improve the collaboration in online environment (Murphy & Salomone, 2013). Communicators can post messages in order to exchange ideas and opinions about sustainability initiatives with the aim of interact with publics. Some authors (Huang & Barlas, 2009) show that shared interests toward the same topics in starting conversation often initiate word of mouth discussion. Conversations are more likely to occur between people who share common interests. The third function is “action”—marketing, promotion, and mobilization—that is important for the organization in order to get its followers to do something for the cause it support. Therefore, sustainability leaders can use social media as a resource that can be mobilized to inspire behavioural change and to help the HEIs fulfil their mission (Valenzuela, Arriagada, & Scherman, 2014). In this way, the institution intends to encourage followers to engage in a specific action to help the organization to meet its objectives of

sustainability development. For example, leaders of higher education institution can directly ask students to reduce the use of plastic bottles through the use of indoor and outdoor fountains installed in the campus.

### **Methodology**

In this study, it has been investigated how academic institution uses social media to communicate sustainability. The analysis of sustainability communication functions on an educational social network context has been carried out, thus a qualitative methodology has been conducted to explore the research question of this study. Considering the qualitative nature of the information exchanged and the typology of messages provided by universities on the social platforms, a qualitative methodology can be considered as a proper solution to assess contents within an online platform throughout the educational network. Furthermore, it has chosen a qualitative content analysis because it allows testing theoretical issues to enhance understanding of the data. Through content analysis, it is possible to distil words into fewer content related categories. It is assumed that when classified into the same categories, words and phrases share the same meaning (Cavanagh, 1997). The aim is to attain a condensed and broad description of the phenomenon, and the outcome of the analysis is concepts or categories describing the phenomenon.

Facebook has been chosen as the social platform to be analysed, considering it as the most relevant and spread tool, it dominates the web landscape and it is used more and more by higher education institutions. Recent studies have found that Facebook is an effective platform for universities to engage students in various issues and programs to potential students (Lund, 2019). In addition, as a social media, it allows contemporary use sustainability related contents as text and several multimedia contents on its page, such as video, links, photos, gif etc., which stimulate the user's reactions and their contributions. Within the institutional Facebook pages, it is also easy to observe the social communication strategies implemented by communication leaders of organisations and the interactions between the firm and its users, even customer-to-customer interactions, in an evolutionary sequence of posts and comments continuously published by the actors. As a sampling frame it has been considered a selection of the most active Italian Universities online Facebook pages on sustainability. A qualitative content analysis has been developed and, following Miles and Huberman (1994), a list of codes defined from the literature was created prior to define the field work to guide the analysis. Defining coding as the organisation of raw data into conceptual categories, each code is effectively a category or "bin" into which a piece of data is placed. Thus the data collected from the different Facebook pages selected from July 2019 and January 2020 have been coded and the analysis has been developed.

### **Data Collection and the Coding Procedure**

The first step of the data collection process was focused to determine which universities could be the most active in communicating sustainability through social network to compose the dataset. The first criterion of selection was to consider those universities participating at the Italian University Network for Sustainable Development. The Network includes 73 universities with different communication strategies on sustainability and different level of sustainability communication commitment. To determine which were the most active Facebook pages belonging to the Italian University Network for Sustainable Development a brief analysis of every page has been developed with the aim to assess which contents were referred to sustainability and sustainability development on the sample period between October and December 2019. To carry out this first step of the analysis a browser application of NVivo software, N Capture, has been used to collect post contents

shared into official Facebook pages of the 73 universities for the sample period. With Nvivo software it has been possible, by setting different queries, to determine which were the sustainability related content posted by each University Facebook page. It has been found that only few universities have dedicated the page to sustainability exclusively, and 6 pages were sensibly more active than the other 73. Thus six Italian universities institutional Facebook pages were considered for the proper database to study the role of the social page for the sustainability communication. The six University Facebook pages selected belong to public University and only one of them is completely dedicated to sustainability given that it has been developed by a specific department focused on sustainability development. The period studied is between July 2019 to January 2020, and through Nvivo a total of 900 messages approximately posted by university were gathered and analysed. From the total amount of post, it has been determined which were related to sustainability and sustainability development, therefore through Nvivo the different queries were repeated, including word search with “sustainability”, “sustainable” both in English and in Italian, finding in total 336 sustainability related post from the 6 University selected.

The next step of the analysis concerned the specific coding of the sustainability related post from the perspective of the University communication about sustainability. In particular, through the coding procedure, we have investigated which are the functions of the sustainability communication on the social media page. All the posted messages by the University have been coded too in relation to the different communication functions which can be implemented by managers to enhance sustainability culture and development throughout the community. These are very significant data to be coded and studied because they represent the communication strategy on sustainability implemented by the universities simultaneously received by users. The coding scheme has been developed previously from the literature on management studies referring to communication on social web and sustainability communication (Lovejoy & Saxton, 2012, Carpenter et al, 2016; Neiger, Thackeray, Burton, Thackeray, & Reese, 2013; Heldman, Schindelar, & Weaver, 2013) and a thematic analysis (Gibbs, 2007). In the next paragraph the coding procedure will be explained considering the former literature that is served as the basis for the communication functions model into social media platform. All the post of universities selected on the institutional Facebook page are served as the coding units of analysis for this study. To avoid observation bias driven by a researcher’s expectations, prior to the actual coding, two trained coders, independently coded a sample of 50 post and, in order to evaluate consistence between the content analysis performed by the two co-authors, and consequently evaluate the robustness of the analysis. More specifically, the coding procedure has been developed through a two-step path. In the first step the coding procedure aims to identify the different categories of messages describing the different functions of communication for sustainability implemented on the social media institutional Facebook page. For this purpose, a model from the communication literature on social media has been used to identify which are the communication function on social media. Therefore, the activities of the model have to be adapted in order to fit a sustainability context. Three main categories have been identified for this classification (Table 1).

Starting from the previous classification, the next passage has been tried to define better each main category into different categories of function for sustainability on the Facebook page. Therefore, the next phase has been focused to best define the three different communication functions referring both to the literature and a thematic analysis. From the literature it emerged that several authors tried to classify different categories and, integrate different model it emerged what is described in Table 2.

Table 1

*Social Media Communication Functions*

Communication function	Description
Information	The information function of social media for sustainability involves a unilateral posting strategy, in which universities imply share information with the only purpose to inform publics about sustainability issues and initiative carried out by universities (Lovejoy & Saxton, 2012). It can be expected on the platform that HEIs could inform students, faculty members, and staff about their universities sustainability policies, practices, and progress.
Action	This function is related to inspire behavioral changes for sustainability related causes (Valenzuela, Arriagada, & Scherman, 2014). This function involves using social media to get stakeholders to do something for the organization and for sustainable development which makes it the most outcome-oriented function of the organizational social media strategies (Lovejoy & Saxton, 2012). It can be expected that HEIs can directly or indirectly ask followers to attend an event, make a donation, recruit other attendees, buy a product, or adopt a specific sustainable behave.
Community	It involves applying social media to build and nurture the dialog of members around points related to the organization, and to sustainability which include dialogue to facilitate community building around causes. It can be expected that HEIs facilitate exchange of ideas and opinions with the goal of interacting honestly and ethically with stakeholders (Lovejoy & Saxton, 2012; Waters & Jamal, 2011).

Table 2

*Sustainability Communication Functions Categories*

Communication function	Categories	Description
Informative	Sharing news about general sustainability development	Sharing information about results and general information coming from external environment, not from the University. It is transferred in a unilateral way (Neiger et al., 2013).
	Sharing information on ongoing project of the University	Information about the organization's activities, initiatives and highlights from events, or any other news, facts, reports or information relevant to an organization's stakeholders. It is transferred in a unilateral way (Neiger et al., 2013; Lovejoy & Saxton, 2012).
Action	Promoting events	It concerns integrating the virtual and real world, and gives committed social media users the opportunity to gain access to events and opportunities about sustainability.
	Calling for volunteers	To list volunteers for opportunities (Lovejoy & Saxton, 2012).
	Joining other site or vote for organisations	Involves asking followers to join another social media site or vote for the organization on another site. Moreover, it involves users to advocate for the university in sustainable development (Lovejoy & Saxton, 2012).
	Changing habits	Refers to the communication action that can be implemented to modify users' routines and practices, in terms of sustainability, to manage long-term changes. More responsible Consumption etc. (Heldman et al., 2013; McColl Kennedy et al., 2017).
Community	Information collection	To solicit a conversational response from stakeholders. Such tweets are important because they clearly show that the organization is looking to create dialogue. These are not just interesting statements that might spark a conversation, but messages that explicitly seek a response of some sort (Heldman et al., 2013; McColl Kennedy et al., 2017).
	Making chance of interaction between users	Creates opportunities for users to engage with the organization, and for your users to engage with each other, and to encourage user generated content (Neiger et al., 2013; Heldman et al., 2013; McColl Kennedy et al., 2017).

Source: our elaboration.



Thus, once the coding scheme emerged from the literature has been set, the next phase has been applying it to the data collected. Therefore, the procedure was to determine whether each post could be placed. Revisions were made along the coding process to make sure coded categories were as exhaustive and mutual exclusive as possible. Concerning the coding activity to determine which post belongs to the different categories different lexical element was considered. More analytically, as it is described in the table, for the information function categories two codes were established and the list of post concerning news about general sustainability development and information on ongoing project of the University were gathered. For the Action categories posts regarding promoting events, to call for volunteers, to join other site or vote for organisations and changing habits were classified. While the information collection and to make chance of interaction between users, have been the two categories for the community function in which several posts have been positioned. It is worth mentioning that few posts on the Facebook page could be apparently classified in two same categories (for example both in information or action function), but the more evolved category could be considered the right for the aim of the study.

### Results and Discussion

We investigated how communicators of universities use social media in order to stimulate sustainability development. Almost all the institutional social pages of the universities observed use Facebook in a considerable way to promote sustain ability, and one of them had gave more attention than other dedicating a social institutional Facebook page to sustainability. For what concern the results, it can be argued that higher education institutions use social media for primarily action and information purposes, whilst for a minor use them to engage and create the community in dialogical interaction. Furthermore, the majority of post are dedicated to promoting action, rather than simply transfer information in a unilateral way. It has been also noticed that only in few occasion, even significant for their content, HEIs stimulate dialog and try to collect information directly or indirectly from users. The following table describes the frequencies of post dedicate for each category.

Table 3

#### *Post Frequencies*

Communication function		Freq.	Percent (%)
Information	Sharing news about general sustainability development	52	15.48
	Sharing information on ongoing project of the University	60	17.86
	Total	112	33.34
Action	Promoting events	81	24.11
	Calling for volunteers	7	2.08
	Joining other site or vote for organisations	18	5.35
	Changing habits	64	19.05
	Total	170	50.59
Community	Information collection	22	6.55
	Making chance of interaction	32	9.52
	Total	54	16.07
General total		336	100

Source: our elaboration.

As it can be seen from the table, universities are more likely to use social media to push content for promoting events both regarding the university activities for sustainability, and general themes regarding other organisation committed in sustainability. Very significant posts were referred both to promote events for

sustainability belonging to the universities or to other organisation. Also, others very significant posts were aimed not only to give information, but to stimulate behaves which could favour sustainable development for, environmental, economic, and social dimensions such as “A new guide to correctly do the separate waste collection! We have decided to join the European Week for Waste Reduction with the Sustainable Unixxxxx project and we have prepared a new document that you can download and use”. This result is very consistent with the nature and mission of universities and in particular to the Italian Universities network for sustainable development. To promote sustainability culture and to foster sustainable development a communication focused on behavioural change and action are crucial. Another important insight coming from results is that universities are very keen on highlighting their achievements in sustainability. This is demonstrated by the importance, in terms of relevance, of the post dedicated to informing public regarding information about sustainability carried out by the HEI. It is worth mentioning that no other main functions are emerged from the coding procedure. It has been observed that universities are very keen to present event in order to make people participate, “A meeting on new technologies, energy and sustainable development aimed at the world of Research, businesses and the local area. Take part in the “National Technology Cluster for Energy, organized on November 27 at Palazzo Bo!”. This type of function is largely encouraged on the social page, the HEIs publish very often and coordinate opportunities for students, faculty members, alumni, and staff to increase participation in campus sustainability events.

The recruitment of people to participate as volunteers, for events or causes, appears to be not a very developed category used by universities in this context. This can be due to the nature of the web page and the typology of events and information posted on the page. But even if the number of post was not huge, the significance of the contents was relevant referring to the typology of request, indeed, many of these volunteers were required to participate as volunteer to an university initiative. So it could be considered an indirect way to promote organizational sustainable actions. They indeed perceive social media as an effective tool in coordinating attendance at events for a mostly mobile population. Also, it has been noticed that universities encourage very often adoption of sustainable behaviours by increasing awareness of positive sustainability practices on their campus and on daily routines actions. For example, sharing experience about responsive consumption:

The #myPoliTObottle have been snapped up! Of the first models there is only one left! But finally the missing models have arrived and, from tomorrow, those who have not yet collected it will be able to go to the Student Office and choose their own bottle In addition, from Monday 3 February the distribution times of the #myPoliTObottle will change:—Monday and Friday from 9 to 12.30—Wednesday from 12.30 to 15.30 Remember to fill in the questionnaire and to bring the Smart Card with you!

They also provide their audiences educational insight on how one can easily help the environment.

Table 4

*Messages Posted on the Facebook Pages by Universities*

Communication function		Quotation
Information	Sharing news about general sustainability development	Every year the approximately 5.6 trillion cigarettes produced in the world are made with cellulose acetate filters, a material that can take over 10 years to decompose. Hence the project of the xxxx startup xxxxx which, through the hydrothermal carbonization technique, obtains coal from the cigarette butts destined for the #painting sector, managing to transform such a dangerous # waste into a # resource. The #WorldEcolabelDay is celebrated today in over 50 countries, a day dedicated to all those products and services that have proven to be preferable from an environmental point of view, and whose performances have been tested in order to guarantee the best results for health of consumers and for the planet.

(Table 4 to be continued)

Information	Sharing information on ongoing project of the university	<p>In the episode of “Cammina Italia” dedicated to scientific research, xxxxxxxx(...), spoke on sustainability, technological innovation and energy diversification (...) in the reportage shot along the course of the xxxxx, with a focus on Ecomuseumxxxxxx. The “green economy” is advancing and there is an increasing need for specialized figures in helping companies in the transition towards sustainable energy policies, both economically and financially. A highly requested figure for which, however, to date, there is no dedicated training course. Now a new European Erasmus + project led by the University of xxxxxxxxxx will fill this gap, giving life to an international degree course with a joint degree designed to support the green turning point of the productive world.</p> <p>With Sustainable Unxxxxxx we have put on paper all the objectives achieved during 2018 with respect to gender equality, equal opportunities, inclusion, well-being and impact on the environment. These are the first results since the approval of the Charter of commitments that we started following a year ago, and until 2022. You can read it and download it here.</p>
	Promoting events	<p>On Tuesday 10 December, at 5.30 pm in the SMT.10 classroom of the XXXXX, the third edition of the cycle of “Sustainability pills” meetings organized by the Sustainability Commission—University of XXXXX.</p> <p>In the first meeting, entitled “Human Rights Day: towards fair, supportive and sustainable trade”, the teachers of the Department of XXXXX XXXXX will speak. To participate, read the article on UniXXXX.</p>
Action	Calling for volunteers	<p>Help the Geography Museum—University of XXXX with a donation! We launched the “Save the globes” campaign for the restoration of two precious museum artifacts, but we need your help! Find out how to become a donor: XXXXXX.</p>
	Joining other site or vote for organisations	<p>“There is enough food on Earth to feed the entire world population but one third of the amount produced every year is wasted. In most cases, however, these “wastes” can be avoided and become raw material for the preparation of new dishes and tasty recipes! With the #StopTheWaste campaign, the World Food Program invites everyone to reflect on the theme by launching a curious challenge: Search your refrigerator or pantry for food that is close to its expiration date and can still be consumed. Take a selfie while you prepare or eat it. Share the photo on social media using the hashtag #StopTheWaste and challenge three friends to do the same by tagging them in the post. Finally, why not, share the recipes made with advanced food on your social profiles or organize a dinner at your home by inviting your friends to do the same!”</p>
	Changing habits	<p>Do you have to dispose of small electrical or electronic appliances, but do you continue to store them at home at the moment? Are you submerged in batteries, plastic caps or corks that you don’t know where to throw properly? Today, all day, and tomorrow until 17, you can deliver them to the XXXXX students in front of classroom 2 of the XXXXXXXX headquarters. Together with the University and we of the Green Team, they will take care of disposing of everything correctly.</p>
Community	Information collection	<p>Tell us your vision about accessibility and sustainable mobility in xxxxxxxx. Participate in the video competition U-mob LIFE: you could win 500 euro! What is your idea for a sustainable campus? Participate in the workshop organized by Ecòxxxxxx in collaboration with the Green Team, Wednesday 30 October from 17.30, to search together for innovative ideas and solutions for our University! Do not miss!</p>
	Making chance of interaction	<p>Do you remember the open assembly of the xxxxx Regional Council dedicated to the theme “Environment and climate, which solutions for the future”, in which the xxxxxx universities have focused attention on the urgency of actions to combat climate change?</p> <p>Here you will find the presentation displayed during the intervention.....”</p>

Source: our elaboration.

Concerning information and action functions, it has been found that relevant messages posted by universities were aimed to inform and to stimulate the participation in educational sustainable initiative carried

out by the universities such as “Let us build a more sustainable teaching together! With xxxxxxxxxxxx, Paralympic water skiing champion, we discover a new educational cooperation, focusing on the culture of heterogeneity and diversity. Come to meet him on Thursday 21 in the Aula Magna at Palazzo Bo: participation is free!> <http://bit.ly/didatticasostenibilita>”. These results gave important insights to the commitment of University in sustainable development also in their main activities including the construction of new sustainable educational path. “Come to discover the General Course, our transversal course dedicated to inclusion! xxxxxxxxxxxx and xxxxxxxxxxxx talk about what they learned from this experience, from the point of view of the teacher and the student”. Another important aspect observed to be emphasised, is the role of the community creation function represented by the information collection and make chance of interaction between users. This two subcategories were not so strongly developed, and the facilitation of the dialog by university is related to post referred mainly to collect information about sustainable university initiatives “Tell us your vision about accessibility and sustainable mobility in xxxxxxxx. Participate in the video competition U-mob LIFE: you could win 500 euro!”. The content analysis carried out also shows that there is not an optimal method to use social media channels for the universities communication in terms of sustainability. The three categories of communication mainly are oriented to information, action, community, all interacting with each other, they seem to be integrated in the context of a complex communication strategy of sustainability. In particular, the components of information and action progressively would feed the community component as the most advanced form of communication in terms of sustainability. Furthermore, in particular, concerning results emerging from the content analysis it can be possible to observe the links between communication categories (information action and community), and it has been possible to notice that the community category could benefit in perspective of content of messages relating to the “information” and “action” components. Indeed it can be argued that single posts coded as community creation perspective includes and are fostered from information or action basis to be developed as community creation. For instance they post:

Tell us your vision about accessibility and sustainable mobility in xxxxxxxx. Participate in the video competition U-mob LIFE: you could win 500 euro! What is your idea for a sustainable campus? Participate in the workshop organized by Ecòxxxxxx in collaboration with the Green Team, Wednesday 30 October from 17.30, to search together for innovative ideas and solutions for our University! Do not miss!

This post contains at the same time the information transferred by the university and the invitation to participate at the contest that is an action based coding with the aim to involve participant in a community for the same contest among the university for a sustainability initiative. Also they post:

Are you a curious person and do you like cooking? Do not miss the workshops of L'uovo di xxxxxx LAB, a laboratory open to all citizens where you can transform surplus food into culinary excellence! During the workshops, open to all, you will work “with your hands in dough” transforming surplus food, recovered in the area, through a #designoriented process full of creativity and experimentation with a view to #economic circulation and enhancement of #resources. The laboratory is created by the xxxxxxxxxxxx of the xxxxxxxxxxxxxxxxxxxx.

In this post they are not only gathering participant to an event (action) already promoted through the social page, but they are also transferring information and contributing to creating a community. Given these considerations it can be argued that the community creation posts are the most advanced in terms of communication strategy and they exploit information and action content most of the time. Therefore, if it would be assessed with a systematic view of the three categories it would be appreciated in a progressive way starting

from the information category through the action and at the end the community creation. In other words, communication oriented towards the creation of the community fuelled by information and action allows the various stakeholders (students, families, teachers, etc.) not only to be informed but also to actively participate in the definition of strategies and their implementation in sustainability issues.

### **Conclusions and Practical Implications**

The research purpose has analysed how social media can be adopted to communicate sustainability. With the aim to accomplish this scope, the method of the content analysis has been implemented regarding the sustainability messages posted by universities from the sample of six Italian universities selected for the research. The application of this method is allowed to classify the messages detected in different grouped categories, according to the framework developed by Lovejoy and Saxton (2012) validated by subsequent studies (Carpenter et al., 2016; Campbell et al., 2014) and integrated with relevant literature. The study confirms the three main functions of universities social media with regard to the sustainability communication. These findings are consistent indeed with earlier research (Campbell et al., 2014; Carpenter et al., 2016; Saxton and Waters, 2014). The functions found consist mainly in information, action, and community creation, all referring to the commitment of the universities in sustainable development communication. In particular, the results show that universities mainly use the social platform to promote sustainability initiatives, increasing user's participation in university sustainability initiatives. Universities use also social media to request or suggest to all internal and external stakeholders the adoption of actions capable of contributing to sustainable development (purpose of action) and to disseminate the information necessary to increase the awareness of the various stakeholders on the sustainability issues worthy for university and the territory (information purpose). Whilst, more rarely, universities use the social platform to feed and activate stakeholders, through dialogue and conversation, in community building, trying to create strong links between individuals and groups specific sustainability issues of common interest. Some of the most representative topic observed on the social page have been the sustainability of teaching, research, support to companies for the development of sustainable solutions, energy saving, climate change. Considering the current period characterized by a transition towards sustainability perspective, it seems from results that, although universities are starting to use social media also to communicate their commitment to sustainable development very noticeably, there is still no adequate use of all the communicative potential of social platforms and, in particular, of their specific interactivity characteristics with reference to the community creation. Social media platforms offer the greatest potential for building links and interactions between universities and internal and external stakeholders. It has also been possible to observe the chance to improve the use of the high interactive capacities of social platforms not yet fully exploited by universities in relation to the communication of their progressive commitment to the dissemination of culture and good sustainability practices both to the inside and outside the universities.

Concerning the managerial implications, it highlights the need for universities to develop a more specific relational orientation, consistent with the characteristics of social media, capable of promoting inclusive processes of the various stakeholders aimed to create active involvement in the sustainability strategies and practices of the university. In other words it emerges the need of the development of an orientation for communication responsible in university capable of evolving the communication of sustainability in the direction of building structured forms of collaboration (of online and offline communities) that allow, through listening, the dialogue and conversation to include and to make participating the various internal and external

university stakeholders in the formulation processes of strategies, initiatives and other practices in terms of contributing to sustainable development.

Results also suggest the need for a greater allocation of resources, certainly not favoured by the progressive reduction of university funding, on the creation of specific skills for professional responsive to manage communication on social media in particular. The aim is to best exploit the opportunities for relational exchange that the interactivity features of social platforms allow. With regard to the analysis developed, the limits of the research, refer to characteristic of the sample of the selected universities essentially, and to the implicit subjectivity of method adopted. Furthermore, a major task for communication managers working within the higher educational sector is to be proactive in using social media, giving relevant attention to all the dimension of sustainability (environmental social and economic). Developing this communication strategy could allow universities to attract and retain students who, through word of mouth, could be promoters and ambassadors of universities actions. In the high educational sector, communication strategy represents a means of competition and a key asset for innovation which allows firms to differentiate and increase their performance and reputation.

The limited number of universities may have conditioned the results, thus a different, more representative sample of “sustainable” universities could be needed to be able to generalize results. Referring to the coding method for classification of the contents of the sustainability communication, albeit its implicit subjectivity, it is worth mentioning that it could be reduced by the “rigidity” of the classification process and its replicability.

The analysis has focused on the contents posted by universities concerning the organizational communication on sustainability conveyed by social media platforms. Therefore, future research could integrate the analysis of the university’s communication activity with analysis aimed to assess the “perception” of the various internal and external stakeholders of the university. This potential study could include reactions and messages posted not only by universities but also by users. The other research perspective could concern the evaluation of the communication effectiveness on Facebook or other social media oriented, through interactional analysis, to assess the social page ability to encourage the engagement of users in sustainability related issues.

## References

- Amey, L., Plummer, R., & Pickering, G. (2020). Website communications for campus sustainability: An analysis of Canadian universities. *International Journal of Sustainability in Higher Education*, 21(3), 531-556.
- Alshuwaikhat, H. M., & Abubakar, I. (2008). An integrated approach to achieving campus sustainability: Assessment of the current campus environmental management practices. *Journal of Cleaner Production*, 16(16), 1777-1785.
- Barlett, P. F., & Chase, G. W. (2004). *Sustainability on campus: Stories and strategies for change*. Cambridge, MA: MIT Press.
- Barnes, N. G., & Lescault, A. M. (2011). *Social media adoption soars as higher-ed experiments and reevaluates its use of new communications tools*. Center for Marketing Research, University of Massachusetts Dartmouth, North Dartmouth, MA.
- Brundtland, G. H. (1987). *Our common future*. Report of the World Commission on Environment and Development. Oxford: Oxford University Press.
- Bucur, M., & Petra, C. (2011). Why is communication so special for sustainable development? *Scientific Bulletin of the “Petru Maior” University of Targu Mures*, 8(1), 48.
- Campbell, D. A., Lambright, K. T., & Wells, C. J. (2014). Looking for friends, fans, and followers? Social media use in public and nonprofit human services. *Public Administration Review*, 74(5), 655-663.
- Cavanagh, S. (1997). Content analysis: Concepts, methods and applications. *Nurse Researcher*, 4(3), 5-16.
- Carim, L., & Warwick, C. (2013). Use of social media for corporate communications by research-funding organisations in the UK. *Public Relations Review*, 39(5), 521-525.

- Carpenter, S., Takahashi, B., Cunningham, C., & Lertpratchya, A. P. (2016). The roles of social media in promoting sustainability in higher education. *International Journal of Communication*, 10, 1-19.
- Castronovo, C., & Huang, L. (2012). Social media in an alternative marketing communication model. *Journal of Marketing Development and Competitiveness*, 6(1), 117-134.
- Cho, M., Schweickart, T., & Haase, A. (2014). Public engagement with nonprofit organizations on facebook. *Public Relations Review*, 40(3), 565-567.
- Cornelissen, J. (2011). *Corporate communication. A guide to theory and practice* (3rd ed.). London, UK: Sage.
- Djordjevic, A., & Cotton, D. R. E. (2011). Communicating the sustainability message in higher education institutions. *International Journal of Sustainability in Higher Education*, 12(4), 381-394.
- Eizaguirre, A., García-Feijoo, M., & Laka, J. P. (2019). Defining sustainability core competencies in business and management studies based on multinational stakeholders' perceptions. *Sustainability*, 11(8), 2303.
- Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review*, 36(2), 90-100.
- Ferrer-Balas, D., Buckland, H., & DeMingo, M. (2009). Explorations on the university's role in society for sustainable development through a systems transition approach. Case-study of the Technical University of Catalonia (UPC). *Journal of Cleaner Production*, 17(12), 1075-1085.
- Genç, R. (2017). The importance of communication in sustainability & sustainable strategies. *Procedia Manufacturing*, 8, 511-516.
- Gibbs, G. R. (2007). *Thematic coding and categorizing. Analyzing Qualitative Data*, London: SAGE Publications, Ltd.
- Golinelli, G. M., & Volpe, L. (2012). *Consonanza, valore, sostenibilità: verso l'impresasostenibile*. Cedam.
- GómezL, M., & Chalmeta, R. (2011). Corporate responsibility in US corporate websites: A pilot study. *Public Relations Review*, 37(1), 93-95.
- Heldman, A. B., Schindelar, J., & Weaver, J. B. (2013). Social media engagement and public health communication: Implications for public health organizations being truly "social". *Public Health Reviews*, 35(1).
- Huang, L., & Barlas, S. (2009). When will people tell you something you do not know? *Advances in Consumer Research*, 36, 761-762.
- Huang, L., Clarke, A., Heldsinger, N., & Tian, W. (2019). The communication role of social media in social marketing: A study of the community sustainability knowledge dissemination on LinkedIn and Twitter. *Journal of Marketing Analytics*, 7(2), 64-75.
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of social media. *Business Horizons*, 53(1), 59-68.
- Lovejoy, K., & Saxton, G. D. (2012). Information, community, and action: How nonprofit organizations use social media. *Journal of Computer-Mediated Communication*, 17(3), 337-353.
- Lozano, R., Ceulemans, K., Alonso-Almeida, M., Huisinigh, D., Lozano, F. J., Waas, T., Lambrechts, W., Lukman, R., & Hugé, J. (2015). A review of commitment and implementation of sustainable development in higher education: Results from a worldwide survey. *Journal of Cleaner Production*, 108, 1-18.
- Lund, B. (2019). Universities engaging social media users: An investigation of quantitative relationships between universities' Facebook followers/interactions and university attributes. *Journal of Marketing for Higher Education*, 29(2), 251-267.
- Mccoll-Kennedy, J. R., Vargo, S. L., Dagger, T. S., Sweeney, J. C., & Van Kasteren, Y. (2012). Health care customer value cocreation practice styles. *Journal of Service Research*, 15(4), 370-389.
- Miles A. M., & Huberman, M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage.
- Murphy, G., & Salomone, S. (2013). Using social media to facilitate knowledge transfer in complex engineering environments: A primer foreducators. *European Journal of Engineering Education*, 38(1), 70-84.
- Neiger, B. L., Thackeray, R., Burton, S. H., Thackeray, C. R., & Reese, J. H. (2013). Use of twitter among local health departments: An analysis of information sharing, engagement, and action. *Journal of Medical Internet Research*, 15(8).
- Nejati, M., Shafaei, A., Salamzadeh, Y., & Daraei, M. (2011). Corporate social responsibility and universities: A study of top 10 world universities' websites. *African Journal of Business Management*, 5(2), 440-447.
- Newell, R., & Dale, A. (2015). Meeting the Climate Change Challenge (MC<sup>3</sup>): The role of the internet in climate change research dissemination and knowledge mobilization. *Environmental Communication*, 9(2), 208-227.
- Newig, J., Schulz, D., Fischer, D., Hetze, K., Laws, N., Lüdecke, G., & Rieckmann, M. (2013). Communication regarding sustainability: Conceptual perspectives and exploration of societal subsystems. *Sustainability*, 5(7), 2976-2990.

- Porter, L. V., Trammell, K. D. S., Chung, D., & Kim, E. (2007). Blog power: Examining the effects of practitioner blog use on power in public relations. *Public Relations Review*, 33(1), 92-95.
- Reilly, A. H., & Hynan, K. A. (2014). Corporate communication, sustainability, and social media: It's not easy (really) being green. *Business Horizons*, 57(6), 747-758.
- Sady, M., Żak, A., & Rzepka, K. (2019). The role of universities in sustainability-oriented competencies development: Insights from an empirical study on Polish universities. *Administrative Sciences*, 9(3).
- Saxton, G. D., & Waters, R. D. (2014). What do stakeholders like on facebook? Examining public reactions to nonprofit organizations' informational, promotional, and community-building messages. *Journal of Public Relations Research*, 26(3), 280-299.
- Siano, A. (2012). La comunicazione per la sostenibilità nel management delle imprese (Communication for sustainability in business management). *Sinergie Italian Journal of Management*, 89, 3-23.
- Siano, A., Conte, F., Amabile, S., Vollero, A., & Piciocchi, P. (2016). Communicating sustainability: An operational model for evaluating corporate websites. *Sustainability*, 8(9).
- UNESCO. (2014). Road map for implementing the Global Action Programme on Education for Sustainable Development. UNESCO.
- Valenzuela, S., Arriagada, A., & Scherman, A. (2014). Facebook, Twitter, and youth engagement: A quasi-experimental study of social media use and protest behavior using propensity score matching. *International Journal of Communication*, 8, 2046-2070.
- Velazquez, L., Munguia, N., & Sanchez, M. (2005). Deterring sustainability in higher education institutions: An appraisal of the factors which influence sustainability in higher education institutions. *International Journal of Sustainability in Higher Education*, 6(4), 383-391.
- Von Hauff, M., & Nguyen, T. (2014). Universities as potential actors for sustainable development. *Sustainability*, 6, 3043-3063.
- Wals, A. E. J. (2014). Sustainability in higher education in the context of the UN DESD: a review of learning and institutionalization processes. *Journal of Cleaner Production*, 62, 8-15.
- Waters, R. D., & Jamal, J. Y. (2011). Tweet, tweet, tweet: A content analysis of nonprofit organizations' Twitter updates. *Public Relations Review*, 37(3), 321-324.
- Williams, K. C., Page, R. A., & Petrosky, A. R. (2014). Green sustainability and new social media. *Journal of Strategic Innovation and Sustainability*, 9, 11-33.
- Wright, D. K., & Hinson, M. D. (2011). A three-year longitudinal analysis of social and emerging media use in public relations practice. *Public Relations Journal*, 5(3), 1-32.
- Wright, T. S. (2002). Definitions and frameworks for environmental sustainability in higher education. *Higher Education Policy*, 15(2), 105-120.