



# How to Encourage Social Entrepreneurship Action? Using Web 2.0 Technologies in Higher Education Institutions

Víctor Jesus García-Morales<sup>1</sup> · Rodrigo Martín-Rojas<sup>1</sup> · Raquel Garde-Sánchez<sup>2</sup>

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## Abstract

University students will be our future business leaders, and will have to address social problems caused by business by implementing solutions such as social entrepreneurship ventures. In order to facilitate the learning process that will foster social entrepreneurship, however, a more holistic pedagogy is needed. Based on learning theory, we propose that students' social entrepreneurship actions will depend on their learning about CSR and their absorptive capacity. We propose that instructors and higher education institutions can enhance this absorptive capacity by exploiting Web 2.0 technologies. We tested our proposition with a sample of 425 university students using structural equation modeling and found support for the proposed relationships.

**Keywords** Learning CSR · Social entrepreneurship · Web 2.0 strategic support · Web 2.0 technology use · Absorptive capacity

## Introduction

Social entrepreneurship, the process of exploring and exploiting opportunities to create social value stimulating social change or meeting social needs (Mair and Martí 2006), is a global phenomenon that impacts society by employing innovative approaches to solve social problems (Robinson et al. 2009). It creates social impact, social change, and social transformation (Nicholls 2006; Mair and Noboa 2006; Wakkee et al. 2018). Organizations need future decision-makers who can recognize and address the new

ethical dilemmas, adopting appropriate moral standpoints and translating these into justifiable social decisions (Brunton and Eweje 2010). As many future business leaders will be university students who must resolve social problems using methods grounded in corporate social responsibility (CSR) (Byerly et al. 2002), educators must be made more aware of the need to improve knowledge and learning of CSR by incorporating related issues into study programs. It also seems logical to focus on the values and emotions underpinning sustainable behaviors (Shephard 2008; Montiel et al. 2018).

Academics have recently advocated teaching methods that promote more active learning and increase the efficacy of education for its sustainability management (e.g., Shrivastava 2010; Sunley and Leigh 2016; Montiel et al. 2018). Integrating a consciousness of CSR in students requires a more holistic pedagogy, which includes emotional and spiritual aspects of learning (Shrivastava 2010). Internalizing knowledge about CSR should lead students to practice it (social action), rather than merely accumulating a series of concepts. Achieving such learning and putting it into practice requires a passion for sustainability (Shrivastava 2010; Montiel et al. 2017, 2018), and teaching passion requires educational change that takes students' learning a step further by making CSR values important and developing

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✉ Raquel Garde-Sánchez  
rgarde@ugr.es

Víctor Jesus García-Morales  
victorj@ugr.es

Rodrigo Martín-Rojas  
rodrigomr@ugr.es

<sup>1</sup> Department of Business Administration, Faculty of Economics and Business Sciences, University of Granada, C/Campus Universitario de Cartuja s/n, 18071 Granada, Spain

<sup>2</sup> Department of Accounting and Finance, Faculty of Economics and Business Sciences, University of Granada, C/Campus Universitario de Cartuja s/n, 18071 Granada, Spain

links between students, business, society, and the natural environment.

Increasing awareness of issues such as CSR and sustainability depends, among other things, on the absorptive capacity as a strategic and necessary element in their understanding of these matters (Delmas et al. 2011). In this study, absorptive capacity refers to the “ability to recognize, absorb, integrate and apply new external knowledge to advance competitiveness” (Cohen and Levinthal 1990, p. 128). Instructors can more easily enhance these students’ absorptive capacities by exploiting Web 2.0 technologies (Huang and Lucas 2015). These are technologies centered around a user’s ability to create their own multimedia content, connect with other users to share content, customize personal profiles (Greenhow et al. 2009), and interface with other Web services (Jussila et al. 2014). They are defined as “technologies that enable users to communicate, create content and share it with each other via communities, social networks and virtual worlds more easily than before” (Jussila et al. 2014, p. 607). These can transform instructional design theory and practice in education (Greenhow et al. 2009). Web 2.0 technologies could enhance a more powerful transmission of concepts by appealing to values, passion, sensitivity and empathy—elements critical for education involving sustainability and CSR (Montiel et al. 2017, 2018). By combining information and communication technologies (ICTs) with new resources such as Web 2.0, educators can communicate, cooperate, interact, and facilitate knowledge exchange (Bennett et al. 2012; Arquero and Romero-Frías 2013).

Web 2.0 technology use is defined in this study as the use of “advanced Internet applications that do something unique, practical, and/or powerful while enabling social connections, and thus, greater collaboration among users” (Ertmer et al. 2011, p. 252). It involves the use of platforms oriented for professional rather than personal use, fosters a high level of interactivity, and has significant implications for educational practice. It is important for instructors to perceive and use Web 2.0 technology as an strategic part of student-centered approach to teaching if enhanced learning outcomes are to be achieved (Englund et al. 2017). Using Web 2.0 technologies has positive benefits for teaching and knowledge exchange (Faizi 2018; Wankel 2009). These technologies have the potential to enhance student engagement (Ivala and Gachago 2012) and facilitate the communication, collaboration (Daniela et al. 2018), and the absorptive capacity of CSR (Junco 2012; Mazman and Usluel 2010; Stainbank and Gurr 2016). Web 2.0 technology use can improve the quality of knowledge about these issues (e.g., Ehlers 2009; Othman and Ab Wahid 2014; Schroeder et al. 2010; Stainbank and Gurr 2016).

Based on learning theory, a “perspective of human behavior in that persons can learn to set goals and self-regulate

their cognitions, emotions, behaviors, and environments in ways to facilitate attainment of those goals” (Schunk 2012, pp. 159–160), this paper argues for the importance of fostering the learning of CSR in business studies to promote students’ social entrepreneurship. Learning CSR is defined as an educational process in organizations “to integrate social, environmental, ethical, human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders” (adapted from European Commission 2011, p. 6). Regarding social entrepreneurship, although is hard to define, we use the term advised by Short et al. (2009) who, after reviewing 152 articles where social entrepreneurship was defined, recommended the following definition: “Social entrepreneurship is a process of creating value by combining resources in new ways. These resource combinations are intended primarily to explore and exploit opportunities to create social value by stimulating social change or meeting social needs. And latterly, when viewed as a process, social entrepreneurship involves the offering of services and products but can also refer to the creation of new organizations” (Mair and Martí 2006, p. 37). Nevertheless, it is convenient to highlight that Short et al. (2009) complement social entrepreneurship as a construct, which overlaps research in entrepreneurship, public and non-profit sectors, and social issues in management. That is to say, the distinctiveness of social entrepreneurship lies in using practices and processes that increase the awareness of companies to address the creation of social value instead of maintaining it or creating just economic value.

Learning CSR has a positive mediating effect on the relationship between absorptive capacity and promoting entrepreneurship from a social perspective (social entrepreneurship). Our research also extends the literature on the antecedents of absorptive capacity. In so doing, it analyzes Web 2.0 strategic support and the use of Web 2.0 technology in higher education institutions. These tools promote new ways of teaching and the capacity to absorb CSR. This paper argues for the need to educate students better on CSR-related issues. Learning CSR must provide individuals who are more committed to the social environment (social entrepreneurship). Educators and their institutions must strategically support Web 2.0 technologies in order to promote absorptive capacity regarding CSR. We understand Web 2.0 strategic support as support initiatives that involve implementing the required tools to run within the organization, which will support the use of the technology and assist staff with its use (Baxter and Connolly 2014). Web 2.0 tools are becoming increasingly common in organizations, and it seems reasonable that support of technology could enhance efficiency (Brychan et al. 2004). Web 2.0 strategic support provides Internet and Web sites that would be easily accessible, appropriate, and useful (Brychan et al. 2004). Management of Web 2.0 ensures an adequate infrastructural support

to ease adoption and to assess whether the use of Web 2.0 technologies is appropriately fitted with the statements of their organization (Kosonen et al. 2007). Zhao and Kemp (2012) present a Web 2.0-based learning and training model and include the organizational support to promote the use of Web 2.0 tools in order to aid the process of organizational learning and development. In our case, Web 2.0 technology use can facilitate collaborative direct learning and promote students' ability to access and absorb new knowledge about CSR and subsequently put it into practice (Hartshorne and Ajjan 2009; Montiel et al. 2017).

The main contributions of this paper are twofold. We first stress the importance of improving student knowledge (by examining the effect of Web 2.0 technology use and Web 2.0 strategic support on absorptive capacity) and learning of CSR and how they turn this learning into practice. The knowledge of CSR that is absorbed by students must be transformed into social action. Educators need a greater awareness of the importance of incorporating social issues into study programs to enable university students (future business leaders) learning CSR to solve social problems through social entrepreneurship (Byerly et al. 2002). Secondly, we analyze the connection between learning theory and action for business students. Learning theory asserts that students must play an active role in learning (Millwood 2011) but does not connect this learning to practical action. Our study fills this gap by enhancing students' absorptive capacity through the promotion of suitable Web 2.0 technology content (Dewey 1938; Montiel et al. 2017) and a proactive (Millwood 2011) and educational environment (Dewey 1938). The resulting learning CSR will increase student intentions to start new businesses that focus on social issues (social entrepreneurship). Finally, to achieve our goals, the article is structured as follows. Section 2 describes our theoretical framework. Section 3 presents our hypotheses, and Sect. 4 outlines the methods of data analysis. The results obtained are then discussed in Sect. 5. Finally, Sect. 6 presents the main conclusions drawn, the theoretical and practical implications of our study, limitations, and possible lines for future research.

## Theoretical Background

### Learning Theory, Absorptive Capacity, and Web 2.0 Technologies

According to learning theory, the process that occurs between instructors and students in the learning environment (Dewey 1938) involves knowledge and absorptive capacity. Knowledge is not passively received, either through the senses or by way of communication, but is actively built up through the cognizing subject (Millwood

2011), and new knowledge has a practical impact on behavior (Huber 1991; Slater and Narver 1995). People have great potential to learn both basic and specialized knowledge from trained educators (Lane et al. 2006; Vasylieva 2013); however, they absorb not only the observable components of an educator's methods, but also the tacit knowledge embedded in a university's learning processes and social context and content (Nonaka and Takeuchi 1995; Lane and Lubatkin 1998).

Successful learning occurs when educators foster student abilities to value, assimilate, utilize, and recognize prior basic knowledge (absorptive capacity) and transform it into new knowledge (Vasylieva 2013). Absorptive capacity is thus essential to learning (Cohen and Levinthal 1990; Zahra and George 2002; Jimenez et al. 2011; Vasylieva 2013; García-Morales et al. 2014). Integrating the concept of absorptive capacity into learning theory in business education should enable students to learn effectively in their business schools and to apply the knowledge acquired later, in the workplace (Tho and Tho 2017). There has been little empirical research, however, on students' absorptive capacities and the effect on learning in education (Halpern and Hakel 2003; Schunk 2012; Duke et al. 2013). Further research is needed to identify the mechanisms by which absorptive capacity and learning interact, especially when learning CSR (Upstill-Goddard et al. 2016), due to the increasing need to integrate CSR topics into education (Quinn and Dalton 2009).

Effective digital learning (Lau and Tsui, 2009) using technological tools can generate absorptive capacity. In the education sector, promoting and supporting ICTs or Web 2.0 technologies (Grosbeck 2009) can facilitate cooperation between students, enhance absorptive capacity and learning, and improve their ability to access newly created knowledge. These abilities can lead to action, but the field lacks empirical research into how this process occurs (Guy and Tonkin 2006; Hartshorne and Ajjan 2009). Web 2.0 technologies are increasingly integrated into the learning process for the active creation and exchange of knowledge (Alexander 2006; Mason and Rennie 2007; Englund et al. 2017; Daniela et al. 2018). Web 2.0 technologies support students' capacity building and develop critical thinking, problem solving, and communication skills (Instefjord and Munthe 2017). Web 2.0 enables learning through participation in social networks (Wang 2011). Although tools exist to integrate social networks into teaching and to foster learning (Rapp et al. 2015), we lack comprehensive strategies for the use of Web 2.0 technologies to promote learning (Wang 2011). Research is thus needed to determine whether students who are better able to absorb knowledge of social issues due to Web 2.0 technologies (supported and used) can also better learn and adapt continuously to the social demands of the environment, and can promote social actions (Zeinabadi 2013).

Research into learning theory (Schunk 2012) suggests that new technologies have caused absorptive capacity and the learning process to evolve, transforming the constructivist focus of learning theory into one of connectivism (Millwood 2011). However, few empirical studies have examined the links between connectivism (promoted by Web 2.0, ICTs, social media, or connections among individuals) and absorptive capacity (Schunk 2012; Duke et al. 2013). It is also necessary to analyze the technological mechanisms through which absorptive capacity enables people to learn new ideas, combine them with what they already know, assimilate these ideas, and apply them for commercial (Cohen and Levinthal 1990) or academic ends (Bennett et al. 2012; Scott et al. 2016; Wei and Ram 2016). Some authors suggest that we should increase the absorptive capacity of individuals and organizations in order to reduce effort and cognitive costs (Uzzi and Lancaster 2003), but these authors have not yet considered the technological mechanisms that create and increase the evaluation, assimilation, and exploitation of knowledge (absorptive capacity) (Jiang 2005; Singh 2005). Filling this gap requires empirical evidence on issues such as the role of social networks in promoting absorptive capacity and learning and the connection between CSR and social decisions (Ertmer et al. 2011; Schunk 2012; Lin 2013; Campos-Climent et al. 2017).

### Social Entrepreneurship and Learning CSR

Entrepreneurship education at school level is important and contributes to economic growth (Isaacs et al. 2007; Wakee et al. 2019). It produces sustainable and competitive human capital (Othman and Ab Wahid 2014). This entrepreneurship education seeks to enable young people to develop the skills they need for life and work (European Commission 2018). In fact, the first concluding recommendation for action in the European Commission's final report on entrepreneurship in education is to create a task force or steering group to determine how entrepreneurship can be integrated into the education system across primary, secondary, and higher education. Business schools, like all higher education institutions, are undergoing "transformative changes" at both conceptual (new models of entrepreneurship education) and technological levels (eLearning, mobile devices, learning networks, entrepreneurship networks, Web 2.0 technologies) (Arquero and Romero-Frías 2013; Welsh et al. 2016). Within entrepreneurship, education has grown exponentially the field of social entrepreneurship in recent years, becoming a social, economic, and cultural phenomenon (Pless 2012). A social entrepreneurship approach and valuing social entrepreneurship are both pertinent to the dynamic growth of human capital and to a country's social and economic changes (Nicholls and Cho 2008).

One mission for twenty-first century universities is thus to encourage the social and economic development of their surroundings through training in venture creation and the development of entrepreneurship (Barba-Sánchez and Atienza-Sahuquillo 2018). Higher education institutions must continue to generate knowledge and technological development with the potential to stimulate economic activity (Goldstein and Renault 2004; Lööf and Broström 2008) and social action (Mueller 2011). The teaching of social entrepreneurship requires absorptive capacity and the learning of CSR. Increasing the absorptive capacities of students by making them capable of recognizing ethics and CSR in study programs makes students more capable of recognizing and addressing ethical dilemmas as they arise, adopting appropriate moral standpoints, and translating these into justifiable decisions, potentially creating socially conscious firms (Brunton and Eweje 2010). In addition to absorbing knowledge, understanding the role of learning CSR is a crucial element of social entrepreneurship, and empirical research is needed on the synergy between learning and entrepreneurship (Bandera et al. 2018). Thus, from a business standpoint, it is very important to train professionals to address and fulfill social needs (Ferguson et al. 2011). The enhancement of students' absorptive capacities in CSR must be accompanied by the promotion of their learning of CSR (Nicholls 2006; Kraus et al. 2017). Such learning will, in turn, improve the level of social knowledge transferred to business students (Lau and Tsui 2009), which will be projected into future social business actions.

Additionally, absorptive capacity is enhanced when it is based on Web 2.0 technology use. This technology provides new ways of acquiring knowledge (e.g., social knowledge) that can be shared (Ehlers 2009; Junco 2012; Stainbank and Gurr 2016) and used to facilitate value creation and knowledge exchange (Sigala and Chalkiti 2015). Using Web 2.0 technology enhances the full absorptive capacity process by combining social knowledge from classes with informal (it takes place not from classes) social knowledge (Hirsh-Pasek et al. 2015). Such use enables students to continue to absorb knowledge in social activities both inside and outside the classroom (Sawyer 2006). Considerable theoretical consensus supports the need to extend the teaching of entrepreneurship in the context of higher education beyond the classroom environment. Such teaching must focus on discovery through experience and promote absorptive capacity through new approaches to learning, such as those enabled by Web 2.0 technologies, in order to develop student competencies and capacity and encourage social consciousness. The use of technology in teaching and learning becomes a fundamental tool (Akcayir 2017; Chawinga 2017; Daniela et al. 2018; Bugawa and Mirzal 2018). Fostering the absorptive capacities of higher education students regarding social issues requires strategic support from these educational institutions



through special programs or training sessions in social topics (Grossek 2009). Instructors have a responsibility to become familiar with the abundance of technologies, select those suitable for education in social entrepreneurship, and hold students responsible for being effective and efficient partners who actively absorb knowledge about social issues and put this knowledge into action (Grossek 2009). Only with such strategic support will students be better able to absorb CSR.

## Hypotheses

### Influence of Web 2.0 Strategic Support on Web 2.0 Technology Use and Absorptive Capacity

Educators and strategic supporters of higher education institutions (instructors, administrators of learning institutions, persons responsible for policies, librarians, and definitely, stakeholders in educational institutions that provide support to different key aspects such as communication networks, information needs, financial aspect, or decision-making by users among others) must play a key role in promoting experiential learning (Dewey 1938; Millwood 2011). Learning theory (Millwood 2011) argues that this process must be active in order to be helpful. Higher education institutions are gradually incorporating learning into their programs through Web 2.0 technologies and providing the support needed for the successful use of these technologies. Web 2.0 strategic support responds to the technological needs of students (European Union 2013), recognizing that Web 2.0 technologies provide outstanding opportunities for education by promoting self-directed learning, creativity, and collective intelligence (Arquero and Romero-Frías 2013). At the same time, university students are already very familiar with Web 2.0 technologies (Scott et al. 2016). Thus, Web 2.0 strategic support is essential for completing the learning process in an educational context (Hirsh-Pasek et al. 2015). Such support also fosters a complex social environment in which social interaction is central to learning and absorbing new knowledge (Sawyer 2006). Strategic support should thus include both Web 2.0 applications used in professors' agendas (Lin and Jou 2012) and podcasts, and any other Web 2.0 applications that enable informal learning.

In this sense, to optimize the use of Web 2.0 technology, universities and other educational institutions should create social network platforms to enable diversity, autonomy, interactivity, and openness, and to promote sustainable economic and/or social development (Downes 2007) in the university population. Web 2.0 platforms operate as open spaces where students interact, reflect, exchange ideas, and expand their knowledge base (Akcayir 2017; Faizi 2018). Although various tools and technologies have been proposed as support for classroom activities (Lin et al. 2010),

most involve brand-new and stand-alone programs, requiring users (instructors and students) to dedicate time and effort to familiarizing themselves with the new approach (Lin and Jou 2012). As such platforms have specific requirements (e.g., functional development and technical design (De Kraker et al. 2013); personal effort and often specific training are needed to ensure that Web 2.0 technology use is efficient, and benefits from the powerful functionalities the technology offers (Lin and Jou 2012). Accordingly, higher education institutions must provide suitable staff training to familiarize instructors with these novel educational technologies and the environment in which they will be employed (Özdener 2018).

The efficient student use of Web 2.0 technology requires also a prior knowledge base and technological infrastructure. In organizations like universities, the strategic support necessary to build a Web 2.0 infrastructure or platform involves more than just adopting new applications. Such support probably requires significant organizational change to encourage the use of the new technology, as well as intercommunication and interrelations, first between instructors and then with and among students (Wirtz et al. 2010). The successful introduction of Web 2.0 is thus a question not only of technology, but also of how it is employed (Shang et al. 2011). In addition to addressing institutional requirements for the Web 2.0 infrastructure, instructors and support staff at universities must instruct students in effective, efficient, and responsible Web 2.0 technology use, highlighting important issues. For instance, students should question the integrity of the information obtained via Web 2.0 technologies (Manly et al. 2015) and be warned against plagiarism and the inappropriate sharing of homework (Cronan et al. 2018). The successful communication of this message will create responsible Web 2.0 technology use. In view of these considerations and previous research findings, the following hypothesis is proposed:

**Hypothesis 1** Web 2.0 strategic support has a positive effect on Web 2.0 technology use.

Learning theory proposes that learning is a continuous process whereby students acquire knowledge step-by-step (Hirsh-Pasek et al. 2015) and need explanations on which to build and evaluate their constructions (Sandoval and Millwood 2005). Web 2.0 strategic support in education is important in this respect because it helps to involve participants in significant teaching and learning processes that improve their absorptive capacity (Lin and Jou 2012). Allocating more resources and improving Web 2.0 strategic support can foster communication and coordination, encourage the integration of technology (Zhao et al. 2010), and enhance students' technological and absorptive competencies (Bennett et al. 2012; Martín-Rojas et al. 2013). Lin and

Jou (2012) find that Google Web support applications (e.g., Docs, Reader, Sites, and Plus) provide a supported learning and absorptive capacity environment for classroom teaching and learning activities. Google can play a significant role in higher education institutions by providing various useful web applications that foster the absorptive capacities of users. In this sense, many higher education institutions now focus on the need to provide strategic support for Web 2.0 technologies (European Union 2013), so as to implement more effective information systems and to foster student knowledge acquisition (Lin and Jou 2012; Alemu 2016). Such support can also overcome the limitations of Web 2.0 technologies (Guy and Tonkin 2006) and resolve questions, enhancing both the knowledge that is absorbed, and also collaborative and direct learning. Both professors and suppliers of Web 2.0 technologies or IT experts must be involved in this support, as they control the content and can monitor what students must learn and how they absorb knowledge.

Institutions that have close relationships or frequent interactions with suppliers or supporters of Web 2.0 technologies can obtain and thus provide more and higher-quality knowledge than institutions that do not (Joo 2011). Suppliers help users understand content-engagement capacity, however, but not necessarily absorptive capacity. Although suppliers can provide such help, this task is more suited to professors who cultivate the specific use of Web 2.0 technologies, as well as student knowledge acquisition and absorption abilities. Instructors in higher education institutions therefore learn from experts, who, in turn, enable effective and responsible communication; instructors then adapt their content appropriately and gain a heightened awareness of the need for classroom technology applications to match student needs (Özdener 2018). In other words, suppliers foster the content-engagement of individuals (students and professors), but professors foster student content-engagement and thus their capacity to absorb the necessary knowledge. Following Hirsh-Pasek et al. (2015), professors should provide ways to complete the learning process and achieve absorptive capacity by combining different forms of learning. In view of these considerations, the following hypothesis is proposed:

**Hypothesis 2** Web 2.0 strategic support has a positive effect on students' absorptive capacities.

### **Effect of Web 2.0 Technology Use on Absorptive Capacity and the Effect of Absorptive Capacity on Learning CSR and Social Entrepreneurship**

Students increasingly use social media in general and Web 2.0 technologies in particular, for knowledge acquisition. These technologies have the potential to increase the cultural and technological competencies of students by engaging them with other resources through diverse digital

communication media (Ertmer et al. 2011). For instance, using the professional resources provided by Facebook, Twitter, or YouTube from a professional perspective can foster students' capacity not only to access new knowledge but also to share this knowledge and learn from it (Chawinga 2017; Montiel et al. 2017; Bugawa and Mirzal 2018). According to Hartshorne and Ajjan (2009), Web 2.0 technology use can improve student learning, dissemination, and writing ability—absorptive capacity—and change their role from passive to active learners. Web 2.0 technology use is transforming traditional formal lessons into an informal learning format, especially in the field of higher education, and expanding students' absorptive capacities by encouraging them to seek their own multimedia content, share knowledge acquired, customize their personal knowledge base (Greenhow et al. 2009), and collaborate with others to achieve their goals (whether technological, economic, environmental, or social).

Learning processes that apply Web 2.0 technologies are being used to enhance the learning experience not only in higher education (Bennett et al. 2012) but also in primary and secondary schools (Pifarré and Li 2012). Wikis, podcasts, mobile apps, teaching games, blogs, virtual reality, and simulations are among the new possible technologies through which students seek and acquire knowledge, increase their absorptive capacity, and reinforce proactive learning. By learning in the way that suits them best, students enjoy themselves and are more motivated, because the learning tasks involve activities that are usually associated with leisure (Wei and Ram 2016; Whitaker et al. 2016). Technological learning processes such as blogging, social tagging, and online collaboration also enable students to acquire, assimilate, disseminate, and exploit new knowledge faster than traditional learning methods, and so the use of Web 2.0 technology fosters students' absorptive capacities (Leonardi et al. 2013).

The Web 2.0 technology use could provide participants with new ways to engage in meaningful teaching and learning activities, motivating instructors and students to use this technology in class to absorb and exploit knowledge (Lin and Jou 2012). For instance, YouTube and podcasts are valuable sources of training materials that are used to disseminate organizational knowledge and enhance absorptive capacity. A recent study showed that participants in a web-enhanced class outperformed those who experienced a traditional lecture format, as Web 2.0 technologies enhance convenience, flexibility, and access to information and knowledge (Wei and Ram 2016). Scott et al. (2016) report another example of these benefits: out-of-classroom learning through the creation of an enterprise social network system to equip students to absorb new knowledge more quickly. The more students use Web 2.0 technologies, the more they develop absorptive capacity. This conclusion is consistent with learning theory:

the more active an individual's (student's) experimentation, the better the abstract conceptualization (absorptive capacity) that they develop (Mainemelis et al. 2002). The use of Web 2.0 technologies in class engages students in learning activities and interactions, facilitating learning reflection and presentation. Accordingly, we propose the following hypothesis:

**Hypothesis 3** Web 2.0 technology use has a positive effect on students' absorptive capacities.

Absorptive capacity offers a new perspective on learning and innovation (Cohen and Levinthal 1990) and has been widely linked to the entrepreneurial orientation and performance (Fellnhofner 2019). When it is applied to education, business education and experience, in general managerial positions, are linked and absorptive capacity lays the groundwork for a successful entrepreneurial career (Chandler and Jansen 1992; Fellnhofner 2019). This entrepreneurship training in higher education plays a role in achieving an intended result and helps micro-businesses to create and adapt an entrepreneurial strategy (Al-Awlaqi et al. 2019). It also supports projects that will either stimulate economic growth and create employment or bring forward projects that will have an economic impact and benefit for social funds (Rhisiart and Jones-Evans 2016). Then, the increase of student's absorptive capacity to be entrepreneurs allows higher economic performance (Fellnhofner 2019) and the involvement not only of economic actors but also of social actors (Rhisiart and Jones-Evans 2016). These social actors will run social enterprises that are agents of change, whose purpose is to create social values that are sustainably distinct from economic values (Dart 2004).

In parallel with social enterprises, universities can play a social role by posing questions about social and economic values (Nicholls 2007; Aleixo et al. 2018). A university's proximity to the workplace (Zeinabadi 2013) could enable students with absorptive capacity in the context of higher education to exploit knowledge acquired. Such students can recognize the value of this knowledge, assimilate it, and combine it with pre-existing knowledge in order to subsequently apply it to the requirements of their learning process (Cohen and Levinthal 1990; Mariano and Walter 2015). Such absorption is especially likely in the case of social issues (Pless 2012). The absorptive capacity developed at universities (Greenhow et al. 2009; Lin and Jou 2012) in the field of social entrepreneurship is thus likely to include concepts, such as integrity and social values, and to explain their necessity in the business world (Mueller 2011; Manly et al. 2015). Learning will be enhanced primarily when professors explain social values: for example, their classes will recognize the consequences of not being socially responsible (Brunton and Eweje 2010), and professors who teach

through an active methodology will increase student involvement in the learning process (Toro Villarroya and Arguis Molina 2015).

Increasing social mindfulness in students' absorptive capacity can exploit their skills in learning effectively in this field, assimilating this social knowledge and deciding how to use it in the founding of businesses. Such mindfulness may also help them to perform better or undertake new initiatives that are more in line with their social values (Tho and Tho 2017). We must promote the absorption of social values among students in order to produce future entrepreneurs for whom social commitment is a factor determining value creation for stakeholders (Young 2012; Ebrahim et al. 2014). Thus, students' absorptive capacity is fundamental to the development of social entrepreneurship, as commercial survival can depend on the possession and application of particular skills (Cornelius et al. 2008). These skills may be viewed as a means of generating value for society as well as for commercial benefit (Campos-Climent and Sanchis-Palacio 2017).

Learning theory supports such thinking, because knowledge is considered a mental representation actively built up by the cognizing subject (Millwood 2011). Increasing absorption skills (absorptive capacity) through social values can also create a social learning environment (Dewey 1938), thereby encouraging social entrepreneurship (Campos-Climent and Sanchis-Palacio 2017). Research shows that the acquisition, dissemination, and exploitation of external social knowledge (i.e., absorptive capacity) are strong antecedents of social entrepreneurship and the generation of social value (Di Domenico et al. 2010). Studies also show that social issues related to students' absorptive capacity can be a source of sustainable competitive advantages for social enterprises (Kolvereid and Moen 1997; Tkachev and Kolvereid 1999). Therefore, we propose the following hypothesis:

**Hypothesis 4** Students' absorptive capacity has a positive effect on social entrepreneurship.

An increasing number of business colleges and universities are responding to the call of business and society to include in their programs issues of business ethics, or CSR. These subjects are especially relevant in universities, where future leaders are acquiring core knowledge (Byerly et al. 2002) that will help them incorporate social issues into their future enterprises (Angelidis and Ibrahim 2002; Nicolaidis 2006; Othman and Ab Wahid 2014). The knowledge acquired at school thus helps students to comprehend and assimilate the concepts of CSR. This knowledge equips future entrepreneurs with skills that are valuable for the implementation of socially responsible strategies (Fen Tseng et al. 2010). The United Nations Global Compact encourages academic institutions to help shape the attitudes

and behavior of business leaders through entrepreneurship education, and calls on all higher education institutions to support this process and participate actively in a global platform (UN 2007).

Enhancing the absorptive capacities of students may develop their proactive environmental, social, and sustainability-oriented strategies (Delmas et al. 2011). Examining the relationship between environmental management practices and personal abilities, Hofmann et al. (2012) suggest that companies, universities, and other higher education institutions should develop specific competencies before committing to sustainability initiatives. The effective implementation of socially responsible business policies also requires absorbing the information needed to introduce sustainability policies, strategies, and processes (Upstill-Goddard et al. 2016). Increasing students' absorptive capacity at school through Web 2.0 technology use (Leonardi et al. 2013) should produce lasting changes in the way students learn and promote social entrepreneurship programs during their studies (Montiel et al. 2017). Following learning theory's argument that students need specific explanations to build their own knowledge (Millwood 2011), practice incorporating social issues into their lessons will enable professors to achieve a learning environment that focuses on social responsibility (Dewey 1938).

Similarly, in the field of business, the management and implementation of CSR policies are usually associated with underlying capabilities that companies must acquire before committing to business initiatives (Hofmann et al. 2012). This association explains why companies develop these capabilities through available personnel (Love et al. 2000). Along similar lines, Galbreath et al. (2016) argue that new knowledge stems from combining prior understandings and beliefs. This is especially true for environmental issues, since variables such as climate change or atmospheric events can pose a severe challenge to companies. Companies with greater information absorption capacity will better interpret the potential impacts of these changes and adapt to them. They may even discover new opportunities to exploit this knowledge. As absorptive capacity is essential to sustainability and social responsibility (Quinn and Dalton 2009), we propose the following hypothesis:

**Hypothesis 5** Students' absorptive capacity has a positive effect on students' learning of CSR.

### Effect of Learning CSR on Social Entrepreneurship

As CSR is a core part of business, business leaders must include the various dimensions of CSR in their strategies and in the organization's operations—both its strategic plan and its day-to-day activities (Jamali 2006). This CSR and social entrepreneurship are closely related to the creation of

sustainable social value, but they do not obtain this value in the same way. Each has a distinct conceptual approach, but combining them is essential for recovering social opportunities in a sustainable way (Crisan and Borza 2012). CSR is an important lever in the support of social entrepreneurship (Austin et al. 2006, 2007), as accepting CSR implies a commitment to improve society through business practices (Kotler and Lee 2005). A company's participation in society involves practices that contribute to positive relationships between the company and its communities and society (Waddock 2004).

Universities must provide the skills and knowledge necessary to determine the social, ethical, and environmental impact of business activities (Brampton and Maclagan 2005). In fact, universities do not only have the opportunity to make changes, but they also have the moral responsibility to develop and disseminate necessary knowledge, values, skills, and awareness to create a sustainable and fair future (Fichter and Tiemann 2018; Wakkee et al. 2018). Learning CSR issues should be incorporated into the curricula to give future professionals the sensitivity needed in matters of ethics and social responsibility (Angelidis and Ibrahim 2002; Nicolaides 2006), and to equip them to address problems that may arise in these areas (Broadbent et al. 2010). The teaching and internalization of strategies for sustainability and social responsibility will contribute to the formation of a specific culture and vision: that of the social entrepreneur, with a vision of value creation through the discovery of innovative approaches to integrate social, environmental, and economic problems into business strategies (Kurucz et al. 2008). A social entrepreneur must thus pursue a threefold objective: environmental, economic, and social. The social objective is to integrate persons who are at risk of poverty or exclusion into the workforce. The social objective may also consist of providing quality services to communities who have difficulty accessing services through other means. The economic objective is to perform an economic activity with an appropriate level of effectiveness and efficiency so as to guarantee the firm's business viability. Finally, the environmental objective is to use (increasingly scarce) environmental resources without compromising their availability to future generations (Spear et al. 2009).

The question of social entrepreneurship should be approached, discussed, and cultivated through education on sustainability and CSR in order to lay the foundations for a culture of socially responsible businesses among students which will benefit the community (Othman and Ab Wahid 2014). Studies show that university education in CSR-related issues encourages student commitment to sustainable products and competitive human capital (Fen Tseng et al. 2010; Othman and Ab Wahid 2014). According to learning theory research, learning styles that specialize in experience (e.g., social specialization) develop stronger interpersonal skills



(Mainemelis et al. 2002). Focusing on a student's learning of CSR issues could increase the promotion of social entrepreneurship. Education should also cultivate a spirit of companies acting in a socially responsible way by honing students' business and social skills. Such integration of social entrepreneurship into teaching and learning encourages the emergence of future business leaders who promote social entrepreneurship (Othman and Ab Wahid 2014). Therefore, our final study hypothesis is as follows:

**Hypothesis 6** Learning CSR has a positive effect on students' intentions towards social entrepreneurship.

## Methodology

### Data Collection

A pilot study was performed to obtain qualitative feedback on issues such as social entrepreneurship, absorptive capacity, learning CSR, and the use of social media. The questionnaire was designed after interviewing university instructors, researchers, and experts in this field. This approach enabled us to fine-tune various aspects of the survey instrument. Students were then interviewed to determine whether they were familiar with the terms 'social entrepreneurship' and 'CSR,' what these expressions meant to them, and which mechanisms were used to acquire, transfer, and use new knowledge. Other areas addressed included the frequency of their use of social media tools (such as blogs, microblogs, social networking, video sharing, and photo sharing), the relevance of the social media students use in their lives, strategic aspects that might encourage such use, barriers to the successful use of social media, and the question of whether social media help students gain a competitive advantage based on knowledge.

The initial structured research questionnaire was developed from previous research findings (e.g., Lane and Lubatkin 1998; Matten and Moon 2004; Lämsä et al. 2008; Bennett et al. 2012; Othman and Ab Wahid 2014; Tho and Tho 2017) and the knowledge acquired from the qualitative interviews. More in-depth information was obtained through the qualitative interviews with individuals than through the quantitative studies (the former produced more descriptive information). Thematic and content analyses were used to study the qualitative data and design. The initial questionnaire was completed by ten university professors and twenty-five students in the final year of an undergraduate degree program in management. On the basis of their feedback, some questionnaire items were modified slightly or redesigned for greater clarity and precision prior to the application of the final version.

The study population (425 students) consisted of final year students from different undergraduate degree programs enrolled in the course "Business Start-up" and registered in the class's continuous assessment system. One aim of the Business Start-up course is to encourage students to create their own businesses. Accordingly, the course teaches basic scientific and technical knowledge about enterprise creation and the preparation of a business plan, and attempts to foster entrepreneurial spirit and transmit the skills required to establish a new business. The class was delivered to business students in a Southern European University. The students were selected as informants similarly to other researches (e.g., Hall and Berardino 2006; Lämsä et al. 2008).

The students were informed of the research aims and were assured that the data obtained would be anonymized and presented only in aggregate terms. The students participated voluntarily without receiving any compensation by completing the questionnaire. These measures reduced possible desirability bias. In total, 201 students completed the survey at the end of the course (2017), giving a response rate of 47.29% (Table 1). The *T*-statistics and Chi-square values calculated confirmed that there were no significant differences among students or professors in the different undergraduate degree programs or between early and late respondents (Armstrong and Overton 1977).

## Measures

### Web 2.0 Strategic Support

Drawing on the approaches of previous studies (Suh et al. 2011; Kärkkäinen et al. 2013; Choudhury and Harrigan 2014; Jussila et al. 2014; Harrigan et al. 2015), we applied a 7-point Likert scale (ranging from 1 "Totally disagree" to 7 "Totally agree") to nine questionnaire items to analyze if the university has Web 2.0 technologies to facilitate decision-making, contact between users, provide answers, attract future students, obtain feedback from students, outsource tasks to students, establish networks, create new forms of communication, or identify the information needs of users (see Appendix). Confirmatory factor analysis was used to validate the scale to measure Web 2.0 strategic support in the

**Table 1** Technical details of the research

Sector	Education
Geographical location	Spain
Methodology	Structured questionnaire
Universe of population	425 students
Response size	201 students
Response rate	47.29%
Period of data collection	2017

classroom or learning process (professionally oriented Web 2.0 perspective). The analysis revealed high validity and reliability ( $\chi^2_{27}=111.09$ , Normed Fit Index [NFI]=0.98, Non-Normed Fit Index [NNFI]=0.98, Goodness-of-Fit Index [GFI]=0.76, Comparative Fit Index [CFI]=0.98 and Incremental Fit Index [IFI]=0.98).

### Web 2.0 Technology Use

This variable was measured in terms of actual Web 2.0 technology use (see Appendix). Following previous research practices (Rothschild 2011; Sigala 2011; Choudhury and Harrigan 2014), we measured the frequency of use of different Web 2.0 technologies from a professional perspective to learn (Facebook, microblogs, video sharing, LinkedIn, blogs, wikis, and discussion forums) by means of a seven items in a 7-point Likert scale (ranging from 1 “Never” to 7 “Every time”). All measures corroborated the scale’s validity and reliability.

### Absorptive Capacity

Prior studies have designed scales to measure different aspects of absorptive capacity, such as knowledge acquisition, assimilation, transformation, and exploitation. Following Jimenez Barrionuevo et al. (2011), we applied a 7-point Likert scale adapted to the educational context (ranging from 1 “Totally disagree” to 7 “Totally agree”) to six questionnaire items to measure if as result of using new technologies it has obtained the ability to acquire information and knowledge, generate discussion, assimilate new concepts and knowledge, transmit important data, share knowledge between different users, or exploit the knowledge obtained in education-related issues. Confirmatory factor analysis was conducted to validate this scale ( $\chi^2_9=13.84$ , NFI=0.99, NNFI=0.99, GFI=0.91, CFI=0.99, IFI=0.99). The results showed the scale’s high validity and reliability (see Appendix).

### Learning CSR

Following Rodríguez Bolívar et al. (2015) and Fen Tseng et al. (2010), we applied a 7-point Likert scale (ranging from 1 “Never” to 7 “Every time”) to five questionnaire items relating CSR in information management and communication with stockholders, labor relations, the market and participation in public welfare, environmental effects, and financial disclosure. Confirmatory factor analysis to validate the scale recommended the deletion of Item 1 ( $\chi^2_9=15.36$ , NFI=0.98, NNFI=0.94, GFI=0.94, CFI=0.98, IFI=0.98), after which the scale’s validity and reliability were verified (see “Appendix”).

### Social Entrepreneurship

Following previous studies (Mueller 2011; Kraus et al. 2017), we applied a 7-point Likert scale (ranging from 1 “Totally disagree” to 7 “Totally agree”) to fifteen questionnaire items to measure social entrepreneurship. The items asked about social innovativeness, social risk-taking, social proactiveness, socialness, and social market orientation (see “Appendix”). The confirmatory factor analysis conducted to validate the findings ( $\chi^2_{90}=496.61$ , NFI=0.95, NNFI=0.96, GFI=0.56, CFI=0.96, IFI=0.96) showed that the scale had high validity and reliability.

### Measurement Model

Structural equation modeling (SEM) is commonly employed in the social sciences because it enables the analyst to determine relationships between observable variables and unobserved constructs (latent variables) by breaking down the total effect of one variable on another into indirect and direct effects. SEM also makes it possible to determine and validate a process or model by examining whether the proposed model produces a population covariance matrix consistent with the sample covariance matrix. The process estimates and compares the parameters in question with the sample covariance matrix. Goodness-of-fit statistics then determines whether the model is appropriate or needs further revision. This technique enabled us to construct unobservable variables, as measured by indicators, and estimate the error of the observed variables. SEM thus takes into account measurement errors, variables with multiple indicators and multiple-group comparisons (Koufteros et al. 2009).

The study data were analyzed using LISREL 8.8 (Linear Structural Relations) statistical software and following the two-step modeling approach described by Anderson and Gerbin (1988). First, a measurement model was constructed to observe the relations between latent variables and their indicators. This measurement model (Table 2) presents a very good model fit ( $\chi^2_{769}=1556.77$  ( $p>0.01$ ); NFI=0.97; NNFI=0.99; IFI=0.99; Parsimony Goodness-of-Fit Index [PGFI]=0.50; Estimated Non-centrality Parameter [NCP]=787.77; Relative Fit Index [RFI]=0.97; CFI=0.99; Root Mean Square Error of Approximation [RMSEA]=0.07). Satisfactory results were obtained for internal consistency and reliability, as measured by Cronbach’s alpha (ranging from 0.90 to 0.97), composite reliabilities (ranging from 0.92 to 0.98), and average variance of extracted coefficients (ranging from 0.69 to 0.89). Each factor for the Cronbach’s alpha presented a value  $>0.8$ , indicating good internal consistency. Similarly, each factor’s composite reliability was  $>0.7$ , and the average variance extracted (AVE) was  $>0.5$ , indicating good construct reliability (Fornell and Larcker 1981; Hair et al. 2010). The

**Table 2** Measurement model results

Variables	Items	$\lambda^*$	$R^2$	$\alpha$	C.R.	AVE
Web 2.0 strategic support	WEBSUP1	0.92(f.p.)	0.85	0.976	0.980	0.849
	WEBSUP2	0.93***(34.26)	0.86			
	WEBSUP3	0.95***(54.35)	0.91			
	WEBSUP4	0.93***(55.30)	0.87			
	WEBSUP5	0.93***(53.65)	0.86			
	WEBSUP6	0.95***(58.30)	0.90			
	WEBSUP7	0.93***(47.55)	0.87			
	WEBSUP8	0.88***(26.40)	0.78			
	WEBSUP9	0.87***(33.39)	0.76			
Web 2.0 technology use	WEB1	0.74 (f.p.)	0.54	0.923	0.939	0.690
	WEB2	0.81***(14.49)	0.65			
	WEB3	0.84***(14.22)	0.71			
	WEB4	0.84***(12.72)	0.71			
	WEB5	0.94***(14.65)	0.88			
	WEB6	0.77***(11.66)	0.59			
	WEB7	0.86***(13.70)	0.74			
Absorptive capacity	ABCAP1	0.92(f.p.)	0.84	0.975	0.981	0.899
	ABCAP2	0.95***(41.45)	0.89			
	ABCAP3	0.96***(42.65)	0.93			
	ABCAP4	0.95***(37.74)	0.90			
	ABCAP5	0.95***(40.69)	0.91			
	ABCAP6	0.96***(42.54)	0.93			
Learning CSR	LCSR2	0.91(f.p.)	0.83	0.909	0.924	0.754
	LCSR3	0.96***(28.20)	0.92			
	LCSR4	0.84***(23.41)	0.70			
	LCSR5	0.75***(15.78)	0.56			
Social entrepreneurship	SE1	0.70***(f.p.)	0.50	0.970	0.973	0.707
	SE2	0.74***(19.12)	0.54			
	SE3	0.80***(14.49)	0.65			
	SE4	0.78***(14.30)	0.61			
	SE5	0.79***(14.12)	0.62			
	SE6	0.79***(14.42)	0.62			
	SE7	0.94***(15.96)	0.88			
	SE8	0.93***(16.40)	0.87			
	SE9	0.92***(16.70)	0.86			
	SE10	0.87***(17.98)	0.76			
	SE11	0.87***(17.75)	0.75			
	SE12	0.85***(16.58)	0.72			
	SE13	0.86***(15.73)	0.73			
	SE14	0.87***(15.04)	0.75			
SE18	0.87***(15.77)	0.76				
Goodness-of-fit statistics	$\chi^2_{769} = 1556.77$ ( $p > 0.01$ ) ECVI = 8.70 AIC = 1740.77 CAIC = 2136.67 NFI = 0.97 NNFI = 0.99 IFI = 0.99 PGFI = 0.50 PNFI = 0.91 NCP = 787.77 RFI = 0.97 CFI = 0.99 RMSEA = 0.07					

$\lambda^*$  Standardized structural coefficient (*t*-students are shown in parentheses, *f.p.* fixed parameter),  $R^2$  reliability, *C.R.* composite reliability, *AVE* average variance extracted  
 \*\*\* $p < 0.001$  (two-tailed)

factor loadings were appropriately significant. Each loading ( $\lambda$ ) was significantly related to its underlying factor ( $t > 11.66$ ), corroborating convergent validity.

The measurements obtained also presented discriminant validity, confirmed as follows. First, we examined the cross loading and observed that no item loaded more strongly on

another construct than on its own. Second, we confirmed that the squared correlation between each pair of constructs was lower than the average variance extracted (Table 3) by applying the Fornell–Larcker criterion to compare the square root of the average variance extracted with the correlation of the latent construct. According to this procedure, each latent construct should explain the variance of its own indicator better than that of other latent constructs (i.e., the square root of each construct’s average variance extracted was greater than the correlations with other latent constructs). The Chi-square difference test was applied to the values obtained for the constrained model (in which the estimated correlation parameter between each pair of constructs was constrained to 1.0) and for the unconstrained model, revealing significant differences. The constructs were thus not perfectly correlated, confirming the presence of discriminant validity (Fornell and Larcker 1981; Anderson and Gerbin 1988).

The absence of common method bias was tested via several procedures. First, the respondents were clearly informed of the study goals and the anonymous nature of the study data. Respondents were assured that there were no right or wrong answers and were urged to answer the questions honestly. Validated and well-tested scales were used, with minimal item ambiguity and a randomized item order (Podsakoff et al. 2003; Pandey et al. 2008). Second, several questions were reverse coded to reduce possible common methods and social desirability bias (Malhotra et al. 2006). These measures prevented respondents from easily combining related items and identifying the correlation needed to produce a common-method-variance-biased pattern of responses (Murray et al. 2005). Third, Harman’s one-factor test was performed to determine whether variance in the data was derived mainly from a common method source (Podsakoff and Organ 1986; Konrad and Linnehan 1995). The principal component factor components (with eigenvalues > 1.0) explained over 80% of the variance. These results suggested that there was no substantial common method bias among the scales. Fourth, confirmatory factor analysis was conducted to test for common method bias, comparing a one-factor model to the measurement model. This test revealed a worse fit for the one-dimensional model ( $\chi^2_{527} = 6352.82$

( $p < 0.01$ ); NFI = 0.89; NNFI = 0.90; IFI = 0.90; PGFI = 0.23; NCP = 5573.82; RFI = 0.88; CFI = 0.90; RMSEA = 0.189) than for the measurement model, confirming that common method bias was not a serious problem. Fifth, a first-order factor (common latent factor) was added to each of the measures as an indicator of the theoretical model. The results showed no differences greater than 0.2 between indicator loadings before and after adding the common latent factor. These results demonstrate that common method bias is not a problem (Podsakoff et al. 2003). Taking into account the outcomes of the different tests performed, we conclude that the data were not seriously affected by common method bias.

## Structural Model

Following the two-step approach proposed by Anderson and Gerbin (1988), we created a recursive no saturated model for the measurement model and the theoretical construct (Fig. 1). To do so, we used a recursive no saturated model with Web 2.0 strategic support ( $\xi_1$ ) as the exogenous latent variable, Web 2.0 technology use ( $\eta_1$ ) as the first-grade endogenous latent variable and absorptive capacity ( $\eta_2$ ), learning CSR ( $\eta_3$ ) and social entrepreneurship ( $\eta_4$ ) as the second-grade endogenous latent variables.

## Results

The hypotheses were then tested to determine the direct, indirect, and total effects, using the covariance and asymptotic covariance matrices as input for structural equation modeling (Table 4). The standardized paths obtained reflect a significant relationship between the constructs (Fig. 2). The overall fit of the structural model is good ( $\chi^2_{773} = 1570.82$  ( $p > 0.01$ ); NFI = 0.97; NNFI = 0.99; IFI = 0.99; PGFI = 0.50; NCP = 797.82; RFI = 0.97; CFI = 0.99; RMSEA = 0.07). All relationships were found to be statistically significant at  $p < 0.001$  except that between Web 2.0 technology use and absorptive capacity, which was significant at  $p < 0.05$ . We conclude, therefore, that the study hypotheses are supported.

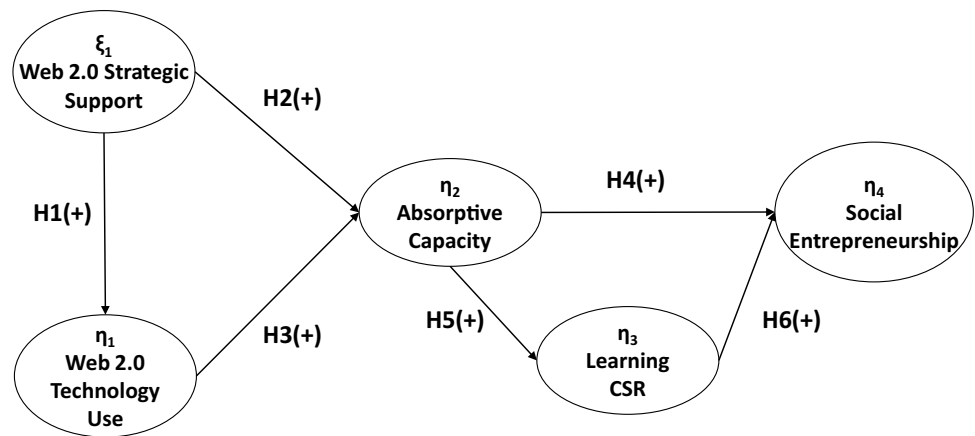
**Table 3** Discriminant validity

Variable	1	2	3	4	5
1. Web 2.0 strategic support	<b>0.849(0.921)</b>	0.581	0.801	0.679	0.694
2. Web 2.0 technology use	0.337	<b>0.690(0.830)</b>	0.591	0.406	0.433
3. Absorptive capacity	0.641	0.349	<b>0.899(0.948)</b>	0.668	0.729
4. Learning CSR	0.461	0.164	0.446	<b>0.754(0.868)</b>	0.764
5. Social entrepreneurship	0.481	0.187	0.531	0.583	<b>0.707(0.840)</b>

Bold numbers on the diagonal show the AVE (and in brackets, the square root of AVE). Numbers below the diagonal represent the squared correlation between the constructs. Numbers above the diagonal represent the correlation between the constructs (95%)



**Fig. 1** Research model and hypotheses



**Table 4** Direct, indirect and total effects obtained for the proposed structural model

Effect from	To	Direct effects <sup>a</sup>	<i>t</i>	Indirect effects <sup>a</sup>	<i>t</i>	Total effects <sup>a</sup>	<i>t</i>
Web 2.0 strategic support	→ Web 2.0 technology use	0.61***	8.64			0.61***	8.64
Web 2.0 strategic support	→ Absorptive capacity	0.72***	7.55	0.11*	2.22	0.83***	14.86
Web 2.0 strategic support	→ Learning CSR			0.59***	8.78	0.59***	8.78
Web 2.0 strategic support	→ Social entrepreneurship			0.62***	7.48	0.62***	7.48
Web 2.0 technology use	→ Absorptive capacity	0.18*	2.16			0.18*	2.16
Web 2.0 technology use	→ Learning CSR			0.13*	2.25	0.13*	2.25
Web 2.0 technology use	→ Social entrepreneurship			0.13*	2.26	0.13*	2.26
Absorptive capacity	→ Learning CSR	0.72***	13.32			0.72***	13.32
Absorptive capacity	→ Social entrepreneurship	0.33***	4.69	0.42***	7.21	0.65***	10.68
Learning CSR	→ Social entrepreneurship	0.58***	7.94			0.58***	7.94
Goodness-of-fit statistics	$\chi^2_{773} = 1570.82$ ( $p > 0.01$ ) ECVI = 8.73 AIC = 1746.82 CAIC = 2125.51 NFI = 0.97 NNFI = 0.99 IFI = 0.99 PGFI = 0.50 NCP = 797.82 RFI = 0.97 CFI = 0.99 RMSEA = 0.072						

<sup>a</sup>Standardized structural coefficients

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$  (two-tailed)

Consistent with H1, Web 2.0 strategic support is positively associated with Web 2.0 technology use ( $\gamma_{11} = 0.61$   $p < 0.001$ ). Web 2.0 strategic support is related to absorptive capacity ( $\gamma_{21} = 0.72$   $p < 0.001$ ), which is also associated with Web 2.0 technology use ( $\beta_{21} = 0.18$   $p < 0.05$ ). There is an indirect effect of Web 2.0 strategic support via Web 2.0 technology use ( $0.61 \times 0.18$ ) on absorptive capacity (0.11,  $p < 0.05$ , see Bollen (1989) for calculation rules). The total effect of Web 2.0 strategic support on absorptive capacity is thus 0.83 ( $p < 0.001$ ), corroborating H2 and H3. By comparing the magnitudes of these effects, we observe that the effect of Web 2.0 strategic support on absorptive capacity is greater than that of Web 2.0 technology use on absorptive capacity. Globally, absorptive capacity ( $R^2 = 0.70$ ) and Web 2.0 technology use ( $R^2 = 0.37$ ) are well explained by the model. Absorptive capacity is related to social entrepreneurship ( $\beta_{42} = 0.33$ ,  $p < 0.001$ ) and to learning CSR ( $\beta_{32} = 0.72$ ,  $p < 0.001$ ). Learning CSR is similarly associated with social entrepreneurship ( $\beta_{43} = 0.58$ ,  $p < 0.001$ ).

Through learning CSR, there is an indirect effect of absorptive capacity ( $0.72 \times 0.58$ ) on social entrepreneurship (0.42,  $p < 0.001$ ). The total effect of absorptive capacity on social entrepreneurship is thus 0.65 ( $p < 0.001$ ). By comparing the magnitudes of these effects, we see that the effect of absorptive capacity on social entrepreneurship is greater than that of learning CSR on social entrepreneurship. These results support H4, H5, and H6. Learning CSR ( $R^2 = 0.51$ ) and social entrepreneurship ( $R^2 = 0.72$ ) are well explained by the model. The  $R^2$  values for all endogenous constructs exceed 10%, implying a satisfactory and substantive model (Falk and Miller 1992). Other indirect and total effects are shown in Table 4.

Finally, we compared various alternatives to confirm that the proposed structural model presented the best data representation and goodness of fit (Bollen and Long 1993; Hair et al. 2010). This comparison shows that the proposed model is the most acceptable and parsimonious (Table 5). When comparing Model 1 (the proposed structural model)

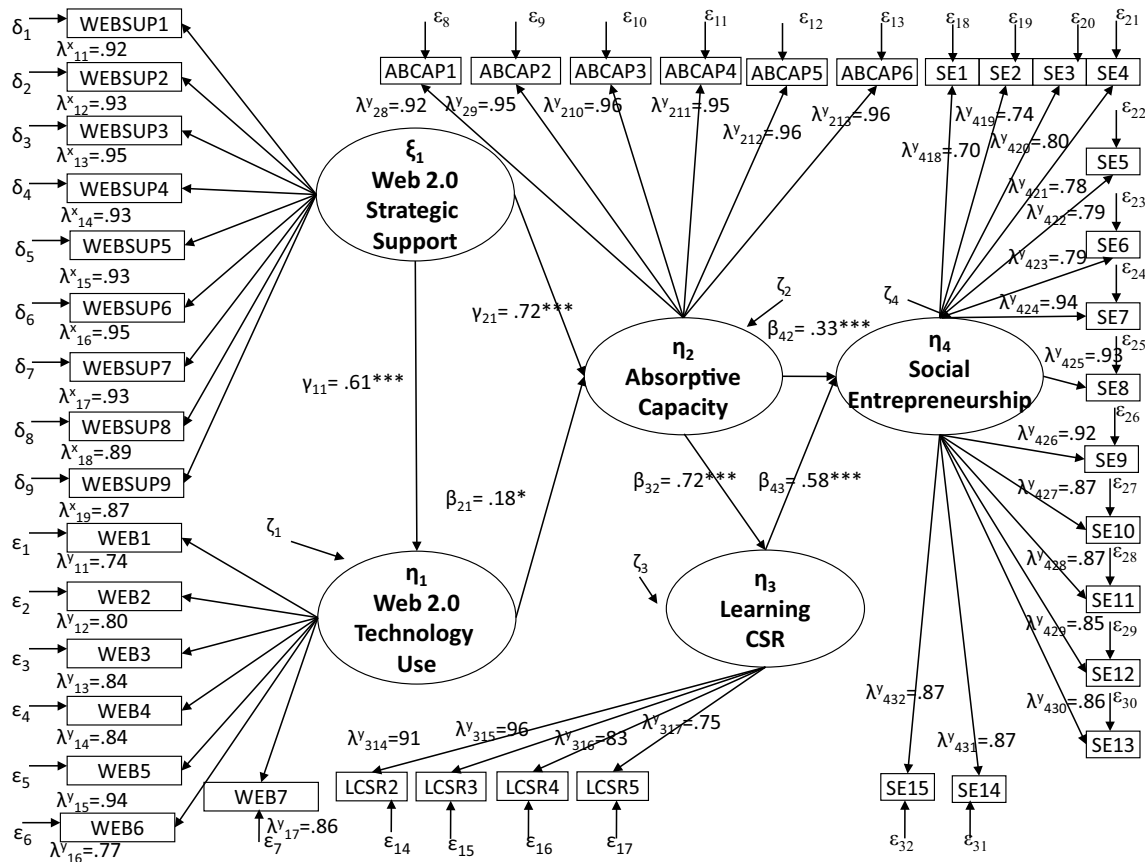


Fig. 2 Structural result of proposed model

Table 5 Proposed structural model versus alternative statistical model

Model	Description	$\chi^2$	$\Delta \chi^2$	RMSEA	ECVI	AIC	NCP
1	Proposed structural model	1570.82		0.072	8.73	1746.82	797.82
2	N.R. Web 2.0 strategic support to absorptive capacity	1616.08	45.26	0.074	8.95	1790.08	842.08
3	N.R. Web 2.0 technology use to absorptive capacity	1578.78	7.96	0.072	8.76	1752.78	804.78
4	N.R. Absorptive capacity to social entrepreneurship	1582.95	12.13	0.072	8.78	1756.95	808.95
5	N.R. Learning CSR to social entrepreneurship	1600.73	29.91	0.073	8.87	1774.73	826.73

N.R. no relationship

with Model 2, we find that the latter has a worse RMSEA ( $\Delta = 0.002$ ), ECVI ( $\Delta = 0.22$ ), AIC ( $\Delta = 43.26$ ), and NCP ( $\Delta = 44.26$ ). Hence, Model 1 is preferred to Model 2 ( $\Delta \chi^2 = 45.26$ ) and to the other models.

### Discussion, Implications, Future Research, and Limitations

At this paper, we have focused on how higher education institutions can encourage learning CSR and ultimately social entrepreneurship behaviors among their students. We

found that to achieve these goals the use of Web 2.0 technologies plays a key role, especially when they are strategically supported. According to our results, the active use of Web 2.0 technologies fosters absorptive capacity, which is positively associated with social entrepreneurship action. To do this, we studied the importance of fostering the learning of CSR as a mediator variable between absorptive capacity and social entrepreneurship to promote social entrepreneurship in students, and its translation into practice in future business leaders from a social perspective.

Our results stress the potential of Web 2.0 strategic support and Web 2.0 technology used as new forms of

promoting absorptive capacity in higher education institutions. These tools foster the absorptive capacity of CSR by transmitting CSR-related values and a passion for CSR (Shrivastava 2010; Montiel et al. 2017, 2018)—essential aspects of the true integration and effective implementation of CSR. The importance of teaching social issues in business programs allow our research to expand pedagogical approaches and tools in the area of CSR and sustainability to foster greater commitment through emotions (Audebrand 2010; Shephard 2008; Shrivastava 2010; Starik et al. 2010; Montiel et al. 2018). Students may then internalize these concepts and go a step further in initiating a social entrepreneurial endeavor, an act that pushes students to be social entrepreneurs in the future (Tho and Tho 2017).

We focused on learning theory (Millwood 2011) to demonstrate the active role of students in the process of learning ethics and CSR in business classes. To do so, we took advantage of the increase in the absorptive capacity of business students, which was analyzed, at the university. According to our results, the better this capacity is supported and accomplished, the more learning CSR will facilitate social entrepreneurial action. In this sense, in a positive way, absorptive capacity is directly and indirectly—by learning CSR—associated with the development of social entrepreneurs, who maintain social value by recognizing and pursuing new opportunities and by becoming involved in the processes of innovation, adaptation, and learning (Campos-Climent and Sanchis-Palacio 2017).

We also found that promoting Web 2.0 strategic support and the use of Web 2.0 technology enhanced the absorptive capacity of students, since this capacity is especially enabled by the production and diffusion of info-knowledge. Then, our findings reinforce the European Union's (2013) requirement where institutions of higher education implement Web 2.0 technologies, with the support of educational instructors (De Kraker et al. 2013). To achieve this, a high-quality Web 2.0 supportive infrastructure is a vital asset for higher education institutions. Universities must invest in R&D directly, not only to pursue new process and product innovation but also to benefit from imported technology and accomplish trajectory shifts (Scott et al. 2016).

### Theoretical Implications

The main theoretical implications of this study relate to learning theory. We deepen on the learning theory (Mainemelis et al. 2002) by showing how learning CSR has a positive effect on the relationship between absorptive capacity and social entrepreneurship. Fostering learning CSR in business studies is a core competence for promoting social entrepreneurship in these students (Angelidis and Ibrahim 2002). A specific and systematic training focused on CSR content is then required so that students can implement CSR

in their daily lives (Jamali 2006). When they are learning and training, students are more conscious of incorporating CSR values in their future actions and business strategies. Instructors can influence this entrepreneurial intention in many ways, but especially by emphasizing perceived social behavior (Nicolaidis 2006; Broadbent et al. 2010). The incorporation of CSR topics into university curricula contributes to the public good, helping to create social value (Angelidis and Ibrahim 2002; Nicolaidis 2006).

Web 2.0 technology use also increases the absorptive capacity of students (Arquero and Romero-Frías 2013). The results obtained demonstrate that Web 2.0 strategic support and Web 2.0 technology use in business schools increase students' absorptive capacity. Universities that use Web 2.0 technologies responsibly both encourage greater interaction and provide students with more trustworthy information (Arquero and Romero-Frías 2013; Corral de Zubielqui et al. 2016; Montiel et al. 2017). Implementing Web 2.0 technologies that are strategically supported by the university can enhance a student's overall absorptive capacity, which is infused directly into the interactive experience between students and instructors (Dewey 1938). Web 2.0 technology use also increases students' proficiency in technological competencies (Arquero and Romero-Frías 2013; Martín-Rojas et al. 2013; García-Morales et al. 2018). Using such applications in class has several advantages that learning theory supports, including greater engagement in learning activities, more interaction, and the facilitation of reflection and social presence in the learning process.

### Managerial Implications

It is important to introduce the learning theory of CSR values at business schools (Mainemelis et al. 2002). Our study shows that social entrepreneurship is promoted through learning CSR at higher education institutions that facilitate the transformation of absorbed knowledge of CSR into social entrepreneurship. It is important to educate students in CSR values so as to turn the absorbed knowledge into their social actions as overseeing managers. To do so, subjects with topics related to CSR are vital. This need must also be explained to public managers and university administrators, who are in charge of designing programs and syllabi to different degrees (Nicolaidis 2006). Similarly, legislators and university managers should bear in mind the importance of CSR to ensure that students learn about these issues. These legislators and managers should foster the training of CSR values through training, research, and knowledge transfer, to increase mindfulness about social responsibility and its relevance.

Strengthening students' absorptive capacity furthers the development of a thriving learning community via new knowledge, enhanced resources, and greater motivations,

both in individuals and in the population as a whole (WaiMui Yu 2013). In fact, the absorptive capacity of students is encouraged with the use of Web 2.0 technologies (Greenhow et al. 2009; Wei and Ram 2016). Web 2.0-based platforms allow students to do the following: (1) communicate with specific colleagues or broadcast messages to the whole university population; (2) explicitly indicate or implicitly reveal specific information; (3) post, edit, and sort text and other files; and (4) view the messages, connections, text, and files communicated, posted, edited, and sorted by anyone else in the organization, at any time of their choosing (Arquero and Romero-Frías 2013; Leonardi et al. 2013). Higher education institutions should thus strategically support Web 2.0 as a core asset since this technology provides opportunities to transform learning and expose instructors and students to new points of view (Ertmer et al. 2012). Students' absorptive capacity can be enhanced, directly and indirectly, through Web 2.0 technologies such as Facebook, Twitter, YouTube, Flickr, interactive Websites, wikis, and tags (in this study, Facebook, video sharing and blogs were found to be the tools most frequently used to foster teaching and learning).

### Limitations and Future Research

Our Web 2.0 study has certain limitations. First, we do not include longitudinal data. The implied relationships are correct, however, as our model follows the understanding that is well established in the literature on the direction of relationships among social entrepreneurship, learning CSR, absorptive capacity, Web 2.0 strategic support, and Web 2.0 technology use. The model also follows the directives in prior research concerning cross-sectional data on the variables studied (García-Morales et al. 2014; Haski-Leventhal et al. 2017; Olokundun et al. 2018). Future studies should use longitudinal data to investigate the learning effects in greater detail. Second, the field of study should be expanded to include a broader geographic scope and a larger sample, as environmental differences may affect the study variables. Third, as the variables considered were based on the perceptions of students (single respondents), a certain degree of subjectivity was unavoidable. Although previous studies have concluded that this approach can obtain reliable, valid data (Elias 2004; Swaim et al. 2014; Haski-Leventhal et al. 2017), future studies in this field would do well to consider other respondents—for example, instructors or students in different degree subjects. Fourth, the article analyzes students' use of Web 2.0 technologies from a professional perspective. It would be interesting for future studies to distinguish between personal and professional Web 2.0 tools and investigate their effects on social entrepreneurship. Fifth, the present study only analyzes the effect of Web 2.0 strategic support and Web 2.0 technology use on students' absorptive capacity and the promotion of social entrepreneurship, either

directly or indirectly through learning CSR. Future research could be undertaken to improve understanding of how a combination of Web 2.0 technologies and the semantic Web are giving rise to Web 3.0 technologies (Hendler 2009), and then study the impact of these technologies on students and on society at large, considering not only social entrepreneurs but also entrepreneurial intention (Mueller 2011).

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### Compliance with Ethical Standards

**Conflict of interest** All the authors, Víctor Jesús García-Morales, Raquel Garde-Sánchez, and Rodrigo Martín-Rojas, declare that we have no conflict of interest.

**Ethical Approval** This article does not contain any studies with human participants or animals performed by any of the authors.

## Appendix: Questionnaire Items

### Web 2.0 Strategic Support

Please indicate your degree of agreement or disagreement with the following statements, considering Web 2.0 as the Web 2.0 technologies used to teach and learn in the classroom or the learning process (Web 2.0 technologies from a professional rather than a personal perspective). The users are students (1 “Disagree completely”...0.7 “Agree completely”). My university:

1. Has established Web 2.0 communication networks for information users.
2. Is not interested in identifying the information needs of users (*R*).
3. Uses Web 2.0 technologies to facilitate decision-making by users.
4. Facilitates contact between users via technological platforms (Web 2.0).
5. Uses Web 2.0 technologies to receive frequently asked questions and to provide answers.
6. Involves users in the creation of new forms of communication, with each other, with teachers, and with the institution.
7. Uses Web 2.0 technologies to attract future students.
8. Uses Web 2.0 technologies to obtain feedback from students or other users.
9. Uses Web 2.0 technologies to outsource tasks to students or other users of the network.

Note: *R*: Reverse.



## Web 2.0 Technology Use

Please indicate how often, or to what extent (1 “never”...0.7 “every time”), you use the following Web 2.0 technologies to learn (use of these technologies from a professional rather than a personal perspective):

1. Facebook
2. Microblogs (such as Twitter)
3. Video sharing (for example, via YouTube or TED talks)
4. LinkedIn
5. Blogs (such as Blogger or Xanga)
6. Wikis (such as Wiki Spaces or Confluence Wiki)
7. Discussion forums

## Absorptive capacity

Please indicate your degree of agreement or disagreement with the following statements (1 “Disagree completely”...0.7 “Agree completely”). As a result of using new technologies “in the educational context” (such as Facebook, microblogs, video sharing, LinkedIn, blogs, wikis, discussion forums):

1. I have obtained the ability to generate an environment of trust and to acquire information and knowledge in education-related issues.
2. I have obtained the ability to generate discussion, to communicate regularly with colleagues, and to assimilate research and education-related issues.
3. I have not acquired the ability to assimilate new concepts and knowledge in education-related issues (*R*).
4. I have obtained the ability to transmit important data to all concerned in education-related issues.
5. I have not obtained the ability to ensure that knowledge in education-related issues flows and is shared between different areas and users (*R*).
6. I have obtained the ability to exploit the information and knowledge obtained in education-related issues.

## Learning CSR

Please indicate how often (1 “never”...0.7 “every time”) the following subjects are addressed in class.

1. CSR in information management and communication with stockholders: corporate social public and performance management systems; disclosure of corporate social duty information; communication and negotiation with stockholders.

2. Labour relations: labour relations and welfare; occupational training and study facilities; protection of female workers’ rights.
3. The market and participation in public welfare: public participation and donations; supply chain management and standards; combating bribery.
4. Environmental effects: environmental policy and effects management; contingency plans for environmental disasters; implementation of environmental and social responsibility policies; energy saving and carbon reduction.
5. Financial disclosure: disclosure of financial information; disclosure of other important information; tax liabilities.

## Social Entrepreneurship

Please indicate your degree of agreement or disagreement with the following statements (1 “Disagree completely”...0.7 “Agree completely”).

1. Social innovation is not important to me (*R*).
2. I constantly seek new ways to increase my social impact.
3. I frequently come up with new ideas to solve social problems.
4. I am afraid to take substantial risks when a social purpose may be served (*R*).
5. Bold action is necessary to achieve my social mission.
6. I avoid taking the cautious line of action if this might put social opportunities at risk.
7. I aim to be at the forefront in making the world a better place.
8. I tend to be at the forefront in addressing questions related to social mission.
9. I typically initiate actions that other social entrepreneurs later imitate.
10. The goal of achieving my social mission precedes that of generating financial profit.
11. I focus strongly on partnerships with partners/colleagues and/or relevant institutions to ensure rapid, full accomplishment of my social mission.
12. I set myself ambitious goals regarding sustainability and incorporate them into my strategic decisions.
13. Becoming an entrepreneur within 5 years of graduating would be very advantageous for me.
14. Becoming an entrepreneur within 5 years of graduating would be good for my career.
15. I would enjoy becoming an entrepreneur within 5 years of graduating.

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