FRAMEWORK FOR THE DEVELOPMENT OF SUCCESSFUL WEB 2.0 TOOLS AND APPLICATIONS

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RESUMO

A incerteza inicial associada à célere disseminação da Web 2.0 está a dissipar-se cada vez mais. A natureza social e colaborativa da Web 2.0 suscitou curiosidade na educação, na saúde, no mundo empresarial e em outras arenas centrais da sociedade. A passividade de uma Web de informação imóvel foi substituída por uma Web dinâmica, de conteúdo vívido gerado pelo utilizador. Esta evolução tem levado muitas instituições, de todos os setores, a implementar componentes da Web 2.0 nos seus *websites* como uma estratégia para melhorar a relação com o seu público-alvo. Apesar da pesquisa nesta área ser abundante, muitas entidades permanecem irresolutas quanto ao tipo de aplicações e ferramentas que devem selecionar para atingir os seus objetivos específicos. O presente estudo aborda este desafio, através do esboço de uma *framework*, que pode ser usada por qualquer pessoa ou entidade que pretenda criar e implementar aplicações Web 2.0 bem-sucedidas. A *framework* foi baseada na revisão da literatura, numa recolha documental e nos resultados obtidos mediante a aplicação de dois questionários *online*, tendo sido um deles aplicado no âmbito de um estudo de caso de uma entidade internacional. Ao examinar as preferências dos utilizadores, foi possível definir os critérios que potenciam a criação de aplicações Web 2.0 bem-sucedidas. Esta f*ramework* estabelece a base para a sua futura implementação na entidade internacional estudada na presente investigação.

PALAVRAS-CHAVE: Web 2.0, fatores de sucesso de plataformas sociais *online*, interatividade, colaboração, utilizadores da internet, utilização de *websites*, gestão de informação.

ABSTRACT

The initial uncertainty surrounding the swift dissemination of Web 2.0 is increasingly dissipating. The social and collaborative nature of Web 2.0 incited curiosity in education, health, business and other central arenas of society. The passiveness of a Web of motionless information was replaced by a dynamic Web of lively user-generated content. This evolution has led many institutions from all sectors to implement Web 2.0 components in their websites as a strategy to enhance their relationship with their target population. Despite the voluminous research in this area, many entities remain bewildered as to what type of applications and tools to select to attain their specific objectives. This study addresses this challenge, by outlining a framework that can be used by any individual or entity that wishes to build and implement successful Web 2.0 applications. This framework was based on the literature review, on the collection of documents, and on the results of the two online questionnaires, one of which was used in the context of a case study of an international entity. By examining the users' preferences, it was possible to define the criteria that potentiate the creation of successful Web 2.0 applications. This framework sets forth the basis for its future implementation in the entity where part of this study was conducted.

KEYWORDS: Web 2.0, success factors of online social components, interactivity, collaboration, internet users, websites use, information management.

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1. INTRODUCTION

Web 2.0 has created a unique language derived from the multiplicity of forms of expression online.

1.1. The World of Web 2.0

Information exchange, collective intelligence, user generated content, collaboration and user interaction are some of the necessary keywords to understand Web 2.0. Whether people choose to side with the enthusiasts or to side with the sceptics, the widespread use of Web 2.0 is no longer in question (Isaías, Pífano, & Miranda, 2014). The pervasiveness of the Social Web in all sectors of society, has transformed this new version of the Web into a routine element of the lives of internet users.

The rise of Web 2.0 was not intrinsically linked to a technological breakthrough, instead, it was the result of a unique combination of protocols and languages that already existed (Hoegg, Martignoni, Meckel, & Stanoevska-Slabeva, 2006). These programming languages created the conditions for the effortless flow of information and data, which embedded content with a dynamic character (Lewis, 2006). Web 2.0 is based on easy to use applications that employ software as a service and whose operation is supported by network effects; on the emphasis placed on users, which endows them with the possibility to extend their role of passive consumers to active creators; and on new revenue models and accrue business opportunities (Constantinides & Fountain, 2008).

Web 1.0 is used to denominate the set of characteristics that marked the beginning of the internet, when the focal points were web pages and information

delivery. Prior to Web 2.0, internet users were restricted to their traditional role of static information consumers, whereas now they have a proactive role of content creators (Eikelmann et al., 2007). The 2.0 version of the Web was built around the user (Johnson, 2006). It is the active involvement of users that attracts more users who, in turn, will add content to the application, improving it. The time and participation of users greatly contributes to the high quality of an application (Hoegg et al., 2006). Thus, Web 2.0 has in itself a limited value. Its ability to use collective intelligence is at the origin of its growth, which results from the joint activity of its users (O'Reilly, 2005).

There is a notion of progress in Web 2.0. The expression itself with the *2.0* suffix is a reference to an upgrade, similar to the updates of software packages, for example. Whether or not it is accepted as progress, what is happening is a shift to a model where the user-created content is increasingly important (Beer, 2008). This user generated content can assume different formats such as video, audio or text (Chai, Potdar, & Chang, 2007) and Web 2.0 applications include Blogs, Podcasts, RSS (Really Simple Syndication), wikis and social networks (Bughin, 2008). YouTube, Facebook, Wikipedia and MySpace are some examples of Web 2.0 websites (Constantinides & Fountain, 2008).

The popularity of social networks, blogs, wikis and forums, shifted the focus of the Internet from information to users. The time and effort invested in these applications are rewarded by a sense of belonging to the community, the opportunity to participate in enriching discussions and the access to diverse information (Ewing, 2008). This power that was given to the user has been extended

to various sectors. The terms Politics 2.0, Enterprise 2.0 and e-Learning 2.0 relate to the application of Web 2.0 tools to politics, business and education, respectively. Moreover, it reflects the effort to adapt to the new demands of citizens, clients and students (Caplan, 2008).

Despite the excitement around Web 2.0 there is some reluctance associated with its use. Not all utilisation of Web 2.0 is noble and useful. The power that the individuals have of spreading the word and organizing collective action is the same they have to invest in obscure and sometimes illegal matters.

When social networks are used in professional settings there is great concern for their potentially negative effect in the productivity of employees (Nucleus Research, 2009). Also related to the time that people spend online, there seems to be some preoccupation about the social isolation of spending too much time in social websites (Hua & Wellman, 2010). Security and privacy issues are some of the most popular shortcoming of the social web (Eisenberg, 2008) (Mansfield-Devine, 2008) Postma, Zwartkruis-Pelgrim, Daemen, and Du (2012) as is the abundance and erraticness of data on the internet (Johnson, 2006). Moreover, the uniqueness of user generated content is constantly questioned by quality and trustworthiness issues (Constantinides & Fountain, 2008).

1.2. Towards a successful Web 2.0

Although most organisations of all sectors are aware of the potential of Web 2.0 to assist their mission statement accomplishment, many are still failing to maximise its numerous benefits (Ingenhoff & Koelling, 2009) (Waters, Burnett, Lamm, & Lucas, 2009).

There is an extensive body of research that explores the proficiency of Web 2.0 through the analysis of people's characteristics, motivations and intentions of using technology in general (Aladwani, 2011), (Ewing, 2008), Lu and Hsiao (2007) (Chen, Yen, & Hwang, 2012). The explanations as to why individuals use some applications have been mainly provided by studies that focus on varied models of technology acceptance or continuance (Dwivedi, Williams, Ramdani, Niranjan, & Weerakkody, 2011) (Yang, Hsu, & Tan, 2010). Others have provided guidelines to the successful management of applications that already exist in specific contexts (Chui, Miller, & Roberts, 2009).

Some authors investigated the influence of certain traits such as gender, age and personal training in the use of Web 2.0 (Aladwani, 2011). Others have focused on framing the success of Web 2.0 within the Technology Acceptance Model (TAM) and perceived usefulness and perceived ease-of-use (Dwivedi et al., 2011). There is also a concern with understanding the motivations of users to engage with social platforms, which Ewing (2008) attributed mainly to social and content motivations. Additionally, the continuous use of social platforms was explained by Yang et al. (2010) as a result of Information Systems (IS) continuance, utilitarian and hedonic values and affective commitment; by Lu and Hsiao (2007), who underlined the importance of knowledge self-efficacy, subjective norms, feedback, and personal outcome expectations; and by Chen et al. (2012), who focused on subjective norm, image, critical mass and electronic word-of-mouth.

The simplicity with which a user can shift from one application to another, does warrant an examination of the reasons why they decide to use some services

(Constantinides & Fountain, 2008), but rather than concentrating solely on their motivations, Isaías, Miranda, and Pífano (2009a) conducted a study to help developers to create successful Web 2.0 applications, based on the main traits of the Social Web itself. Isaías et al. (2009a) proposed a theoretical Framework of Web 2.0's critical success factors based on: "users' inputs, users' critical mass figures, ease of use of component, availability of content to justify users' access, user content addition features, user content development tools and revenue models." (Isaías et al., 2009a).

1.3. Research Objectives

The variety of studies that explain the success of IS in general, has yet to address in detail the particularities of Web 2.0's widespread popularity. This gap in research constitutes and important lacuna for people who wish to create Web 2.0 applications. For this reason, this research intends to contribute to the debate of Web 2.0 success by developing a framework that can guide the successful creation of Web 2.0 components. As a result, the research question that this study ambitions to answer here is: *What are the elements of a framework for the successful development of Web 2.0 components?*

To address this question, it is necessary to explore several aspects of Web 2.0 use. Namely, this work intends to:

- Identify the patterns of use and participation on Web 2.0 websites;
- Determine what are the most popular Web 2.0 websites;
- Examine the users' preferences in terms of Web 2.0 tools;

- List the most important characteristics of Web 2.0 components, from the users point of view; and
- Create a pilot Framework to develop successful Web 2.0 applications.

The purpose of this study is both theoretical and practical: theoretical in the sense that it is motivated by the interest of understanding success in Web 2.0 websites and framing it in a set of criteria; practical, because it aims to provide specific guidelines for the development of successful Web 2.0 applications. Hence, this work intends to determine why Web 2.0 is successful and also, how it can be achieved. In order to attain these objectives, this research will undertake a review of the literature and an empirical investigation that uses three distinct instruments of data collection: document analysis, a general questionnaire for Web 2.0 users and a questionnaire in the ambit of the case study of an international organisation.

The collection of documents sets the foundation for determining what are the most popular Web 2.0 websites, by providing multiple ranking reports that evaluate the popularity of websites. Moreover, along with the literature review, the documents were used to support the development of more insightful questionnaires.

The first online questionnaire examined the preferences and opinions of Web 2.0 users in general and it was distributed in a few social network websites. The sample was reached through the deployment of snowball sampling techniques, having been initiated by a sample of convenience. The first online questionnaire was disseminated in Web 2.0 websites to benefit from 'viral marketing' (Enders, Hungenberg, Denker, & Mauch, 2008). The results of this first questionnaire were used to draft a preliminary version of the framework for successful Web 2.0 applications.

The second questionnaire was based on the conclusions of the first and it aimed to apply the preliminary framework to the reality of an international organisation, that is referred to as Entity X, throughout this document to protect its anonymity. Entity X was used as a case study due to its intention of creating a Web 2.0 component in its newly developed internet portal. The questionnaire was sent via email to a random sample of Entity X's members to understand their preferences and habits in relation to Web 2.0 and to test their approval of the preliminary framework.

1.4. Thesis Outline

Notwithstanding this Introduction section (Chapter 1) and the final section allocated to the Conclusion (Chapter 7), this thesis is divided into five chapters.

Chapter 2, Literature Review, presents all the relevant background information to frame this work theoretically. The abundance of research that focuses on Web 2.0, demands a strict filtering of the information that is pertinent. For the purpose of this study the literature is divided into six subsections: an overview of Web 1.0, the presentation of Web 2.0 main precepts, the itemisation of the different tools it uses, its application to different arenas of society, the main challenges of Web 2.0 and, finally, the analysis of its success. The review of the literature sets the context for the development of the empirical research which is framed in the Methodology chapter.

Chapter 3, Methodology, maps the empirical research and the procedures it entails. It addresses the knowledge claims, the enquiry strategies and the methods of data collection and analysis that guided this work. This section of the thesis describes

the empirical research venture and its limitations and prefaces the presentation of the results in Chapter 4.

Chapter 4, Web 2.0 According to its Users, concerns the presentation of the results of the document collection and the first questionnaire according to the main objectives of this research. It presents the quantitative content analysis of the documents that were collected and the descriptive statistics analysis of the first questionnaire. These results are used in the next chapter to outline the framework that this study proposes.

Chapter 5, Framework for a Successful Web 2.0, uses the results of the document collection and the first questionnaire to outline a threefold framework for the development of successful Web 2.0 applications. This section of the thesis is the foundation of the case study of Entity X.

Chapter 6, Entity X's Web 2.0 Component, analyses and discusses the results of the second questionnaire that was applied to Entity X's members. The discussion of the descriptive statistics analysis of the results was at the origin of the application of the framework to develop of a successful Web 2.0 component in Entity X.

2. LITERATURE REVIEW

Depicted by O'Reilly (2005), as a paradigm shift in terms of internet use, Web 2.0 swiftly became an important resource for accessing and managing information, with a transversal impact on several areas of society. Web 2.0 is also designated Social Web and Read/Write Web.

2.1. Web 1.0: The Beginning of the Web

In order to understand the changes that Web 2.0 introduced in the way people use the internet, it is paramount to provide a brief overview of the Web that prefaced these transformations. Web 1.0 was characterised by HTML frames, newsletters, limited dial-up connections, one-way communication, electronic mail, low bandwidth, static content and content ownership (Singh & Gulati, 2011).

The term Web 1.0 was named in retrospective (Fuchs et al., 2010) and it became commonly used to define the initial stage of the development of the Web. Web 1.0 is also known as the Read Web, since that was all that the average user could do then. The core differences between Web 1.0 and Web 2.0 can be divided into three groups: technology, content and social nature.

Technology-wise, Web 2.0 resorts to scripting and presentation techniques that are employed to produce the website and permit interaction among users (Cormode & Krishnamurthy, 2008), while HTTP, HTML and URI were the main protocols of Web 1.0 (Aghaei, Nematbakhsh, & Farsani, 2012). Plain HTML was the main technology of Web 1.0, but the static nature of Web 1.0 was no impediment for the development of websites, since website owners mainly wished to assert "an

online presence and make their information available to anyone at any time." (Singh & Gulati, 2011). Annotations in Web 1.0 were possible through the use of anchortext, nonetheless, this feature was only accessible to website owners, who, at the time, represented only a substantially small percentage of the internet users' population (Kinsella et al., 2008).

With regard to content, the central trait of Web 1.0 is information gathering (Eccleston & Griseri, 2008). The Web's first version was composed of websites with static HTML pages which were updated only sporadically. Online businesses, for example, had a brochure-like appearance (Aghaei et al., 2012). "Users were sheer spectators, the information that was available was searchable but not editable by regular users" (Isaias, Miranda, & Pífano, 2013). Content creation was extremely restricted during the first stage of the Web. The gap between information consumers and information creators was abysmal, with an overwhelming majority of passive consumers (Cormode & Krishnamurthy, 2008) (Leung, Lee, & Law, 2011). The evolution of the Web decreased the differences between information consumers and information creators. During the Web 1.0 era there was a clear separation between these two roles and with the progression towards Web 2.0 this separation became increasingly equivocal (Furtado et al., 2010). With Web 1.0, the creation and editing of the information available on websites were possibilities reserved exclusively for their owners. Using the internet was synonym to reading information. Solely a few resources offered a certain degree of personalisation by the user, but they had very limited power (Handsfield, Dean, & Cielocha, 2009).

While Web 1.0 is often portrayed as a source of information, Web 2.0 is regarded as a platform for participation. The differences between the Read Web and the Read/Write Web go beyond the mere content consultation vs. content creation dichotomy (Song, 2010). The social nature of Web 2.0 cemented the notion of friends and groups in online environments (Cormode & Krishnamurthy, 2008). Web 1.0's read and search features left little room for interaction (Aghaei et al., 2012). "Web 2.0 represents the transition from internet-enabled delivered content (Web 1.0) to participation-based internet communities." (Adebanjo & Michaelides, 2010). Whereas Web 1.0 is a cognitive tool, Web 2.0 is an instrument for communication (Fuchs et al., 2010). Unlike Web 1.0 which was based on software and personal computers, Web 2.0 is defined by services and supports the use of any device that can be used to connect people to the internet. Furthermore, while Web 1.0 was predominantly about navigating the internet, Web 2.0 is more concerned with building relations (Chen et al., 2012).

This categorisation of the Web into numeric versions is not applauded by the entirety of the research community, but it is widely used to depict the differences between the various stages of the evolution of the Web.

2.2. Web 2.0's Fundamental Precepts

The term Web 2.0 was coined by O'Reilly (2005) and it is used to designate websites, applications and activities that provide online interaction within virtual communities, the exchange of information between users and the opportunity to create content (Eikelmann et al., 2007). O'Reilly (2005) is responsible for coining the concept, but since many have tried to explain Web 2.0:

> *Web 2.0 is a collection of open-source, interactive and user-controlled online applications expanding the experiences, knowledge and market power of the users as participants in business and social processes. Web 2.0 applications support the creation of informal users ' networks facilitating the flow of ideas and knowledge by allowing the efficient generation, dissemination, sharing and editing/refining of informational content.* (Constantinides & Fountain, 2008, p. 232).
>
> *There is currently a shift of epidemic proportions in the virtual environment of the internet. The movement is powered by the social behaviour of millions of internet users and the companies which serve them* (Kittinger, n.d., p. 3).
>
> *Web 2.0 is both a usage and a technology paradigm. It's a collection of technologies, business strategies, and social trends. Web 2.0 is more dynamic and interactive than its predecessor, Web 1.0, letting users both access content from a Web site and contribute to it* (Murugesan, 2007, p. 34).

The pursuit of an unanimous definition of the term Web 2.0 should consider the words of O'reilly (2007): "Like many important concepts, Web 2.0 doesn't have a hard boundary, but rather, a gravitational core. You can visualize Web 2.0 as a set of principles and practices that tie together a veritable solar system of sites that demonstrate some or all of those principles, at a varying distance from that core." (pp. 18, 19). Web 2.0's principles are intertwined and this causes some difficulty in defining each of them separately, but for the purpose of conceptual clarity, Web 2.0 is here divided into four central precepts: user participation, collective power, content creation and management and free economy.

2.2.1. USER PARTICIPATION

According to Bojārs, Breslin, Finn, and Decker (2008) "there has been a shift from just existing on the Web to participating on the Web". In the context of Web 2.0, users are not confined to their traditional role of passive consumers of information. Their stance is changed by their proactive approach to content creation (Eikelmann et al., 2007). Web 2.0 empowers the average user to collaborate online with others and

share information. The Social Web gives power and relevance to the everyday user of the internet (Thompson, 2008).

Web 2.0 enables the users to share information, express their opinion and edit existing content (Shang, Li, Wu, & Hou, 2011). The existence of a community encourages the users' constant participation. Users feel that they must regularly create content in the application, in order to keep it current and to be at an equal level with the remaining users (Kittinger, n.d.). User participation is also paramount for websites that need reviews and comments about their services and/or products. The contributions of the users improve the website. As more people participate and leave feedback, more people will join because of this feedback (Constantinides & Fountain, 2008).

Web 2.0 promotes a more democratic use of the Internet. Users are given the possibility of exchanging a wide variety of content with their peers, in a multiplicity of formats, such as audio, video or text (Cormode & Krishnamurthy, 2008). Web 2.0 offers service based and open source online applications. The development and continuous improvement of these applications need the users to evolve as content creators, editors and reviewers (Constantinides & Fountain, 2008).

The inflamed competiveness of Web 2.0 is mainly due to the high turnover of Web 2.0 applications. Since the core of the Social Web is the user, it is imperative for those who want to succeed in Web 2.0, to consolidate a strong and lasting relationship with their users (Chen et al., 2012). Waters outlines three methods to foster relationships online: full disclosure - users are increasingly demanding transparency and honesty from collective entities. The information era has exposed

many organisations for their dubious activities, so openness has become an essential requirement of people's engagement with organisations. To ensure maximum disclosure organisations can resort to the use of institutional logos, information on the staff in charge of their profile, the provision of a comprehensive portray of the organisation's core information and use hyperlinks to establish an easy connection with other official channels (Waters et al., 2009).

Different websites have unique ways to increase their network of users and ensure their preference and loyalty. EBay, for example, allows transactions to happen among its users, acting as an intermediary. It is this collective activity that is the product of eBay, this is what the website sells. Since, eBay only allows such transactions much of its success is due to the massive numbers of users, which leads to the existence of an ever-growing amount of items for users to buy and users to buy them. This is an extremely important competitive advantage. Due to this number of users, eBay guarantees a clear lead over websites that are at the beginning of their activity and have fewer users, and thus less variety, becoming less appealing (O'Reilly, 2005). Meanwhile, Amazon focuses its attention on users and their participation on the site and has developed several mechanisms with the intention of constantly inviting users to participate. Their system of product reviews is one of the tactics that they employ. Product reviews helps other users to have more information about the product. This process is further used to get better search results on the website. How Amazon interacts with users is what sets it apart from its competitors (O'Reilly, 2005).

The software must be easy to use and it has to be a tool that facilitates the use of Web 2.0 and not a disincentive (Zajicek, 2007). One of the fundamental principles of Human-Computer Interaction relates to the ease of use of interfaces, which must be simple to use and predictable. This is particularly important at a business level. Users will not spend much time on a website that they do not know how to use or that they can't instantaneously see how it works (Pilgrim, 2008). Web 2.0's accessibility means that anyone can participate, since it has only basic Information Technology (IT) requirements. The applications are easy to use and they do not required sophisticated computer skills (Thompson, 2008). Thus, more people participate by making more information available and there are higher possibilities of benefiting from mutual knowledge. Being that Web 2.0 needs to be inclusive, to cover various types of users, new technologies are being developed to facilitate the accessibility of Web 2.0 for people with access difficulties (B. Gibson, 2007).

Many social networks have been disseminated, primarily through its initial users that motivated others to join, only by word-of-mouth. In addition, the website itself provides tools and participation options that are attractive to the user. Hence, the user also participates in order not to lose all the opportunities that the website offers (Kittinger, n.d.). The power of certain groups of users is so evident that Eccleston and Griseri (2008) refer to their influence as the "spread of word-of-mouth epidemics".

The participation of users in Web 2.0 raises some concerns. One of the conditions for user participation is trust. The development of online communities requires trust and in order to foster trust in online environments a series of strategies have been created that help users to embrace Web 2.0 and the collective intelligence principal: Rating systems and voting (Hoegg et al., 2006). Given that trust should be felt

bilaterally, the website hosts have to trust the content that the user will post and vice-versa. In the same way that there are mechanisms to increment participation, it is also important to consider the implementation of content control strategies. The users, in their turn, have to trust the website and feel that it is safe for them to post their content.

This transformation of the role of the user results in a greater transfer of information between users, and this often includes private data. Some authors believe that, concerns regarding privacy and data protection seem to affect only a small number of users. Most users are not preoccupied about the fact that they exchange information on the internet with people who are strange to them, even when the contents of this information is very private (Eikelmann et al., 2007). In contrast, other studies have reported an increase in the privacy concerns. The protection of privacy is a growing concern among social networking users (Wu, Majedi, Ghazinour, & Barker, 2010). Over time, internet users have developed a sharper awareness of how the social networking websites may use the data they share with them (L. Wu et al., 2010). Knowing a website's privacy police endows users with the information they need to decide if they want to use that website (L. Wu et al., 2010).

As stated by (Yang et al., 2010) "the full values and potential of online communities cannot be realised without users' ongoing participation" (p. 383).

2.2.2. COLLECTIVE POWER

Web 2.0 harnesses collective intelligence, enables content creation and edition, offers responsive interfaces and provides the opportunity and tools for people to establish networks with their peers (Murugesan, 2007).

The Social Web operates in a strong sense of community. Users create and exchange information online among them and produce a unique outcome that could only derive from a collective effort (Ankolekar, Krötzsch, Tran, & Vrandečić, 2008). The number of users varies proportionally to the level of quality of an application. The base of collective intelligence is that more users mean more value, since the worth of the service increases with the active participation of users (Constantinides & Fountain, 2008).

Online social networking is based on relationships (Waters et al., 2009) and a "large loyal user base is indispensable" (Wang & Chin, 2011). The online social networks' capacity to appeal to high numbers of users and reach critical mass is at the core of their success. Word of mouth and search features that allow members to look for further connections are some of the strategies that social networks employ to attract new members and increase their numbers (Adebanjo & Michaelides, 2010). A high number of users leads to a rise of the number of users, improves the services and supports the chosen revenue model, being sometimes "decisive for the feasibility of certain revenue models."(Isaías et al., 2009a).

The majority of collaborative platforms have four core aspects in common: content creation, content exchange, a space for providing feedback on content and a network of contacts (individuals or communities) (Bojārs et al., 2008). While

interactivity and user-generated content cannot be seen as inventions of social media and social networks, their increased accessibility is truly their responsibility (Ewing, 2008). The growth of social media has facilitated the democratisation of content, by providing both the means and the opportunity for users to interact with each other (Drury, 2008).

Word-of-mouth has been widely identified as one of the factors influencing consumer loyalty. In digital settings, word-of-mouth is especially important due to the vast demand for users input on products and services. More and more people search online for the reviews they need to make purchasing decisions (Chen et al., 2012). Users are greatly influenced by the applications' network effects. They are more likely to stay in a service that their peers or close contacts use (Constantinides & Fountain, 2008). Since, one of the reasons for the success of an application is the network effects resulting from the participation of its users, it is important to invest in strategies to boost this participation. Websites can resort to monetary incentives for people to contribute to the site, they can use volunteers or opt to have a mechanism in their system by default that automatically turns the user into the server, as it happened with Napster. Many of the users do not invest their time adding information, so the websites use systems that allow users implicit participation. It seems to be more effective to use a system that allows that the user, just by naturally seeking his/her interests, to contribute to the collective value of the website. These systems are designed to host technology with network effect. These websites can either have a visible architecture of participation, or one that is camouflaged in the website itself, much like Amazon (O'Reilly, 2005). Also, Napster,

which today does not exist, for legal reasons, provided a database of songs, and simultaneously developed a system that worked so that each user when downloading songs became a server in itself, allowing for a tremendous growth of the Napster network. In this case what had the most impact was not so much a database of music, but this system designed to attract more users (O'Reilly, 2005). Finally, the operation of BitTorrent, where each user is both a server and a client, confirms one of the key principles of Web 2.0, which is the fact that the service improves with use. BitTorrent has a built-in architecture of participation, so there is no need to add servers to increase the quality of service. The more the service is used, the better it gets, because each new user brings content that enriches the application. The website becomes thus a channelling platform of each user's potential, in order to become better (O'Reilly, 2005).

Socially speaking, the benefits that users harvest come from their interactions with other members of the groups that they belong to. The user will feel motivated to contribute with content in order to enhance his/her reputation in a certain group and to make friends (Ewing, 2008).

2.2.3. CONTENT CREATION AND MANAGEMENT

Web 2.0 can assume a variety of guises. The most popular forms of content addition are uploading and tagging photos and creating blogs and profiles (Kittinger, n.d.). Hence, socialization in Web 2.0 is supported by multiple representation tools such as verbal communication, text, image, audio and video (Shang et al., 2011).

The core concepts of Web 2.0 are dynamic participation and interaction. The pages are no longer static, the information circulates more fluidly and the users

collaborate and interact (B. Gibson, 2007). Furthermore, Web 2.0 allows the participation of internet users in the creation and distribution of content without requiring any particular expertise (Benito-Ruiz, 2009). The website has to be straightforward and require only basic IT skills. It should use simple and flexible technology and be as permissive as possible to encourage content creation. The emergence of Web 2.0 has come to provide information with more dynamic features (Eikelmann et al., 2007).

Web 2.0 represents fundamental changes in the architecture of websites (Peña-Ortiz, Sahuquillo, Pont, & Gil, 2009). The technologies used by Web 2.0 play a fundamental part in its user-friendliness as they facilitate content's creation, edition and dissemination. Thus, they are responsible for the mounting volume of users generated data (Rinner, Keßler, & Andrulis, 2008). In the past, any changes to a web page would result in a complete update of the page, currently Web 2.0 allows partial updates (Pilgrim, 2008). The use of AJAX, for example, has been translated into a significantly improved user experience, because it allows the reduction of the amount of information that is transferred between the user and the server. Only the changes, that the user entered, are actually updated, and not the webpage in its entirety (Hoegg et al., 2006). By updating only the information that was changed in a webpage, rather than updating the entirety of the content, AJAX contributes to a superior user experience (Hoegg et al., 2006). The elimination of the need to reload the entirety of a page, eliminates an important usability challenge that was typical of Web 1.0 (Rinner et al., 2008). Ajax is hence, at the origin of richer, more interactive and responsive user interfaces (Murugesan, 2007). The use of dynamic languages is

imperative to the Social Web, and they do exactly what the name implies, they add swiftness to development, debugging and deployment. Unlike static languages, they support a seamless flow of information (Lewis, 2006).

An effective participation provides the users with social and content benefits. Content wise the perks refer to the ability to locate and contribute with data (Ewing, 2008). Content needs to be constantly updated and there must be a sense of identification between the user and the content of website. Users need to feel related to it. The fact that content is added by users, means that the more content there is, the more people will be motivated to join the website and participate. It is also important to have several formats (Chai et al., 2007). Peer reviews in online social platforms have a stronger impact on the potential customer, than the reviews of experts (Constantinides & Fountain, 2008). The users are empowered to voice their opinions and the fact that they participate, provides other users with valuable information. This is also one of the most important characteristics of the Social Web. Not only there is more flow of information, but there is a very unique type of information that was not available before.

According to Kittinger (n.d.) there are three stages of content creation by users: motivation, analysis and choice and production. The user, in the motivation stage, is influenced externally by pressure exerted by other users, namely the internet community and intermediary organizations and he/she is internally driven to participate due to their own interests and needs (Kittinger, n.d.). For the user it matters to be connected to users with whom he/she has some degree of affinity. In order for that to happen the user expresses his/her interests in an open manner

inside the community, thus increasing the opportunity to find users with similar characteristics and curiosity (Kittinger, n.d.). Once the motivation phase is over, it is imperative to decide which application to use. At this stage of analysis and choice the user will have several criteria in mind, which relate mainly to issues of time, finance and suitability of the website to his/her own interests and needs. The production phase occurs after this decision, and it is characterised by the creation of content by the user, employing Web 2.0. At this stage, the decisions concern what kind of content to add and it accounts for factors as diverse as the robustness of the website, its ease of use and personal aspects. The content can either be the uploading of photos and music, or the use of tags or creation of blogs. The greater the creative freedom offered by the website, the greatest the creativity of the user. It is important that the website is not limiting and that technologically it potentiates users' creativity, but without ever compromising ease of interaction with the application (Kittinger, n.d.).

Web 2.0 can be used for social or professional purposes and the tools and options that the websites offer mainly depend on their nature (Leitner & Grechenig, 2008). The Social Web is a "viable channel of knowledge building for general and discipline-specific communities" (Shang et al., 2011), as a result, specific content should be added to subject-specific websites (Constantinides & Fountain, 2008).

Some of the scepticism around Web 2.0 derives from user-generated content. With feeble accountability and control and ample possibility to participate, there are problems associated with intellectual rights, deception and the intricacy of separating quality content from gibberish (Constantinides & Fountain, 2008). Web 2.0

providers can use control mechanisms to manage their services. This includes reviewing content to assess its quality and authenticity, however, the level of control exerted by Web 2.0 providers requires a difficult balance. On the one hand, raising the levels of control can potentially have a detrimental effect on socialization. On the other hand, lower levels of control may negatively impact quality (Shang et al., 2011).

2.2.4. FREE ECONOMY

Web 2.0's principle of free economy is mainly related to the use of open source software and the idea that information should be available for free (Hoegg et al., 2006). Thus, Web 2.0 is a vehicle for the ideals of open software and free access information.

Open source software gained a wider proportion with the introduction of Web 2.0. While Web 1.0 resorted to packaged software, the Social Web breaks free of licensing charges, release cycles and proprietary constraints and resorts mainly to open and free software, one that can easily be downloaded, shared and disseminated (Constantinides & Fountain, 2008). The notion of perpetual beta consists in the constant development and improvement of software. The release of the software is no longer its final stage, because it can continue to be enhanced and the changes it undergoes are regularly updated (Constantinides & Fountain, 2008). Software, previously considered a product, is seen by the social web as a service. For this change to take place, it is necessary to transform the manner in which software is developed, namely, it is essential that there are constant updates. The concept of perpetual beta originates in the need for continuous improvement of the software. New tools are being launched and tested by users who through their choices and

behaviours provide software developers with ideas of what to use and what to remove. A daily update of applications is taking place, freeing the user from the constraints of the software release cycles (O'Reilly, 2005).

Web 2.0 changed the internet business models. Many Web 2.0 service providers assure their revenue through advertising (Constantinides & Fountain, 2008). The majority of online social networks regards advertising as the most relevant and profitable revenue model (Wang & Chin, 2011).

Assuring the financial viability of their service is a matter of survival (Wang & Chin, 2011). Websites such as Google and Facebook, which use advertisement as a revenue model collect data from the interaction of their users with their platform, in order to create tailored sets of advertisement (Fuchs, 2010). Wikipedia resorts to donations and shows to finance its service. It provides free access to users without having to resort to advertising (Fuchs, 2010). Freemium stands for the offer of elementary free services to every user and the establishment of a fee for users who want to benefit from premium services (Varnum, 2007). To opt for freemium solutions results in the provision of a basic service to the entirety of the members and provide paying members with added value. Flickr and Last.FM, for example, offer their services via freemium models (Wang & Chin, 2011).

The choice of the revenue model is also determinant for a websites' success, in the sense that it can either attract or deter users. In principle Web 2.0 is free (Isaías et al., 2009a). Nonetheless the providers of those services have expenses from maintaining their websites operating for a high number of users. YouTube, for

example, with its features of video sharing, has elevated bandwidth costs (de la Iglesia & Gayo, 2009).

Web 2.0 poses challenges from the viewpoint of websites' funding. One of the fundamental precepts of Web 2.0 is the possibility of obtaining services and joining them for free and users have learned to expect exactly that. Hence, only a very small number of sites have added a monetary fee for access to its services. Financial survival is a challenge for websites, because an increase in massive numbers of users doesn't automatically translates into increased funding (Hoegg et al., 2006). Thus, the choice of a revenue model becomes a key decision for the holders of Web 2.0 applications. Most of these websites offer their services for free to ensure high numbers of users, nonetheless there are other websites that try to optimize the existing revenue models to achieve profit and a high number of users simultaneously. Those who offer their services for free usually use advertising and sponsorships as a way to get funds to survive and have profits. Those who decide to impose paid access to their users usually opt for one of two pathways: the imposition of a fixed sum for anyone using that website, regardless of the services they use, or what is more frequent, the supply of most basic services for free and the use of a rate for more sophisticated tools that provides the user with a premium membership with additional tools and options (Constantinides & Fountain, 2008). Revenue may also be obtained by using models that charge according to the usage or by facilitating transactions between users and merchants. There is a multiplicity of revenue models for websites and these can be applied in numerous ways (Rappa, 2008).

2.3. Web 2.0 Applications

Web 2.0 became known through the use of blogs, wikis, forums, social networks and many other applications and services that empower the user to create and exchange information in a variety of formats.

2.3.1. BLOGS

Blogs are among the most popular Web 2.0 applications and they can be more accurately described as online journals (Constantinides & Fountain, 2008), as they often represent personal views.

A blog consists of chronologically ordered entries that can be continuously added to the blogs' webpage. A blog is more of an individual and personal tool than a collaborative or social one. Although bloggers do share their views online, blogs are not regarded as discussion enablers. They mainly serve an autonomous and personal presentation (Dalsgaard, 2006), despite the fact that other users can frequently interact with the blog's posts (Alkhateeb, Clauson, Khanfar, & Latif, 2008).

Through RSS it is possible to be updated on any new posts on a variety of blogs, without the need to consult each blog individually. Generally, there is also a list of links to other blogs that the owner finds relevant and/or subscribes to. This information allows the user to see what other blogs exist, which fosters interaction and interconnectivity (Dalsgaard, 2006). Blogs can assist organizations to project their image and to maintain close contact with its customers (Leung et al., 2011). Blogs allow the posts to include text, image, video and other resources. The settings of blogs allow people to have private or public blogs. Blogs allow people the free and undemanding access to a publication tool, through post and/or comments. There are

several organizations that are leveraging the usefulness of blogs to engage internally with their employees and externally with their clients (Murugesan, 2007).

2.3.2. FORUMS

Forums are part of the *many-to-many* communication channels (Wirtz, Schilke, & Ullrich, 2010). Albeit being commonly associated with Web 2.0, message boards and forums have been part of the internet since its early stages. They are considered the most valuable channels for online discussion. Their moderation is simple and their organization of content assures that it remains concentrated on a unique webpage (Ewing, 2008). Commonly build around specific subjects, forums are stages for the discussion of ideas and the exchange of information (Constantinides & Fountain, 2008). Unlike other social tools, forums do not explicitly display the relationship that users might have among them. It does not list a user's friends, for example. People are grouped according to their participation on certain threads and the only indication of any relationship is their replies (Shi, Zhu, Cai, & Zhang, 2009). The type of discussion that a blog facilitates is very different from the type of debate that arises from a forum. A blog is personal and a forum is social. Also, the discussions that may emerge from a blog derive from the bloggers entry (Dalsgaard, 2006), rather than any user in the forum. Forums are a powerful information resource. A forum can harbor different boards with an unlimited number of threads of topics. They support a high number of users and complex discussions. The users can introduce new topics and engage with topics that already exist (Shi et al., 2009). Web-based forums are also known as message boards. Their unique organisation of content into communities and threads facilitates user participation, which is mainly done through

discussion topics. They are particularly beneficial for the exchange or information and knowledge (H. Wu et al., 2010).

2.3.3. WIKIS

Wikis received their designation from the Hawaiian language, where wiki signifies "quick". Swiftness is core to the wiki technology that began as a tool for the speedy and simple generation and manipulation of webpages. Their rising adoption had to do with the fact that it was accessible even to users lacking technical expertise (Buffa, Gandon, Ereteo, Sander, & Faron, 2008). Wikipedia, for example, is a product of collaborative writing and in order to maximise the accuracy and quality of its content, it standardises the content edition procedures, demands the registration of all editors, categorizes its content and traces all changes to ensure that people are complying (Shang et al., 2011). Wikipedia is the most popular wiki so far and it works as an encyclopaedia with editable content (Dalsgaard, 2006) (Lewis, 2006) (Alkhateeb et al., 2008). Wikis are editable web pages that allow direct changes to their content. Users can create new pages or edit existing ones (Alkhateeb et al., 2008). The changes made to a wiki are recorded in a log that tracks any modification and makes previous versions available. Wikis are characterised by straightforward structure and navigation, built-in search options, asynchronous collaboration among different people and the possibility to add and improve content over time. Despite all their benefits, wikis represent a challenge in terms of content trustworthiness, accountability and legal liability (Murugesan, 2007).

2.3.4. MASHUPS

The Social Web was equally responsible for the introduction of mashups, which allows content from different sources and formats to be combined and structured in different manners. A common example is the integration of a map (photo) with a street address (text), which provides a visual feature to the location in question (Cormode & Krishnamurthy, 2008). Mashups is the denomination given to a website that combines data and services from several sources, as the author explains it, it is very much like using the lyrics of one song and the music of another. Since mashups can be created swiftly and easily they present an alternative to the coding of an application from zero. This is one of Web 2.0 most useful tools, one that is being used by many companies to create new web applications. Their simplicity means that the organisations do not have to depend on an IT expert and can use the in-house human capital to develop web mashups (Murugesan, 2007). The use of mashups allows content to be combined and incorporated in different types of services, hence allowing a greater spectrum of data sources. Google Maps is an example of resorting to mashups (Ankolekar et al., 2008).

2.3.5. SOCIAL BOOKMARKING

Social bookmarking allows the user to save internet bookmarks on a website rather than on the computer itself. The fact that they are available online, and not on a hard drive, means that they can be accessed anywhere anytime, as long as there is an internet connection. Additionally, they can be shared with other users. Del.icio.us and StumbleUpon are two of the best known social bookmarking websites. One of the most common features of these websites is the possibility that users have of

tagging (attributing keywords) their bookmarks. These tags can then be used to generate tag clouds that display the relevance of each subject (Thompson, 2008). Social bookmarking allows users to see what pages people have bookmarked, to subscribe to other users bookmarks and receive notifications via RSS and to receive recommendation of new pages based on their bookmarking history (Dalsgaard, 2006). Bookmarking in light of Web 2.0 technology is a social activity where resources are saved both for private reference and for others to consult . The social aspect of bookmarking relies greatly on the use of tags. When tagging, users are endowing a webpage with a description that will guide other users to that type of content (Heymann, Koutrika, & Garcia-Molina, 2008).

2.3.6. SOCIAL NETWORKS

Social networks allow users to share personal content., for example, MySpace (Constantinides & Fountain, 2008). Facebook is the world leader in what web-based social networks are concerned. The social network shared its latest figures as of June 2013 and they reported an average of 699 million daily active users and 1.15 billion monthly active users (Newsroom, 2013). The widespread success of web based social networks is far from being a hype and it has modeled the behavior of both the media and internet users (Cooke, 2008).

Online social networks have many purposes, namely to provide information and amusement to their customers (Leung et al., 2011). Their existence preceded the emergence of social media. Classmates.com in 1995 and SixDegrees.com in 1997 were, in fact, the pioneers of online social networking. Social networks have become associated with websites that foster online connection between users. Social networks

can be general like Facebook or specific, much like PatientsLikeMe (Kim, Jeong, & Lee, 2010).

The basic elements of social network include, profile information, a list of contacts, means of interaction, such as message or comments features and tools to add multimedia content. These platforms often provide theirs users the possibility to articulate their use with mobile devices (Boyd & Ellison, 2007). Additionally, online social networks usually offer their members the possibility to create specific groups. The opportunity to build these sub-communities allows the users to be in contact and interact with people who share their interests (Kwon & Wen, 2010).

The numerous benefits of social networks cannot overshadow the multiple risks of using these social online platforms. Some of the perils include providing personal information, adding contacts that people don't actually know and using the privacy settings incorrectly (Ofcom, 2008).

2.3.7. RSS, PODCASTS AND CLOUD COMPUTING

RSS is basically a XML file that offers a summary of information and the links to it. It is a feed that syndicates content from websites. It is used to update users on any new content on the websites that they subscribe to. Any user can, effortlessly, add feeds to his/her website (Murugesan, 2007).

A podcast is a recording using audio or video that can be posted on the internet and transferred to other digital devices such as an iPod (Thompson, 2008). Despite the popularity and the existence of numerous podcasts online, a podcast pose real challenges in terms of interaction. namely, podcasts lack a formal description of their

content and they do not offer the possibility to dissect its content into tracks (Celma & Raimond, 2008).

Cloud computing is an effective method for accessing software and address storage needs. It represents a step forward in the provision of resources that are not bound by specific computer desktops. The services it provides can be access via a web browser from any computer (Bein, Bein, & Madiraju, 2009).

2.4. All things 2.0

At the dawn of Web 2.0, Kittinger (n.d.) forecasted that content creation would be broaden rapidly and that it would affect all areas of society. His prediction seems to be concretised in the growing multiplication of '2 .0 'terms, such as Business 2.0, Education 2.0 and Politics 2.0.

2.4.1. BUSINESS 2.0

There are several studies that report the adoption of Web 2.0 by enterprises (Murugesan, 2007) (Shuen, 2008) (Gagliardi, 2011; Isaías, Pífano, & Miranda, 2012a; Wijaya, Spruit, Scheper, & Versendaal, 2011). The rise of online social networks that are directed at specific types of users, namely professionals, is an expression of their power to reach different users and add value to a panoply of circumstances (Joan DiMicco & Casey Dugan, 2008).

The extensive influence of Web 2.0 in the business sector has clear manifestations in consumer behaviour and empowerment and has demanded the strategic adaptation of many companies (Thompson, 2008). Web 2.0 has provided greater opportunities for organizations to increase their competitive advantage over the competition, but also gave users a more collaborative experience (IBM., 2008). In

terms of business, Web 2.0 represents an opportunity for the companies to diversify the ways in which they assure customer satisfaction, while having access to a multiplicity resources from where to obtain information (Eccleston & Griseri, 2008). Also, a significant portion of Web 2.0 research has been concerned with the study of its potential for increasing productivity, revenue and for assisting management (Andriole, 2010) (Fuchs, 2010).

Some of companies' most used tools include wikis, internal blogs for employees, external blogs for clients and RSS (Andriole, 2010). Office 2.0 is also an example of a social tool with professional purpose. It comes from the notion of web office, of using office software directly over the internet without the need for installation on the computer. The existence of this category of applications favours the collaboration among researcher of different countries for example. They allow people to share their work, offer permission to others to review and edit it, to write collaboratively and brainstorm (Gambadauro & Magos, 2008).

The adoption of social technology in business environments requires caution nevertheless. As (Isaías et al., 2012a) stated:

> *The exposition that the age of internet collaboration offers to businesses has immense potential, but it equally presents many challenges. The openness and publicity that give companies the opportunity to present their products and services to a wider audience are also increasing their vulnerability.*

2.4.2. EDUCATION 2.0

The Social Web has been able to reach even the more ceremonial environments of educational systems. As with the other sectors, its adoption is far from being unanimous and the criticism around its informality is solely one of many reasons why some people have yet to implement it in educational settings.

The use of technology deriving from the Read/Write Web inside didactic settings, involves the introduction of tools that are innovative and therefore require some training. The requirements for the employment of social technology are not merely reduced to technical training, they also encompass a change in the mindset of teachers and students alike. Again, Web 2.0 is both a technology and a philosophy. Hence, in education its impact will be seen not only at the level of new technological instruments, but also in the way people experience learning. Its repercussions reach the educational culture (Isaías, Miranda, & Pífano, 2009b). Web 2.0 is shaping a more collaborative educational structure (Carr, Crook, Noss, Carmichael, & Selwyn, 2008).

There is a variety of authors that explored the implementation of Web 2.0 tools in educational settings (Miranda, Isaias, Costa, & Pifano, 2013) (Miller & France, 2013) (Isaías, Miranda, & Pífano, 2009c) (Churchill, 2009) (Luo, 2010) (Usluel & Mazman, 2009) (Grosseck, 2009). The question that arises here is how the adaptation process to these new trends will evolve and what kind of commitments are institutions and technology willing to accept to benefit the most from this phenomenon (Bessenyei, 2008). In the words of (Isaías et al., 2014):

> *Web 2.0 sceptics often designate informality, lack of significance and poor quality content as some of its great weaknesses. Therefore, it is paramount that its application to educational settings is progressively conducted in ways that provide scientific evidence, increasing the validity and reliability of their conclusions and endowing collaborative learning with growing credibility.*

Despite their seemingly paradox nature, social and educational, can be joined together to enhance the learning outcomes of students at all levels.

2.4.3. POLITICS 2.0

At a political level Web 2.0 has contributed to the enhancement of citizen participation and engagement with public matters. Web 2.0 has introduced a vast resource of instruments and platforms of participation, increasing both the opportunities and the means to participate in the civic life.

Web 2.0 is being used to promote political activism. It is creating space and opportunity for people to become more involved politically, to be more active and at the same time, to grant access to resources such as political speeches, or proposed laws that previously were not available. Web 2.0 is growing and boosting civic engagement through its increasing accessibility (Caplan, 2008).

Isaías, Pífano, and Miranda (2012b) explored the impact that campaigns that were developed on Facebook had on citizen participation. From all the campaigns that were explored by the authors, a surprising majority of them did succeed (76.7%) in engaging other users and reaching their goals. The adhesion to these actions was depicted by participants ranging from the hundreds of thousands to only over a dozen (Isaías et al., 2012b).

The research on this particular deployment of Web 2.0 comprises a panoply of subjects such as the use of the Social Web in government (Sivarajah, Irani, & Jones, 2014) (Osimo, 2008) and its application to political elections (R. Gibson, McAllister, Bean, Gow, & Pietsch, 2012) (Towner & Dulio, 2011) (Wattal, Schuff, Mandviwalla, & Williams, 2010).

2.4.4. NON-PROFIT 2.0

The Social Web is a resourceful tool for businesses and also for non-profit entities, which can use it to disseminate their services and manage their relationships (Kim et al., 2010). Since, Entity X is a non-profit association is it important to explore the specificities of the adoption of Web 2.0 by this type of institutions.

Web 2.0 has revealed itself as a central vehicle in the promotion of two-way communication and as a vital platform for the engagement of the wider internet public (Ingenhoff & Koelling, 2009). The public relations potential that social networking grants is being explored by a plethora of individuals and entities. Nonetheless, the mere presence in a social website is insufficient in itself to enhance awareness or elicit incursions of participation (Waters et al., 2009).

Waters et al. (2009) examined the Facebook profiles of 275 non-profit organizations and the results of their study demonstrated that majority of them were making a restrictive use of the tools at their disposal. One of the most important conclusions of their research revealed that despite the existence of a broad awareness of the benefits of using social networking websites, organizations failed to engage fully with their users, by limiting their activity to the inclusion of links to external news, the use of photographs and posting on their message boards (Waters et al., 2009).

Ingenhoff and Koelling (2009), developed a study about the use of Internet resources by 134 non-profit organisations from Switzerland. Similarly to what Waters et al. (2009) concluded, the authors' work disclosed the limited use of Internet resources and Web 2.0 by most of the non-profit entities The potential that the Web

has in terms of engaging all stakeholders and prospective donors is known to most the these organisations, but they failed to harness that potential. Their use of the Web was efficient in term of the information requirements, but with regard to Web 2.0, these organizations were entirely marginal to the use of social tools such as message boards of chat rooms to build relationships with their stakeholders. Moreover, pertaining to media relations, their websites fell short of what is needed to market their organizations (Ingenhoff & Koelling, 2009).

More recently, Lovejoy and Saxton (2012) explored the use of Twitter by the 100 largest non-profit entities in the Unites States of America and concluded that microblogging can be valuable in terms of information provision, community building and action triggering. (Lovejoy & Saxton, 2012)The authors argued that non-profit organizations are progressively engaging with Web 2.0 and investing on that interaction at a higher level, when compared with their traditional websites. Concerning the particular use of Twitter, the authors found that despite the fact that a minority of the organizations was fully reaping the benefits of Twitter, most of them were "missing the bigger picture of its uses as a community building and mobilization tool… [and] not using Twitter to its full capacity as a stakeholder-engagement channel" (Lovejoy & Saxton, 2012).

Social technology serves as a vehicle to organization communication and stakeholder engagement and it offers communication possibilities that are radically different from the conventional organisational websites (Lovejoy & Saxton, 2012). Web 2.0 can be useful to expand the target population of non-profits. It can be used to appeal to new audiences (Ingenhoff & Koelling, 2009). Interactivity is crucial to

foment online relationships. Besides the usual online requests for donations or the exchange of email contacts, it is important that the organisations list their events and activities to engage people both online and offline (Waters et al., 2009).

2.5. The Challenges of the Social Web

The enthusiasm around Web 2.0 and its applications is believed to have somewhat led to its overvalue (Song, 2010), hence it is important to portray some of its main challenges.

Parallel to the advertised benefits of online social networks for business, there are claims that when used in a professional environment, they can actually have a detrimental impact on productivity. Facebook, as many social networks is often used at work, during office hours, which is causing some concern as to its impact in their productivity. Also, some users are unaware of the importance of separating their work life from their private life online. This has two important ramifications: they can share more information about their work, that is advisable, or that they are authorized to do; and by transposing some of their business relationships to these social arenas and providing access to the private aspects of their lives, they might have a detrimental effect on their professional profile (Nucleus Research, 2009).

There is some concern around the use of the internet as a social channel. Some believe that it can be isolating to invest in internet relationships with users and that it might cause people to develop less relationships in the offline social life. Nonetheless some studies have proved that if the use of internet social networks is interpreted in light of a current networked society, it is just as functional as any other social channel. The authors have conducted a survey-based study where it become evident

that active internet users had a higher number of friends both in an online and offline setting (Hua & Wellman, 2010).

Security, privacy and credibility are some of the core shortcomings of social online environments (Eisenberg, 2008). User generated content is unique, but because it is often originated by anonymous users, without a guarantee of quality it can pose a challenge in terms of reliability (Constantinides & Fountain, 2008). Despite the many advantages that user generated content has, it raises the debate between professionals and amateurs (Johnson, 2006). Additionally, Benito-Ruiz (2009) uses the term 'infoxication' to illustrate one of the core shortcoming of Web 2.0. The panoply of abundant and scattered resources leaves the user with the difficult task of sorting what is relevant.

Social network websites are yet to grant their users the transparency that they need to unequivocally comprehend their policies (L. Wu et al., 2010). The mechanisms used by the service providers of certain web 2.0 applications are considered by some as a form of surveillance. These techniques of data collection that originate from the users' interaction with websites and other users are at the core of several debates relating to issues that arise for the civil rights of the users in light of electronic surveillance techniques (Fuchs, 2010).

The reason why social network are targeted by hackers is their value in providing information on the user that can be used to access other websites of significance, such as banks. Some individuals reuse their login information on multiple sites. Furthermore, some of the data on personal profiles (i.e. mother maiden name, hometown, etc) is key to password recovery procedures in important

services such as internet banking (Mansfield-Devine, 2008). Postma et al. (2012) alerts Web 2.0 users to the existence of malware, fraudulent online activities and the exposure of personal data that Web of user generated content exchange facilitates

A core issue of Web 2.0 is the fact that an overemphasis on presenting data in a manner that is human-oriented may increase the difficulty of machines when they read that data, which can cause information to become hidden and hampers the automation of tasks (Lewis, 2006). The use of taxonomy and folksonomy tries to address the issue of information search and retrieval, but their capacity for information integration is very limited. The association of the Semantic Web with Web 2.0 promises to enhance the accuracy of data search, by generating a connection between several sources of content and facilitating reusability (Bojārs et al., 2008). B. Gibson (2007) reiterates this need and recommends the use of additional semantic, adaptive interfaces and navigation options, to promote a more accessible Web 2.0.

The prerogative of user empowerment is not as unlimited as some Web 2.0 devotees might argue. It is important to understand that the power that the users have of adding content is limited to the facilities created by the people developing the websites. When updating their information on Web 2.0 websites the user is creating content, but he/she is doing so by a process of completing pre-defined online forms. The data they introduce is represented in a specific template, which was designed by the developers and applies to all users. The manner in which the information is displayed is the same for all users. Arola (2010) argues "Facebook does not offer any means of changing its interface. For example, one cannot interchange the location of the Wall and the profile picture, nor can one get rid of the

Wall altogether and replace it with a YouTube video". These challenges were the opening line to the proliferation of a new generation of the Web: Web 3.0 or Semantic Web.

2.6. Exploring the Success of Web 2.0

Since the user has most of the control in Web 2.0, the ease with which users can change one service for another, requires a deeper examination of their motives (Constantinides & Fountain, 2008). The majority of the work that examines the success of Web 2.0 mainly focuses on explaining users' adoption through several variances of technology acceptance models or on the establishment of guidelines for the implementation of Web 2.0 applications that already exist. The scarce research on how to create successful Web 2.0 components leaves an important gap in this area of research.

2.6.1. SUCCESSFUL MANAGEMENT

Chui et al. (2009) outlined 6 critical success factors to guide companies in their adoption of 2.0. Despite the fact that Web 2.0 operates from the bottom-up, it does require management involvement, so senior executives should lead by example and engage actively in the tools that the companies are adopting and provide guiding directives for their corporate use. Secondly, people using a specific application have the best knowledge of how it should be operated and for what purpose, but they require assistance in term of scaling that use. Thirdly, it is paramount to incorporate the use of Web 2.0 tools in the day-to-day tasks, in order to promote a seamless incorporation of these tools in the work load of the workers. Fourthly, management should reward the employees with public acknowledgement and fuel their desire for

recognition, since the normal cash incentives will not foster participation. Some companies tried that method only to find that many people were posting because they had to, but the quality of their posts was poor. Fifthly, it is important to identify those users who will create value and motivate participation. Finally, it is critical to balance control and total permissiveness. Management should articulate with several departments, such as HR, legal and IT to draft policies to guide the use of these tools (Chui et al., 2009). While the critical success factors that the authors present assist companies in the implementation of Web 2.0 inside the structure of their work dynamic, it does not provide the grounds for the development of a successful Web 2.0 application. Instead it focuses on the strategies that should be followed once it is already in place and operating.

2.6.2. SUCCESSFUL ACCEPTANCE

Users employ several criteria to choose the applications they want to use: ease of navigation, financial cost, social networking presence and interaction with the website, users with whom they identify, that are active participants in the application, the visual aspect of the website, the quantity and quality of options and applications available to the user, security settings and privacy, the possibility to add and manage content and the performance of the software used on the site (Kittinger, n.d.).

In trying to determine the personal factors that affect the acceptance of Web 2.0 by users, Aladwani (2011) posited that gender, age and personal training not only have an influence on user's acceptance of information technology, but more specifically, they also play an important role in the acceptance of Web 2.0. His

research tested these factors and age and training were the factors that influenced Web 2.0 attitudes the most, with the younger and more trained participants having more positive attitudes. Gender did not result in different attitude towards Web 2.0, but it was concluded that it did have an impact on the diversity of applications used, with the male respondents reporting a wider variety. Furthermore, the author concluded that a positive perception of Web 2.0 increases use, so the providers should cultivate a positive image of Web 2.0 (Aladwani, 2011). This particular study contributed with some insight on the different habits of internet users and it highlighted some factors that may result in different use and acceptance of Web 2.0.

In an environment of proliferating social technology, it becomes difficult to identify what tools and applications best meet the needs of users. The identification of the factors that motivate the use of Web 2.0 applications helps the outline of user attraction and retention strategies (Dwivedi et al., 2011). Some authors have used models of technology acceptance to justify Web 2.0's widespread adoption. Dwivedi et al. (2011), used the Technology acceptance model (TAM) and advocated that usefulness and ease-of-use are important elements in predicting the intention of users to adopt Web 2.0 services. The authors postulate that TAM can be deployed to predict a user's intention to use Web 2.0 and that perceived usefulness and perceived ease-of-use are determinant in forecasting the intention of users to use Web 2.0, which, consequently will lead to the actual use of Web 2.0. The authors define perceived usefulness of web applications as the perception that the users have in relation an application's capacity to offer pertinent information, to provide a wide diversity of content and to foster social connections (Dwivedi et al., 2011). Web 2.0

provides internet users with a multiplicity of opportunities: electronic learning, collaboration tools and content generation, which contribute to a perception of Web 2.0 usefulness. Ease of use, on the other hand is assured by the fact the Web 2.0 does not require advanced IT competences. In fact, ease of use is one of Web 2.0's main precepts (Dwivedi et al., 2011).

Ewing (2008) describes the motivation of people to engage with online communities as a process that begins with content motivation and shifts to social motivation. A user begins to interact with certain communities because they harbour discussions on subjects that are interesting to her/him, but as time progresses that user will begin to develop a relationship with the people that contribute in that community and they end up participating because of them, regardless of the level of pertinence of the content they post (Ewing, 2008).

2.6.3. SUCCESSFUL CONTINUANCE

Online communities can be established in a variety of platforms, such as forums and social networks. While technology offers opportunity, user participation fuels the existence of online communities. Some theories explain the participation of user in online communities through initial acceptance, but it is continuance that is mostly responsible for the success of these communities (Yang et al., 2010).

Yang et al. (2010) tested three approaches to explore the decision of users to participate in online communities: IS continuance, utilitarian and hedonic values and affective commitment. The author cites the expectation confirmation model as a more suited method to explain the continuous use of online communities, rather than concentrating on adoption models. The continuance model assesses not only the

initial acceptance, but also the users post adoption motivation. To complement this model, the author examined utilitarian and hedonic values as well as affective commitment. Utilitarian and hedonic values have only recently been the focus of internet use research. Purpose and entertainment are believed to be the core elements behind the use of internet communities. On the one hand the utilitarian view focuses on the accomplishment of a task, rather than on the experience taken from that process. On the other hand, the hedonic approach concentrates on how it feels to perform a certain task, i.e. if it was enjoyable. Affective commitment is an indicator of how people feel engaged with and attached to the other people in a group. Their research established that the intention to continue to contribute to online communities is the result of the users' satisfaction with past experience and the affective commitment to the other members and that both these factors are the product of a positive disconfirmation of utilitarianism and hedonism (Yang et al., 2010).

Similarly, Lu and Hsiao (2007) also underlined the importance of research concerning the intention to maintain the use of social media, rather than the exclusive examination of the successful adoption. In this case in particular, the authors were referring to blogs. The study that they developed, investigated the reasons behind the intention of users to continue using blogs. Their study highlighted knowledge self-efficacy, subjective norms, feedback, and personal outcome expectations as the prime motives. Knowledge self-efficacy refers to a person's belief in his/her capacity to offer valuable and interesting information. The more confident the users are, the more likely they are to continue to engage with

blogs. Likewise, there is a higher probability of continuance of use when the users believe that they have something to gain from doing so. Contrary to what some other studies have argued, Lu and Hsiao (2007) found that feedback and subjective norm had only an indirect impact in the users continuance intention.

Members of online social networks are prone to mimicking their friends' behaviours and the behaviours of those with whom they interact socially (Wang & Chin, 2011). Social influence is part of a plethora of studies on behavioural intention models and is also applicable to the intention of continuing to use Web 2.0 (Chen et al., 2012). Chen et al. (2012) evaluated the impact of four social dimensions in the continuance intention of Web 2.0 by internet users: subjective norm, image, critical mass and electronic word-of-mouth. The results of their research dictate that all these factors have a direct influence on continuance intention. User satisfaction is paramount to Web 2.0 usage, so it is important to the providers, to understand what leads to their users' satisfaction. It is imperative to build a service based on the general needs of the users and prevent their alienation. The loyalty of the users is essential to the success of the Web 2.0 application, as they will be less likely to leave and more inclined to attract other users (Chen et al., 2012). Social pressure is a key motivator of human behaviour and word-of-mouth is an integral element of user interaction in social networks based online. When a website achieves critical mass, its value increases, hence, as the number of contributors increases, so does the positive effective of critical mass. The investment of Web 2.0 platforms must be focused on raising a large number of users. Moreover, the users value their image and they are, therefore, more likely be part of a Web 2.0 platform that contributes to the edification

of their image. Hence, the image of a Web 2.0 website has the power to attract or repel users. A Web 2.0 application with high status and a positive and widely recognised image will motivate people to invest more time in that application (Chen et al., 2012).

2.6.4. CRITICAL SUCCESS FACTORS

The previous studies have placed their emphasis on the motivations of users and on the motives that cause them to remain and participate in Web 2.0 platforms. The characteristics of the platforms themselves have been relegated to a secondary plan. This final subsection will analyse the success of Web 2.0 from the point of view of users, but with a incidence on the particular features of the websites and applications.

Isaías et al. (2009a) outlined seven critical success factors that Web 2.0 applications must reunite. The authors argue that the success of Web 2.0 components and applications is dependent on "users' inputs, users' critical mass figures, ease of use of component, availability of content to justify users' access, user content addition features, user content development tools and revenue models"(Isaías et al., 2009a). Each of these factors can be maximised by several requirements, as can be seen in the brief outline of the authors' framework, in Table 1.

Table 1. Web 2.0 CSFs and their main enablers

CRITICAL SUCCESS FACTORS	ENABLING CONDITIONS
Users' Inputs	User generated content Trust Privacy settings Attract the use (Marketing, network effects, rewards, hubs)
Users' critical mass figures	Word of mouth Social pressure (collective or individual) Snowball effect (users generate users) Tools to enhance registration and participation
Ease of use of component	No advanced IT skills required User-friendly technology Straightforward and intuitive software Effortlessness and predictability
Availability of content	Encourage use participation Critical mass figures Specific communities of interest User generated content
User content addition features	Users want diversity Variety of tools (message services, photos, text) Features for specific purposes (professional, social)
User content development tools	Technology (APIS, AJAX, Ruby on Rails, Java script, XML) Dynamic languages Built-in participation structures
Revenue models	Free economy precept Internet revenue models (advertising, freemium)

The critical success factors that the authors propose imply that a Web 2.0 application has to have the participation of the users, which namely demands trust and strategies to captivate the user; it has to attract a critical mass of members, though the facilitation of registration and participation; it must be easy to use, which can be accomplished through the employment of user-friendly technology; it must guarantee the availability of content, by encouraging user participation; the tools it

uses should allow for a variety of content formats, such as photo uploading and text editing; it has to deploy technology that enables the creation of content by the users, more specifically dynamic programming languages; and it should define its revenue model according to its needs (Isaías et al., 2009a).

Though the several requirements, of each of the critical success factors that Isaías et al. (2009a) developed, seem to introduce some sort of relation among them , the authors do not examine that relation. It would be important to establish a connection between the several success factors. Additionally, since their framework was based on the review of the available literature, their study lacks empirical validation. Apart from these limitations, when compared with the abovementioned studies, Isaías et al. (2009a) critical success factors, accounts for a more extensive and all-encompassing explanation of Web 2.0's popularity. Their work considers the main precepts of Web 2.0 by focusing on the core of its nature and it is for that reason a valuable starting point for the development of the framework that this research ambitions to develop. All the critical success factors will be considered with the exception of the sixth, *user content development tools*. Thus, for the creation of the framework this study will consider: CSF1 - *Users' inputs*; CSF2 - *Users' critical mass figures*; CSF3 - *Ease of use of component*, CSF4- *Availability of content to justify users' access*; CSF5 - *User content addition features*; and CSF7 - *Revenue models.*

A study by Mckinsey examined the adoption of Web 2.0 by 50 organizations and concluded that there was an equal distribution of satisfaction and dissatisfaction among the participants. Some of the challenges that were encountered subsume organizational structure, feeble management support and an insufficient knowledge

of how to create value with Web 2.0 (Chui et al., 2009). It seems that despite an extensive body of research on how to harness the potential of Web 2.0, some people and institutions remain unclear as how to develop successful Web 2.0 components. Thus, in the next chapters, this research will work towards the development of a framework that can guide the successful development of Web 2.0 applications, by using Isaías et al. (2009a) Web 2.0 critical success factors framework as a stepping-stone.

3. METHODOLOGY

This research is committed to the creation of a framework for the successful development of Web 2.0 components. The literature review offered a theoretical frame for the design of the empirical research. This study is focused on answering one main question: "What are the elements of the framework for the successful development of Web 2.0 components?". The pursuit of this answer is guided by the following objectives:

- To identify the patterns of use and participation in Web 2.0 websites;
- To determine what are the most popular Web 2.0 websites;
- To examine the users' preferences in terms of Web 2.0 tools;
- To list the most important characteristics of Web 2.0 components, from the users' point of view; and
- To create a pilot Framework to develop successful Web 2.0 applications.

This chapter provides a depiction of the empirical research conducted in this study. It highlights the chosen methodological approach, the methods of data collection and all the precepts that guided the data collection and analysis. This section maps and explains the methodological options of this work's empirical research and it contemplates its methodological limitations.

3.1. Research design

In research it is vital to respect the appropriate chronology each of its stages. When the data collection methods are chosen and applied prior to the establishment of a concrete research design, the results are often frail and do not provide the necessary

answers. Research design is the "logical structure of the inquiry" (De Vaus, 2001). The presentation of this work's research design follows Creswell (2008) threefold research design organisation: knowledge claims, inquiry strategies and methods of data collection and analysis.

3.1.1. KNOWLEDGE CLAIMS

This research is framed within the positivist tradition of knowledge claim. Positivist is focused on providing an accurate description of the aspect that it aims to study. It argues that knowledge is built through the use of scientific methods (Walliman, 2011). The positivist researcher must remain objective and uninvolved (Walliman, 2011). Positivism disregards subjective statements as holders of scientific value. Only objective statements are within the scope of science (Greener, 2008). Positivism is characterised by a deterministic view of cause and effect. It is focused around the need to explore the causes that have an influence over a certain outcome. Positivists rely deeply on numeric measures and the study of individual behaviour (Creswell, 2008).

Interpretativism, on the other hand, presents a subjective approach of the world. Each person has his/her own construction of the world, therefore, phenomena can be interpreted in a variety of ways. In the Interpretativism tradition, the researcher is an integral part of the investigation process and usually qualitative methods of data collection are used (Walliman, 2011).

Other knowledge claims include, for example, social constructivism, advocacy/participatory and pragmatism. Social constructivism prefers open and broad questions to give the participants the opportunity to construct meaning.

Meaning is constructed individually as well as collectively, via social interaction (Creswell, 2008). The advocacy/participatory approach provides an alternative to the strict laws of Positivism that fail to include segregated groups and individuals. This type of approach regards research as an instrument of change and reform that needs to address issues of social importance (Creswell, 2008). The pragmatic approach is centred on the problem that is being studied. Pragmatism explores actions, circumstances and it is focused on understanding what works best to address the problem in question. The emphasis of research is placed in the problem rather than the methods used to explore it. The researcher should select whatever methods and techniques provide the best outcomes (Creswell, 2008).

3.1.2. INQUIRY STRATEGIES

Strategies of inquiry can be chosen from a variety of options such as survey, case study, ethnography and experiment. The inquiry strategies that this research will use are: unobtrusive research, survey research and case study research.

Unobtrusive Research

Unobtrusive research can be qualitative or quantitative. Content analysis is a method of unobtrusive research and it is particularly suitable for the analysis of communications or communication related research (Babbie, 2004). The unobtrusive research was conducted via a qualitative content analysis of reports collected over the internet.

Survey

Surveys can be cross-sectional or longitudinal and include different methods of data collection like questionnaires or interviews (Creswell, 2008). The key ethical

aspects of survey research are confidentiality and informed consent (Kelley, Clark, Brown, & Sitzia, 2003). There are several shortcomings to survey research: the data that results from surveys is not usually very detailed and may lack some depth and it can be difficult to assure a high response rate (Kelley et al., 2003). Moreover, survey research is an inflexible instrument of data collection. When the survey is designed and launched the research will not be able to make any changes. Additionally, by trying to design questions with a minimum common denominator, the researcher might be leaving out important aspects that could be included. On the other hand its standardized nature is an advantage in terms of reliability, since it is uniformly applied to the entire participant pool and does not vary with the researcher's observations (Babbie, 2004). Also, there are many other benefits of conducting survey research: it produces empirical data; the fact that it can be distributed among a high number of people offers a high probability of obtaining a representative sample and of being able to generalise the findings; it can collect a sizeable amount of data in a timely and low cost manner (Kelley et al., 2003). Additionally, surveys are used to offer a depiction of a certain situation at a particular time and are, thus, valuable resources for descriptive works (Kelley et al., 2003). The survey research was done through an online questionnaire to the Web 2.0 in general.

Case Study Research

The use of case study research is particularly well suited for the examination of contemporary phenomena. Regardless of the subject of the research, the case study is used when the researcher intends to analyse a case or as aspect in particular. The focus of the case study can be individual or collective and it can be concentrated, for instance, on people, organisations or processes (Yin, 2003). For the development of

the case study of Entity X, this research designed an online questionnaire targeting its members.

3.1.3. METHODS OF DATA COLLECTION AND ANALYSIS

There are three approaches to research: quantitative, qualitative and mixed methods (Creswell, 2008). This work uses a quantitative approach. When the research problem is related to the identification of the factors that influence a certain result, the quantitative approach is the best strategy (Creswell, 2008). Qualitative research is also the best option to study new or unknown phenomena (Creswell, 2008). Hence, this was the most suitable choice for this research in particular. Quantitative research is based on the collection of algebraic data and it has a deductive approach of theory and research. The main concerns of quantitative research are the need to measure, to establish causality, and the ability to generalise and replicate (Bryman, 2004). The quantitative approach to research mainly uses postpositive precepts, such as causal thinking. Also, it is associated with experiments and surveys as strategies of inquiry and it prefers the use of methods that provide statistical data (Creswell, 2008). Traditionally, cross-sectional survey examines phenomena at a specific point in time (Kelley et al., 2003). This is also the case of this research, where each of the data collection instruments was used in a particular time period.

This study used two different methods of data collection: collection of documents and two online questionnaires, used in two different occasions. The document analysis consisted in the examination of website ranking reports. In terms of the questionnaires, one was developed for the generality of Web 2.0 users and the

other targeted the users of Entity X. Using various research methods is one of the important measures that this study has employed to more rigorously substantiate its conclusions. Collecting data from multiple sources improves the internal validity of the research (Creswell, 2008). Data triangulation allows the use of various methods to substantiate the same result and has a positive effect on the quality and validity of the scientific research (Yin, 2003).

3.2. Collection of Documents

One of the objectives of this work is to determine which are the most the most popular Web 2.0 websites. Web 2.0 places its emphasis on users, so, their preferences and patterns of use, dictate the conception of success. The notion, of most popular or successful websites, is to be understood, in this research, as the ones presenting a higher number of accesses by users. For this reason the document collection was concentrated on website rankings of the most popular websites.

The collection of documents results in secondary data. Secondary data can come from magazines, reports, documentaries and many other sources. (Walliman, 2011). Since, it is usually free, it constitutes a financial advantage and it is free from the researchers' intervention (Greener, 2008). Albeit its numerous benefits it is important to account for the quality and validity of the data that is supplied. It is paramount to understand the origin of the data (Walliman, 2011). There are five steps in secondary data collection: location and access, authenticity, credibility, representativeness and methods of analysis (Walliman, 2011).

Unobtrusive methods have the advantage of providing information that is not subject to the influence of the researcher. Furthermore, in reactive methods of data

collection, the participants may experience some inhibition from the awareness they have of being surveyed (Hine, 2011). As an unobtrusive method, documentary research provides data that is less subjective to bias. In the collection of documents, as in other research methods it is necessary to take into account certain requirements to assess the quality of the documents, including "authenticity, credibility, representativeness and meaning" (Scott, 1990). These criteria are paramount to the reliability of the collection of documents. Given that the internet changed the conventional methods of document collection, it has introduced a new term in the typology of documents: the virtual source. This type of documentation needs to be critically assessed, not automatically accepted as valuable (McCulloch, 2004). The control of the quality of the sources that are used is essential, especially in a context where people can easily host their own websites and publish all kind of unverified content. The overwhelming flow of information online leads to an increasing demand of methods to determine which data is actually authentic (Mogalakwe, 2006).

In order to find the list of the most popular websites using Web 2.0 features, it was necessary to collect documents that were specific to website ranking. The documents collected during this research are made of reports that rank websites according to the highest number of visits. This study collected 5 different reports from 4 online services that rank websites by several categories: alexa.com, mostpopularwebsites.net, ebizmba.com and netcraft.com. All the reports were collected from these websites on May 27, 2010, between 5:54pm and 6:33pm, to

guarantee that the variation between results could not be attributed to time and date differences.

Alexa.com was used as the primary list of website rankings and provided this study with 2 reports. The first report was taken from the category *Top Sites*, which lists the top 500 sites of the Web. This listing has three types of views: global, by country and by category. Since the objective is to have a general depiction on the top internet sites, the global view was selected. The report used here, comprised website #1 until website #50 (Alexa, May 27, 2010a). Alexa, Web Information Company, was founded in 1996 and its mission is to offer "free website analytics for all websites" (Alexa, n.d). The Alexa Rank, comprises over 30 million websites all over the globe. The global rank that was used in this study is a calculation of a website's position for the past 3 months, in relation to all other websites. The measurement is the result of a "combination of the estimated average daily unique visitors to the site and the estimated number of page views on the site over the past 3 months. The site with the highest combination of unique visitors and page views is ranked #1." (Alexa, n.d). In light of the fact that the first questionnaire would be initially disseminated to and by Portuguese Web 2.0 users, it was decided to use the category Top Sites, filtered by country, to include only the results from Portugal. This was done mainly to minimise any potential and substantial discrepancy between the Global results and Portugal's results. The second report with Portugal's results also comprised all the websites placed in #1 up to #50 (Alexa, May 27, 2010b).

The thirds report was taken from Mostpopularwebsites.net, which is hosted by MostPopular.org. Most Popular is a project that was founded in 2008. The

objective of this website is to "provide web based reports on the popularity of various data elements including websites, keyword terms and phrases, movies, songs, games and more [in order to] quickly identify leading and trending items in a variety of some of the most popular subjects that people are interested in" (MostPopular, 2012). The mostpopularwebsites.net is a rank that exclusively lists websites. It is organised according to the number of visits and the information they provide is updated every 24 hours (MostPopular, n.d.). The report from this rank looked at the 50 most popular websites (MostPopular, 2010).

EBizMBA, an eBusiness knowledgebase, has information on business related subjects and it provided the fourth report. The website for eBizMBA provided this study with a report of the 15 most popular websites that use Web 2.0 (eBizMBA, May, 2010). The rank that eBizMBA displays in its website is the average of the websites' Alexa Traffic Rank (globally) and their U.S.A traffic rank, using data from Compete.com and Quantcast.com, and lists a maximum of 15 websites.

The last ranking was obtained from Netcraft, which provides several internet services, namely application assessment, internet security and research data. It has been operating since 1995 (Netcraft, n.d.-a). Netcraft gathers and presents data on the million most popular websites. They determine this list by using the number of visits that a website gets from internet users who use the Netcraft Anti-Phishing Extension. This list of web traffic is updated every month (Netcraft, n.d.-b). This report it provided ranked the 50 most visited websites from all countries (Netcraft, 2010).

The analysis of the reports was done via a quantitative content analysis. The two main perspectives of content analysis are the qualitative and the quantitative.

While the qualitative approach is more concerned with establishing relations between the several units of analysis, the quantitative approach is more focused on the numeric values of those units (Muehlenhaus, 2011). Before analysing the data it is imperative to predefine what the aim of the analysis is. The focus of the analysis depends on what it is trying to achieve (Walliman, 2011). In this case, the objective of the document collection was quantitative. Quantitative content analysis has the advantage of producing replicable results. It is conditioned by a set of operational rules, denominated codes and the use of codes increases the replicability of the results and it allows several sources to be analysed according to the same exact rules, thus enabling their comparison (Muehlenhaus, 2011). In content analysis it is possible to analyse the data by measuring the frequency with which certain words appear in the content. This technique works with a quantitative approach, since only the frequency of the words are relevant (Hsieh & Shannon, 2005). Nvivo 8 was used to perform the word frequency query that provided the basis for the content analysis of the ranking reports. Quantitative content analysis is focused on providing a map of the occurrence of certain specified units (Franzosi, 2008), so in some cases quantitative it has been regarded as being potentially misleading, as the use of mere frequency counts can produce inaccurate results (Franzosi, 2008). This was not the case of this particular analysis, since only the websites and the positions the occupied were considered. The next chapter will detail the specific codes that guided the content analysis.

One of the limitations of the document collection was the fact that the different rankings, that were used, had different criteria for building their lists, impeding any

comparative analysis. In addition, the fact that the internet is a resource that is used by a growing number and variety of people, does not guarantee a representative sample for research. Some people are more likely to use the internet than others. Also, more IT savvy and security concerned users, may choose privacy settings that block access to the information that the other users have as public. In terms of researching information, search engines provide only a limited access to what is available on the internet. When resorting to search engines to explore internet trends, it is important to acknowledge that the sources they use to order their results may provide biased information (Hine, 2011).

3.3. Online Questionnaires

Online settings are valuable resources of information and dominant sources of communication that endow researchers with new possibilities (Zhang, 2000). Online questionnaires provide access to web based populations as more and more people, groups and organisations are using the internet. They enable the investigation of online communities and geographically distant respondents. Moreover, they allow the research of populations that could not be access otherwise, either because it would be difficult or impossible to reach. Certain populations exist solely on the internet (Wright, 2005). The main reason for using online questionnaires in this research is the target populations: Web 2.0 users and Entity X members. Web 2.0 users do exist outside the internet and have an *offline life*, but the contact via Web 2.0 sites is one way of ensuring that they really are users of the Social Web. If they were not, the questionnaire would not have reached them. With respect to Entity X members, the contact they have with Entity X is already based on the internet. The

only occasion where in-person contact happens is during the conferences that they attend and since they are organised in different time periods and by subject, it would be impossible to collect a random sample at any of those events. Furthermore, since most of the contact is done online, a database with all of the members' electronic contacts was already available.

3.3.1. ADVANTAGES AND DISADVANTAGES OF ONLINE QUESTIONNAIRES

Braunsberger, Wybenga, and Gates (2007) concluded that overall web surveys resulted in more reliable data collection than telephone questionnaires. Some subjects are considered to be of a private nature by the participants and in order to protect their privacy, the answers they provide via telephone are more prone to be inaccurate, which leads to a lower level of reliability than when the participants can themselves complete the questionnaire without the intervention of an interviewer. Also, in comparison to telephone surveys, online questionnaires are less expensive and the data can be collected more swiftly (Braunsberger et al., 2007).

Online questionnaires are also valuable resources in terms of time management. The data collection is automated, reducing time and workload. The researcher is given the opportunity to collect data, while working on other aspects of the research. Some services have features that compile and organise the data at the same time as the participants are responding, so once the questionnaires are sent there are many steps that were previously the responsibility of the researcher and are now automatic (analysing and interpreting, for example) (Wright, 2005). Furthermore, they do not require transcription. The responses are automatically acknowledged so no time or budget needs to be allocated for dealing with

transcriptions (Fleming & Bowden, 2009). Questionnaires that involve self-administration are attractive not only in terms of cost, but also in terms of the possibilities they offer to reach a large number of people (Williams, 2003). The fact that online surveys are self-administered and the results are usually automatically stored, eliminates the bias and the possible misconduct of the researcher, at the same as it ensures the privacy of the participant and, in comparison to telephonic questionnaires, they are more prone to reveal certain behaviour of the participants and be less affected by the influence of prestige and social desirability. When compared with telephone inquiries, online survey methods are also reported to have results with a higher level of consistency over time and this is an important measure of reliability (Braunsberger, Wybenga, & Gates, 2007).

Similarly to any other method of data collection, online questionnaires present many challenges. Since the completion of the questionnaire is the responsibility of the participant the quality of the data might be affected by their lack of responses to certain items as they progress through the several questions (Denscombe, 2009). Furthermore, they present a sampling challenge: invalid email addresses, multiple emails for the same participant, several replies from the same person. All these elements hamper the use of random sampling. Although using specific measures to decrease the negative impact of these factors is a good solution, the downside of using extra procedures is the potential decrease of the rate of questionnaire responses (Wright, 2005). Non-response bias and duplicate entries are also elements that frequently are cited as disadvantages of online questionnaires (Fleming & Bowden, 2009). Some of the strategies that can be used to potentiate high response rates,

include conciseness, straightforward design, sending reminders and a methodical planning of the recruitment technique (Kelley et al., 2003).

3.3.2. ONLINE SURVEY SERVICES AND SOFTWARE

In an online setting, the design of a questionnaire is greatly dependent on the service that is used to build and distribute it. Before choosing which service to use, it was imperative to review the existing options, to assure an informed and adequate decision. This was a time consuming task that involved the development of questionnaires in dozens of different softwares and services. Despite the time that it demanded, this proved to be an important step in the development of high quality questionnaires. The review of the survey providers took into consideration the fundamental requirements for high quality online questionnaires and the specific demands of each of the required questionnaires. Furthermore, special attention was paid to the main challenges of using web-based research methods and the underlying issues that hinder reliability, credibility and the other core values of research.

In a paper based questionnaire, the researcher has all the control over the design. Therefore, when transposing a questionnaire to an online version, researchers face limitations that are imposed by the features available in the service. As for the fundamental principles of online questionnaire design, the search for a survey provider was guided by the importance of a welcome page or at least a space for an introductory note to the questionnaire, the guarantee of anonymity and confidentiality, user-friendly navigation and final page or a space to enter a final statement. As for the specificities of this research and its questionnaires, the search

for online questionnaire services started with an expectation of free access, variety of question types, multilingual options, help features within the form and the availability of the *other* option for multiple choice questions. Also, the questionnaire on Entity X's users required a service that offered branching/skip logic options.

The first criterion for selection was the price, due to budget constraints, but also to use free online services, which is more in line with Web 2.0's precepts. Ultimately, this criterion was sacrificed for the sake of the other requirements, but it was always a concern. Most of the survey providers that were analysed offered a free option to develop questionnaires, but it usually meant having very limited features. The paid versions were as a rule divided into a few different price plans and payment modalities. Typically the most basic plans were approximately 15€ and they had several restrictions. The fact that the first questionnaire had two versions in different languages, gave multilingual services a competitive advantage. Although the wording of the questions and their translation into the required languages are the responsibility of the researcher, the navigation buttons within the survey would be in the default language of the service. Only a multilingual service would guarantee the coherence between the navigational buttons and the language of the questionnaire. Both price and language were important, but they were secondary to the other abovementioned criteria.

Some services were swiftly excluded for not meeting the basic requirements. Formsite.com (http://www.formsite.com) displayed poor editing design settings and options. They do offer a free modality, but it is very limited. Both the free and basic (paid) version restricted the number of responses to 100 and 500 respectively.

Infopooll.com (http://infopoll.com) provides software to design and conduct surveys online, that needs to be downloaded to a computer. The software can be downloaded for free, but once the survey is done and it needs to be placed online to start collecting data, it will ask for a payment method. The creation is free, but the distribution is not. There is not enough information on the website to understand this in advance, which leads the users to develop the form and only be aware of the charges once it is completed. This lack of clarity costs researchers a great amount of time. Also, this option was discarded because it was a paid service and the interface that is installed to create the survey is not intuitive. My3q (http://www.my3q.com) provided a free service, but the website had very poor design and appearance. Smartsurvey (http://www.smartsurvey.co.uk) charged a fee for their software and even its first and most elemental price plan is very limited in terms of the features it offers. SurkeyMonkey.com (https://surveymonkey.com) was equally limited in the free version, allowing a maximum of 10 questions per survey. Zoomerang (http://www.zoomerang.com/pricing/) is now part of Survey Monkey and it was at the time discarded due to its restrictions on the number of responses. Questionpro (http://www.questionpro.com) had a very limited free version and Question-Survey (http://question-survey.com) was a good option but it had adverts.

There were services that were very good, but as the creation of the form progressed, they revealed some flaws at a design level, especially in terms of organising multiple choice questions that disqualified them. Qualtrics Survey (http://www.qualtrics.com) has a very professional aspect which compensated for the fact that it charged a fee. Nonetheless, halfway through the development of the

questionnaire, it was discarded as a viable option due the organisation of questions with grids and/or multiple choice. As the multiple choices were added, the form became distorted. A more extensive matrix of choice enlarges the space that is available for the survey. Visually it did not look professional and was therefore unacceptable. Esurveypro (http://esurveypro.com) had good design options, including the *other* response option, but it did not display multiple choices in columns. This service is no longer active. Surveyz (http://www.surveys.com) is equally not active anymore and at the time it was discard for requiring payment and for exhibiting too many Google adverts. Survs (https://www.survs.com) was multilingual and had an amazingly professional design, but it not only required payment, which could be overlooked, it also did not organise multiple responses in columns. MySurvs (http://www.mysurvs.com) was not free and it did not group multiple choices in columns.

There were some options that can be valuable for some types of survey, but did not fulfil all the requirements of this particular questionnaire. Google forms (https://docs.google.com/forms) presents itself as a free option, but is has very limited features. It is a valuable resource for basic data collection, but for more complex questionnaire designs it is not useful. For the researcher, the fact that it saves any change to the form automatically, attests to its inflexibility. In terms of multiple choice questions, it organises the answers vertically. When numerous options are available, they should be organised in columns. Additionally, the final version of the questionnaire, occupies only half of the width of a webpage and it does not have an appealing aspect. This issue might be more of a personal taste

nature, but it did look unprofessional. Also, Google forms allow very little manipulation of fonts, templates and overall design of the questionnaire. Not much is left for the researcher to decide. In the words of García-Martín and García-Sánchez (2013):

> *The Google Docs application presented the following limitations: i) limited range of types of questions, answers and templates available, ii) absence of a logic of exclusion, iii) no question randomisation function, iv) no possibility of channelling questions and answers, v) no validation options for obligatory questions, vi) inability to set a password and vii) the data privacy policy.*

KwiksSurveys (http://kwiksurveys.com) was a very good option in terms of features and design, but it had several constraints in the final page of the questionnaire. Finally, two different services were selected: Freeonlinesurvey and SurveyGizmo. The two questionnaires had different requirements and hence two different services were used. Freeonlinesurvey was used for the first questionnaire and SurveyGizmo was used for the Entity X's users questionnaire.

Although these decisions were based on a thorough review of several survey providers, these online services change constantly and the review presented here was done with information dating from mid 2011. The features that were available at the time might not be the ones available in the present day. The decision that was made reflects the options available at the time. The usage of any of these services, now, would imply a new review of their features.

3.3.3. QUESTIONNAIRE LAYOUT

Design should account for the characteristics of questionnaires in general, but consider the specificities of the online version. Usability and accessibility are

important values to consider (Lois A Ritter & Valerie M Sue, 2007). The two online questionnaires that were designed and administered in this research, used different populations and measurements, but both followed the best practice guidelines that will be described below.

A careful design is key to the reduction of bias in the results. The chosen research method has to "demonstrate psychometric properties of reliability (consistency from one measurement to the next) [and] validity (accurate measurement of the concept" (Kelley et al., 2003).

The first requirement of online questionnaire design is the inclusion of an introductory page or text segment. In both questionnaires, as per the recommendations of Lois A Ritter and Valerie M Sue (2007) the welcome page tried to be brief and simple; it avoided web effects that could cause it to be loaded slowly; it included the purpose of the questionnaire and the reason why the respondent was selected to participate; it discussed anonymity and confidentiality; provided the participants with an estimated time of completion; and it placed an emphasis on the importance of each participation. The introduction text should explain how the information will be used and it should personalise the questionnaire as much as possible. The inclusion of the researcher's name, instead of a general description of the entity behind the questionnaire, affects the trustworthiness of the questionnaire in a positive way (Wilson, 2007). Both questionnaires included the name and contact of the researcher.

In terms of its layout, it is important for questionnaires to be, visually attractive, with questions that are easy to read. The decision to use a single or a multi

page questionnaire is a subject where there is no consensus. A useful strategy will be to use scroll down for short questionnaires and multi page for longer ones. It is not a good practice to make the completion of certain questions as a condition to move forward on the questionnaire (Umbach, 2004). By including forced responses in online questionnaires, the researcher is influencing the response to those items as well as impacting on the dropout rate (Stieger, Reips, & Voracek, 2007). In light of this argument, a decision was made to substitute the forced-response with a plea at the beginning of both questionnaires, asking participants to respond to all questions. Also, the final question, in each questionnaire, reminded the participants to verify if all questions had been answered. These strategies augment the number of responses, without making impositions to the participants.

Other layout guidelines include questions that are ideally numbered and assembled according to their theme, clear instructions and to avoid ambiguous, double negative or double barrelled questions (Kelley et al., 2003). Generally speaking shorter questionnaires educe a higher response rate, better results and it minimises abandonment (Lois A Ritter & Valerie M Sue, 2007). It is advisable to begin with clear questions that are easy to answer and take only a few seconds. The initial questions give the respondent an idea of how the rest of the questionnaire will be and that has an impact on their decision to continue or abandon the survey (Wilson, 2007) and demographic questions should be placed at the end unless they will be used as filter questions (Lois A Ritter & Valerie M Sue, 2007). Only questionnaire 1 had one demographic question (question 12) and it was placed at the

end. The researcher should plan in advance how the data will be analysed, as design decisions are also dependent on the type of analysis (Kelley et al., 2003).

Missing values are more likely to occur in sensitive variables (Pigott, 2001). To prevent important data loss, it is advisable to use more than one manner to collect data on important variables (Pigott, 2001). This way the researcher can protect the results by having more than one measure for the variables that are core to the study. Annexe C shows the distribution of Web 2.0 Critical Success Factors (CSF) of Isaías et al. (2009a) throughout Q1 and Q2. Questionnaire 1 had the most important CSFs spread through several questions in order to maximize the validity of the results. With respect to Q2 the focus was shifted to particular CSFs that were also assessed multiple times, when possible. The researcher is advised to use "best practices and careful methodology to minimize missingness. There is no substitute for complete data and some careful forethought can often save a good deal of frustration in the data analysis phase of research." (Osborne & Overbay, 2012).

How the questionnaire finishes is equally important. Once the questionnaire has been completed, there should be a final page that acknowledges and shows appreciation for the time spent by the respondent. It should include a thank you statement, the researcher may remind the participants of his/her contact information and the respondents should be informed of how they can have access to the results of the survey (Lois A Ritter & Valerie M Sue, 2007).

Before sending the final version of the questionnaire to the selected sample, a pre-test should be performed. Piloting allows some insight into the clarity of the questionnaire and the meaning in the participant's responses. Also, it allows the

researcher to test multiple choice questions to see if the items that were included are enough and to determine if there are any questions or items that the respondents are not answering (Kelley et al., 2003).

The pre-test is the final phase of the design and it is done by choosing a small sample of the prospective respondents and ask them to complete the questionnaire and provide their input on the questions clarity and structure, on the usefulness of the introduction text and on the overall performance of the questionnaire (Wilson, 2007). The pilot questionnaire also enables the identification of possible vagueness and it provides a preview of possible answers to the questions (Williams, 2003). In both questionnaires, the people who participated in the pre-test were asked to answer the following questions after the pilot questionnaire completion:

- Were the instructions clear?
- Were any of the questions unclear or bias? Why?
- Were there any specific questions you did not want to answer?
- Were there any important subjects or topics missing?
- Would you like to make any comments to this questionnaire?

3.3.4. DISSEMINATION AND ANALYSIS

Questionnaires should be accompanied by a cover letter or email. Cover letters should include information about who is behind the study and this includes providing contact details; the purpose of the study, the way the information is going to be used, explain why the respondent was selected. The cover lever has a double-barrelled purpose, on the one hand it works as an instrument to motivate the person to participate and on the other hand it must serve as a instrument of informed

consent (Kelley et al., 2003). It is vital to adopt strategies that have been proven to expand the number of total responses (Umbach, 2004), so all the respondents were addressed by name in their invitation to contribute to the questionnaire, in an attempt to increase the rate of responses. Research has shown that response rates can be increased if the invitations to complete the questionnaire are personalised in terms of the salutation. Invitations that address the person by name have higher probabilities of having a superior number of responses (Joinson & Reips, 2007).

The data cleaning process prefaces the analysis and consists in verifying the data for missing values, incoherencies, odd distribution patterns and impossible or improbable values (L. A. Ritter & V. M. Sue, 2007). For a varied number of reasons it is common in research to be faced with the challenge of missing data (Pigott, 2001), so missing values is one of the items that needs to be managed, before initiating the analysis of the data. There several reasons that can explain item non-response: a mere lapse in attention; delaying the answer of a particular item and then forgetting to return to it; unwillingness to respond to questions that are deemed as personal by the respondent; software error (Widaman, 2006); participants may refuse to answer a question; or they may not know the answer to a particular item (Tshering, Okazaki, & Endo, 2013). Some of the aspects that are specific to the online scenario is the lack of personal contact with the researcher and the fact that online questionnaires compete with multiple sources of distractions online (Galešic, 2002).

In addition, the participants are more prone to answering questions that entail low levels of effort, unless there is some type of compensation (Denscombe, 2009). Difficult questions are more likely to be left incomplete (Williams, 2003) and closed

questions are usually associated with higher response rates (Williams, 2003). Similarly, the response rate is more likely to be higher in situations where the respondents are more familiar with computers and the internet. Some studies have also stated there where open questions are concerned, people who participate in the social media, and therefore are more accustomed with expressing their opinion in online settings, usually feel more comfortable in replying to text based questions (Denscombe, 2009). The length of online questionnaires is also believed to have an impact on the response rate (Galešic, 2002).

Data can also be missing due to legitimate reasons. Legitimate missing data is understood as the absence of data in cases where it is appropriate or expected. In questionnaire that use skip logic, for example, some data will be missing in the questions that the participants did not qualify to answer (Osborne & Overbay, 2012).

The lack of sufficient responses may lead to bias, as the responses might mislead the results and represent only those who answered (Kelley et al., 2003). When approaching the subject of missing data, it is important to assess the mechanism of missingness. By determining if the data is missing completely at random (MCAR), missing at random (MAR) or missing not at random (MNAR), the researcher can then address the issue more appropriately. The mechanism of missingness determines the strategies that will be implemented to deal with missing values. MCAR means that the missing values are not dependent on any particular variable (Scheffer, 2002). When the data is deemed as MCAR, then the fact that there are missing values is classified as ignorable. MCAR data may reduce the sample size and thus affect the power of the results, but it does not constitute a potential element

of bias (Osborne & Overbay, 2012). When data is considered ignorable, that means that there is no need to model the missing data mechanism (Tshering et al., 2013). The several strategies that can be deployed to address missing values can be grouped under deletion, direct estimation and imputation (Buhi, Goodson, & Neilands, 2008). Some examples of methods used to handle missing data include last observation carried forward, single imputation, stochastic regression imputation and arithmetic mean imputation (Tshering et al., 2013).

Complete case analysis techniques can offer impartial estimations in situations where there are only a reduced number of cases with missing values (Pigott, 2001). "When a data set has only a few missing observations, the assumption of MCAR data is more likely to apply; there is a greater chance of the complete cases representing the population when only a few cases are missing." (Pigott, 2001). Although the deletion of a reduced part of the sample to address missing data can be a very effective solution, caution is advised when big portions of the data will be disregarded, as it will have a detrimental effect on the size of the sample and on statistical power (Buhi et al., 2008). Furthermore it has implications at an ethical level: "is there an ethical duty on the researcher to include questionnaires even when some items have not been answered?" (Denscombe, 2009). This is an important consideration to have when dealing with missing values.

In this research the missing data was addressed via case deletion. Case deletion has two modalities, listwise and pairwise (Scheffer, 2002). Case deletion should only be done when the data is MCAR (Osborne & Overbay, 2012), since MCAR is needed to validate case deletion (Scheffer, 2002).

Listwise deletion entails the deletion of each case where data is missing on any of the variables. Hence, the subjects that have variables with missing data will be eliminated from the sample - "key assumptions involve the representativeness of the reduced sample with complete data and the unimportance of the decrease in power and precision due to reduced sample size"(Widaman, 2006). Listwise deletion advocates a complete case only analysis (Scheffer, 2002), hence it is also known as case-wise deletion or complete case analysis and despite its advantages, it results in the deletion of a large portion of the sample (Tshering et al., 2013), thus compromising the capacity of the sample to produce generalizations (Buhi et al., 2008). Listwise deletion can also cause a bias in the sample. People who complete a questionnaire in its entirety are likely to behave differently throughout the questionnaire than those who answer just a few questions. Totally eliminating the later, not only reduces the sample size and the statistical power, but it is also likely to introduce bias (Buhi et al., 2008).

Alternatively, pairwise deletion makes use of all the existing information of the non-missing values. The biggest advantage of this technique is that all available information is used. On the downside, this means that the analysis of the variables will be conducted with different sample sizes, which complicates the creation of a valid summary that can describe the entirety of the sample (Widaman, 2006). Pairwise deletion is also known as available case analysis (Scheffer, 2002). The shortcomings of this technique are mainly associated with that fact that there will be different response rates among the questions and thus the result that the questions produce are derived from different subsets of the sample (Buhi et al., 2008).

The missing data on both questionnaires was addressed with pairwise deletion. All available cases were used since the data was considered MCAR in Q1 and Q2 and the missing values corresponded to a very small percentage of the participants. The results used all the available cases, using thus, as much data as was available. When presenting the results, it is important to describe any missing data incidences, by presenting each variable's rates and when possible, state the reasons why it is missing (Osborne & Overbay, 2012), so the detailed incidence of the missing values will be presented in chapter 4, with the results of Q1 and in chapter 6, with the results of Q2.

Research is driven by two essential questions *What* and *Why*. Descriptive research is associated with the pursuit of *what* rather than *why*. It provides a map and a measure for the phenomenon that is being studied. Whether the research has a descriptive or an explanatory nature will impact the type of information that will be collected (De Vaus, 2001). The descriptive nature of this study demanded a descriptive analysis. The analysis of both questionnaires was done on SPSS 17 and it consisted in a descriptive statistics analysis.

3.3.5. FACEBOOK, YOUTUBE, WIKIPEDIA: THE OPINION OF USERS

The first online questionnaire that was intended for Web 2.0 users in general was entitled "Facebook, YouTube, Wikipedia: the Opinion of Users". This questionnaire will be referred to as Q1 or questionnaire 1 through the remainder of this work.

Q1 was divided in four main parts and it had 13 questions in total. The full version of the questionnaire is available in annexe A. The first section (q1, q2 and q3) aimed to identify the respondents' patterns of use and participation in Web 2.0

websites. The second part (q4 and q5) was expected to determine the most popular Web 2.0 websites. Section three (q8) was intended to recognize the participants' preferences in terms of Web 2.0 tools. Finally, the fourth part (q6, q7, q9 and q10) was designed to provide a list the most important characteristics of Web 2.0 components, from the users' point of view. The questionnaire also included a comments section, where the participants could leave any observation and two final questions to provide information about the snowball sampling process itself, more specifically, where the questionnaire was accessed and where the participant resided.

For Q1, 30 pilot questionnaires were sent, 20 of them for the Portuguese version and 10 of them in the English version. The pilot questionnaires were sent on June 4, 2010 and the replies and feedback were accepted until June, 15, 2010. People from different nationalities were selected. In total, 12 answers were received. The feedback received from the people who completed the pilot questionnaire was paramount to the improvement of the final questionnaire. Despite the thorough review of the questionnaire the respondents of the pilot questionnaire were still able to detect some flaws. There was one item that asked two different questions (double barrelled). In question 7 it is important to have the list, otherwise people might not understand that the options are listed on the previous questions – this isn't so obvious that people will see it immediately, so it is better to alter it. In question 10 it should be made clear that it is possible to highlight more than one option. It is important that the respondent immediately realises that there is the option of selecting more than one answer, not realising that will compromise the answer that will be provided. Also, the fact that the respondents were directed to the homepage

of the online survey website that was used was considered as not being as pleasant as being directed to a thank you page. The time to complete the questionnaire was around 5 to 10 minutes, which was within the predicted time range the introductory text of the survey estimates in advance for the participant. A typo was also identified and subsequently corrected. It was felt that some people confused the notion of Social Web with social network exclusively. So the introductory text included a clearer definition of the Social Web.

The final questionnaire was sent to an initial sample of convenience on June 16, 2010 and it was closed on September 30, 2010. Convenience sampling consists in recruiting people to participate because they are the most accessible (Kelley et al., 2003). In this case, it was important to resort to a sample of an initial sample of convenience, because the access of the respondents to the questionnaire was dependent on trust on the researcher. This initial sample was composed of all the subjects that would later on refer the questionnaire to other people, initiating the desired snowball sampling.

Although the precepts of random and probability sampling reign in the world of research as good practice, there are studies that by reason of budget and time constraints, of extreme complexity of attaining a probability sample and of ad hoc opportunities to explore a specific group, resort to non-probability samples (Bryman, 2004). "Further, many social computing platforms like Twitter and Wikipedia are beyond the researcher's ability to recruit randomly" (Bernstein, Chi, Ackerman, & Miller, 2011). The population that this questionnaire aimed to explore was challenging both geographically and numerically. Hence, it adopted a sampling

methodology based on subject referral. Although "snowball sampling lies somewhat at the margins of research practice" (Atkinson & Flint, 2001), it does offer an opportunity to access populations that are difficult to reach. Snowball sampling entails a progressive creation of the sample. It increases as the people who were initially recruited invite others to participate (Kelley et al., 2003). The application of snowball sampling explores the initial participants' social network. The employment of this sampling technique assumes the existence of a bond between the original selection of respondents and the other people that the research aims to reach. It is the bond that exists between them that will originate the referrals (Atkinson & Flint, 2001).

Snowball sampling is appropriate also in situations where a certain level of trust is necessary to establish contact (Atkinson & Flint, 2001). Contacts via social networks are not always welcome from people that the users don't know. The possibility of using private messages to contact people within the Facebook community, for example, may lead people to be suspicious of people they do not know. By obtaining the referral of someone they trust it is easier to obtain a good response rate. Snowball sampling is associated with issues of representativeness: the sample is selected by the respondents and not randomly selected; the sample is bias and cannot be used to generalise; since it is based on social networks, it will be composed of people who are socially connected and it will exclude those with weaker social links. Despite the absence of a statistical formalisation of the bias of snowball sampling, the use larger samples can be a strategy to decrease bias (Atkinson & Flint, 2001). For certain types of studies, obtaining the initial sample that

will lead to referral may be time consuming and require great effort. It is paramount that any initial resistance from the original sample is dissipated by the researcher in order to engage it in the study and building their trust. Data protection and clarifying the purpose of the research can go a long way (Atkinson & Flint, 2001).

The use of snowball sampling derives from the fact that Web 2.0 users are a population widely spread through the world and the best solution to reach as many respondents as possible is to use Web 2.0 itself to communicate with this population, allowing the population to define itself. Non-probability sampling methods are usually the more adequate resources in terms of researches with no sampling frame (Isaías, Pífano, & Miranda, 2013). Snowball sampling not only is a non-probability method, but is has an interactional nature. This sampling method, besides being the most effective in terms of unveiling hidden populations is also a very good tool to study networks. It is an informative procedure, that endows that research with a peculiar kind of knowledge (Noy, 2008). By employing this sample method the research is giving power to its respondents and it is learning about their choices and behaviours. The element of bias in convenience and in snowball sampling is often cited by researchers, nonetheless, when the study at hand involves populations that are difficult to reach, both these sampling techniques are extensively accepted in social science:

> *With a population of this proportion, the selection of a sample was conditional for its viability. The sample method that would be selected would have to address two seemingly contradictory requirements: on the one hand, limit the total population and on the other hand create a sample that would increase the number of respondents and diversify their characteristics. In sum, reduce the population, but at the same time constantly increase the sample.* (Isaías et al., 2013).

This study used the social networks where the researcher had an account. Invitation were sent from Facebook (419), Gmail (1), Hi5 (26), Windows Live (38) and LinkedIn (3). In Facebook the invitations were sent through private messages. Other tools, such as event creation or a fan page could be used, but even if the strictest privacy settings were used, the respondents' anonymity could not be guaranteed. Besides privacy, another concern was the possibility of inviting friends. With the aforementioned options, the dissemination of the questionnaire would be significantly compromised. Having the link available in a private message allowed people to send it to others. Additionally, via a private message it was possible to personalise the invitations. All initial invitations addressed the person they were sent to, by name, as advised by Joinson and Reips (2007). In total 487 invitations were sent. In order to maximise validity, and avoid repeated responses, it was thought that to block IPs when they had been used once, was a good strategy. Nonetheless, blocking the IP would restrict access to all people accessing this questionnaire on public computers or on their work place. It is known that people use Web 2.0 websites in their work place and the computers in the same company or same office might have the same IP. The questionnaire was sent via the Freeonlinesurvey Website (freeonlinesurvey.com).

Q1's final thank you page was done via a video. Once they finished the last question, the participants of Q1 were directed to a YouTube video (created with Windows Movie Maker) that thanked them for their time, provided them with the contact information of the researcher and showed them where they could regularly see the updates of the questionnaire's results. Q1 had two versions and consequently,

the videos were also created in two languages and associated to their respective versions. The Portuguese version of the video can be found at http://goo.gl/favvEn and the English version is located at http://goo.gl/bPWknk. The participants were informed in the videos and in the textual descriptions of the videos that the questionnaire results would be updated into a blog that was created for that specific purpose (Socialwebusersopinions.blogspot.pt). The blog had posts in both languages with a summary of the results and it displayed a map highlighting all the countries that the questionnaire had reached up until that time. Additionally, the summary of the results included a note with the contact of the researcher in case the participants would like a copy of the full report.

This first questionnaire received 628 responses, from which 621 were deemed valid. From the entries that were deleted, 1 was considered invalid because it did not answer enough questions and the remaining 6 were duplicate entries. Since the questionnaire had two versions, one in Portuguese and one in English, it was necessary, once all the replies had been received, to join the responses of both questionnaires into a unique database. This database was then imported into IBM SPSS 17, to be analysed.

3.3.6. CASE STUDY: ENTITY X'S PORTAL

The second questionnaire was entitled "Improving Entity X Portal" and it was aimed at Entity X's members. Throughout the remainder of this work, it will be referred to as Q2 or questionnaire 2. This online questionnaire was designed to attain the same objectives as Q1, but with a particular focus on Entity X. The results were expected to refine the general assumptions of questionnaire 1.

Entity X is non-profit international association that conducts research and organizes conferences in the area of information systems, the Internet, and societal topics related to the use of Information and Communication Technologies (ICTs) in everyday life. It was created in 2001 and it organizes conferences and other events to promote knowledge exchange among scholars and practitioners. Entity X is invested in the organisation of research initiatives and scientific publications that join people from all over the world. Its members originate from all parts of the globe, creating a very diverse and multifaceted audience. As a small non-profit association it has very restrictive budgets and reduced human capital. The selection of this institution was done by convenience.

When this study began, Entity X was launching a new Portal that envisioned the creation of a Web 2.0 application to offer the users the opportunity to interact among each other. While its previous website assured the appropriate channels of communication between Entity X and its members, it lacked a platform where the users could communicate with each other. Given the nature of its work, the organisation of scientific conferences, it is essential to promote the opportunity for social networking outside the conferences' settings. With the development of a Web 2.0 platform on its Portal, Entity X's users could more easily maintain contact with their peers. Additionally, Entity X had just established its presence on Twitter and Facebook and it was trying to improve its users' interactions with the newly developed pages. So far, its members had not yet been using them at all in most cases and those who did had a very limited participation. In order to achieve these goals it is imperative to identify Entity X's preferences in terms of social platforms in

general and more specifically the ones Entity X uses; to assess if a Web 2.0 component on the new Portal would be welcome; and to use this study's proposed framework, to determine what characteristics it should it have.

For the second questionnaire the population was selected using random sampling. Sampling error cannot be avoided but there are sampling techniques that are more likely to extend this error. The use of a simple random sampling technique will provide a more accurate representation of the population than the use of a convenience sample, who are merely selected for being easy to access (Kelley et al., 2003). The size of a random sample can be determined in a number of ways, including, the application of formulas, the mimicking of similar studies' samples and the use of published tables. The analysis that a study intends to carry is another factor in the determination of the sample size, the more elaborate the analysis the bigger the sample size. It is common practice to add 10% of cases to the sample to account for people that cannot be reached and 30% more to balance the effect that non response might have in the sample size (Israel, 1992). The larger the sample the more accurately the population will be represented. On the other hand, a large sample doesn't necessarily mean an appropriate response rate. To minimise the lack of responses, the calculations of the sample size should account for a non-response rate. Sample size calculations apply to data that will be statistically analysed (Kelley et al., 2003).

The population was defined as all people registered for Entity X's conferences, since its creation, 2001. The total population amounted to 18,930. This total population was composed of all registered users from all conferences ever organized

by Entity X, regardless of what role they played in the conference (participants or paper authors). From the total population, a random sample was selected using an error margin of 4% and a confidence interval of 95%. The sample size was defined as 582 individuals[1].

The literature says that only around 20% of the people to whom online questionnaires are sent actually reply. Assuming that solely 20% of the people will reply, in order to obtain the 582 ideal responses, the questionnaire was sent to 2,910 people. The questionnaires were sent via SurveyGizmo.com. Another internet survey service was chosen, because the one used in the first questionnaire was over simplistic and it did not allow the application of skip logic to the questions, which was a requirement for the second questionnaire. The respondents were contacted via the email that they used for their registration

The pilot questionnaire was sent to 15 people that were part of the sample used for the questionnaire. The respondents of the pilot questionnaire identified some important glitches. There was bias in one of the questions, caused by the absence of option "no", forcing the respondent to say yes, regardless of his/her opinion. There were a few typos and some suggestions to improve the initial welcome text. They approved the exclusion of forced-response questions and found the questions clear. They also suggested a few changes in the wording of some questions. This verification is important to identify difficult questions. Questions with a high degree of difficulty are more likely to result in inaccurate data and questionnaire abandonment (Williams, 2003).

[1] Obtained using an online sample calculator, http://www.custominsight.com/articles/random-sample-calculator.asp

Questionnaire 2 was divided into 11 sections, which included the welcome page (section 1) and the final section for comments (section 11). The questionnaire had to be divided into several parts due to the skip logic options that some questions required. This was done to ensure that the participant would go through the questionnaire smoothly and clearly, without having to answer questions that were not appropriate to them, nor having to calculate what questions to skip. All measures were taken to ensure the maximum comfort for the participant. In total the questionnaire had 28 questions and its full version is available in annexe B. Section 2 (questions 1 to 5), section 5 (question 20) and sections 6 to 10 were designed to assess the relationship of the participants with Entity X and the use they made of its web resources. Section 4 and section 5 (questions 11 to 19) aimed to gather data about the respondents' patterns of use of Web 2.0 in general. Finally, section 2 (question 6) and section 3 were directed at probing the users insight on the prospective Web 2.0 component. The version of the questionnaire in annexe B has been made anonymous to protect the name of Entity X, which would otherwise be disclosed.

As it was mentioned in the literature review due to the broadness of the framework for Web 2.0 CSFs developed by Isaías et al. (2009a), this work will use it as a guide in the data collection process. In this first questionnaire, most questions were designed to include Isaías et al. (2009a) framework. Questionnaire 1 measured all of Isaías et al. (2009a) Web 2.0 CSFs except CSF6- *User content development tools*, because it refers to the use of specific technologies to develop Web 2.0 applications, which is out of the purview of the users' opinions. Since the participants were to be questioned about their experience as users and not as developers, the knowledge of

what technology is used is not relevant. The participants were selected for being end-users, not experts on this matter. With respect to Q2, due to the specificities of Entity X, three Web 2.0 CSFs of Isaías et al. (2009a) were used disregarded. CSF6 was not assessed for the same reason as it was not measured in Q1. Also, given the specific number of users of Entity X and its non profit nature, both CSF2- *Users' critical mass figures* and CSF7 - *Revenue models were excluded from questionnaire 2*. Again, in annexe C it is possible to see the distribution of the CSFs throughout Q1 and Q2.

4. WEB 2.0 ACCORDING TO ITS USERS

The analysis of Q1 was structured to meet the core research aims of this study. The main is to determine which elements must compose the framework for the successful development of Web 2.0 components. To attain this objective the collection of the empirical data was expected to:

- Identify the patterns of use and participation in Web 2.0 websites;
- Determine what are the most popular Web 2.0 websites;
- Identify users' preferences in terms of Web 2.0 tools;
- List the most important characteristics of Web 2.0 components, from the users' point of view.

This chapter solely presents the results of Q1. The data resulting from Q2 will be analysed in chapter 6. The analysis of Q1's data was organised around the objectives mentioned above.

Q1, the first questionnaire received 628 responses in total, from which 621 were deemed valid. From the entries that were deleted, 1 was considered invalid because it did not answer enough questions and the remaining 6 were duplicate entries. Since the questionnaire had two versions, one in Portuguese and one in English, it was necessary, once all the replies had been received, to join the responses of both questionnaires into a unique database. This database was then imported into IBM SPSS 17, to be analysed. The data was analysed via a descriptive approach.

In terms of non response overall Q1 had only a few cases. The missingness mechanism was calculated via a Little's MCAR test in SPSS 17. The results of that test were: Chi-Square = 2396,018, DF = 2305, Sig. = ,091. The data was then characterised

as being MCAR. As was explained in the previous section, this research dealt with the missing values by deploying the pairwise deletion method. The questionnaire had 13 items, but the last item was a comment section rather than a question, so it was not considered for the analysis. Figure 1 shows the distribution of the response and non response rates of each of Q1's questions.

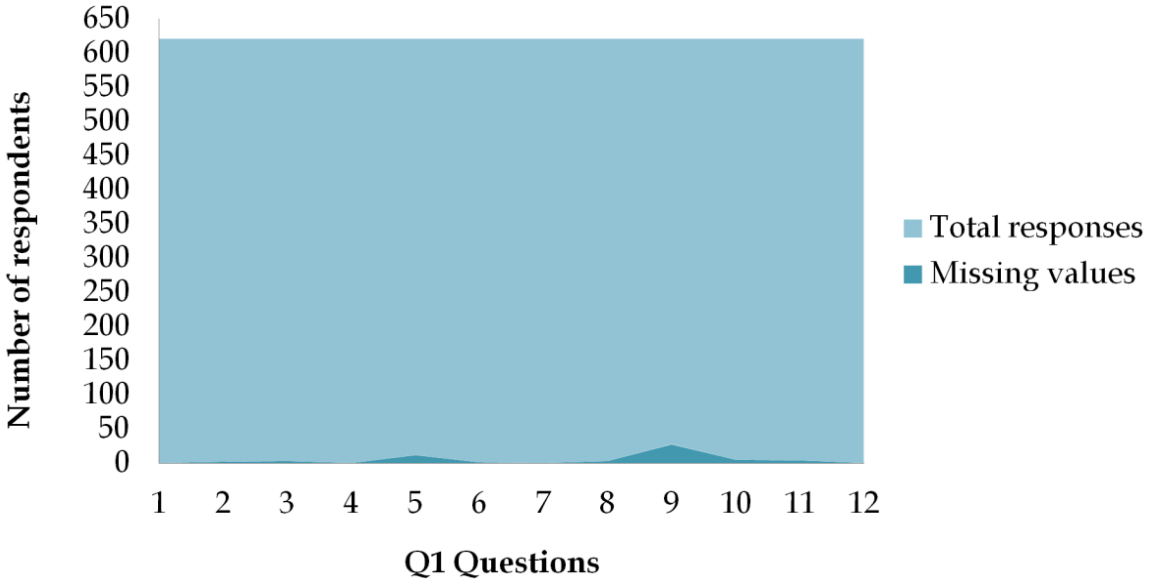

Figure 1. All questions' responses and non-response rate

As can be seen, the complete responses are far superior to the number of missing values. The missing values varied from 0.2% to 4.8% of the sample. In a total of 12 questions, 4 of them presented no missing values, 5 of them presented 1 to 5 missing values and 3 (questions 5, 9 and 10) had the biggest incidence of missing values ranging from 5 to 30. The missing values of these 3 questions were significantly higher, but the type of questions might provide a justification for that difference. The fact that question 5 was an open ended question, might have influenced the respondent's willingness to answer (Williams, 2003). Questions 9 and 10 asked the participants to rate items, which differed from the majority of the items in this

questionnaire. Most of the questions offered a wide range of answers that the respondents could choose and these two forced the respondent to choose only one rate per item. This can also be seen as a reason for non response, since survey respondents are more likely to commit to question that do not require too much effort (Denscombe, 2009).

4.1. Patterns of Use and Participation in Web 2.0 Websites

The engagement with Web 2.0 assumes many forms. Some users are shy supporters and limit their participation to observation, while others are proactive in their interaction. The first three questions of Q1 were designed to profile the respondents in terms of their experience with Web 2.0 applications, the frequency with which they use them and how they use them.

The data demonstrated a clear difference between the number of people who are more experienced with Web 2.0 and those who have just started to use the Social Web. This cleavage is illustrated in Figure 2. The majority of the respondents (64.6%) claimed to be using Web 2.0 for more than 3 years. Solely a small percentage of the participants (3.1%) indicated that they were using Web 2.0 for less than 6 months. This difference is even more evident when considering the total of people who have been using Web 2.0 for less than 1 year (9%) and the overwhelming majority who has been using it for more than 1 year (91%). This information characterises the sample of participants as one that is constituted by experienced Web 2.0 users.

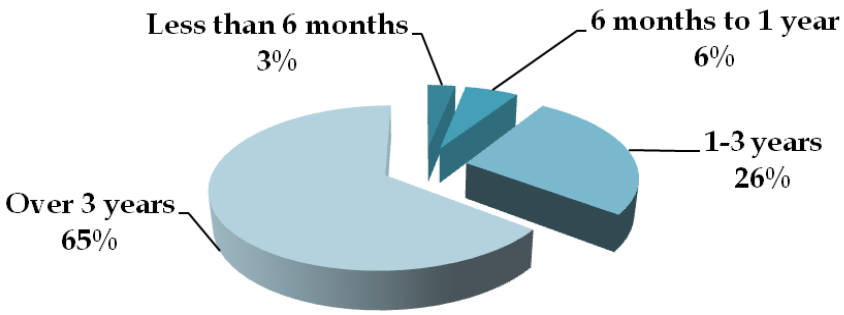

Figure 2. Experience with Web 2.0 applications and websites

The second trait of this sample is provided by the frequency of use of Web 2.0. In terms of frequency of use, 44.3% of the respondents stated that they use it three times a day or more and 35.1% said that they use it once a day. This means that the majority, of the respondents, uses Web 2.0 three times a day or more and 79.3% of all the respondents use Web 2.0 at least on a daily basis. As can be seen in Figure 3, people with a more sporadic use of Web 2.0 accounted for 12.4% if using it around three times a week and 8.2% if their use was limited to once a week or less.

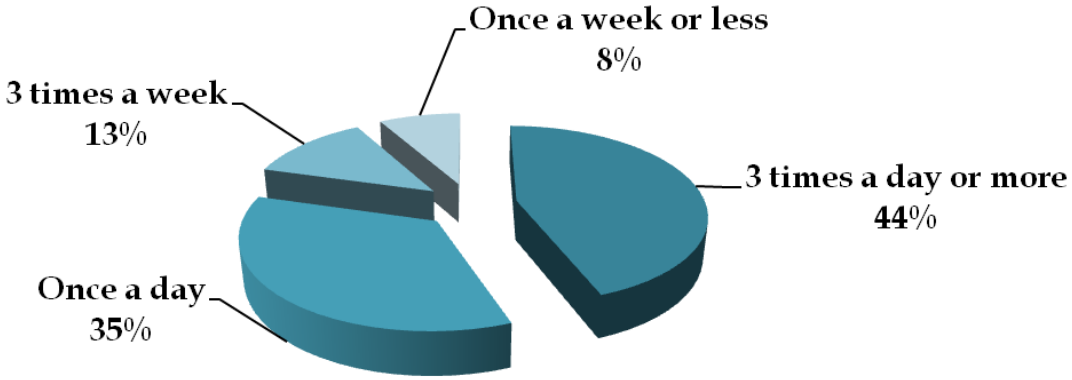

Figure 3. Frequency of use of Web 2.0

When questioned about their type of use of the Social Web, the respondents had to choose between an active and a passive role. While 57.3% of the respondents classified their use of Web 2.0 as being active, 38.3% considered their use as being more passive. The respondents who didn´t fit into these two categories could choose *Other* and describe their use in their own words. The 27 people who chose *Other*, did so to say that their use was both passive and active depending on how they felt or on the website; or to state the purpose of their use (social, professional, for entertainment).

The data shows that the majority of the participants has been using Web 2.0 websites for more than 3 years and has an active and frequent use of Web 2.0. This information provides an important insight into the respondents' patterns of use. Also, this familiarity with Web 2.0 means that the respondents are more prepared to have an opinion about it and constitute, therefore, a suitable sample.

4.2. Most Popular Web 2.0 Websites

The preference of users when participating in Web 2.0 is also manifested in the websites that they use the most and the ones they prefer. As a preliminary analysis of what are, worldwide, the most popular websites, five ranking reports were used. The analysis of the five website ranking reports originated a list of the 20 most popular Web 2.0 websites: YouTube, Yahoo, Wordpress, WindowsLive, Wikipedia, Twitter, RapidShare, Orkut, Myspace, LinkedIn, IMDb, Hi5, Google, Flickr, Facebook, eBay, Craigslist, Blogspot/Blogger, Badoo and Amazon. This list was used has a reference database of the most successful web 2.0 websites when designing both online questionnaires. Table 2 shows each of the websites' position in the several rankings.

Table 2. Most popular websites across the selected online rankings

Websites	Alexa Global	Alexa Portugal	Netcraft	eBizMBA	Most Popular
Google	1	1	1	0	1
YouTube	3	3	3	1	3
Facebook	2	2	2	0	5
WindowsLive	5	5	13	0	4
Blogspot and/or Blogger	8	8	0	3	8
Wikipedia	6	10	18	2	7
Yahoo	4	12	19	0	2
Hi5	0	7	0	0	21
Wordpress	17	15	0	5	24
Twitter	11	23	20	6	0
Craigslist	33	0	0	4	27
Myspace	22	38	27	0	9
eBay	25	0	29	0	19
Amazon	18	0	28	0	34
RapidShare	37	31	0	0	15
Badoo	0	28	0	0	0
IMDb	43	30	46	8	41
Flickr	32	47	0	7	33
LinkedIn	28	59	0	0	0
Orkut	0	0	0	0	39

As was described in the previous chapter, the document collection was analysed via a quantitative content analysis. To analyse the rankings, all the websites in the top 50 positions of all 5 rankings were inserted in Nvivo 8. In Nvivo 8 a word frequency query was run to determine the occurrence of each of the websites. The analysis of word frequency list was based on several coding rules:

Rule 1: Consider only the top 50 websites in each of the rankings. The exception to this rule is eBizMBA, which only has 15 websites.

Rule 2: Identify websites that are mentioned in all of the rankings regardless of their position.

Rule 3: Select websites that are mentioned in a minimum of 3 or 4 rankings.

Rule 4: Some websites are available in a multiplicity of domains and/or specific links. In these cases, only the main website provider will be considered, for example, maps.google or my.yahoo, will not be considered as an extra count of Google and Yahoo.

Rule 5: Only websites with a Web 2.0 nature will be considered.

Rule 6: Internet websites that are specific to certain countries, and thus considered local, will be excluded.

Rule 7: Websites with inappropriate or sensitive content will not be considered, regardless of their position in the rankings.

These two last rules were necessary to guarantee a list of websites that the generality of the people would recognise and that would not offend or make the participants uncomfortable.

All the websites listed in table 2 were the result of the application of these coding rules, with the exception of Hi5, Badoo, LinkedIn and Orkut. This decision was based on the fact that the researcher had an account on these sites and they were to be used for the distribution of Q1. This exception to the coding rules might have introduced an element of bias in the selection of the websites, but since this list was the result of varied rankings and in the questionnaires it was used in a multiple response question where the *other* option was used, the participants had the freedom to choose other websites and not be limited to the list that was given. The content analysis of the ranking identified Google, Facebook, YouTube, Windows Live and Wikipedia as the most popular websites, in this order. When used in Q1, this list was

randomly sorted, so that the respondents wouldn't be led to choose the most popular, just because they were itemised first.

In Q1, questions 4 and 5 were specifically designed to determine which Web 2.0 websites were used more often by the participants and which one they preferred. The Web 2.0 websites that they used more often were: Facebook (89%), Google (81.5%), YouTube (79.2%) and Wikipedia (56.4%). These were the top 4 websites and they scored a significantly higher number than the remaining websites, as it can be seen in Figure 4 below. Blogs (Blogspot/Blogger) with 30.1%, WindowsLive with 28.2%, Hi5 with 23.2% and Amazon, with 17.6%, were also among the most frequently used. The lower scores were registered by Wordpress.com (3.9%), Orkut (2.7%), Craigslist (2.4)% and Badoo (1.3%). Besides the list of websites that was suggested in the question, the respondents had the option to add other websites. There were 39 participants (6.3%) who added their own websites, the majority of which were country-specific social networks such as Hyves, Soup.io, Studivz and Nasza Klasa.

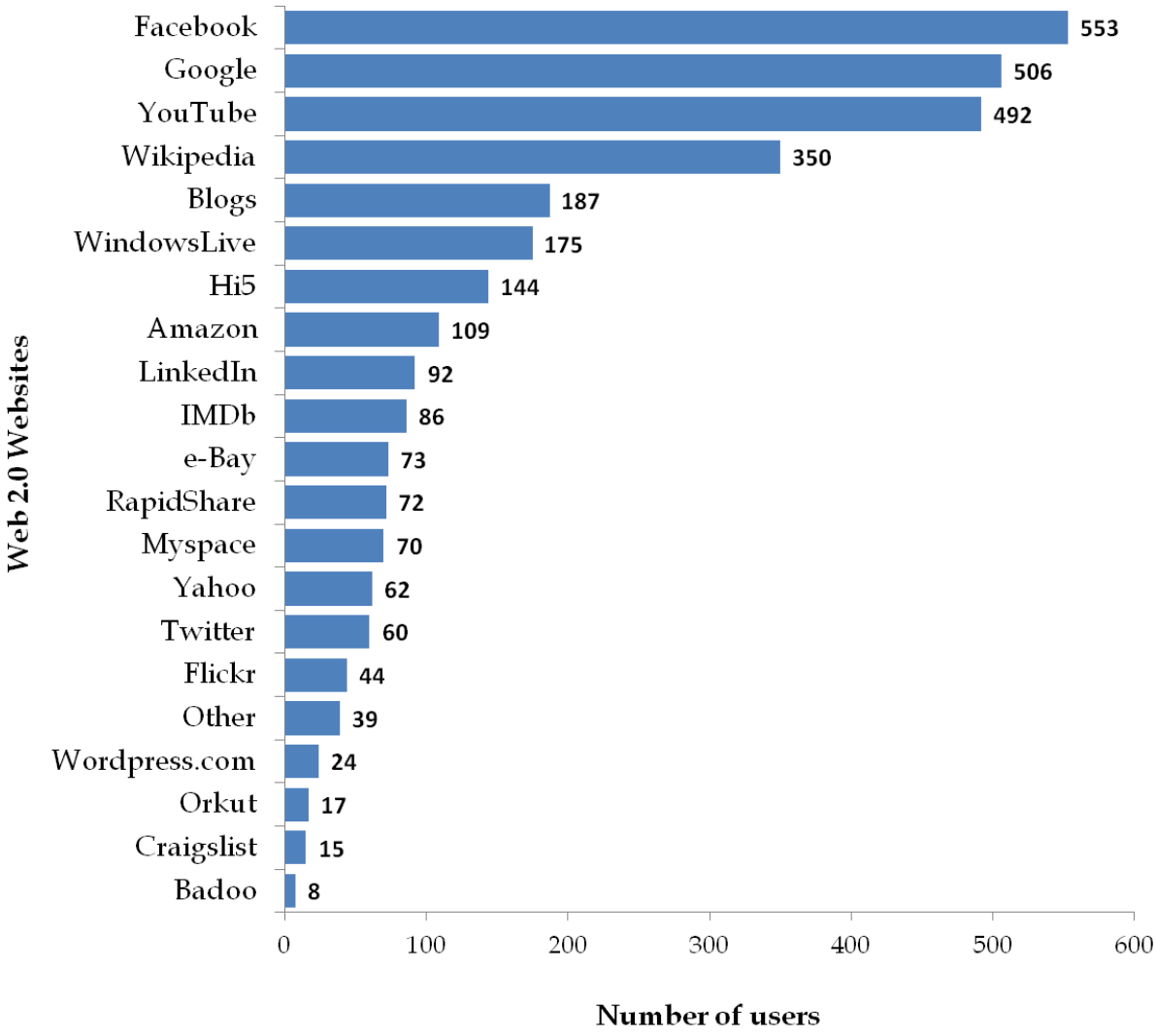

Figure 4. Web 2.0 websites that are used more often

Unlike the previous question where the participants could select all the websites that applied, in question 5, they were asked to indicate only one website as their favourite. Facebook, with a solid majority of 51.1%, and Google with 28.6% of the cases, appear once more as the websites with the highest scores, in this case, as the participants' favourite Web 2.0 website. The third and fourth place in the ranking is occupied by YouTube (6.6%) and WindowsLive and Wikipedia (both with 3.6%), respectively. The other websites the participants mentioned include Yahoo, Flickr,

Tumblr, Orkut, Ning and MySpace. Figure 5 illustrates the vast discrepancy between the several websites.

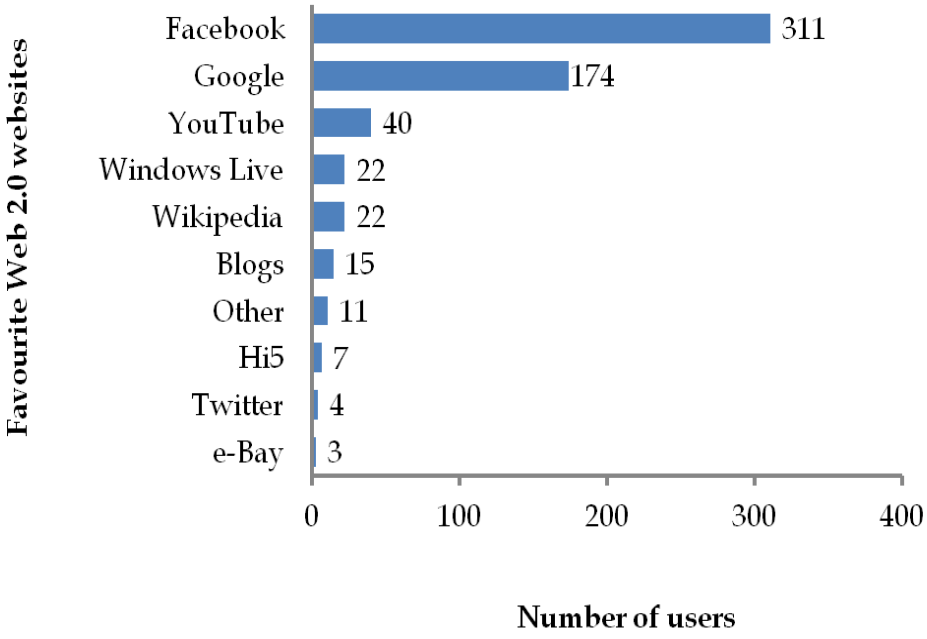

Figure 5. Favourite Web 2.0 websites

In terms of the most popular Web 2.0 websites, the online rankings and both questions 4 and 5 were consistent. Facebook, Google, YouTube and Wikipedia were the websites with a higher level of popularity according to data of the documents and Q1.

4.3. Users Preferred Web 2.0 Tools

Following the identification of the most successful Web 2.0 websites, it is necessary to analyse the type of tools that users prefer when using these websites. Table 3 portrays their choices.

Table 3. Favourite Web 2.0 tools

Web 2.0 tools	Number of users	Percentage
Photos	428	69.3%
Messaging	324	52.4%
Music	290	46.9%
Video	254	41.1%
Chat	221	35.8%
Profile information	199	32.2%
File sharing	185	29.9%
Writing tools	182	29.4%
Games	165	26.7%
Downloads	137	22.2%
Forums	111	18%
Wikis	77	12.5%
Tags	70	11.3%
News Feeds	53	8.6%
Podcasting	30	4.9%
Other	15	2.4%

Most respondents demonstrated their preference for photos (69.3%) and messaging (52.4%). Music (46.9%), video (41.1%), chat (35.8%) and profile information (32.2%) were also among the most popular tools of the Read Write Web. On the other hand, News Feeds and Podcasting were the tools that the participants chose the least, scoring 8.6% and 4.9% respectively. The analysis of the data also underlined the respondents' preference for several tools. The calculation of the mean (4.41) revealed that the average respondent chose between 4 and 5 different tools.

4.4. Most Important Characteristics of Web 2.0 Components

Successful Web 2.0 websites have a panoply of characteristics that attract users. Q1 respondents were asked to identify the reasons that led them to choose a specific website as being their favourite (Table 4).

Table 4. Reasons for choosing their favourite website

Reasons for using Web 2.0 websites	Number of Users	Percentage
Easy to use	424	68.4%
Free access	422	68.1%
Other users active participation	315	50.8%
Variety of features to add content (video, text, etc.)	253	40.8%
Content constantly updated	252	40.6%
Popularity	219	35.3%
Interesting content	213	34.4%
Possibility to leave comments	185	29.8%
Large number of users	175	28.2%
Variety of applications (ex. games)	154	24.8%
Accessible from mobile devices	110	17.7%
Attractive design	106	17.1%
Advanced privacy settings	104	16.8%
Safe	100	16.1%
Clear Help options	48	7.7%
Other	46	7.4%
Possibility of subscribing updates	38	6.1%

User friendliness (68.4%), free access (68.1%) and other users' active participation (50.8%) were the most cited reasons. Variety of features to add content and updated content also registered a higher score as being responsible for the participants' choices, with 50.8% and 40.8% respectively. On the contrary, the possibility to subscribe updates (6.1%) and clear help options (7.7%) were only selected by a very small percentage of the sample. Additionally, safety (16.1), design (17.1%) and advanced privacy settings (16.8%) didn't seem to be priorities when deciding the website that they prefer.

The respondents were also asked to highlight the aspect that they liked the least in the website that they selected as favourite. Due to a typo in the English version of Q1, question 7's results could not be merged into one single database, unlike all other

questions. One of the options given to the participants in question 7 was *Impossibility to subscribe updates*, regretfully, in the English version, Q1 displayed *Possibility to subscribe updates*, instead. To assure that this typo did not impair the results, each of the versions was analysed separately in this question only. Table 5 and Table 6 portray the choices of both the English and the Portuguese versions.

Table 5. Aspects that the respondents like the least about their favourite website (English version)

Aspects that users like the least (English)	Number of users	Percentage
Not very safe	48	17.5%
Too many applications	43	15.7%
Insufficient privacy settings	42	15.3%
Other	25	9.1%
Unattractive design	16	5.8%
Lack of options to control comments	12	4.4%
Other users lack of participation on the website	12	4.4%
Paid access to more advanced options	12	4.4%
Difficult to use	11	4%
Help option not clear	11	4%
Uninteresting content	11	4%
Not very popular	9	3.3%
Outdated content	7	2.6%
A reduced number of users	6	2.2%
Only allows one content format (ex. only photos)	5	1.8%
Inaccessible from mobile devices	3	1.1%
Possibility to subscribe updates	1	0.4%

Table 6. Aspects that the respondents like the least about their favourite website (Portuguese version)

Aspects that users like the least (Portuguese)	Number of users	Percentage
Insufficient privacy settings	103	17.2%
Too many applications	85	14.2%
Not very safe	78	13%
Unattractive design	65	10.9%
Other	57	9.5%
Help option not clear	55	9.2%
Lack of options to control comments	48	8%
Paid access to more advanced options	29	4.8%
Uninteresting content	20	3.3%
Impossibility to subscribe updates	17	2.8%
Other users lack of participation on the website	10	1.7%
Outdated content	7	1.2%
A reduced number of users	5	0.8%
Inaccessible from mobile devices	5	0.8%
Only allows one content format (ex. only photos)	5	0.8%
Difficult to use	5	0.8%
Not very popular	4	0.7%

In both versions, not very safe (17.5%/13%), too many applications (15.7%/14.2%) and insufficient privacy settings (15.3%/17.2%) were the three aspects that the participants liked the least in their favourite website. The options that were rarely selected by the respondents differ from one version to the other, but since the differences in terms of the percentage of responses were not significant, these results were considered valid.

Q1's participants also indicated the factors that, in general, have more weight in their decision of using web 2.0 websites. Firstly, the respondents were asked to assess which factors were more important when deciding to use Web 2.0. They had to rate

the different factors on a scale of 1 to 10, where 1 corresponded to the most important and 10 to the least important. Each of the scores could only be used once. Figure 6 illustrates the distribution of their classifications.

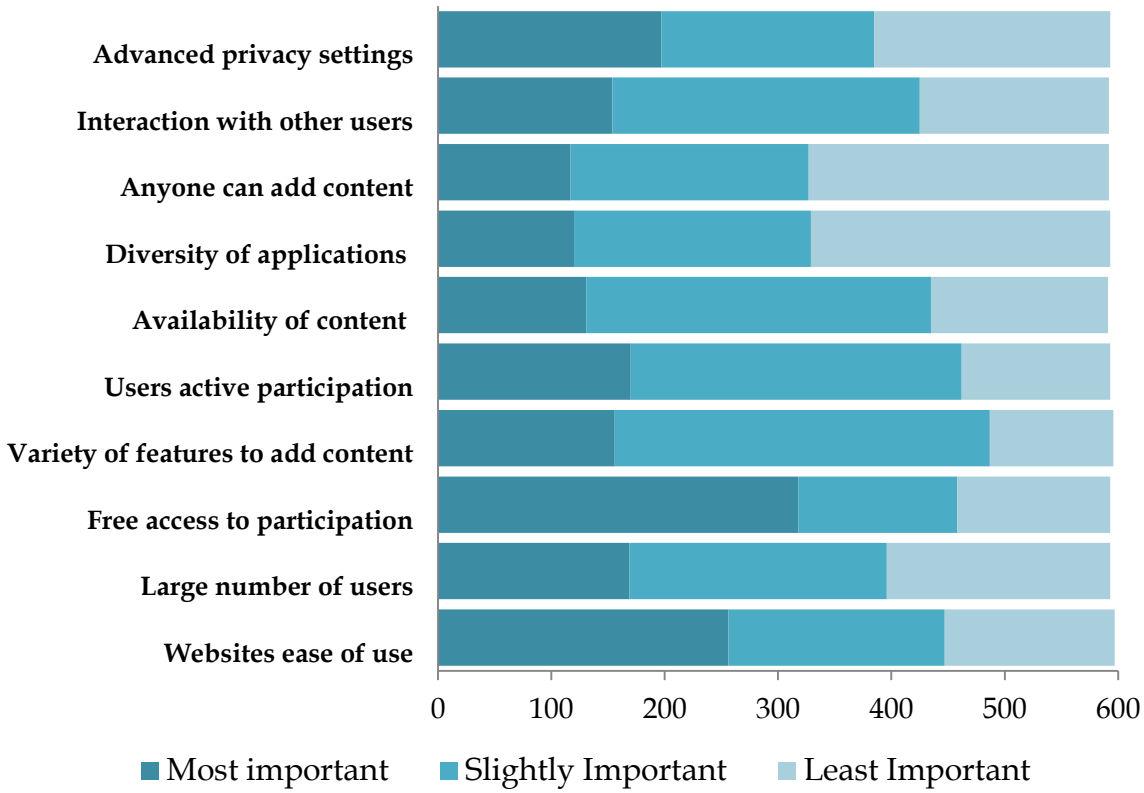

Figure 6. Most important reasons for using Web 2.0

The calculation of the mean showed that, on average, each of the factors scored between 4 and 6. To analyse the respondents' classification more closely, the 10 point 10 scale was divided into three groups: most important (1-3), slightly important (4-7) and least important (8-10). In the first group, the factors with the highest scores were free access to membership/participation (318 cases out of 593), followed by website's ease of use (256 cases out of 597). The fact that anyone can add content (265 cases out of 592) and diversity of applications (264 cases out of 593) were the factors with the highest scores in the group of least important factors. In terms of the group with more moderate scores, variety of features to add content (331 cases out of 596),

availability of content (304 cases out of 591) and users active participation (292 out of 593) took the lead. Some of these factors were also measured in the assessment that the participants were asked to do on statements about Web 2.0, as Table 7 illustrates.

Table 7. Respondents' opinions about Web 2.0

Statements about Web 2.0	Totally Agree	Agree	Neutral	Disagree	Totally Disagre
Trust on the website is very important	470	127	15	3	1
Content can have a variety of formats (text, video, photos)	320	253	37	5	1
Free access should be for all options	275	220	84	31	5
It is best to have adverts on the website than to pay for access	263	238	89	18	8
I like to receive comments from other users	155	283	144	23	4
I don't mind paying for more advanced options	11	57	126	179	240

The majority of the respondents said that they agree or totally agree with all statements, except for the last sentence "I don't mind paying for more advanced options", which 240 respondents totally disagree with and 179 disagree. Similarly to their ratings in the previous questions, the participants manifested their preference for a free access, even if it means having to deal with adverts (501 people out of 616 agree or totally agree) and the free access should be extended to all options of the website (495 people out of 615 agree or totally agree). The statements that they agree or totally agree the most were those concerning the importance of trust on the website (597 people out of 616) and fact that content can have a variety of formats such as text, video and photos (573 people out of 616). Also, 438 participants said that they like to receive comments from other users.

5. FRAMEWORK FOR A SUCCESSFUL WEB 2.0

The inventory that Isaías et al. (2009a) provided of Web 2.0's critical success factors was the starting point of this research and the foundation for the development of the preliminary framework that is proposed in this chapter.

Following the analysis of Q1, this work recommends the use of a threefold framework to develop successful Web 2.0 applications, as is illustrated by Figure 7.

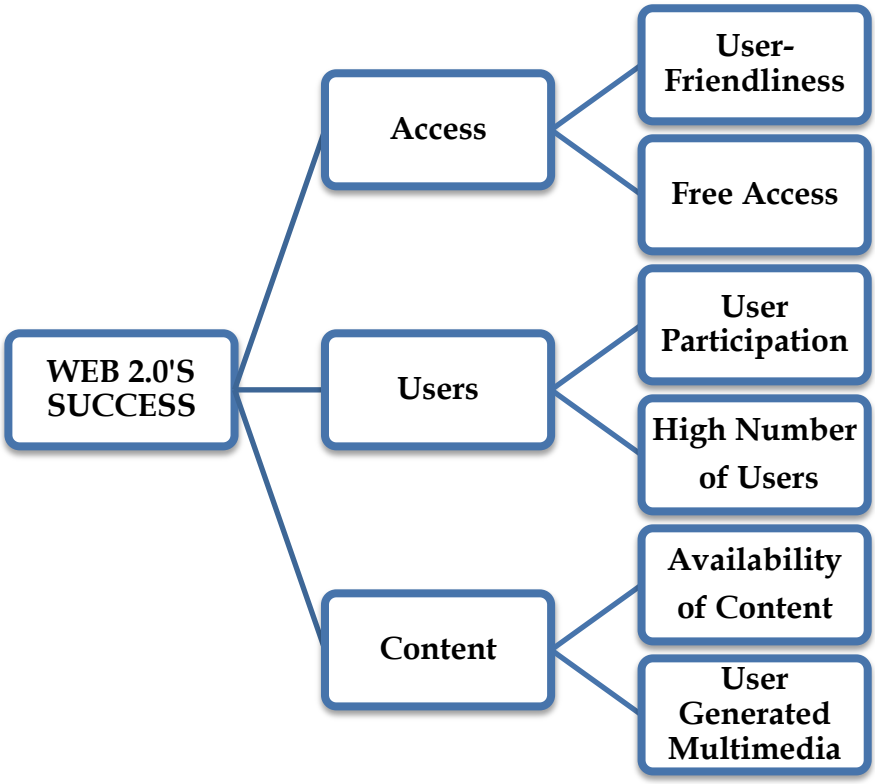

Figure 7. Framework for the development of Web 2.0 applications

The framework consists of 6 elements grouped into three domains: access, consisting of user friendliness and free access; users, which include participation and large numbers; and content, concerning availability and multimedia. These three

categories gather the most important aspects of Web 2.0's success and they will be developed in detail in this chapter.

5.1. Access

The first element of success has to do with access to the Web 2.0 platform. In the case of this framework, access has both a technological and a financial dimension. In order to engage with Web 2.0, people need to have technological skills and financial means to do so. There is a vast body of research that underlines free economy (Constantinides & Fountain, 2008) (Fuchs, 2010) (O'Reilly, 2005) and ease of use as canons of Web 2.0 (Pilgrim, 2008) (Thompson, 2008) (Dwivedi et al., 2011). In the analysis of Q1, this argument was patent in the responses provided by the users.

5.1.1. USER-FRIENDLINESS

An important condition of Web 2.0's success is its user-friendliness (Pilgrim, 2008) (Thompson, 2008). Q1 measured its importance in several indicators. Table 4 shows that according to 68.4% of Q1 respondents, one of the reasons why they chose to use their favourite Web 2.0 internet site is ease of use. Clear help options were also used as an indicator to measure user friendliness, but only 7.7% of the respondents selected that option. It remains unclear if it is was not a priority for the respondents or if the existence of clear help options is not one of the positive aspects of their favourite website. When comparing this information with Table 5 and Table 6 it is possible to see that only a very small fraction of the respondents found that their favourite website was difficult to use and had unclear help options. Similarly, Figure 6 ranks a websites' ease of use as the second most important reason to use Web 2.0. Around 43% of Q1 participants (256 cases out of 597), attributed a rate between 1 and

3 to websites' ease of use. This unequivocal selection of user-friendliness is coherent with what many authors have advocated and validates the first element of the proposed Web 2.0 framework for success. Dwivedi et al. (2011) argued that perceived ease-of-use is a central reason for people to engage with social websites and this was also the argument behind Isaías et al. (2009a) CSF3-Ease of use of component . As Benito-Ruiz (2009) stated "nowadays, with Web 2.0 tools, non techsavvy people can create and distribute content on the Web without needing to become experts." (Benito-Ruiz, 2009).

5.1.2. FREE ACCESS

Web 2.0 has become commonly associated with ideals of free economy (Hoegg et al., 2006). Isaías et al. (2009a) refer that the choice of revenue models is critical to the success of Web 2.0 (CSF7-Revenue Model). Nonetheless, the authors did not specify which business model would be more successful. The choice of the revenue model is not always straightforward, as the service providers do need to account for their costs and ensure their services' survival (Wang & Chin, 2011).

Web 2.0 service providers have a wide range of business models that they can adopt to guarantee their livelihood, nonetheless, Q1's results showed that in order for them to succeed they need to assure free access to their potential users. Q1's respondents displayed no disposition for accepting business models that might involve paying a fee for access. The participants were quite straightforward when it came to paying to engage with Web 2.0: they want free access. Free access was selected by 68.1% of the participants as one of the reasons that made respondents choose their favourite Web 2.0 website. When compared with the other aspects, free

access was the second most cited feature as can be seen in more detail in Table 4. Their views on this subject were confirmed when they were asked to rate several items according to their importance in their decision to use Web 2.0 (Figure 6). Free access to membership/participation was the item with the highest score in the *most important* category, having been rated by 53.6% of the respondents (318 out of 593). Additionally, when asked to assess several statements about Web 2.0, the participants reiterated their reluctance to pay for access (Table 7). They declared their preference for free access, even when that entails dealing with adverts as was agreed or totally agreed with by 81.3% of them. Moreover, they believe that free access is to be extended to all options of the website (80.4% agreed or totally agreed). Likewise, 68.3% of the respondents disagreed or totally disagreed with the statement "I don't mind paying for more advanced options", thus refusing any freemium options. This statement had the highest incidence of negative ratings. Only the answers portrayed in Table 5 and Table 6 were not very clear as to what they might mean. Only a small percentage of people stated that having to pay for more advanced option was one of the aspects that they liked the least about their favourite website.

5.2. Users

Web 2.0 is all about the users. It is the collective participation of users that adds value to Web 2.0 (O'Reilly, 2005). People are the driving force of Web 2.0, so it is only natural that people should be one of the elements of the framework for successful Web 2.0 applications.

5.2.1. USER PARTICIPATION

User participation is key to the improvement of Web 2.0 sites and it is one of the drivers of user engagement and loyalty to a specific service. The active involvement of users persuades other users to participate and create content and this process has a positive impact on the quality of the application (Hoegg et al., 2006).

Throughout the analysis of Q1, it became clear that the participation of other users was vital to the respondents. When highlighting the reasons that led them to select a specific Web 2.0 site as their favourite, 50.8% of the participants selected the item *other users' active participation*. In Table 4, this item is listed as the third most cited reason and the possibility to leave comments, one of the many ways people can participate, is portrayed as the choice of 29.8% of the sample. When rating the most important reasons for using Web 2.0 (Figure 6), the participant's answers placed other users active participation as the item with the fourth best score (28.6%) in the *most important* category and third best score in the *slightly important* category (49.2%). Also, interaction with other users was a close fourth in that same group, with 45.7% of the ratings. In Table 7 the importance of user's inputs became even clearer, with 71.4% of the participants stating that they agreed and totally agreed with the sentence "I like to receive comments from other users".

Accessibility from mobile devices, attractive design, advanced privacy settings and safety are some of the aspects that condition the participation of users on Web 2.0 sites. These elements are also showed in Table 4 as the selection of 16.1% to 17.7% of the respondents' choices. The presence of these same elements, namely, safety and privacy settings, on the top positions of Table 5 and Table 6, reiterate the importance

of privacy as another powerful determinant of Web 2.0 adoption. The users' privacy inside social networks has become a growing concern (L. Wu et al., 2010). Similarly, 96.9% of the respondents stated that they agree or totally agree (Table 7) with the importance of trust on the website, which according to Isaías et al. (2009a), is one of the conditioners of user participation. Since Table 7 displays results that were based on a question that forced the respondents to choose only one rating per item, their choices started to reveal a clear hierarchy in the reasons that they find more important. This became clear, for example, in the ratings of advanced privacy settings, which were evenly distributed throughout all of the categories. At a corporate level, a crucial difference between Web 2.0 tools and its predecessor technology, such as Enterprise Resource Planning or Customer Relationship Management is the level of participation it demands to be successful. The interactive nature if Web 2.0 demands the creation and manipulation of content by the users (Chui et al., 2009). This is also the view of (Isaías et al., 2009a) when they argued that user's input was a critical success factor of Web 2.0.

5.2.2. HIGH NUMBER OF USERS

It has been made clear that Web 2.0 depends on users to fully work. The notion of collective intelligence, implies that the growth of Web 2.0 derives from the joint participation of internet users (O'Reilly, 2005). The popularity of the website was selected by 35.3% of the participants and a large number of users by 28.2%, when selecting the reasons why they chose about their favourite website (Table 4). In the ranking of the most important reasons to use Web 2.0 (Figure 6), the large number of users was ranked 5th in the most important and the moderate group and 4th in the

least important slot. This is one of the factors with a solid support from the literature, but maybe one of the most difficult to validate in the questionnaires. It is believed that the revenue model is secondary to Web 2.0's need to engage a large member foundation, as it happens with Twitter and Facebook, for example (Chen et al., 2012). User's critical mass figures is one of the critical success factors that (Isaías et al., 2009a) highlighted for Web 2.0 and it is also the argument that (Wang & Chin, 2011) makes.

Yang et al. (2010) believed that the quality of the emotional relationships with their peers has an important influence on the decision of users to remain in online communities. In light of this argument, one can posit that people might be more concerned with the presence of specific people in the websites they use, rather than the large number of users in general. They participate and use that website because the people who are relevant to them are there.

5.3. Content

Users must feel that the website is useful, which is often perceived in the information that is conveyed. Some of the ways to provide information subsume posts of several types, namely links to external resources, photos and videos, the dissemination of press releases and the use of a message board, or whatever similar application is available on the website, to publish announcements and address any user query that may arise (Waters et al., 2009).

5.3.1. AVAILABILITY OF CONTENT

The content that is produced by the user enriches Web 2.0 applications (O'reilly, 2007) and it is one of the main critical success factors of Web 2.0 (Isaías et al., 2009a).

The constant update of content and interesting content were chosen respectively by 40.6% and 34.4% of the respondents as one the reasons why they selected their favourite website (Table 4). On the other hand, whether or not that website allowed their subscription to updates was not seen as important having only 6.1% of the responses. Additionally, in Figure 6, the item availability of content had most of its ratings located in the *slightly important* category (51.4%). Especially in questions where the respondent is demanded to limit his/her choices, a hierarchy of the most important elements really comes to light.

5.3.2. USER GENERATED MULTIMEDIA

The respondents' preference for content in a variety of formats started to become evident in Table 3 which shows that a variety of tools were selected by the respondents. On average each participant chose between 4 and 5 different tools. In Table 4, the item variety of features to add content was chosen by 40.8% of the respondents. This same item was represented in Figure 6 with the highest incidence of moderate ratings (55.5%). Finally, the fact that content can have a variety of formats such as text, video and photos was a statement that 93% of the sample agreed or totally agreed with (Table 7). This finding corroborates the literature that defends the importance of having content in a variety of formats (Isaías et al., 2009a) (Cormode & Krishnamurthy, 2008) (Kittinger, n.d.) (Shang et al., 2011).

In contrast, the variety of applications such as games did not seem to be a priority for the respondents, on the contrary, they seemed to think that there are too many applications available. While 24.8% affirmed that they chose their favourite website due to the variety of applications it presents (Table 4), in Table 5 and Table 6,

the fact that there were too many applications was the second aspect that the respondents liked the least about their favourite website. Similarly, in Figure 6 the highest incidence of the ratings of the item *diversity of applications* was located in the *least important* category.

6. ENTITY X'S WEB 2.0 COMPONENT

Entity X's intention of developing a Web 2.0 application on its new internet portal, motivated this case study. In this chapter the framework that this work proposes will be applied to the specific case of Entity X. It will begin with a presentation of the results of Q2 and then proceed to analyse the answers of its respondents, in the context of the framework.

Q2 was sent to 2910 people and 229 responses were received. After the data cleaning process, the sample was reduced to 225 cases. Similarly to Q1, the Little's MCAR test was conducted (Chi-Square = 1052,459, DF = 945, Sig. = ,008), but in this case, the missing data was not deemed as MCAR. SPSS counts cases that are non-responsive due to skip logic, as missing cases, so the Little's MCAR test result was influenced by this. Since, it was not possible to assess if the missing data was MCAR and the actual missing values were focused in particular questions, the analysis proceeded with the available cases (pairwise deletion). Figure 8 shows the distribution of the missing values throughout Q2.

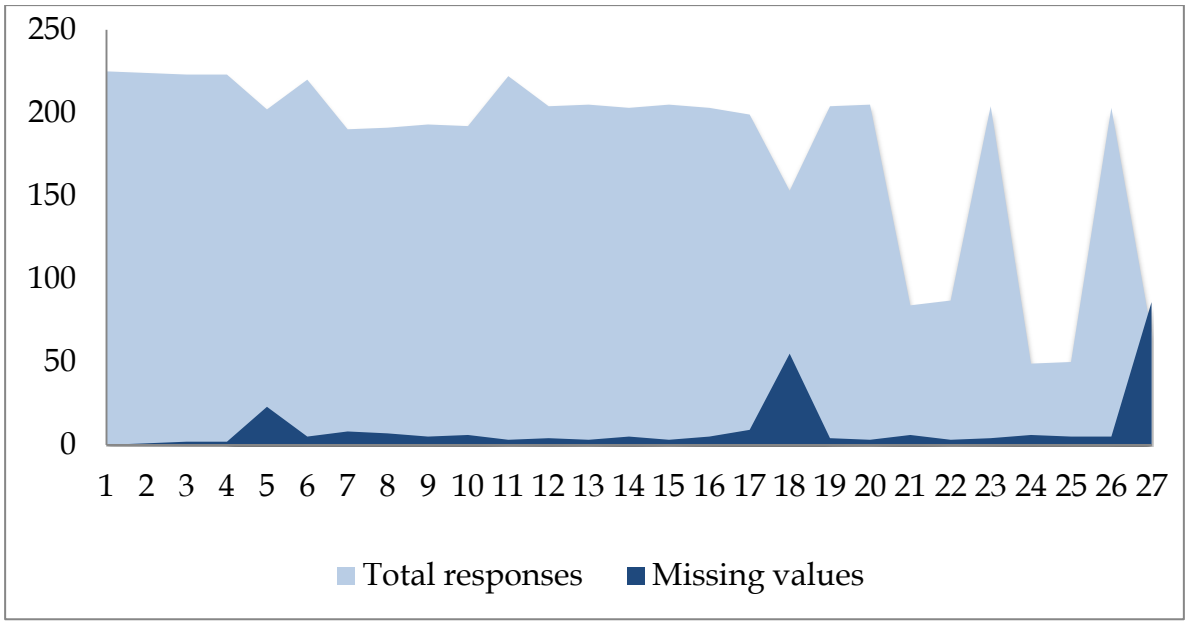

Figure 8. All response and non response for Q2

The non-response rates in this case need to be assessed according to the skip logic. The distribution of the missing values is quite even throughout the chart, the questions that registered a higher number of missing values were questions 5, 18 and 27, which were 2 Likert scale questions and an open question, respectively. These types of questions are more prone to be left unanswered (Denscombe, 2009) (Williams, 2003).

6.1. Entity X Respondent's Profile

The initial questions of Q2 were expected to determine the respondents' relation with Entity X, in order to establish a profile of the respondents.

Most respondents have been interacting with Entity X for 1-2 years (39.1%) or 3-5 years (32%). Only a few people were relatively new to Entity X, which is a positive indicator of the suitability of the sample in terms of its knowledge of the entity. Another characteristic of the respondents is the fact that the sample of people who participated was composed mainly by authors (84.8%) and participants (44.2%).

Additionally, the majority of the participants attended 1 to 4 conferences (71.6%). Around 21.3% of the respondents indicated that they had not attended even 1 conference. The conferences are this organisation's predominant activity and the emails that were used in this questionnaire were from people who registered to attend one of Entity X's conference. This percentage of people probably stands for no shows or people who registered for publication rather than conference attendance. Authors have to register in order to publish their papers, regardless of their presence in the actual conference.

6.2. Use of Entity X's Web Resources

At the time of Q2's administration, Entity X had four channels of online communication: its main website, the websites for each of its conferences (around 20), a Twitter account and a Facebook page. Entity X's users indicated that they used each of the conferences website more often (59.1%) than the main website of the organisation (36.9%). This shy access to Entity X's Portal is one of the reasons why it is necessary to implement a Web 2.0 application. There isn't enough traffic in the main website, which decentralises the services and leads the users to be more connected to what is happening in the conferences that they want to attend, then to the place where the information pertaining to the generality of all conferences is. Table 8 shows the resources that the members use the most in Entity X's main website and it also confirms the lack of engagement with social media resources.

Table 8. Resources that the users visit more often on the main website

Resources on the main website	Very often	Often	Neutral	Not often	Never
Current Events	17	64	52	51	29
Entity X Publications	17	58	49	66	29
Entity X Digital Library	12	45	58	59	37
Specific Conferences Links	16	78	48	45	27
Facebook Link	2	8	22	31	139
Twitter Link	1	4	17	21	157

Around 62% of the respondents have never accessed Entity X's Facebook link, while 70% have never accessed Twitter's link. When questioned about their potential use of Entity X's Facebook, 36% said that they would use it, 2.7% said they already use it, but the majority of respondents said they would not use it (52.4%). When it comes to Twitter, the discrepancy between the people who would use it and those who would not use it is even more significant. While 21.3% of the respondents said that they would use and 1.3% already used it, a very significant 68% of the participants said they would not use it. As for its presence in other Web 2.0 website, the majority of the users said they did not know (34.2%), 31.6% of them said that Entity X should have an account on other websites that use the Social Web and 24.4% were against such account. Those who agree with the presence of Entity X in other Web 2.0 platforms suggested LinkedIn, Google and YouTube.

Those who responded affirmatively to a potential use of Facebook and Twitter were questioned as to what type and format of content they would prefer to see in each of the websites. The content that they specified for Facebook was related to call for papers information (78.6%), more details on forthcoming conferences (73.8%),

information Society news (70.2%) and reminders of call for papers deadlines (58.3%). Tourist attraction, as it happened when questioned about the prospective Web 2.0 component of Entity X's Portal, scored the lowest numbers. This was true for both Facebook and Twitter. In terms of the content that was in the top choices for Twitter, it did not vary too much from the one for Facebook: call for papers information (69.4%), reminders of call for papers deadlines (55.1%), information on research projects and project proposals and partners (51%), news about diverse technological innovations (46.9%) and Information Society news (46.9%).

The respondents' choices in terms of the content's format also did not vary too much for Facebook and Twitter. For Facebook they selected text (92%), photos (64.4%) and video (50.6%) and for Twitter the same: text (92%), photos (44%) and video (34%).

6.3. Use, Preferences and Participation in Web 2.0 Websites

The respondents for the Q2 were Entity X's users, but it was not guaranteed that they used Web 2.0, so in order to ask them about their own personal experience with these types of applications, it was important to distinguish between Web 2.0 users and non-users. Figure 9 shows that the great majority of the participants do use Web 2.0.

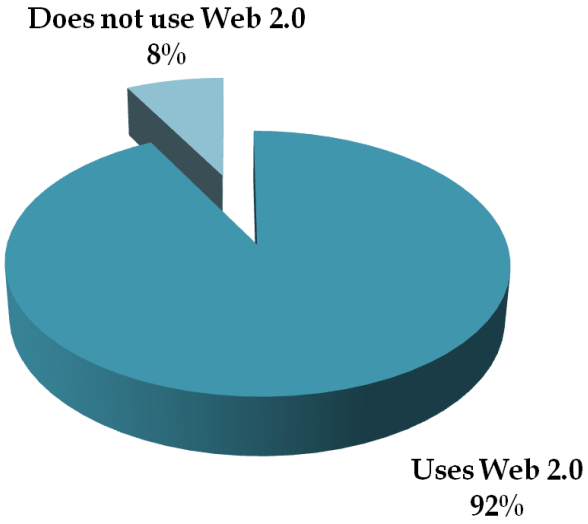

Figure 9. Web 2.0 use

Question 11 filtered the participants that did not use Web 2.0 websites. The remaining of the questionnaire regarded Web 2.0 websites and needed the experience of Web 2.0 users. For 7.6% of the sample this was their last question. Those who replied affirmatively, continued to complete the questionnaire, while the other 7.6% of the respondents were automatically forwarded to the end of the questionnaire, to question 28, where they could add any comments that they had wanted to make.

As with the first questionnaire most of the respondents (54.2%) said that they had been using Web 2.0 for over 3 years, that they used it 3 times a day or more (40.9%) and that their participation was active (50.3%). In terms of participation the active respondents (50.63%) were only slightly superior in numbers to those who classified their participation has being passive (47.8%). In Q2, it was important to assess the motivations of people to use Web 2.0 in general. The respondents' main reasons for using Web 2.0 are portrayed in Table 9.

Table 9. Reasons for using Web 2.0 websites

Reasons for using Web 2.0 websites	Frequency	Percentage
Research	149	72.7%
Staying updated on news	103	50.2%
To stay informed about new events	102	49.8%
Staying in contact with friends	95	46.3%
Business networking	65	31.7%
To reach people you're not normally in contact	57	27.8%
Sharing your thoughts	52	25.4%
For entertainment (games, funny applications, etc)	28	13.7%
To feel connected with people	25	12.2%
To meet new people	19	9.3%
For recruitment	11	5.4%
Other	5	2.4%

The respondents could only choose three options in this question. Their top choices were: research (72.7%), Staying updated with on news (50.2%), to stay informed about new events (49.8%) and staying in contact with friends (46.3%).

In terms of content, generally speaking, in Web 2.0 websites, Entity X's users stated that they prefer to see informative content (96.6%), although a significant percentage of the sample (40.7%) said that they like to see entertaining information.

The Web 2.0 websites that the participants of Q2 use more often are very similar to the websites that Q1's respondents also highlighted. Figure 10 portrays the leadership of Google (87.7%), Wikipedia (75.9%), YouTube (69%), Facebook (58.6%) and LinkedIn (42.9%). It also illustrates the clear disparity between the most popular sites and the least popular ones.

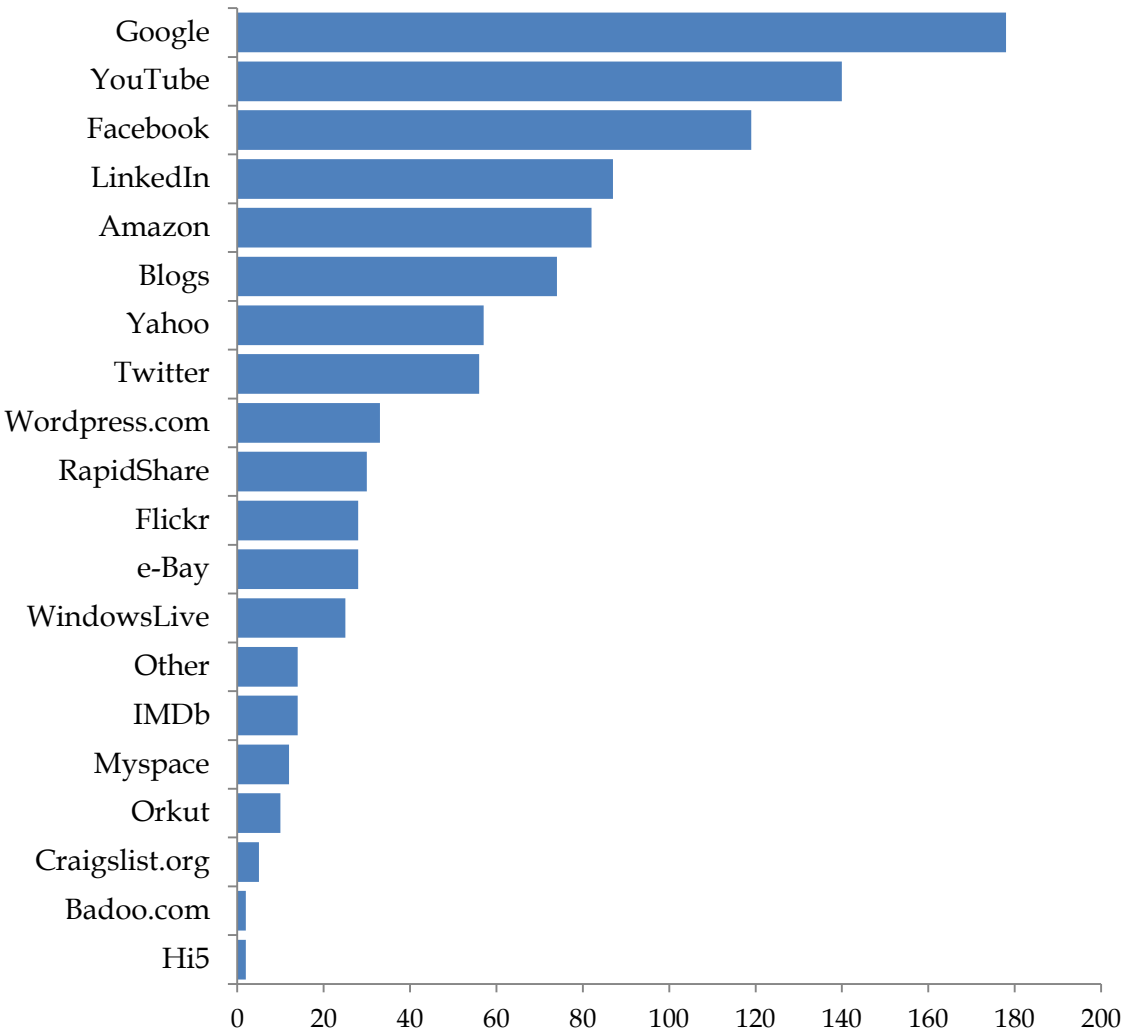

Figure 10. Web 2.0 websites that Entity X's users use more often

Both Web 2.0 users in general and Entity X's users placed Facebook, Google, YouTube and Wikipedia on the top of the list of websites that they use more often. Their choices are also reiterated by the initial list of most popular Web 2.0 websites, which resulted from the content analysis of website rankings.

With regard to the tools that they use more often in the generality of the Web 2.0 websites (Table 10) Entity X's users highlighted downloads (56.2%), photos (49.2%), video (45.7%), file sharing (42.2%) and profile information (41.7%).

Table 10. Tools used more often

Tools more frequently used	Frequency	Percentage
Downloads	112	56.2%
Photos	98	49.2%
Video	91	45.7%
File sharing	84	42.2%
Profile information	83	41.7%
Wikis	77	38.6%
Private messages	74	37.1%
Forums	60	30.1%
Chat	57	28.6%
Writing tools	55	27.6%
Tags	53	26.6%
News Feeds	43	21.6%
Music	31	15.5%
Podcasting	18	9%
Games	10	5%
Other	7	3.5%

6.4. Applying the Framework for Web 2.0 Success to Entity X

The results of Q2 supplied this research with important information as to the preferences of Entity X's members in terms of Web 2.0 in general and Entity X's intention of developing its own Social Web application. The final section of this chapter will examine the responses of Q2 in combination with the framework that was outlined in the previous chapter to design the structure of the application that Entity X will create. When questioned about the prospective Web 2.0 component that Entity X is aiming to build, its users provided their feedback and established the grounds for its creation.

This research created a threefold framework to develop successful web 2.0 applications, consisting in access (user friendliness and free access), users

(participation and large numbers) and content (availability and variety of features to add content). The Web 2.0 success framework was intended as a guiding structure of any type of Web 2.0 application or website, so the decision on what type of website or application should be developed remains as a responsibility of the developer. Deciding what the application or website should be and what mission it will serve is the first step. The multiplicity of applications is at the centre of this decision's complexity. Q2's main purpose was to determine what type of Web 2.0 application should be developed for Entity X. The motivation to incorporate Web 2.0 features on its new internet portal, was explained to the participants in Q2's introductory test. Entity X wants to increase the interactivity with and among its members. As an association that promotes conferences and research, a network of members is essential. While email is sufficient to promote the effective communication between the entity and its member it fails to foster communication between the members.

6.4.1. DECIDING THE APPROPRIATE APPLICATION

In terms of what Web 2.0 application to develop, the respondents' preferences can be seen in Figure 11.

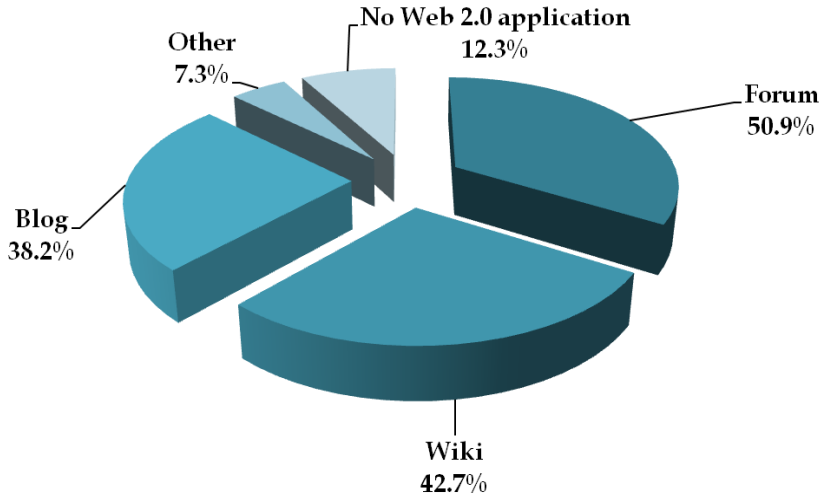

Figure 11. Web 2.0 component that should be developed by Entity X

They stated that Entity X should develop a forum (50.9%), a wiki (42.7%) or a blog (38.2%). The 12.3% of the respondents, that advocated that Entity X should have no Web 2.0 application, were directed to question 11, as the questions in-between regarded the characteristics of that potential application.

Blogs and forums are also on the list of most solicited internal tools in academic institutions Web 2.0 (Jadu, 2010). The choice of the application has to be based on the users' preferences, but also on what best fits the nature of the interactions that will take place on that application. Despite the fact that forums were rated higher, wikis and blogs also had a significant score in the questionnaire and could not, for that reason, be automatically disregarded. Blogs are collaborative applications, but although they are two-sided, the host of the blog has most of the power. Some of the tools that users wish to have available will be difficult to implement, such as profile information or file sharing. A blog resembles a web-based diary or a news feed (Lewis, 2006). At first sight wikis may be similar to the standard Web 1.0 pages of

information storage, but they allow user to add and edit content and share information. It is a useful application to host information exchange. Wikipedia is the most renowned wiki and it introduced the notion of editable encyclopaedias (Lewis, 2006). Entity X needs a platform where all the users have equal power and opportunity to start and maintain topics and discussions. To accommodate the tools and functionalities that the users pointed out and the nature of the component that Entity X needs, a wiki or a blog would be very restrictive. Forums are platforms for the exchange of information and ideas. Generally they exist around specific interests (Constantinides & Fountain, 2008). In this case, the general subject of Information Society and its various branches. The development of a forum is the most appropriate route to build a successful Web 2.0 component.

6.4.2. ACCESS

The first domain of Web 2.0's success framework is access. The capacity to access the application is determined by technological simplicity and financial demands.

With reference to user-friendliness, an expressive 88.5% of the respondents confirmed this aspect of the framework by stating that the ease of use was one of the most important characteristic of the prospective Web 2.0 platform. Easy to use, is even listed, in Table 11 as the most selected characteristic.

Table 11. Most important characteristics of Entity X's prospective component

Most important characteristics	Frequency	Percentage
Easy to use	170	88.5%
Content regularly updated	109	56.8%
Allow interaction with other users	101	52.6%
Possibility of subscribing updates	72	37.5%
Information society related content	60	31.3%
Variety of features to add content (photo, video, text,	59	30.7%
Attractive design	55	28.6%
Moderation features to prevent abusive content	51	26.6%
Uncluttered design	49	25.5%
Safe	47	24.5%
Clear Help options	45	23.4%
Advanced privacy settings	38	19.8%
Other	3	1.6%

Similarly to what Table 4 demonstrated for Q1, the priorities of Q2's respondents also highlighted regularly updated content (56.8%) and interaction with other users (52.6%).

Given the importance of user-friendliness to the success of Web 2.0 application and given the lack of IT experts among the staff members of Entity X, the use of mashups could be considered. The use of mashups is a simpler alternative to the coding of a component from zero that can be developed by any staff member (Murugesan, 2007). Since mashups are easy to use and to develop, this could be a practical solution for addressing the need for an application that is easy to use.

Financially speaking, the Web 2.0 component that Entity X wants to build will be free. The option of paying for access was not in question due to the non-profit nature of Entity X. There was no intention to charge any type of fee to its members for the use of the Web 2.0 component. Although it might have been beneficial to include a

question about paid access to validate this aspect of the framework and to determine what revenue model to adopt, it was felt that it would put an unnecessary burden on the respondent on an already long questionnaire. Since the financial aspect of access was already decided, a more pragmatic approach was adopted when designing the questionnaire and it included a question about a more formal aspect of access, instead. In order to access the application, most users wish to have a password protected access (56.1%), although a significant percentage 38.4% did not want to register to participate.

6.4.3. USERS

The users' aspect of success entails the user's participation and the presence of a large number of members.

The interaction with other users occupied the third place in Table 11, with 52.6%, confirming the importance of the participation of other users in the future Web 2.0 application. Despite referring to Web 2.0 websites in general, Table 9 lists the reasons why the respondents use Web 2.0 and reiterates the importance of user participation. Most of the items related to other users, were selected by a significant portion of the participants: staying in contact with friends (46.3%), business networking (31.7%) and to reach people you're not normally in contact with (27.8%). The importance of user participation was also supported by Q1's respondents in Table 4 and by an extensive body of research (Constantinides & Fountain, 2008) (Chen et al., 2012) (Yang et al., 2010) (Isaías et al., 2009a). Hence, creating the conditions to facilitate the participation of its members is core to the success of Entity X's future Web 2.0 component. Ewing (2008) postulates that the engagement in

online communities starts with a content-related motivation, but with time the relationships that the users develop with each other, turn it into a social motivation, where participation is fuelled by the people themselves and not their content.

Entity X's number of current members is closer to the hundreds than to the thousands, so the question of a large number of users, was difficult to approach in terms of Q2. It was decided not to question the members as to their opinion in terms of numbers of users, only in terms of participation. Much like, free access, a question about the number of users seemed an unjustified burden on the participants. The large number of users is a core precept of Web 2.0 and it is strongly supported by the literature, so despite not being validated in Q2 it was supported by Q1 (Table 4) and by numerous studies (Chen et al., 2012) (O'Reilly, 2005) (Isaías et al., 2009a) (Wang & Chin, 2011) (Yang et al., 2010).

6.4.4. CONTENT

According to Web 2.0's success framework, content needs to be available and in a variety of formats. Entity X users' responses validated this aspect.

Availability of content is one of the fundamental critical success factors of Web 2.0, so it is important to define what type of content is more appropriate. The nature of Entity X's services gives its Portal an informative tone. The content of the Portal is mainly directed at keeping its users informed about the conferences that have been organised or that will be organised in the future and all matters relating to this. For the development of a Web 2.0 component, the users were also asked in the questionnaire about the type of content it should have. Most people chose call for papers information (82.7%), forthcoming conferences (69.1%), reminders of call for

papers deadlines (68.1%) and resources on how to prepare and write research papers (58.6%). Since this question gave the respondents the option to select all the options that they found pertinent, they didn't have to sacrifice any option that they considered important. This resulted in a high score for every option that was listed. The lowest score was 30.4% and it referred to touristic information on the conferences' host countries. Furthermore, Table 11 catalogues the item *content regularly updated* (56.8%) as second on the list of the most important characteristics of the prospective Web 2.0 component. Also, the *possibility of subscribing updates* was selected by 37.5% of the sample, 31.3% reiterated the importance of having *information society related content* and 26.6% thought it was necessary to have *moderation features to prevent abusive content*.

The entity that is developing and hosting the component, should offer as much latitude to its users, as it is possible. The people using their component should have as much variety of content creation tools as they can. This broadens the ways in which they can contribute and enriches the content of the application. The preference for multimedia, became once again visible in the diversity of tools that the respondents stated that the component should have. Downloads (64.2%), video (48.4), photos (48.4), file sharing (46.8%) and search features (44.7%) were the most popular choices. The other tools that the respondents selected are shown in Table 12.

Table 12. Features of Entity X's potential Web 2.0 component

Web 2.0 tools	Frequency	Percentage
Downloads	122	64.2%
Video	92	48.4%
Photos	92	48.4%
File sharing	89	46.8%
Search features	85	44.7%
Profile information	82	43.2%
News feeds	74	38.9%
Tags	72	37.9%
Writing tools	72	37.9%
Chat	55	28.9%
Private messages	50	26.3%
Podcasting	29	15.3%
Music	10	5.3%
Other	6	3.2%

People want to add and see content in a multiplicity of formats. Text alone is insufficient in the era of dynamic content. When listing the most important characteristics of Entity X's future social component, *variety of features to add content (photo, video, text, etc.)* was highlighted by 30.7% of the sample. This was also a main tendency in Q1, where the participants highlighted their preference for a variety of tools to add content and diverse formats of content (Table 4, Table 7and Figure 6).

7. CONCLUSION

The success of Web 2.0 seems to be embedded in its unique characteristics. More specifically, Web 2.0's success is intrinsically connected to its ability to offer free and user-friendly services with access to a large base of active users and to content that is both available and in various formats.

7.1. Main Contributions

The overwhelming diversity and quantity of websites and applications is an unmistakable demonstration of Web 2.0 success, but it equally constitutes a challenge to its existence. The continuous proliferation of Web 2.0 applications leaves the users with the consuming task of deciding where they should invest their time and contributions. Similarly, it leaves website developers and anyone with the ambition of developing Web 2.0 components with the important question of how to be successful in their endeavours in an already overpopulated Internet. These conundrums are the core motivation for this study. While there is an extensive body of literature focusing on the acceptance and success of information technology, there is insufficient research published in this area about Web 2.0 in particular. This work intended to address this research gap, by developing a framework for the successful creation of Web 2.0 applications.

The main concern of this research was the identification of a set of guidelines that could foster the successful development of Web 2.0 platforms in general. This objective was addressed through the outline of a framework for successful Web 2.0 applications that was based on user-friendliness, free access, user participation, large

number of users, availability of content and user generated multimedia. The outline of this framework derived from a quantitative content analysis of website rankings and the analysis of the data collected by questionnaire 1 and questionnaire 2. In a time when the *2.0* suffix is widespread through a multiplicity of central areas of society, it is paramount to explore the reasons behind the success of Web 2.0. The framework that is proposed in this study gathers some of the core characteristics of the Social Web and it has the ambition of being applicable to several scenarios.

Both online questionnaires reiterated the much reported omnipresence of Web 2.0 in the life of internet users. The majority of the participants in both questionnaires had been using Web 2.0 for more than three years, they used it at least three times a day and they described themselves as active participants.

Google, Facebook, YouTube and Wikipedia were on the top five most popular websites of the rankings' reports and also on the top five websites that were used more often by Q1 and Q2's respondents. Throughout these three different instruments of data collection, these websites symbolised the success of Web 2.0.

Photos, video and profile information were common to the top choices of the respondents of both questionnaires. More importantly the results have shown that regardless of what tools they choose, the most part of the respondents choose to use several. Web 2.0 service providers should invest in a variety of features to add several formats of content. The different characteristics of the samples of Q1 and Q2 and the different natures of the questionnaires did not allow for a direct comparison of the results, nonetheless, when assessing the most important traits of Web 2.0, several common patterns emerged. Pertaining to Web 2.0 applications, the

participants prioritised ease of use, other user's participation, availability of content and content in a variety of formats. The characteristics that the users appreciate the most about Web 2.0 set the basis for the outline of the framework for the successful development of Web 2.0 that subsumes user-friendliness, free access, user participation, large number of users, availability of content and user generated multimedia.

The main contribution of this work is the outline of a framework that can guide the successful development of Web 2.0 components, but it equally, or even more importantly, intends to emphasise the necessary evaluation of the revolutionary Web 2.0. The opinion of the users is crucial to this assessment and the empirical data that this research offered contributes to this ongoing and multifaceted process.

7.2. Limitations

The limited budget available to conduct this research, along with time constraints prevented the pilot testing of Entity X's Web 2.0 component, relegating this part of the research to a future venture. Despite the fact that the framework was validated by Q1 and Q2 and the website ranking reports, it would have been ideal to test it in Entity X's specific scenario in order to refine it.

The methodological limitations of this research mainly pertain to the sampling techniques and the statistical analysis of the data. One of the factors with potential bias in questionnaire 1, was the fact that it reached people mainly through Facebook and the fact that it was mostly distributed among Portuguese users. Another challenge of the sample is the fact that it was a non-probability technique and that it

was initiated by an initial sample of cconvenience. The people were chosen for their relationship to the researcher which is not a criterion that assures the representativeness of the sample.

Questionnaire 2 used a random sample, which methodologically speaking is more capable of generating a representative pool of respondents. Nonetheless, because this sample used a population with members dating from 2001, when Entity X initiated its activity, some of the people that were selected to answer might not have been currently engaged in the activity of Entity X. Furthermore the random sample should have been composed of more cases, to avoid a high non-response rate (Kelley et al., 2003)

In both questionnaires, the fact that websites were classified as being Web 2.0 might have been confusing to some of the respondents. Although most answers did reflect some knowledge of what they were, people are more familiar with the websites and applications of Web 2.0, than with its denomination. The greeting pages of the questionnaires provided some information about Web 2.0 to minimise this aspect, but there might have been websites that were not mentioned by the respondents in either questionnaire, because they were not sure if they were Web 2.0.

Additionally, the data collected from the questionnaires could have been analysed by other methods rather than exclusively focusing on descriptive statistic analysis, such as factor analysis or regression analysis. As, a multivariate statistical method, factor analysis, has the capacity to decrease the redundancy that might exist among the several variables under study (Rencher, 2002). Regression analysis, in its

turn, would have been an important asset due to this ability to establish connections among different variables (Sykes, 1993).

7.3. Future Work

The next evident step for this research is the implementation of this framework across several contexts and entities to assess its reach and validity. Its ambition of becoming a widely used instrument to guide and facilitate successful Web 2.0 applications requires its application across a variety of areas, such as education, business and health. While it was preliminarily accepted by Entity X's members as the founding structure of a Web 2.0 component, this framework demands further application. Firstly, though, it should be used to develop the Entity X's Web 2.0 application that it delimited.

The outline of the elements that potentiate Web 2.0 success does not necessarily provide the means to pursue it. So, while this study does provides insight into the mechanisms of success, further research is necessary to address each of the elements of the framework in particular. It is paramount to do an in-depth examination of how aspiring Web 2.0 developers can to reach each of the factors of the framework. How will companies, universities, hospitals and other entities or individuals guarantee the free access of users to the Web 2.0 applications that they aim to develop? How will user participation and the availability of content be assured? Since the focus of this research was to expand on the *what,* it only just scratched the surface in terms of the *how*, which provides the ground for a new direction for the research of Web 2.0 success.

Moreover, it has been made clear in the literature that besides the Web 2.0 enthusiasts, there are those who remain unconvinced about the power of the Social Web and focus instead on its shortcomings. In all areas of its success, the Social Web, needs to assert its position by providing evidences of its value. It is insufficient to praise this new generation of the Web by arguing its valuable contribution to a number of key areas of society. Empirical evidence and formal metrics must be the focus of researchers in order to substantiate the real value that Web 2.0 brings to the several arenas that embrace its features.

One of the most valuable assets of Web 2.0 is its ease of use, nonetheless, it is important not to underestimate the importance of having the appropriate skills to deal with the Social Web and the challenges it poses. There is no call for advanced IT skills, but there is certainly the need for people to have a certain degree of digital literacy to deal with the challenges of online environments. Future research could also explore this aspect more specifically and determine what type of skills does a Web 2.0 user need in particular. The success of Web 2.0 depends on what applications are available online, on their quality and appeal to the user, but if the user is ill-prepared they will be of no use. The application developers would be wise to invest on cautionary behaviour guidelines. The introduction to a application should come with a kind of instructions book, that not only explains how the application works and how to best take advantage of it, but it could also include a safety warning on the most common threats and how to deal with them.

Finally, future research should look at the non-adopters, at people who do not use Web 2.0 in order to understand their motivations. The study of success is never

complete without an examination of failure. A deeper insight on the resistance of some users to engage with Web 2.0 applications, would provide precious data on Web 2.0's challenges. Moreover, it would be an important step towards addressing those challenges.

The approach of Web 2.0 can be done through an infinite number of methods and perspectives. The social and psychological ramifications of using Web 2.0 are yet to be fully exhausted by their respective experts. The same can be said about its technological, economical and instructional implications and motivations. Web 2.0 is a fertile subject with infinite ramifications. The work that can still be developed around it can assume a broad assortment of guises.

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ANNEXE A: FACEBOOK, YOUTUBE, WIKIPEDIA: THE OPINION OF USERS

Thank you for opening this questionnaire. It should take you approximately 5 minutes to complete it.
By responding to this questionnaire you are contributing to an international study on the opinion of users about the Social Web (Facebook, Google, MySpace, YouTube, Wikipedia, Yahoo, blogs, forums and thousands of others). Generally speaking, the Social Web (or Web 2.0) includes all websites and applications that allow users to add or edit content (photos, music, text, etc.), to interact with other users and share information.

This study is part of a PhD research from the Open University (Portugal). This questionnaire is confidential and anonymous. The treatment and publication (when applicable) of the results will be done globally, not individually.

Instructions to complete the questionnaire:
This questionnaire is directed at users of the Social Web;
It is essential to complete the questionnaire, so **please answer all questions**;
There are no right or wrong answers, only your personal and sincere opinion is requested.

If you have any questions about the questionnaire or this ongoing study, please contact Sara Pífano at sara.web2.0@gmail.com.
Your participation is fundamental. Thank you very much for your collaboration.

1. How long have you been using Social Web internet sites?	
Less than 6 months	
More than 6 months but less than 1 year	
1-3 years	
Over 3 years	

2. How often do you use these websites?	
3 times a day or more	
once a day	
3 times a week	
once a week or less	

3. Your use of the Social Web is mainly:	
Passive (just visiting websites and applications)	
Active (adding content, such as photos, posts or videos and using the applications)	
Other (Please Specify):	

4. Please select the Social Web internet sites that you use more often? (Select as many as apply)	
Wikipedia	
Hi5	
Wordpress.com	
Blogs	
Facebook	
YouTube	
Yahoo	
Twitter	
Badoo.com	
RapidShare	
Myspace	
Amazon	
Google	
e-Bay	
Flickr	
Craigslist.org	
LinkedIn	
WindowsLive	
Orkut	
IMDb	
Other (Please Specify):	

5. Which one of the above websites do you prefer? (Name only one)

6. Select the reasons why you've chosen this website. (Select as many as apply)	
Attractive design	
Free access	
Other users' active participation	
Variety of features to add content (photo, video, text, etc.)	
Easy to use	
Accessible from mobile devices	
Variety of applications (ex. games)	
Popularity	
Advanced privacy settings	
Clear Help options	
Content constantly updated	
Large number of users	
Possibility to leave comments	
Possibility of subscribing updates	
Safe	
Interesting content	
Other (Please Specify):	

7. What are the aspects that you like the least about the website you've selected? (Select as many as apply)	
A reduced number of users	
Inaccessible from mobile devices	
Only allows one content format (ex. only photos)	
Difficult to use	
Unattractive design	
Paid access to more advanced options	
Other users' lack of participation on the website	
Too many applications	
Not very popular	
Outdated content	
Help option not clear	
Lack of options to control comments	
Insufficient privacy settings	
Not very safe	
Uninteresting content	
Possibility to subscribe updates	
Other (Please Specify):	

8. What are your favourite features in a Social Web internet site? (Select as many as apply)	
Video	
Photos	
Tags	
Games	
Profile information	
Writing tools	
Chat	
Messaging	
Forums	
Music	
Wikis	
Podcasting	
File sharing	
Downloads	
News Feeds	
Other (Please Specify):	

9. Read the following sentences and rate them according to their importance to your decision of using a Social Web Internet site. (1 - corresponds to the most important and 10 - corresponds to the least important) - <u>Please use each number only once</u>	
Website's ease of use	
Large number of users	
Free access to membership/participation	
Variety of features to add content (ex. video, photos, comments)	
Other users' active participation	
Availability of content on the website	
Diversity of applications (ex. games, tests)	
Anyone can add content	
Interaction with other users	
Advanced privacy settings	

10. Please read the following statements about Social Web internet sites and rate them accordingly.					
	Totally Agree	Agree	Neutral	Disagree	Totally Disagree
It is best to have adverts on the website than to pay for access					
Content can have a variety of formats (text, video, photos)					
Trust on the website is very important					
Free access should be for all options					
I like to receive comments from other users					
I don't mind paying for more advanced options					

11. Where did you access this questionnaire?	
Blog	
Facebook	
LinkedIn	
YouTube	
Hi5	
Other (Please Specify):	

12. What country do you live in?

Please confirm that you have responded to all questions. If you have any additional comments, please add them here. Thank you.

ANNEXE B: IMPROVING ENTITY X PORTAL

Thank you for opening this questionnaire. It should take you approximately 10 to 15 minutes to complete it.
In order to increase interactivity and collaboration on its Website, Entity X is integrating social technology to design a Web 2.0 component to be included on its new Portal. Generally speaking, Web 2.0 (also known as Social Web) includes Websites, applications and tools that allow users to add or edit content (photos, music, text, etc.), to interact with other users and share information. Web 2.0 applications include Facebook, Google, MySpace, YouTube, Wikipedia, Yahoo, blogs, forums and thousands of others.
This questionnaire is part of a PhD thesis and represents an international study on the opinion of Entity X users about its Website and associated Web resources. By responding to this questionnaire you indicate your consent to participate in the study and your understanding that you are actively contributing to the successful design and implementation of a social and collaborative component that will be part of the new Entity X Portal and that will improve communication between you and Entity X and worldwide researchers, practitioners and students.
This platform will be designed for you, so your opinion is vital. There are no right or wrong answers; only your personal and sincere opinion is requested. It is essential to complete the questionnaire, so please try to answer all questions.
This questionnaire is confidential and anonymous. Individual respondents will not be identified in any way, directly or indirectly, in any published reports or papers based on this study.
If you have any questions regarding the questionnaire or this ongoing study, please contact Sara Pífano at sara.web2.0@gmail.com.
Your participation is fundamental. Thank you very much for your collaboration, your time is deeply appreciated.

2. Entity X

1) How long have you been interacting with Entity X?
( ) Less than 6 months
( ) 6 Months
( ) 1-2 Years
( ) 3-5 Years
( ) 6-8 Years

2) How would you define your relationship with Entity X?
( ) Author (Submitted a paper regardless of acceptance or presentation)
( ) Participant (Attended one or more conferences)
( ) Program chair/co-chair
( ) Conference chair/co-chair
( ) Other

3) What do you use more often?
( ) Entity X website (http://www.Entity X.org or http//www.Entity Xportal.org)
( ) Each conference website (ex: http://www.c1-conf.org/; http://www.e1-conf.org/)
( ) Other: _____

4) How many Entity X conferences have you attended?
( ) 0
( ) 1-4
( ) 5-9
( ) 10 or more

5) On Entity X website (http://www.entityx.org or http://entityxportal.org), how often do you access these resources?

	Very often	**Often**	**Neutral**	**Not often**	**Never**
Current Events					
Entity X Publications					
Entity X Digital Library					
Specific Conferences Links					
Facebook Link					
Twitter Link					

6) In order to increase interactivity and collaboration, Entity X aims to add a new Web 2.0 application to its new Portal. What type of application do you think it should be? (Choose all that apply)
( ) Forum
( ) Wiki
( ) Blog
( ) Other
( ) No Web 2.0 application should be added

Page Jump/Disqualify Logic — the following conditions will run when Page ID 3* (above) *gets submitted:
People who would not use this Web 2.0 application:
If:
The answer to Question #6 is in list **No Web 2.0 application should be added**
Then:

Jump to Page #4: Web 2.0 websites

3. Entity X Web 2.0 application

7) What features should this Web 2.0 application have? (Choose all that apply)

( ) Video
( ) Photos
( ) Tags
( ) Profile information
( ) Writing tools
( ) Chat
( ) Private messages
( ) Music
( ) Podcasting
( ) File sharing
( ) Downloads
( ) News feeds
( ) Search features
( ) Other

8) What type of content should the new application have? (Choose all that apply)

( ) Information Society news
( ) More details of forthcoming conferences
( ) Resources on how to prepare and write research papers
( ) Call for papers information
( ) Tourist attractions about the countries hosting the conferences
( ) Information on research projects and project proposals and partners
( ) News about diverse technological innovations
( ) Information on specific training courses
( ) Formal details essential to paper submissions
( ) Reminders of call for papers deadlines
( ) Advices from scientific committee members to maximise acceptance
( ) General information on research
( ) Reminders of registration and last version submission deadlines
( ) Other

9) What kind of access should it have?

( ) A password protected login
( ) No registration required
( ) Other: _____

10) What should be the most important characteristics of this platform? (Choose all that apply)

( ) Easy to use
( ) Variety of features to add content (photo, video, text, etc.)
( ) Advanced privacy settings
( ) Clear Help options
( ) Uncluttered design

( ) Content regularly updated
( ) Safe
( ) Allow interaction with other users
( ) Moderation features to prevent abusive content
( ) Possibility of subscribing updates
( ) Information society related content
( ) Attractive design
( ) Other

4. Web 2.0 websites

11) Do you use Web 2.0 websites? (ex: Facebook, Google, MySpace, YouTube, Wikipedia, Yahoo, blogs, forums)
( ) Yes
( ) No

Page Jump/Disqualify Logic — the following conditions will run when Page ID 16 **(above)** *gets submitted:*
New Page Logic Action:
If:
The answer to Question #11 is in list **No**
Then:
Jump to Page #11: Additional comments

5. Social Web

12) How long have you been using Web 2.0 internet sites?
( ) Less than 6 months
( ) More than 6 months but less than 1 year
( ) 1-3 years
( ) Over 3 years

13) How often do you use these websites?
( ) Once a week or less
( ) 3 times a week
( ) Once a day
( ) 3 times a day or more

14) Your use of Web 2.0 websites is mainly:
( ) Passive (just visiting websites and applications)
( ) Active (adding content, such as photos, posts or videos and using the applications)
( ) Other: _____

15) What are 3 most important reasons that lead you to use Web 2.0 internet sites? (Please choose only 3)

( ) Staying in contact with friends
( ) Research
( ) Staying updated on news
( ) Sharing your thoughts
( ) Business networking
( ) For entertainment (games, funny applications, etc)
( ) For recruitment
( ) To meet new people
( ) To stay informed about new events
( ) To reach people you're not normally in contact with
( ) To feel connected with people
( ) Other

16) Please select the Web 2.0 internet sites that in general you use more often. (Select as many as apply)

( ) Wikipedia
( ) Hi5
( ) Wordpress.com
( ) Blogs
( ) Facebook
( ) YouTube
( ) Yahoo
( ) Twitter
( ) Badoo.com
( ) RapidShare
( ) Myspace
( ) Amazon
( ) Google
( ) e-Bay
( ) Flickr
( ) Craigslist.org
( ) LinkedIn
( ) WindowsLive
( ) Orkut
( ) IMDb
( ) Other

17) What tools do you use the most on these websites? (Choose as many as apply)

( ) Video
( ) Photos
( ) Tags
( ) Games
( ) Profile information
( ) Writing tools
( ) Chat
( ) Private messages
( ) Forums
( ) Music
( ) Wikis
( ) Podcasting
( ) File sharing
( ) Downloads
( ) News Feeds
( ) Other

18) Please select the reason(s) you use the following websites.

	Social Use	**Business Use**	**Both**	**None of these reasons**	**Don't use**
Wikipedia					
Blogs					
Facebook					
YouTube					
Yahoo					
Twitter					
Myspace					
Google					
LinkedIn					
Windows Live					

19) Generally speaking what type of content do you prefer to see on Web 2.0 websites and platforms? (Choose as many as apply)

( ) Informative
( ) Entertaining
( ) Other user's personal updates
( ) Other

20) Entity X is now on Facebook. Would you use Entity X Facebook Page?
( ) Yes
( ) No
( ) I already use Entity X's Facebook Page

Page Jump/Disqualify Logic — the following conditions will run when Page ID 5* (above) *gets submitted:
New Page Logic Action:
If:
The answer to Question #20 is in list **No**
Then:
Jump to Page #7: Twitter

6. Entity X on Facebook

21) What type of content would you like to see on Entity X Facebook Page?
( ) Information Society news
( ) More details of forthcoming conferences
( ) Resources on how to prepare and write research papers
( ) Call for papers information
( ) Tourist attractions about the countries hosting the conferences
( ) Information on research projects and project proposals and partners
( ) News about diverse technological innovations
( ) Information on specific training courses
( ) Formal details essential to paper submissions
( ) Reminders of call for papers deadlines
( ) Advices from scientific committee members to maximise acceptance
( ) General information on research
( ) Reminders of registration and last version submission deadlines
( ) Other

22) What type of format do you prefer that content to be in? (Choose as many as apply)
( ) Music
( ) Video
( ) Photos
( ) Text
( ) Other

7. Twitter

23) Entity X is now also on Twitter. Would you use Entity X Twitter page?
( ) Yes
( ) No
( ) I already use Entity X' Twitter Page

Page Jump/Disqualify Logic — the following conditions will run when Page ID 8 **(above)** *gets submitted:*
New Page Logic Action:
If:
The answer to Question #23 is in list **No**
Then:
Jump to Page #9: Web 2.0

8. Entity X on Twitter

24) What content would you like to see on Entity X' Twitter page?
( ) Information on research projects and project proposals and partners
( ) News about diverse technological innovations
( ) General information on research
( ) Reminders of registration and last version submission deadlines
( ) Information Society news
( ) More details of forthcoming conferences
( ) Resources on how to prepare and write research papers
( ) Information on specific training courses
( ) Formal details essential to paper submissions
( ) Reminders of call for papers deadlines
( ) Advices from scientific committee members to maximise acceptance
( ) Call for papers information
( ) Tourist attractions about the countries hosting the conferences
( ) Other

25) What type of format do you prefer that content to be in? (Choose as many as apply)
( ) Music
( ) Video
( ) Photos
( ) Text
( ) Other

9. Web 2.0

26) Should Entity X have on account in other Web 2.0 internet sites?
( ) Yes
( ) No
( ) I don't know

Page Jump/Disqualify Logic — the following conditions will run when Page ID 9 **(above)** *gets submitted:*
New Page Logic Action:
If:
The answer to Question #26 is in list **No**

Then:
Jump to Page #11: Additional comments

10. Entity X and Web 2.0

27) In what other Web 2.0 internet sites should Entity X have an account?

_____

11. Additional comments

28) Please use this section if you would like to share any additional comments.

_____

_____

Thank You!
Thank you for taking the time to complete this survey.
Your response is very important.

Please remember that as this questionnaire is confidential and anonymous,
if you need further information regarding this ongoing study,
please contact Sara Pífano at sara.web2.0@gmail.com.

ANNEXE C: CRITICAL SUCCESS FACTORS THROUGHOUT THE QUESTIONNAIRES

CSFs Correspondence to Questionnaire 1

Description of the CSFs:
CSF #1: Users' inputs
CSF #2: Users' critical mass figures
CSF #3: Ease of use of component
CSF #4: Availability of content to justify users' access
CSF #5: User content addition features
CSF #7: Revenue models

6. Select the reasons why you've chosen this website. (Select as many as apply)	**CSFs**
Attractive design	CSF #1
Free access	CSF #7
Other users' active participation	CSF #1
Variety of features to add content (photo, video, text, etc.)	CSF #5
Easy to use	CSF #3
Accessible from mobile devices	CSF #1
Variety of applications (ex. games)	CSF #5
Popularity	CSF #2
Advanced privacy settings	CSF #1
Clear Help options	CSF #3
Content constantly updated	CSF #4
Large number of users	CSF #2
Possibility to leave comments	CSF #1
Possibility of subscribing updates	CSF #4
Safe	CSF #1
Interesting content	CSF #4
Other (Please Specify):	

7. What are the aspects that you like the least about the website you've selected? **(Select as many as apply)**	
A reduced number of users	CSF #2
Inaccessible from mobile devices	CSF #1/ CSF #4
Only allows one content format (ex. only photos)	CSF #5
Difficult to use	CSF #3
Unattractive design	CSF #1
Paid access to more advanced options	CSF #7
Other users' lack of participation on the website	CSF #1
Too many applications	CSF #5
Not very popular	CSF #2
Outdated content	CSF #4
Help option not clear	CSF #3
Lack of options to control comments	CSF #1
Insufficient privacy settings	CSF #1
Not very safe	CSF #1
Uninteresting content	CSF #4
Possibility to subscribe updates	CSF #4 / CSF #1
Other (Please Specify):	

9. Read the following sentences and rate them according to their importance to your decision of using a Social Web Internet site. (1 - corresponds to the most important and 10 - corresponds to the least important) - <u>Please use each number only once</u>	
Website's ease of use	CSF #3
Large number of users	CSF #2
Free access to membership/participation	CSF #7
Variety of features to add content (ex. video, photos, comments)	CSF #5
Other users' active participation	CSF #1
Availability of content on the website	CSF #4
Diversity of applications (ex. games, tests)	CSF #5
Anyone can add content	CSF #1
Interaction with other users	CSF #1
Advanced privacy settings	CSF #1

10. Please read the following statements about Social Web internet sites and rate them accordingly.					
	Totally Agree	Agree	Neutral	Disagree	Totally Disagree
It is best to have adverts on the website than to pay for access	CSF #7				
Content can have a variety of formats (text, video, photos)	CSF #4				
Trust on the website is very important	CSF #1				
Free access should be for all options	CSF #7				
I like to receive comments from other users	CSF #1				
I don't mind paying for more advanced options	CSF #7				

CSFs Correspondence to Questionnaire 2

10) What should be the most important characteristics of this platform? (Choose all that apply)	
( ) Easy to use	CSF #3
( ) Variety of features to add content (photo, video, text, etc.)	CSF #5
( ) Advanced privacy settings	CSF #1
( ) Clear Help options	CSF #3
( ) Uncluttered design	CSF #3
( ) Content regularly updated	CSF #4
( ) Safe	CSF #1
( ) Allow interaction with other users	CSF #3
( ) Moderation features to prevent abusive content	CSF #4
( ) Possibility of subscribing updates	CSF #4
( ) Information society related content	CSF #4
( ) Attractive design	CSF #1
( ) Other	

ANNEXE D: LIST OF PUBLICATIONS

Isaías, P., Pífano, S., & Miranda, P. (2014). Higher education and Web 2.0: theory and practice. In J.-E. Pelet (Ed.), E-Learning 2.0 Technologies and Web Applications in Higher Education. Hershey, PA, USA: IGI Global.

Isaías, P., Miranda, P., & Pífano, S. (2013). The Impact of Web 2.0 Adoption in Higher Education. In P. Kommers, E. Kasparova & N. Bessis (Eds.), IADIS International Conference Web Based Communities and Social Media (pp. 65-73). Prague, Czech Republic.

Miranda, P., Isaías, P., Costa, C., & Pifano, S. (2013). WEB 2.0 Technologies Supporting Students and Scholars in Higher Education. In A. A. Ozok & P. Zaphiris (Eds.), Online Communities and Social Computing (Vol. 8029, pp. 191-200): Springer Berlin Heidelberg

Isaías, P., Pífano, S. & Miranda, P. (2013). Subject Recommended Samples: Snowball Sampling. In Isaías, P. & Nunes, M. B. (eds) Information Systems Research and Exploring Social Artifacts: Approaches and Methodologies. Hershey, PA: IGI Global.

Isaías, P., Pífano, S., & Miranda, P. (2012). Social Network Sites: Modeling the New Business-Customer Relationship. In M. Safar, & K. Mahdi (Eds.), Social Networking and Community Behavior Modeling: Qualitative and Quantitative Measures (pp. 248-265). Hershey, PA: Information Science Reference.

Isaías, P., Pífano, S. & Miranda, P. (2011). Web 2.0: Harnessing Democracy's Potential. In Downey, E. and Jones, M. A. (eds) Public Service, and Web 2.0 Technologies: Future Trends in Social Media. Hershey, PA: IGI Global.

Isaías, P., Miranda, P. & Pífano, S. (2009). Designing E-Learning 2.0 courses: recommendations and guidelines. Research, Reflections and Innovations in Integrating ICT in Education. Vol. 2, pp 1081-1085

Isaías, P., Miranda, P. & Pífano, S. (2009). Critical Success Factors for Web 2.0 - A Reference Framework. In Ozok, A. A. & Zaphiris, P. (Eds.). Proceedings of the 3d International Conference on Online Communities and Social Computing: Held as Part of HCI International 2009 (OCSC '09), Springer-Verlag, Berlin, Heidelberg, p354-363

Isaías, P., Miranda, P. & Pífano, S. (2009). Towards An Effective E-Learning 2.0. EDULEARN 09 Proceedings, pp. 4997-5004