

**UNIVERZA V LJUBLJANI
FAKULTETA ZA DRUŽBENE VEDE**

Marco Aurelio Iannone

Ocenjevanje uporabnosti spletnih mest: primerjava metod

Website Usability Assessment: Comparison of Methods

Magistrsko delo

Ljubljana, 2016

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Magistrsko delo se osredotoča na primerjavo dveh metod ocenjevanja uporabnosti spletnih mest. V teoretičnem delu avtor predstavi pristop načrtovanja storitev in izdelkov, ki je usmerjen na uporabnika (angl. *User-Centered Design* ali *UCD*; Abras in drugi 2004, 1), ter ga aplicira na ustvarjanje, razvoj in vzdrževanje spletnih mest. Sledi pregled metod za ocenjevanje uporabnosti spletnih mest, pri čemer sta najbolj poudarjeni dve metodi, ki ju avtor uporabi v empiričnem delu magistrskega dela: hevristično ocenjevanje in spletna anketa.

S hevrističnim ocenjevanjem odkrivamo problem spletnih mest preko pregleda enega ali več strokovnjakov, medtem ko s spletno anketo odkrivamo probleme preko vključevanja uporabnikov spletnih mest. V okviru magistrskega dela avtor razišče in predstavi še ostale razlike med metodama.

V empiričnem delu avtor uporabi in primerja ti dve metodi pri ocenjevanju uporabnosti spletnega mesta Chimera Revo. Gre za italijansko spletno mesto, ki ponuja novice o tehnologiji, pametnih telefonih, tablicah, programski opremi, aplikacijah, operacijskih sistemih itd.

Ocenjevanje uporabnosti spletnega mesta Chimera Revo je pokazalo nekatere težave v zvezi z uporabnostjo, ki bi jih bilo potrebno rešiti za to, da bi uporabnikom ponudili boljšo uporabniško izkušnjo. Primerjava obeh metod pri ocenjevanju tega spletnega mesta je pokazala dodatne razlike med tema dvema metodama, tako glede metodologije kot tudi dobljenih rezultatov.

Ključne besede: pristop *User-Centered Design* (UCD); načrtovanje, usmerjeno k uporabniku; metode ocenjevanja uporabnosti; hevristično ocenjevanje; spletna anketa; Chimera Revo.

Website Usability Assessment: Comparison of Methods

This master thesis compares two assessment tools for evaluating website usability.

In the first part of the thesis, the researcher provides a general theoretical overview of *User-Centered Design* (UCD) (Abras et al. 2004, 1), which is applied to the creation, development, implementation and maintenance of websites. Then, an overview is provided of related *usability assessments*, focusing on the two methods used in the empirical part of the study: *heuristic evaluation* and a *web survey*.

Heuristic evaluation uncovers usability issues of a website through inspection by one or more experts, whereas the web survey involves the website users. Within the master thesis, the researcher explores some other aspects that characterize them.

The two methods were compared while assessing *Chimera Revo*, an Italian website dedicated to news related to technology, smartphones, tablets, software, apps, OS (operating systems), etc.

The assessment revealed some usability issues that need to be addressed in order to provide a better user experience. The comparison of the two assessment methods showed some additional different aspects that characterize these two methods, such as the reported results.

Keywords: *User-Centered Design* (UCD) approach; Usability assessment methods; Heuristic evaluation; Web survey; Chimera Revo.

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1 Introduction

Every person with an internet access has a possibility to use websites daily. There are different types of websites with different types of content. For instance, a citizen that needs information about State services can surf dedicated websites and find desired information. However, providing interesting content is insufficient to attract users to a website. In addition to this, usability is an important characteristic of successful websites. In practice, a website might contain useful content, but that is largely irrelevant if visitors find the site difficult to use.

This master thesis assesses the usability of websites, following the *User-Centered Design (UCD)* (Abrams et al. 2004, 1) approach. UCD, when implemented in the product or service development process, helps to develop products and services addressing the users' needs. Related to that, the *usability assessment methods* give the possibility – through an assessment process – to assess the usability of products and services.

The first part of this thesis (chapters 2 and 3) provides a theoretical overview of UCD and describes related *usability assessment methods*. The second part includes an empirical case study with two aims: usability assessment of a particular website (the *Chimera Revo* website, an Italian website dedicated to news related to technology, smartphones, tablets, software, apps, OS (operating systems), etc.) and comparison of two usability assessment methods. The first aim is substantive, relevant for the developers of the Chimera Revo website. The second aim is methodological: heuristic evaluation and the web survey approach are compared as methods for uncovering website usability issues.

The conclusions section presents findings and considerations on the use and comparison of the two assessment methods.

2 User-centered design approach

Producing products and services which meet customers' needs is a hard process. It is expensive and involves a great part of designer's resources.

When this process is successful, users can enjoy products and services with less amount of stress. The words "less amount" suggest that the process of producing products and services is not exhaustive, that it cannot perfectly match all customers' needs. It is a process that – taking into account different factors – allows to create or to modify a product or a service while being aware of users' necessities; but it cannot eliminate every possible deficiency of the product or the service.

For reaching the goal of successful production of products or services, it is possible to use so called User-Centered Design (UCD) (Abrás et al. 2004, 1) approach which "represents the techniques, processes, methods, and procedures for designing usable products and systems, but just as important, it is the philosophy that places the user at the centre of the process" (Rubin and Chisnell 2008, 12).

In this approach, users or customers are not only buyers but they can also be co-designers. They can be part of the design of productive process, giving their support. The approach provides them usable products and services while it gives them also a sense of satisfaction for being part of the process.

In the rest of this section we are giving a theoretical overview of the UCD in general as an approach to design a product or a service. Then, we are going to apply the UCD to the design of websites as the main topic of this master thesis.

2.1 UCD theoretical overview

Donald Norman started to use the term User-Centered Design in the 1980s (Abrás et al. 2004, 1). His advices about the design process of products and services design concerned visual, psychological and structural aspects. According to his philosophy, users need to have the possibility to understand the ongoing process, knowing the state of it, what is possible to do, and how it is possible to reach their objective through the product or service (Abrás et al. 2004, 2).

Continuing on this approach, the scholar later elaborated several guidelines for the design process that put the user into the centre of the process. We summarize some of the guidelines here as reviewed by Abrás et al. (2004, 2–3):

- Create conceptual models which are “mental model(s) that people carry of how something should be done” (Kellingley 2016). Later on, Norman (2007, 75) defined two different mental models:
 - Designer’s model following a belief that every designer has an own “image in the head” of products and services;
 - User’s model following a belief that every user has an own “image in the head” of products and services.
- “Write manuals...[of the products and services]...that are easily understood and that are written before the design is implemented” (Abrams et al. 2004, 2).
- Every task – that users accomplish while using products and services – must be easy to achieve.
- “Make things visible...The user should be able to figure out the use of an object by seeing the right buttons or devices for executing an operation” (Abrams et al. 2004, 3).
- Use graphics to make things understandable.
- The process of reaching objectives – while using products and services – must be clear (using proper advices, alerts, guidelines);
- Consider possible errors that users can commit during the use of products and services. Design products and services while taking into account these possible errors and give users – that commit them – the possibility to repair.
- “When all else fails, standardize. Create an international standard if something cannot be designed without arbitrary mappings” (Abrams et al. 2004, 3).

Norman’s advices help during the design process; nonetheless, according to the UCD approach it is important to support this process with data provided by possible users which can be classified into three categories: primary, secondary and tertiary users (Abrams et al. 2004, 4):

- **Primary users:** users who use the product;
- **Secondary users:** users who occasionally use the artefact or those who use it through an intermediary;
- **Tertiary users:** users who can be affected by the use or are thinking about its acquisition.

The designer needs to understand what kind of users is he/she dealing with and take this into account during the design process; it is important to know who will directly use of the product or service and who through an intermediary; who can be affected by the product or service; who is interested in using it.

There are different ways to involve users in the design of products/services at different steps of the design process (beginning, middle steps or final). In this way they can provide an important support for refining products/services. We present possible techniques, their purposes and when (in which stage of the design cycle) they can be implemented in Table 2.1 (by Abras et al. 2004, 5–6)

Table 2.1 Supportive data collection techniques for UCD.

Technique	Purpose	Stage of the Design Cycle
Background interviews and questionnaires	Collecting data related to the needs and expectations of users; evaluation of design alternatives, prototypes and the final artifact	At the beginning of the design cycle
Sequence of interviews and questionnaires	Collecting data related to the sequence of work to be performed with the artifact	Early in the design cycle
Focus groups	Include a wide range of stakeholders to discuss issues and requirements	Early in the design cycle
On-site observation	Collecting information concerning the environment in which the artifact will be used	Early in the design cycle
Role Playing, walkthroughs, and simulations	Evaluation of alternative designs and gaining additional information about user needs and expectations using prototypes	Early and mid-point in the design cycle
Usability testing	Collecting quantitative data related to measurable usability criteria	Final stage of the design cycle
Interviews and questionnaires	Collecting qualitative data related to user satisfaction with the artifact	Final stage of the design cycle

Source: Abras et al. (2004, 5–6).

To summarize, the use of the UCD approach gives the possibility to develop products/services in a more effective, efficient and safe way while understanding and addressing the customers’ needs, giving them the opportunity to be part of the process, and developing “a sense of ownership” (Abras et al. 2004, 10). This process is expensive, not just in terms of financial resources, but also in terms of needed expertise. In fact, it involves experts from different disciplines and fields that need to cooperate harmonically.

2.2 UCD approach related to the development of websites

A website is a specific type of product or artefact and the principles of the UCD can be applied. As with any product or service, also designing websites can be a hard process and taking into account all possible aspects involved is not easy. According to Calongne (2001, 40–41) the most important aspects of the website that need to be taken into account during the design process are:

- What is the audience or target population? Referring to specific target population, every effort in the design process should address the needs of this specific target population;
- What is the purpose of the website? Referring to the purpose, Calongne (2001, 41) defines four types of website: sites that sell products or services, information sites, entertainment sites, ego-based sites. The choice of a specific category allows to “identif(y) basic goals that need to be met for the website to be successful” (Calongne 2001, 40);
- What is the content of the website? The designer needs to choose the organization of the content, what kind of information is shared, which type of content is shared (images, texts, etc.), in what ways to communicate.

When defining websites audience, it is important to specify that people with disabilities can be part of the target population. In this respect, designers need to develop websites which are highly accessible for people with disabilities. Bernardini et al. (2016) invite to develop websites using a “multimodal approach” that addresses needs of a variety of disabled people (which may not be only the disabilities regarding eyesight which is the most usually addressed disability).

Bevan (1998) provided some guidelines that can help to develop a website using the UCD approach, taking into account the above defined aspects. The guidelines are organized across six aspects of the website development process (see Bevan (1998) for detail):

- **Planning:** it is fundamental to understand the purposes of the website. Furthermore, it is necessary to choose the target population and understand their needs and abilities, to choose the information to share, to define the budget;
- Define **site structure and content:** the designers need to understand how to structure efficiently and effectively the information in ways that can be clearly understandable by users;
- Optimize **support navigation:** the designers need to provide to users information about “where they are and where they can go” (Bevan 1998) (so they can understand the state of the process that they generate). It is important to create an efficient system for searching

information on the website. Users need to be aware about every consequence that an action can generate;

- Optimize **page design**: the designers need to design an usable home page, to not overload the website with heavy graphical content, to optimize the website as regards the speed of interaction and the possible use through different browsers (also browsers used by blind people);
- Use **evaluation methods** for assessing different aspects of the website during the design process. It is important to support the design process using at least three different evaluation methods:
 - *Expert inspection: use a checklist to inspect pages for conformance with house style (consistency of layout) and with recommendations such as those in this paper;*
 - *Early mock-ups: early in design evaluate a partial mock up of the site with representative users performing representative tasks. Use first drafts of screens, either on-line or as colour prints;*
 - *Functional prototypes: Produce a working version of a representative part of the site, taking account of the design principles and evaluation feedback. Evaluate the working version with representative users performing representative tasks (Bevan 1988).*
- Take care of the website through **management and maintenance**: every new part of the website needs to reach the same quality of the already existing parts; it is important to facilitate indexing by search engines (like Google, Bing); plan and review the site structure as it grows; review the users' needs; make sure the site continues to meet the needs.

In the next chapter we are going to focus on the evaluation methods which have been stressed by Bevan (1998) as one of the important aspects of the website development process. We are going to discuss on these methods from a perspective of the usability of websites and related to this, we are going to present various usability assessment methods. Common to the discussion of usability and usability assessment methods is the fact that when latter defining usability, they put the user of the website into the centre of discussion, just as it is advocated by the UCD approach.

3 Usability assessment methods

According to the UCD approach products and services need to address specific customers' necessities. Addressing the customers' needs effectively and efficiently is just one aspect that contributes to the creation of highly valuable products and services. In fact, the other important aspect to consider is to create highly *usable* products and services: "a product or service is truly usable... [if]... the user can do what he or she wants to do the way he or she expects to be able to do it, without hindrance, hesitation, or questions" (Rubin and Chisnell 2008, 4).

There is no unique definition of *usability* of products and services. We have decided to share the point of view of Dumas and Salzman (2006, 110) who define *usability* as "the attribute of a product that makes it easy to understand and use, and that other product attributes – aesthetics, desirability, ability to motivate – combined with individual, contextual, and social factors help to create a user's experience".

Producers and designers need to evaluate the usability of their products and services in order to improve them if necessary. For this purpose, they can use usability assessment methods (Dumas and Salzman 2006). The usability assessment is a complex process that provides substantial insights which help producers and designers to provide highly usable products and services. In this section we first provide an overview of usability assessment methods in general and then present two methods more in detail: heuristic evaluation and web survey.

3.1 Usability assessment methods: general overview

There are various usability assessment methods; each of them belongs to a specific category. It is possible to distinguish between four main categories of usability assessment methods (Dumas and Salzman 2006, 111–132):

1. **Usability testing:** during the performance of this usability assessment method users or potential users perform tasks interacting with the product or service in order to discover product/service usability issues. Usually, the participants are invited by moderators to think aloud during the assessment process in order to collect the majority of data by the user interaction with the product/service. The collected data are then analysed and discovered usability issues and possible recommendations are reported to designers, developers (Dumas and Salzman 2006, 111).

There are three variations of the usability testing: early concept testing, diagnostic testing, benchmark and comparison testing (for details, see Dumas and Salzman 2006, 112–113).

2. **Inspection methods:** the usability assessment methods that belongs to this category can be subcategorized in two subcategories (Dumas and Salzman 2006, 119–121):

- **Expert reviews:** experts, following some guidelines, inspect the product or service in order to discover usability issues. This method includes several variations: heuristic evaluation, team reviews, task-based reviews, user-based reviews, reviews using impact ratio.
- **Walkthroughs:** groups of developers led by an usability expert inspect the product/service while performing tasks. This method includes several variations: cognitive walkthrough, walkthroughs with users.

3. **Surveys, interviews and focus groups:**

- Surveys enable collecting data from users using standardized questionnaires. It is important to design a reliable questionnaire that allows collecting reliable data.
- With interviews we collect data through the in-depth interviews of users. It is important that the interviewer is skilled enough to collect useful data without inhibiting the interviewed.
- Focus groups collect data through with discussion generated in a group of users. It is important that focus groups are conducted by skilled moderators that lead the discussion on the topic avoiding external excursions.

4. **Field methods:** the usability assessment methods that belongs to this category focus on studying the interaction between users and product/service in “real-world contexts” (Dumas and Salzman 2006, 127). There are seven common variations of these methods: contextual inquiry, ethnographic interviews, ethnographic field studies, evaluative field studies, beta field studies, longitudinal panel studies, discount field studies.

3.2 Usability assessment methods: overview of methods used in the empirical study

The primary objective of this master thesis project is to compare two usability assessment methods while assessing the usability of the Chimera Revo website (www.chimerarevo.com): *heuristic evaluation* and *web survey*.

In the next paragraphs, the researcher will provide overviews of the used usability assessment methods that will help to understand the entire process of the usability assessment performed on the Chimera Revo website.

3.2.1 Heuristic evaluation

The *heuristic evaluation* is a type of expert review which is one of the two inspection methods (in addition to walkthroughs) used for the usability assessment (Dumas and Salzman 2006). We speak about *inspection methods* when professionals use some guidelines and checklists to evaluate the usability of products and systems. In *expert reviews* individual specialists inspect a user interface while in *walkthroughs* small teams of developers led by a usability specialist use a group process to explore how tasks are performed (Dumas and Salzman 2006, 118).

The expert reviews are thus usability assessment methods that focus on the inspection of products/services performed by experts while following specific usability guidelines. This method includes several variations: heuristic evaluation, team reviews, task-based reviews, user-based reviews, reviews using impact ratio. We are going to further describe the heuristic evaluation which we used in the empirical study.

The heuristic evaluation is a variation of expert reviews “in which a small set of heuristics – typically about 10 – is used by a usability specialist to identify and classify usability issues” (Dumas and Salzman 2006, 119). As an example of heuristics we can quote Nielsen’s (1994, 30) example of a heuristic: “Visibility of system status. The system should always keep users informed about what is going on, through appropriate feedback within a reasonable time”.

Heuristics are thus some recognized usability principles that describe common properties of usable interfaces (Nielsen 1994, 26–28). Of course, the use of certain heuristics does not preclude the use of other principles that can help the evaluator during the usability assessment process if they are important for the usability assessment evaluation of particular elements of a product or service (Nielsen 1994, 28–29).

The heuristic evaluation is sometimes considered a “discount” method (Nielsen 1994, 25), in terms of costs and time in comparison to other methods. Its main objective is to discover the usability issues of a product or a service while providing a list of them as results. However, it does not provide design suggestions as results of the usability assessment. The heuristic evaluation and usability assessment methods in general can provide results in the form of design suggestions only if the evaluators and the observers have the possibility to discuss with the designers. The main topic of the discussion must

be the design of the product in terms of usability issues' resolution. Only through the interaction between evaluators and designers it is possible to provide results in the form of design suggestions.

The heuristic evaluation can support the product development process from the first stages of it. In fact, it is possible to perform heuristic evaluations on paper prototypes of the product.

An important characteristic of the heuristic evaluations is that they are always performed by people with training and experience in human factors/ergonomics or usability evaluation (Dumas and Salzman 2006, 119). One of the questions related to this is how many of such experts are needed.

The heuristic evaluation performed by a single expert cannot uncover all issues related to the usability of products and services. For ensuring reliable results, Nielsen (1994, 26) recommends to involve three to five evaluators. The involvement of more than one expert ensures that the majority of usability issues of products and services will be discovered. Every expert has the capacity to uncover usability issues of a product, but not all evaluators uncover the same usability issues. This characteristic of the experts is the reason of the necessity of involving not just one, but a group of experts.

The procedure of the usability assessment process using heuristic evaluation is the following (Nielsen 1994, 26–27): every expert examines the product or service taking into account the heuristics. At the end of the usability assessment process, every expert provides the results. The results of the group of evaluators are aggregated and provided as written reports or verbally reported to an observer during the usability assessment process. The reports are aggregated by an evaluation manager. Within this procedure, Nielsen (1994, 29) suggests that the experts go through the product, interacting with it, at least two times: the first time for becoming familiar with the product, the second time for focusing on the various elements of the product.

The result of the heuristic evaluation process is a list of usability issues. For each of them a reference to usability principles that were violated by the design should be given by evaluators (Nielsen 1994, 31). In this list every usability issue must be listed separately. Listing each usability issues separately has two reasons (Nielsen 1994, 31):

1. Avoid the repetition of usability issues related to a product element. In fact, knowing all the usability issues that affects a single element allows the designers to fix all of them, without reiteration.

2. Fix the most part of the usability issues related to a product element. In fact, sometimes it is not possible to fix all the usability issues that affect a single element, but it is possible to fix the most part of them when all are known.

3.2.2 Survey questionnaire

In usability assessment surveys are used for collecting data using standardized questionnaires from big samples of users for discovering usability issues related to products or services. The questionnaires used for the usability assessment can be categorized in two categories (Dumas and Salzman 2006, 124):

1. **Short questionnaires:** questionnaires that allow to collect data about “users’ subjective reactions” (Dumas and Salzman 2006, 124) while using a specific product/service.
2. **Longer questionnaires:** questionnaires that allow to collect data about users’ experience. These questionnaires include subscales that are used for evaluating different usability aspects.

In this master thesis we focus on the use of one variation of the surveys as regards the survey mode: *web surveys*. In accordance with Callegaro, Lozar Manfreda and Vehovar (2015, 4), we define web surveys as surveys using computerized self-administered questionnaires, stored on a specific computer connected to the internet (i.e. server), which respondents access via web browser.

The respondents can use different devices for answering to the questionnaire (personal computers, smartphones, tablets, etc.). While answering, the respondents interact with the questionnaire through different input devices such as keyboards, mouse, touch screens, etc. The gathered data are stored on the server and are immediately usable by the researchers.

This type of surveys can be used in different fields of research for different objectives (Callegaro et al. 2015, 23). In this master thesis a web survey is used for the usability assessment of a website involving the users. In this case, the focus of the web surveys is to discover usability issues through the collection of data related to the users’ experience. There are different types of measurement instruments that can be used for this purpose. In this case, the researcher decided to use *WAMMI* (Website Analysis and MeasureMent Inventory), a measurement instrument developed within the project founded by Nigel Claridge and Dr. Jurek Kirakowski that provides a service able to assess efficiently and effectively websites (Wammi 2016).

In this section on web surveys as usability assessment methods we are going to further present some of the relevant issues of this method: coverage issues, sampling aspects, recruitment possibilities and

questionnaire design, including the already mentioned WAMMI measurement instrument. We conclude the section with a short discussion of advantages and disadvantages of this method.

3.2.2.1 Coverage issues

Web surveys are affected by issues related to the coverage of a target population (Lozar Manfreda and Vehovar 2009, 269).

The severity of the coverage issue depends on the target population of the web survey:

- The most severe coverage problem occurs in web surveys targeted to the general population, including internet users and non-users. In this case, it is usually not possible to infer to the entire target population since a part of the target population (i.e. internet non-users) cannot be reached with a web survey.
- Less severe, but still important is the coverage problem in web surveys of internet users in general. Also in this case, it is usually not possible to reach every internet user due to the lack of contact information what makes difficult the process of inference.
- The least severe is the coverage problem in web surveys of specialized high-coverage internet populations. If a good sampling frame is available, the coverage problem may be non-existent or minimal.

Web surveys used in the usability assessment of websites do not suffer from coverage error (type three above) if a good sampling frame of (registered) website users, with contact information, is available. If this is not the case, special recruitment approaches are used for the invitation to the web survey to reach the largest part of users as possible, as explained in Section 3.2.2.3.

3.2.2.2 Sampling issues

Web surveys can be divided into two categories (Lozar Manfreda and Vehovar 2009, 265):

- **Probability web surveys:** web surveys that allow inferring to the target population;
- **Nonprobability web surveys:** web surveys that do not allow inferring to the target population.

The first category includes (Lozar Manfreda and Vehovar 2009, 265–266):

- **List-based surveys of high-coverage populations:** surveys that are based on a list of members that cover the majority of the target population.

- **Surveys on probability pre–recruited lists or panels of Internet users:** surveys that are based on lists of participants that were pre–recruited using some probability sampling method.
- **Surveys on probability panels of the general population:** surveys implemented on probability panel samples of a general population that received devices for participating in web surveys.
- **Mixed–mode surveys:** Surveys where different survey modes are used on a probability sample and one part of the sample answers a web survey.
- Web surveys that use systematic sampling while intercepting users of websites. This type of web surveys is called **intercept surveys**.

The second category includes (Lozar Manfreda and Vehovar 2009, 266–267):

- **Web surveys using volunteer opt–in panel:** web surveys that are implemented on samples taken from large databases of voluntary participants.
- **Web surveys using purchased lists:** web surveys that are implemented on samples of participants provided by some commercial provider.
- **Unrestricted self–selected web surveys:** web surveys that are open to any possible participant. Usually, the researchers invite the participants through invitations published on websites, forums, etc.
- **Online polls:** web surveys that are open to any possible participant. Their main goal is to entertain and stimulate discussions on forums.

Web surveys used for usability assessment may be probability list–based web surveys of highly–covered population when a good sampling frame of (registered) website users is available. If this is not the case, they may be probability intercept surveys with invitations shown to a systematic sample of visitors or non–probability unrestricted self–selected web surveys with variety of recruitment channels and open to all. The web survey used in the empirical part of this thesis is of the third kind mentioned.

According to the sampling theory, large sample size decreases sampling variance and thus decreases the sampling error (Groves et al., 2009). Although the sufficient sample size depends on many factors, samples sizes in surveys are usually rather large and small sample sizes are considered a limitation in the quality of data. However, for website usability assessment, Dumas and Salzman (2006, 126) assert, through a comparison of studies about the reliability of different questionnaires, that a sufficient sample size for a usability assessment survey is composed already by 10 up to 12

participants. This finding tells us that for discovering the majority of the usability issues of products or services using a survey it is not necessary to have a huge sample size.

3.2.2.3 Recruitment process

For recruiting participants in web surveys it is important to create appropriate invitations that can stimulate them to participate. The recruitment options depend on the availability of a sampling list and members' contact information.

When the researchers do not have a list of contacts of possible participants, they need to create *general invitations* (Lozar Manfreda and Vehovar 2009, 270). These general invitations can be sent through email (using public e-mail lists), published in journals, on websites, forums. In this case it is important where the invitation is published. A highly visited website can be a right place to publish an invitation, but it is important also to choose the website that is visited by the target population of interest.

When the researchers have a reliable list of contacts of possible participants, they can send *individual invitations* such as pre-notifications, main invitations and reminders (follow-ups) (Lozar Manfreda and Vehovar 2009, 270–271). The prenotification will inform the participants about the incoming survey while stressing the importance of participation. This strategy increases the response rate (Callegaro et al., 2015, 153). The main survey invitation introduces the participants to the survey and give them all the information about the research process. Finally, reminders or follow-up contacts are used for nonrespondents in order to decrease nonresponse.

Namely, the survey process can be affected by nonresponse. In fact, it is always possible that the participants contacted do not answer to the invitations at all or start to answer the questionnaire but leave it during the process, providing a partially empty questionnaire. Using reminders is one possibility for decreasing the nonresponse.

Another procedure that can stimulate the participants is to provide them money incentives or other kind of benefit (e.g. lottery, vouchers, gifts) (Lozar Manfreda and Vehovar 2009, 275). Regarding this, it is important to remember that incentives can increase the cost of the survey and not all them can be used in all cases. For example, there are some countries that do not allow money incentives and lottery in surveys (Lozar Manfreda and Vehovar 2009, 275).

In the web survey presented in the empirical part of the thesis, general invitations to website users were created since a list of users with contact information was not available. These invitations were published using various channels as explained in detail later.

3.2.2.4 Questionnaire: WAMMI

Designing a questionnaire for a web survey requires substantive and methodological knowledge. In the latter case, the researcher needs to consider that the questionnaires for web surveys must take into account some special characteristics of internet users such as the fact that they might not read online text carefully, they might scan the online text and they might not like to spend much time on the questionnaire (Lozar Manfreda and Vehovar 2009, 276). It is thus suggested to create a questionnaire layout that motivates the respondents (Lozar Manfreda and Vehovar 2009, 276).

In this section we are not going to describe the possibilities of the web survey questionnaire design from the methodological point of view. The interested reader can refer to Callegaro et al. (2015), Couper (2008), Dillman et al. (2014). Rather, we are going to describe a questionnaire from the substantive point of view, as a special measurement instrument that is used in surveys for website usability assessment.

In the specific case, the researcher used the WAMMI questionnaire as measurement instrument in the web survey for the website usability assessment. In this section we are going to describe the WAMMI aspects related to the creation of factors for evaluating websites usability; for further information, the interested reader can refer to Kirakowski et al. (1998) and Wammi (2016).

The core of the WAMMI questionnaire is composed of 20 statements. These statements allow creating reliable indexes (factors) related to different usability aspects of a website (Wammi 2016):

1. **Attractiveness:** *An Attractive site is visually pleasant, and...offers...[content which is]...of direct interest to the respondents, whether it be functionality or information.*
2. **Controllability:** *If a site scores well on Controllability the respondents most probably feel they can navigate around it with ease and do the things they want to do. Poor [score] usually means a poorly organised site that disrupts the way they normally expect to do things.*
3. **Efficiency:** *When respondents give a high Efficiency rating they feel they can quickly locate and do what is of interest to them in an effective and economical manner. They feel that the web site responds (possibly, the pages load) at a reasonable speed.*

4. **Helpfulness:** *A site which is high on Helpfulness corresponds with the respondents' expectations about its content and structure. A site low on Helpfulness can be misleading about its layout and content.*
5. **Learnability:** *When Learnability is high, respondents feel they are able to start using the site with the minimum of introductions. Everything is easy to understand from the start. When Learnability is low, respondents feel that the site may be using concepts or terminology which are unfamiliar. More explanations are needed.*
6. **Global Usability Score (GUS):** *Global Usability centres around the concepts that a site must make it easy for respondents to access what they need or want from the site, that there is a good, understandable level of organisation, and that the site 'speaks the respondents language' and meets their expectations. This factor is composed by all 20 statements (variables).*

These factors can be defined as “latent variables” (Wammi 2016) and come out through the data analysis as explained in detail in Section 4.4.2.

The WAMMI questionnaire gives the possibility to benchmark websites in accordance to the website users' experience and collect useful insights that help to improve websites.

3.2.2.5 Advantage and disadvantage of web surveys in comparison to other survey modes

The use of web surveys has different advantages over the other survey modes. The main advantage of using the web surveys is the reduction of costs. With the help of new technologies it is easy to reach possible respondents, there is no need to contact them through telephone or mail, but rather through inexpensive email, websites, social media, online forums. In addition to the reduction of costs, the use of these technologies allows to reach respondents with no geographical limitations.

This self-administered survey mode increases the quality of data because there is no interviewer who could affect the respondents' answers. Furthermore, the data and paradata are gathered and immediately available for the analysis.

Last but not least, web questionnaire software tools offer a lot of possibilities of questionnaire visual design.

The main disadvantages of the web surveys are related to:

- The already mentioned problem of coverage;
- The high nonresponse rate.

As discussed in Sections 3.2.2.1 and 3.2.2.3, even if noncoverage and nonresponse issues affect the web survey method, there are some solutions to these problems, such as weighting procedures and using different strategies for increasing the coverage of the target population and the response rate.

4 Case study: comparison of a heuristic evaluation and a web survey while assessing usability of Chimera Revo website

The main objective of this master thesis is to use and to compare two different usability assessment methods (a heuristic evaluation and a web survey) while assessing the usability of a selected website. The researcher has decided to evaluate the usability of the Chimera Revo website (www.chimerarevo.com). Chimera Revo is an Italian website dedicated to news related to technology, smartphones, tablets, software, apps, OS, etc. The website provides reviews of products, software, guidelines about them and commercial offers.

The Chimera Revo project started on December 27th, 2009 by Gaetano Abatemarco who is the unique owner and administrator of the website. Gaetano Abatemarco created this project following his passion for technology. In July 2015, he decided to turn the project into a real job and created a dedicated legal entity.

The target population of this project is very variable; it addresses the needs of technology expert users but also technology newbies.

The website is highly visited. In June 2016, it was visited by 1.553.986 unique visitors. In addition to the interesting content, this may be a result of the fact that it is possible to follow the project through its official social media channels (Facebook, Google+, Twitter, YouTube, Instagram, Telegram) and feed RSS.

This chapter is composed of four main sections. First, we report on the interview with the Chimera Revo founder what gives background information on the whole project and the aim of this study. In the second part we describe the website homepage as needed to understand the usability assessment reports which are given in the third and the fourth part. These include the results of a heuristic evaluation performed by the researcher and a web survey among website users.

In the empirical part of the master thesis the researcher intends to answer following research questions related to the usability assessment of the website:

- According to Nielsen's (2002) heuristics, is the Chimera Revo website affected by usability problems?
- Is the Chimera Revo website usable in an efficient and effective way by its users?

- What are the differences between two usability assessment methods: the heuristic evaluation and the web survey?

In this chapter we are mainly going to focus on the first two substantive questions. The third – which is a methodological one – will be addressed in the concluding chapter.

4.1 About Chimera Revo: an interview with the owner, founder and administrator of Chimera Revo

For introducing the case study and setting the objectives of the usability assessment of the Chimera Revo website, the researcher interviewed the owner, founder and administrator of the Chimera Revo project Mr Gaetano Abatemarco. The interview took place on July 18th, 2016 using Zoom session via internet¹.

During the interview, the researcher and the interviewee discussed the Chimera Revo project, its target population, content, the renovation process that the project had gone through and expectations about the usability assessment conducted by the researcher.

4.1.1 Role of people behind Chimera Revo website

Abatemarco is the founder, owner and administrator of the Chimera Revo project. The project was born on December 27th, 2009, following the passion for technology of its founder. The founder, after few years of running the project as a hobby, decided to turn it into a real job, giving it a legal entity, in July 2015.

Abatemarco is unique administrator of the project. His main responsibilities are:

- Manage the Chimera Revo project;
- Decide on the topics of the published articles;
- Write articles;
- Supervise the work of the team;
- Check the articles before the publication;
- Manage sponsorships by other companies.

¹Zoom. 2016. Available at: <https://zoom.us/> (22 August, 2016).

Abatemarco is supported by a team. The core of the team is composed by two payed contributors and editors, Jessica Lambiase and Giuseppe Fabio Testa, while the other contributors – that vary over time – voluntary support the project.

4.1.2 Objectives and content of the Chimera Revo project

The main objective of the Chimera Revo team is to provide information about technology. The treated topics refer to: informatics, electronics, gadgets, OS (example: Linux, Android), etc. The team wants to provide information which is not provided by other competitors and thus become a main point of reference for the Italian audience interested in these topics. In addition, it heads to provide content of high quality while carefully choosing topics to treat.

The target population of the project is very variable. It is intended for expert technology users and newbies while providing different types of content. Thus, on the Chimera Revo website, it is possible to find information about various topics, including information on complex, niche issues. In any case, the content is structured for being highly understandable by the most general audience. Through the use of an highly understandable language, the team tries to involve the newbies, trying to help them to gain knowledge. Namely, they follow the rule that the content must be highly understandable. For this purpose, the team avoids the use of difficult or too technical terminology that can be less understandable, unless their use is really necessary. The team uses this shrewdness for increasing the understandability of the provided content.

As said, the Chimera Revo team provides content of different kind. The majority of the treated topics refer to:

- Official and truthful news;
- Reviews of software, smartphones, tablets, apps, gadget, etc;
- Guides about software, apps, etc;
- Feature articles.

During the process of creation of the content and writing texts, the team follows three main guidelines:

- Every author has the possibility to structure the text according to his/her writing style, but it must be well formatted;
- The text needs to be written grammatically correct;
- The text needs to be as much as possible exhaustive as regards the treated topic.

The team follows these simple guidelines while providing content of high quality. A typical way to do is that, often, the team reviews its previous provided content and tries to improve it for increasing its value.

4.1.3 The Chimera Revo renovation process

Recently the Chimera Revo project went through a renovation process that ended in June 2016. The main persons involved in this process were the founder Abatemarco and his friend and developer Simone Bisogno. The renovation process was done in two main steps:

- **First step:** June to October 2015. During this step, the structure of a new Chimera Revo website was created. A layout, inspired by paper journals, was implemented.
- **Second step:** February to June 2016. During this step, the previous structure and layout of the Chimera Revo website (created during the first step of the renovation process) were totally remade. The team created a new HTML structure of the website and a new layout.

The main reasons, that led to the renovation of the previous website, were:

- The necessity to simplify the structure and the layout of the website;
- The necessity to make the website more user friendly;
- The necessity to make the website more mobile friendly, creating a responsive website able to adapt to any device;
- The necessity to improve the graphics.

During the renovation process, the developers did not consider any theoretical guidelines on the design of highly usable, efficient and effective websites. They used their own ideas, taking inspiration from websites such as *The Verge* (www.theverge.com), *The Next Web* (www.thenextweb.com) and *TechCrunch* (www.techcrunch.com). The only guidelines that they followed during the development process were related to efficient and effective implementation of elements allowing promoting the website using the *SEO* (Search Engine Optimization) (Guida di Search Console).

During the process, the founder considered also the possibility to create a usable, efficient, effective website that could address the needs of people affected by disabilities. This consideration did not lead to the creation of a website layout that could address needs of people affected by disabilities. At that moment the team realized that they were not able to create a dedicated website layout that would follow the guidelines of the *Fondazione SInAPsi*, a foundation that is dedicated to the support of

people with various disabilities located in Cava de' Tirreni (www.fondazioneinapsi.it/index.php), Anyway, Abatemarco has the intention to develop a layout that would allow using the Chimera Revo website to people affected by disabilities in the future.

Main costs of the renovation process were related to the purchase of a dedicated server and *SSL* (Secure Sockets Layer) security protocols². These purchases were necessary to improve the velocity of the website and to protect it by possible hacker attacks.

At the end of the development process, the two developers tried to gather feedbacks from other member of the Chimera Revo team, friends and commercial partners. More precisely, they performed some activities that can count as an informal usability testing (see Section 3.1). They asked members of the Chimera Revo team, friends and commercial partners to use the new website and try to find some specific information. Through this, the developers were able to improve some elements of the website for which they thought had been well implemented. For example, they received some feedback about the website features concerning coupons elements and through this feedback they had the opportunity to improve these elements. The developers concluded that – although this usability assessment process was informal – it gave them a few good insights.

To summarize, during the website design and renovation process the developers tried to create a high usable website while avoiding the use of complex graphics, implementing well the main structure of the website and structure the website elements in a way that enable the users to perform desired tasks easily. Generally, the founder is satisfied with the new Chimera Revo website.

4.1.4 Expectations related to formal usability assessment

As said, the Chimera Revo team has never performed formal usability assessment processes on the website. However, despite their relative satisfaction with the website, the founder recognised the importance of formal usability assessment. Thus he has decided to collaborate with the researcher. In this respect, he does not expect the usability assessment process to discover many serious problems, although he hopes to get some useful insights that can help the team to improve the project further.

²*OpenSSL*. 2016. Available at: <https://www.openssl.org/> (17 July, 2016).

4.2 Overview of the Chimera Revo website


Before presenting methodology and findings of the usability assessment process of the Chimera Revo website the researcher will provide a description of the website homepage. The description is given following the guidelines for the content analysis of websites of Agnese Vardanega (2011), associated Professor at the University of Teramo who specializes in this field. The researcher successfully used these guidelines in his previous master thesis *Comunicare il pubblico: Analisi dei flussi comunicativi fra Dipartimenti, Ministeri Italiani e cittadini in Rete* (Iannone, 2015). For this reason, the researcher has decided to use these guidelines again.

Figure 4.1 Chimera Revo homepage part 1.

The screenshot displays the Chimera Revo website homepage. At the top, there is a navigation bar with links for 'News', 'Schede Tecniche', 'Video', 'Recensioni', and 'Offerte'. A search icon is located on the right. Below the navigation bar, the main content area is divided into several sections. On the left, a large banner features a blue smartphone with the text 'UMi Super Euro Edition è ufficiale. Ed è blu!'. To the right, another banner shows a man smiling with the text 'Aiutateci a migliorare il vostro Chimera Revo'. Below these banners, there are four utility tool buttons: 'Modelli gratuiti di curriculum vitae', 'Esempi gratuiti di curriculum vitae', 'Formattazione gratuita di curriculum vitae', and 'CV Builder gratuito'. A 'Trends' section below the tools lists 'POKÉMON GO' and 'MIGLIORI SMARTPHONE'. At the bottom, there are two more sections: 'News' with a video player for 'Nuova NVIDIA Titan X: 1200 € di pura potenza' dated '22 LUGLIO 2016', and 'Offerta in evidenza' featuring a smartphone and a discount code 'ZUKZ2GB' for 'ZUK Z2 64GB SU GEARBEST'.


Source: Chimera Revo (2016).

Figure 4.2 Chimera Revo homepage part 2.



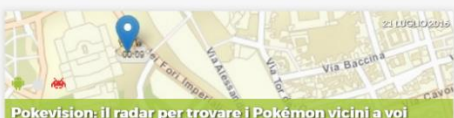
22 LUGLIO 2016

App scommesse: le migliori per Android




21 LUGLIO 2016

Trovare file e cartelle di grandi dimensioni in Linux




21 LUGLIO 2016

Pokevision: il radar per trovare i Pokémon vicini a voi




21 LUGLIO 2016

DAB: la radio digitale che vuole mandare in pensione la radio FM




21 LUGLIO 2016

Bluetooth Keyboard
FOR IOS / Windows / Android
iClever IC-BK04 keyboard: tastiera Bluetooth per tablet




21 LUGLIO 2016

Come togliere 'Mi piace' dalle pagine Facebook



21 LUGLIO 2016

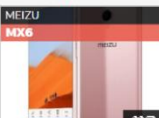





Offerte eBay su tanti prodotti hi-tech dal 21 al 28 luglio








21 LUGLIO 2016


Il menu Start di Windows 10 non funziona? Ecco una soluzione

Ultimi prodotti

 MEIZU MX6	 LENOVO IDEAPAD MIIX 700 BUSINESS EDITION
 HUAWEI HONOR 8	 UMI LONDON
 LG X POWER	 HP CHROMEBOOK 11 G5


Ultime offerte

 Codice sconto 8€ per Xiaomi Redmi 3 Pro su Gearbest	COUPON 8€ XIAOMIREDD
 Codice sconto 22€ per ZUK Z2 64GB su Gearbest	COUPON 0€ ZUKZ2GB
 Codice sconto 20% per Inateck USB 3.0 Custodia per Hard Drive Disk su Amazon	COUPON 20€ PPAPADAM
 Codice sconto 15% per Inateck FE2010 Case Esterno SSD su Amazon	COUPON 15€ ZDFKE19Y
 Codice sconto 15% per Inateck USB 3.0 HDD docking station su Amazon	COUPON 15€ WTBLK5GR




21 LUGLIO 2016

Addio per sempre ai videoregistratori: la fine di un'era




21 LUGLIO 2016

Scheda di rete wireless (PCI o PCIe): guida all'acquisto




21 LUGLIO 2016

Come riutilizzare un vecchio smartphone



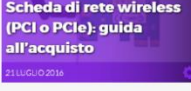
21 LUGLIO 2016

Corning presenta Gorilla Glass 5




21 LUGLIO 2016

KickassTorrents è stato chiuso: arrestato il presunto fondatore




21 LUGLIO 2016

Creare e stampare foto tessere: migliori programmi e servizi




21 LUGLIO 2016

Firefox inizierà a bloccare Flash da agosto



21 LUGLIO 2016

DLNA su Android: guida completa



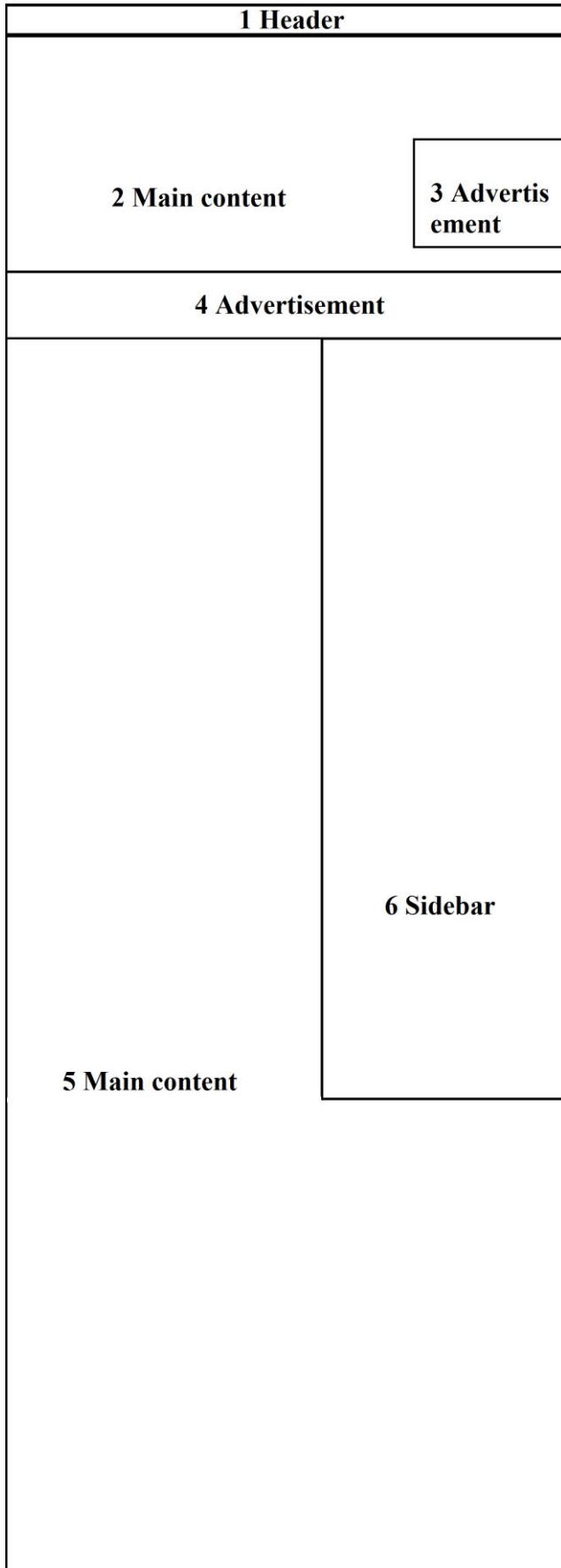
20 LUGLIO 2016

TinyDeal, come acquistare dalla warehouse in Germania

Source: Chimera Revo (2016).

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Figure 4.3 Chimera Revo homepage scheme.



Figures 4.1 and 4.2 present a screenshot of the homepage of the Chimera Revo website taken on July 22nd, 2016. Figure 4.3 presents the scheme of the website homepage.

The website homepage is composed by six main sections: a header, two sections dedicated to main content, two sections dedicated to advertisement, and a sidebar. Below, we describe every section in detail.

4.2.1 Header of the Chimera Revo website

The header of the Chimera Revo website homepage is composed of two main sections.

Figure 4.4 First section of the Chimera Revo website header.



Source: Chimera Revo (2016).

The first section (see Figure 4.4) of the homepage header is divided in two subsections:

1. **Social bookmark subsection:** this subsection is located on the left part of the section. It is dedicated to social bookmarks (links to social media) of the official social media channels (Facebook, Google+, Twitter, YouTube, Instagram, Telegram) of Chimera Revo and to a link to the feed RSS of the website.
2. **Identity and communication subsection:** this subsection is located on the right part of the section. It provides links to two sections of the website and one external link to another website :
 - **Chi siamo** (Engl. About): this section of the website is dedicated to a description of the Chimera Revo project, objectives that the team pursues through it, information about shared content, legal information about the project itself. This section provides also information about the target population of the project.
 - **Contattaci** (Engl. Contact): this section of the website includes contacts of editorial staff and of an advertisement manager. The editorial staff, through this section, provides also legal information about the Chimera Revo project and invites users to collaborate with the project team. Furthermore, this section provides information about the target population of the project.
 - **Privacy policy:** this is not a section of the Chimera Revo website but it is a link to the webpage of *Iubenda* website (www.iubenda.com) where information about the project

privacy policies is located. Iubenda is a service that allows users to create privacy policies webpages easily³. In fact, the Chimera Revo team uses this service for providing information about data gathered through the website and their use.

Figure 4.5 Second section of the Chimera Revo website header.



Source: Chimera Revo (2016).

The second section (see Figure 4.5) of the homepage header is composed by a navigation bar of the website. It is divided in two subsections:

- 1. Website logo and website sections subsection:** this subsection is located on the left part of the section. It is composed by:
 - **Chimera Revo logo:** the logo represents two stylized letters, C and R. The colour of the logo is white. It is a direct link to the homepage of the website.
 - **Website sections:** the navigation bar allows the possibility to navigate through the main sections of the website:
 - **News:** this text is a direct link to the homepage, where the main website content is provided.
 - **Schede Tecniche** (Engl. Technical Specifications): this link leads to the section dedicated to specifics of different devices such as smartphones, tablets, notebook, etc.
 - **Video:** this link leads to the section dedicated to videos shared by Chimera Revo YouTube channel and other sources.
 - **Recensioni** (Engl. Reviews): this link leads to the section dedicated to Chimera Revo reviews about gadgets, devices, apps, etc.
 - **Offerte** (Engl. Offers): this link leads to the section dedicated to commercial offers of gadget, devices, etc.
- 2. Search tool subsection:** this subsection is composed by a search tool of the Chimera Revo website. It allows searching information on the website and is located on the right part of the navigation bar.

³Iubenda. 2016. Available at: <http://www.iubenda.com/it> (27 July, 2016).

4.2.2 Main content and advertisement sections of Chimera Revo website

The Chimera Revo website homepage includes two sections for the main content.

Figure 4.6 First section of Chimera Revo website dedicated to the main content.



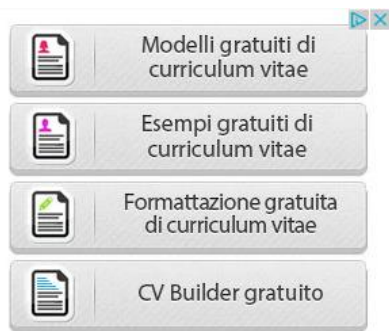
Source: Chimera Revo (2016).

The first section (see Figure 4.6) of the website homepage dedicated to the main content includes:

- Three banners that are links to three different articles. They can be the latest ones shared or chosen by the editorial staff.
- Two links to two topics that are salient (hot) during the period. These topics are chosen by the editorial staff.

In addition, as seen in the Figure 4.6, there is a section dedicated to an advertisement banner (see Figure 4.7 for an enlarged picture) that shows ads provided by a third service (Clickio).

Figure 4.7 First section of Chimera Revo website dedicated to advertisement.



Source: Chimera Revo (2016).

Below the first main content section and the first advertisement section, the website homepage includes a second advertisement section dedicated to ads (see Figure 4.8). It is composed by a banner managed by the dedicated third service Clickio.

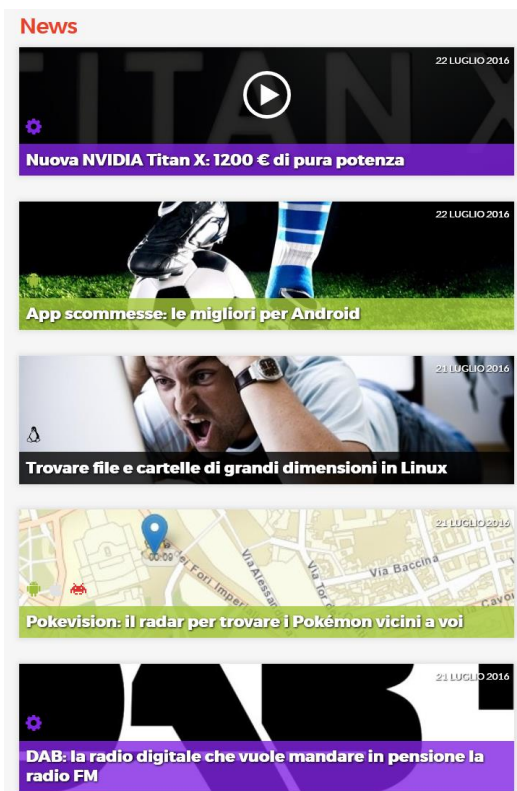
Figure 4.8 Second section of Chimera Revo website dedicate to advertisement.



Source: Chimera Revo (2016).

The Chimera Revo website homepage includes two other sections: the second Chimera Revo section dedicated to the main content and a sidebar. Here, we describe the second section (see Figures 4.9 and 4.10) dedicated to the main content, while the sidebar is described later. The second section of the main content is dedicated to articles, including news, products guides, products reviews, video. This section has the particularity to show a preview of the articles as single banners that includes a preview image and the title of the article.

Figure 4.9 Second section of Chimera Revo website dedicated to the main content part 1.



Source: Chimera Revo (2016).

Figure 4.10 Second section of Chimera Revo website dedicated to the main content part 2.

The image displays a grid of 13 article teasers from the Chimera Revo website. Each teaser consists of a small image, a title, a date, and a small icon. The teasers are as follows:

- Bluetooth Keyboard** (FOR IOS / Windows / Android) - IC-BK04 - 21 LUGLIO 2016 - iClever logo. Title: **iClever IC-BK04 keyboard: tastiera Bluetooth per tablet**
- 21 LUGLIO 2016 - Facebook logo. Title: **Come togliere 'Mi piace' dalle pagine Facebook**
- 21 LUGLIO 2016 - eBay logo. Title: **Offerte eBay su tanti prodotti hi-tech dal 21 al 28 luglio**
- 21 LUGLIO 2016 - Windows logo. Title: **Il menu Start di Windows 10 non funziona? Ecco una soluzione**
- 21 LUGLIO 2016 - Video recorder. Title: **Addio per sempre ai videoregistratori: la fine di un'era**
- 21 LUGLIO 2016 - Wireless network card. Title: **Scheda di rete wireless (PCI o PCIe): guida all'acquisto**
- 21 LUGLIO 2016 - Smartphones. Title: **Come riutilizzare un vecchio smartphone**
- 21 LUGLIO 2016 - Corning Gorilla Glass 5. Title: **Corning presenta Gorilla Glass 5**
- 21 LUGLIO 2016 - KickassTorrents logo. Title: **KickassTorrents è stato chiuso: arrestato il presunto fondatore**
- 21 LUGLIO 2016 - Photo printing. Title: **Creare e stampare foto tessere: migliori programmi e servizi**
- 21 LUGLIO 2016 - Firefox logo. Title: **Firefox inizierà a bloccare Flash da agosto**
- 21 LUGLIO 2016 - DLNA logo. Title: **DLNA su Android: guida completa**
- 20 LUGLIO 2016 - TinyDeal logo. Title: **TinyDeal, come acquistare dalla warehouse in Germania**

Source: Chimera Revo (2016).

4.2.3 Chimera Revo website sidebar

The last section of the website homepage includes a sidebar (see Figure 4.11) which is composed of three subsection:

- **Offerta in evidenza** (Engl. Main offer): this sidebar subsection is composed by a banner, provided by the Chimera Revo editorial staff, that is a link to a commercial offer that is particularly advantageous.
- **Ultimi prodotti** (Engl. Last products): this sidebar subsection is composed by banners that are links to latest product specifics shared by the Chimera Revo editorial staff.
- **Ultime offerte** (Engl. Last offers): this sidebar subsection is composed by latest shared commercial offers.

Figure 4.11 Chimera Revo website sidebar.

The screenshot displays the Chimera Revo website sidebar with the following content:

- Offerta in evidenza:** A banner for a 22€ discount on the ZUK Z2 64GB SU GEARBEST with coupon code ZUKZ2GB.
- Ultimi prodotti:** A grid of six product banners: MEIZU MX6, IDEAPAD MIIX 700 BUSINESS EDITION LENOVO, HUAWEI HONOR 8, UMI LONDON, LG X POWER, and HP CHROMEBOOK 11 G5.
- Ultime offerte:** A list of five offers with coupon codes:
 - Xiaomi Redmi 3 Pro su Gearbest: 8€ discount, coupon XIAOMIRED.
 - ZUK Z2 64GB su Gearbest: 22€ discount, coupon ZUKZ2GB.
 - Inateck USB 3.0 Custodia per Hard Drive. Disk su Amazon: 20% discount, coupon PPKXPX3XM.
 - Inateck FE2010 Case Esterno SSD su Amazon: 15% discount, coupon ZDFKE-TVY.
 - Inateck USB 3.0 HDD docking station su Amazon: 15% discount, coupon WTBKXSGR.

Source: Chimera Revo (2016).

4.3 Usability assessment of the Chimera Revo website I: Heuristic evaluation

In Sections 4.3 and 4.4 we present methodology and results of the usability assessment process that the researcher performed using two different usability assessment methods: a heuristic evaluation (Section 4.3) and a web survey (Section 4.4).

4.3.1 Methodology of the heuristic evaluation

The researcher inspected the Chimera Revo website homepage in accordance with ten guidelines provided by Nielsen (2002) about the homepage usability. These ten guidelines present the heuristic used for the heuristic evaluation. They were chosen because, according to Nielsen (2002), these are ten most important aspects that can increase the homepage usability and the website's business value (Nielsen 2002). It is important to remember that other usability guidelines exist (Nielsen 2001). The researcher decided to use these ten because of the limited resources available.

During the process, the researcher inspected the Chimera Revo website homepage two times: the first time for becoming familiar with the website homepage, the second time for inspecting every element of the website homepage in detail.

The heuristic evaluation was performed by the researcher himself on July 23rd, 2016. For this purpose, the researcher used a notebook, a TV monitor attached to the first one, and a home internet connection. The browser used during the usability assessment process was Mozilla Firefox.

The fact that only one expert evaluated the website, using one device and one browser, may present some limitations of the heuristic evaluation which may affect the results. However, given the expertise of the researcher as website evaluator (Iannone, 2015) and the fact that the evaluation was made using the most common equipment (the notebook ran Microsoft Windows 8.1, one of the most widespread OS for pc, while Mozilla Firefox enables to surf efficiently and effectively websites) while working without any issue, we believe that limitations of the performed usability assessment do not invalidate the results. In addition, the heuristic evaluation was not affected by limitations related to the speed of the used internet connection. In fact, the internet connection allowed surfing properly the website, without troubles. Furthermore, the researcher did not inspect usability aspects related to the website velocity as this was not included in the ten Nielsen's (2002) guidelines.

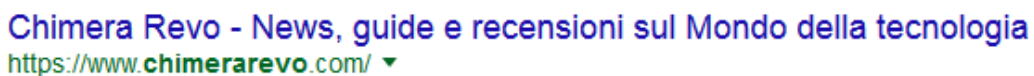
Below, we present the report on the performed heuristic evaluation. It is structured in ten sections in accordance with the ten homepage usability guidelines provided by Nielsen (2002). For each of the guidelines we assess whether the related element(s) of the website follow the guidelines or are there deviations from the guidelines resulting in usability problems. At the end we present a summary of findings in a form of a table.

4.3.2 Results of heuristic evaluation

Heuristic 1: Include a One-Sentence Tagline

Figure 4.12 shows the Chimera Revo website title followed by a tagline which can be translated as “Chimera Revo – News, guides and reviews about the World of Technology”.

Figure 4.12 Chimera Revo website title and tagline.

The image shows a search result snippet for Chimera Revo. The title is "Chimera Revo - News, guide e recensioni sul Mondo della tecnologia" in blue text. Below it is the URL "https://www.chimerarevo.com/" in green text, followed by a small downward-pointing triangle icon.

Chimera Revo - News, guide e recensioni sul Mondo della tecnologia
<https://www.chimerarevo.com/> ▼

Source: Google.

In accordance with the homepage usability guidelines provided by Nielsen (2002), we can assert that the Chimera Revo website tagline clearly explains to possible visitors what type of content and information they will find while navigating the website. In fact, the tagline informs the visitors that the website offers content and information related to news, guides and reviews about the technology world. In this case, the expression “Mondo della tecnologia” (Engl. “World of Technology”) emphasizes that any product related to the world of technology is of interest. In fact, the Chimera Revo project provides content and information concerned about a wide range of products, software, apps, devices, etc.

To summarize, the researcher did not find any problem related to this particular usability guideline.

Heuristic 2: Write a Window Title with Good Visibility in Search Engines and Bookmark Lists

The Chimera Revo homepage window title is “Chimera Revo – News, guide e recensioni sul Mondo della tecnologia” (Engl. “Chimera Revo – News, guides and reviews about the World of Technology”).

The homepage window title thus includes the name of the website (Chimera Revo) and a description of the content and information that it provides to the visitors. This is in line with the Nielsen's (2002) guideline that the window title must include a description of the website what is important when visitors search for the website using search engines and bookmark lists. In addition, in accordance with the Nielsen's (2002) guideline, the homepage window title does not include words as "The" or "Welcome to" which do not help when visitors search for the website. Considering this, the researcher did not find any problem related to this usability aspect.

Heuristic 3: Group all Corporate Information in One Distinct Area

On the Chimera Revo website header (see Figure 4.13), there is an area composed by three different sections dedicated to the corporate information (About, Contact, Privacy Policy), as already described in Section 4.2.1.

Figure 4.13 Chimera Revo website header.



Source: Chimera Revo (2016).

While for most of the corporate information area we do not find usability problems, there are some usability problems in the section Contattaci (Engl. Contact):

- There is some repetition of information about the Chimera Revo project which is already provided in the section Chi Siamo (Engl. About). This repetition makes useless the website section Chi siamo.
- The website contact referred to the third service (i.e. Clickio) which manages the advertisement banners addresses to an expired domain.
- There is a lack of contact information in the subsection that invites the visitors to collaborate with the Chimera Revo team. The invitation to collaborate with the team is clear but the contact that the visitors can use for communicating their willingness to collaborate is missing. It is possible that the interested visitors contact the Chimera Revo editorial staff for this purpose, however this it is not sufficiently clear.

To summarize, at the Chimera Revo website, an area dedicated to the corporate information is present. However, the researcher found few usability problems referred to the section Contattaci (Engl.

Contact) (i.e. some repetition of information, a dead link, lack of clear contact information for collaborations) that need to be addressed.

Heuristic 4: Emphasize the Site's Top High–Priority Tasks

The Chimera Revo website navigation bar (see Figure 4.13) provides five links to the main sections of the website (News, Technical Specifications, Video, Reviews and Offers), as already explained in Section 4.2.1. The website navigation bar thus provides to the visitors immediate access to the main website sections and in this way the top high–priority tasks are emphasized, as suggested by Nielsen's (2002) guideline. However, the researcher found some problems in the News link.

The text *News* is a direct link to the website homepage where the website content is provided. This linkage is problematic for two reasons:

- The website logo located on the website navigation bar is already a link to the website homepage. For this reason, there is no need to provide a second website homepage link.
- There is no need to provide the website homepage link on the homepage of the website. The visitors are already on the website homepage, they do not need to be redirected.

Heuristic 5: Include a Search Input Box

A search input box is present in the homepage navigation bar (see Figure 4.14). It allows users to search information in three of the main sections of the website (News, Video and Reviews). However, it is not possible to search in the entire website what – according to Nielsen (2001, 2002) – constitutes a usability problem.

Figure 4.14 Chimera Revo website search input box.



Source: Chimera Revo (2016).

The search input box is represented by an icon in form of stylized magnifying glass. When a user clicks on it, the entire website navigation bar is turned into an input box that allows the user to type

more than 30 characters what is in line with the Nielsen's (2001) recommendations. After finishing typing the search words, the user needs to press the enter key on the keyboard for starting the search. There is also a button (a stylized X) dedicated to an immediate deletion of the typed text. There is no special "Search button", as suggested by Nielsen (2001), what represents a usability problem.

To summarize, the researcher can assess that the Search Input Box is included what is in accordance with Nielsen's (2001, 2002) guidelines. However two usability problems related to the search input box were found:

- The impossibility to search in the entire website;
- The lack of a Search button close to the input box.

Heuristic 6: Show Examples of Real Site Content

As already described (Sections 4.2, 4.2.2 and 4.2.3) the content related to news, products guides, products reviews, videos, products specifics and commercial offers is included on the Chimera Revo website in the form of banners (see Figures 4.1 and 4.2). Each banner is composed of a title of the content, a background image, icons that represent a category of the content and the releasing date of it.

Nielsen (2001) asserts that it is important to show some abstraction of the content or part of it for involving the users. In this case, introductions to the content are provided only on the banners related to commercial offers. They are created in a way that they present the whole content and a link to a commercial offer webpage of another service at the same time. In other cases, there is no introduction of the content on the banners. In accordance with Nielsen (2001, 2002), this lack of examples of the real site content on the homepage constitutes a usability problem that needs to be addressed.

Heuristic 7: Begin Link Names with the Most Important Keyword

The majority of the links provided on the website homepage are named with relevant words that users can easily see and represent the content provided by the specific link, as suggested by Nielsen (2001, 2002).. However, the researcher found one usability problem, a problem related to the News section. As previously explained (see heuristic 4 of this report), the News text in the navigation bar is a direct link to the website homepage as a whole. This is redundant as visitors are already on the homepage.

There is no meaningful connection with the link name (i.e. news) and the direction it leads (i.e. homepage).

Heuristic 8: Offer Easy Access to Recent Homepage Features

The homepage of the Chimera Revo website provides the possibility to see all the shared content about news, videos and reviews through an infinite scrolling of the webpage. There is no time limit. The website sidebar on the website homepage provides the latest content about products' specifics and commercial offers, while the navigation bar gives the possibility to access the main website sections (News, Technical Specifications, Video, Reviews and Offers) that are archives of the correspondent type of content.

In accordance with Nielsen (2001, 2002), the researcher found no usability problem related to this feature of the website homepage. We can conclude that easy access to the recent homepage features is provided.

Heuristic 9: Don't Over-Format Critical Content, Such as Navigation Areas

The majority of the content provided through the Chimera Revo website homepage is graphically presented in a form of banners (see Figures 4.1 and 4.2). The only exception is the homepage header which – not being in the form of a banner – allows the users to focus on the main sections of the website.

In accordance with Nielsen (2001, 2002), this type of graphics can be unproductive in terms of usability because the users tend to avoid the parts of the website that seem to be advertisement. We can say that using banners the designers over-formatted the content and this constitutes a usability problem.

Heuristic 10: Use Meaningful Graphics

All images on the website homepage are related to the shared content. This is in accordance with Nielsen (2001, 2002) who lists this homepage feature as one of the most important ones.

However, the researcher found that all images are partially covered by other content elements such as the content title, the labels, the icons of the content category, the releasing date. This excessive

overlap of elements can reduce the power of the images, reducing their impact on the users. This homepage content feature is thus a usability problem that needs to be addressed.

Summary

As showed through the report, the Chimera Revo website homepage is affected by some usability problems that need to be addressed for improving the usability of the website homepage. However, we can conclude that major renovation of the website would not be needed according to this heuristic evaluation. Table 4.15 provides a summary of the usability problems found.

Table 4.15 Summary of the heuristic evaluation results.

Heuristics	Results	Problem
Include a One-Sentence Tagline	Guideline followed	No usability problems
Write a Window Title with Good Visibility in Search Engines and Bookmark Lists	Guideline followed	No usability problems
Group all Corporate Information in One Distinct Area	Guideline partially followed	Repetition of information, dead link, lack of clear contact information for collaborations
Emphasize the Site's Top High-Priority Tasks	Guideline partially followed	News section is a link to the website homepage
Include a Search Input Box	Guideline partially followed	Impossibility to search in the entire website, lack of a Search button close to the input box.
Show Examples of Real Site Content	Guideline partially followed	Lack of examples of the real site content on the homepage
Begin Link Names with the Most Important Keyword	Guideline partially followed	News section is a link to the website homepage
Offer Easy Access to Recent Homepage Features	Guideline followed	No usability problems
Don't Over-Format Critical Content, Such as Navigation Areas	Guideline partially followed	Over-formatting the content through the usage of banners
Use Meaningful Graphics	Guideline partially followed	Images partially covered by other content elements

4.4 Usability assessment of Chimera Revo website II: Web survey method

In this section, we will present the main findings of a web survey implemented by the researcher involving the Chimera Revo website users. The research question that has led this usability assessment process is:

- **Is the Chimera Revo website usable in an efficient and effective way by its users, as evaluated by users themselves based on their use experience?**

With the web survey we gathered data on the website users' experience. For this purpose, the researcher used the WAMMI questionnaire, however slightly modified to our case study and the

needs of the Chimera Revo team. As already said, WAMMI (Website Analysis and MeasureMent Inventory) is a project founded by Nigel Claridge and Dr. Jurek Kirakowski (Kirakowski et al. 1998, Wammi 2016). The main aim of the WAMMI project is to provide a service able to assess websites efficiently and effectively (Wammi 2016).

4.4.1 Methodology of the web survey

4.4.1.1 The process of data collection

The web survey project was implemented using the tool 1KA. This tool is developed by the Centre of Social Informatics of the Faculty of Social Science (University of Ljubljana). 1KA allows designing web questionnaires, sending and publishing invitations, collect data and perform basic data analysis.

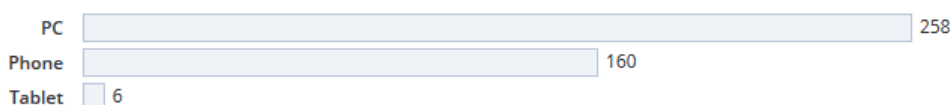
The target population of the research project are the Chimera Revo website users, which are Italians. The questionnaire was thus prepared in Italian, although an English version was also created for the purpose of this thesis and communication with the mentor.

For this survey project, the survey was active from July 15th to July 31st, 2016. In this period 424 usable responses were obtained (for more details see Section 4.4.1.2).

The majority of respondents (60,8%) used a PC for answering, while 37,7% of respondents used a phone and the remaining 1,4% of respondents used a tablet (see Figure 4.16). Among the PC respondents, most of them were using Win 10 or Win 7 operating systems, while the mobile respondents most often used the Android operating system (see Figure 4.17).

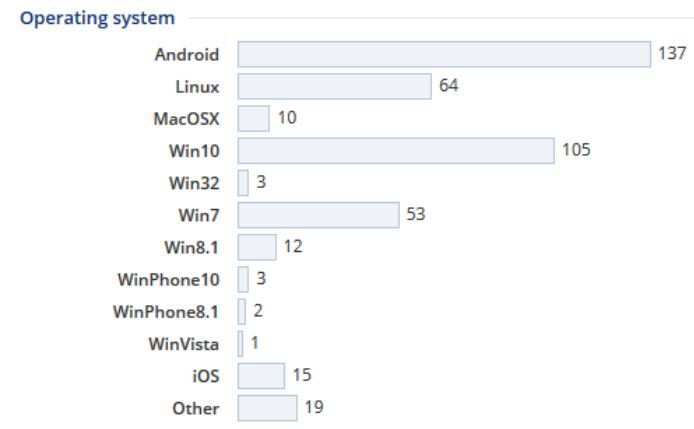
On average, respondents needed 4 minutes and 47 seconds to complete the questionnaire.

Figure 4.16 Devices used by respondents during the web survey process.



Source: 1KA (2016).

Figure 4.17 Operating system of the devices used by respondents.



Source: 1KA (2016).

4.4.1.2 The recruitment process

The recruitment strategy was developed by the researcher himself, together with the founder and administrator of the Chimera Revo project Mr Gaetano Abatemarco.

Since the Chimera Revo team does not have users' contacts information, we were dealing with a non-list based web survey (Callegaro et al. 2015, 8). The recruitment strategy was aimed to intercept and involve the majority of the Chimera Revo website users in this research project.

For this purpose an URL address which was a direct link to the Italian version of the questionnaire was shared by the Chimera Revo team on the official social media channels of the Chimera Revo project (Facebook, Google+, Twitter, Telegram) and on the website as an article (composed by the researcher). For increasing the possibility to involve the Chimera Revo website users, the researcher invited the founder of the project, his team and other collaborators to share the URL address on their private social media channels as well. Below, we describe types of invitations used more in detail.

The researcher used general invitations (see Section 3.2.2.3) to involve any Chimera Revo website users who noticed the invitations. Three types of general invitations were used:

- 1. General invitations provided through a Chimera Revo website article** (see Figure 4.18): the researcher composed an article shared through the Chimera Revo website. This article contained an invitation to participate in the web survey, an e-mail contact of the researcher and a direct link to the web survey. During the field period, the invitation article was pinned on the first section of the Chimera Revo website dedicated to the main content. This strategy

made the invitation as visible as possible and allowed the researcher to intercept the website users as they entered the website homepage.

- 2. General invitations shared through official social media channels of the Chimera Revo project** (see Figures 4.19 and 4.20): the researcher composed different invitation texts dedicated to different official social media channels of the Chimera Revo project: Facebook, Google+, Twitter and Telegram. Every social media channel has different characteristics; considering these, the researcher composed two types of invitation texts: the first one for Facebook, Google+ and Telegram channels, the second one for Twitter. For each type of the invitation text, the researcher created three different texts which varied daily during the web survey field period.
- 3. General invitations shared through private social media accounts of the Chimera Revo team members and their collaborators:** the researcher asked to the Chimera Revo team members and their collaborators to share the URL address of the web survey and the invitation texts (the same as used for the Chimera Revo social media channels) through their private social media accounts. In total, the researcher asked nine people, involved in the Chimera Revo project, to share the survey invitations. In this way they additionally contacted the Chimera Revo users which were part of their private social media networks. Every contacted team member and collaborator was free to share the survey invitation with the URL address through a public sharing or a private message. They were free to personalize the survey invitations to adapt them to their own social media networks.

Figure 4.18 Open invitation provided through the article shared on the Chimera Revo website.

Naj vas potencialne stranke najdejo z oglaševanjem prek Googlea [Zaloznik](#) S 60 € dobropisa Google AdWords

15 LUGLIO 2016

Aiutateci a migliorare il vostro Chimera Revo

In pochi minuti, rispondendo all'indagine, ci aiuterete a migliorare i nostri servizi. Grazie per il vostro aiuto.

€506,10 [Clicca subito](#)

Microsoft

UMi Super **SCONTO DI 80\$** [Scopri](#)

Darvi la migliore esperienza **Chimera Revo** è importante per noi. Proviamo a creare quotidianamente contenuti utili che possono aiutarvi durante l'utilizzo di software e dispositivi, durante un acquisto, e così via. Per continuare a farlo, abbiamo bisogno del **vostro aiuto**. Rispondendo all'indagine, tramite il link sottostante, ci invierete i vostri feedback. È importante. **Ci aiuterete a migliorare l'usabilità del sito web.**

Questa indagine è stata creata da Marco Aurelio Iannone (blogger freelance ed utente **Chimera Revo**) in collaborazione con il nostro team. L'indagine è parte della tesi magistrale "Web Usability Assessment: Comparison of methods" di Marco Aurelio Iannone, supervisionata dalla Professoressa Dr.ssa Katja Lozar Manfreda, del corso di studi Social Informatics presso l'Università di Lubiana.

Accedi all'indagine

L'indagine vi prenderà approssimativamente 5 minuti.

Le vostre risposte sono anonime e i vostri dati saranno protetti in accordo con la legislazione vigente in norma di privacy. Vi ringraziamo in anticipo per la collaborazione. In caso di ulteriori domande è possibile contattare Marco Aurelio Iannone: marc.a.iannone[at]gmail[dot]com

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- +chimera-revo: seguici su Google+ grazie alla nostra Vanity URL

BLOG

di **Marco Aurelio Iannone**

Source: Chimera Revo (2016).

Figure 4.19 Invitation texts shared through the Chimera Revo Facebook channel (the same texts were shared through the Chimera Revo Google+ and Telegram channels).



Source: Chimera Revo Facebook page (2016).

Figure 4.20 Invitation texts shared through the Chimera Revo Twitter account



Source: Chimera Revo Twitter account (2016).

4.4.1.3 Data on survey participation

During the field period the Chimera Revo website was visited by 649.490 unique users (according to Google Analytics 2016). In accordance with these data, it is possible to conclude that by obtaining 424 usable responses (at least partially completed questionnaires) the researcher succeeded to collect data from 0,07% of the Chimera Revo website users (see Figure 4.25).

Figure 4.21 Response outcomes of the web survey.

Response rate (?)		
	Base: Entered intro	
Status	Frequency	State
Entered intro	3940	100%
Entered first page	497	13%
Started responding	433	11%
Partially completed	424	11%
Completed	292	7%
Unit usability (50%/80%)		
Usable units	280	66%
Partially usable units	14	3%
Unusable units	130	31%
Breakoffs		
Introductory breakoffs	3507	89%
Questionnaire breakoffs	140	4% (neto 32%)
Total breakoffs	3647	93%

Source: 1KA (2016).

As seen from Figure 4.21, the introduction page of the web questionnaire was visited 3940 times. Only 497 visitors (12,6% of all visitors) actually entered the first page of the questionnaire; 433 (11,0 % of all visitors) started to answer to the questionnaire. 424 (10,84% of all visitors) partially completed the questionnaire; while 292 (7,4% of all visitors) completed it. Definition of “partially completed” and “completed” is taken from 1KA which defines the first ones as respondents that answer more than 50% of questions, while the second ones as respondents that answer more than 80% of questions (1KA 2016).

Finally, 89,0% of visitors did not start to answer the web questionnaire.

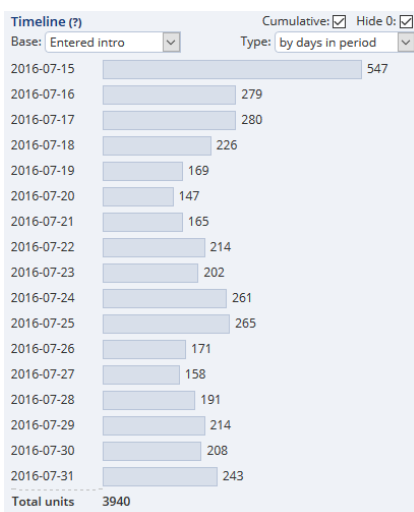
Figure 4.22 Provenience of questionnaire visitors.



Source: 1KA (2016).

The Figure 4.22 shows that the majority of visitors (68,1%) entered the web survey through the direct link (e.g. they copied/entered the URL directly into the web browser). 13,8% of visitors entered the web survey through social media channels, followed by 7,4% of visitors that entered through the Chimera Revo website (through the link in the article). The remaining 10,7% of visitors entered through miscellaneous sources.

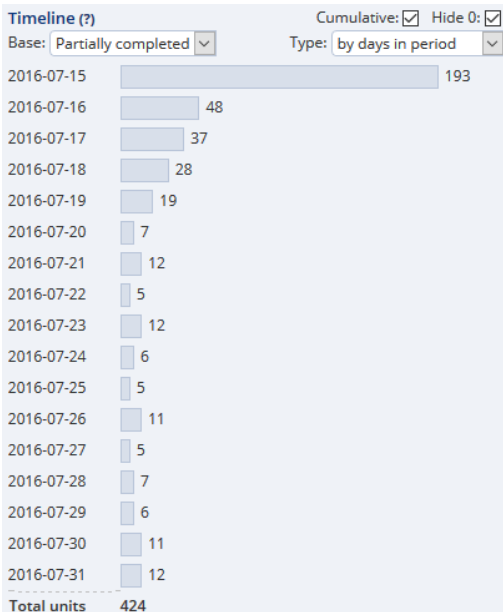
Figure 4.23 Timeline referred to visitors that entered the web survey introduction webpage.



Source: 1KA (2016).

On the first day of the field period, on July 15th, 2016, 547 visitors, presenting 13,9% of all visitors, entered the web survey introduction webpage. After this date, the visits decreased and settled around 150–200 daily with some peaks (261, 265 visitors on July 24th and 25th, 243 visitors on July 31st) (See Figure 4.23).

Figure 4.24 Timeline referred to the visitors that at least partially completed the web survey .



Source: 1KA (2016).

Similar to this, the largest number of responses (at least partial responses) was obtained the first day (193 responses what presents 45,5% of all responses). After this date, number of responses decreased and became almost constant (from 5 to 12 per day) (see Figure 4.24).

Figure 4.25 Survey status: valid and not valid units.

Survey status (?)	
Completed (6) :	292
Partially completed (5) :	132
Total valid	424

Completely empty (6l) :	1
Partially empty (5l) :	8
Entered first page (4) :	64
Entered intro (3) :	3443
Total invalid	3516

Total surveyed	3940

All units in database	3940

Source: 1KA (2016).

As already said, there were 3940 visits to the questionnaire webpage, thus the 1KA database includes 3940 units (see Figure 4.25). However, only 424 units (10,8% of them) are used for data analysis. 292 or 68,9% of the valid units are respondents that answered to more than 80% of questions (marked as “complete” by 1KA), while the remaining 132 or 31,1% of the valid units are respondents who answered more than 50% of questions (marked as “partially complete” by 1KA).

Let us to repeat that the valid 424 units represent 0,07% of the users that used the Chimera Revo website during the web survey field period. This means that we have a click-through rate (Callegaro et al. 2015, 138) of 0,07% what is comparable to low click-through rates in non-list based web surveys in general (Callegaro et al. 2015, 138). This is a very low response. However, Dumas and Salzman (2006, 126) showed, through a comparison of studies on the reliability of different questionnaires for usability assessment of software, computer systems, etc., that a sufficient sample size for usability assessment using a survey questionnaire can be composed already from 10 up to 12 participants. In the specific case, the researcher collected data from 424 respondents what we consider sufficient for reliable analysis.

Despite the fact that we consider our sample size to be sufficient for the analysis, it is fundamental to remember that it is not possible to infer to the entire population of the Chimero Revo website users from obtained data. Namely, the sample was not chosen using a random mechanism.

4.4.2 Data analysis plan

For data analysis, the researcher used 1KA data analysis features, Microsoft Excel and IBM SPSS. The data analysis and presentation of results is structured in the following way. First, description of the sample by some selected characteristics is given. Then, *reasons for using the website* are presented.

As the main part, *six usability factors* are explored. Here, the researcher followed the sample WAMMI report shared on the project website (Wammi 2016). As suggested by this report, the items taken from WAMMI were used to create normalized indexes on six usability factors: *attractiveness*, *controllability*, *efficiency*, *helpfulness*, *learnability* and *global usability score (GUS)* (Kirakowski et al. 1998, Wammi 2016). This was done in the following way. First, in order to compare all 20 statements on usability and find out which of them show critical aspects, the researcher created a normalized index for each of them. For each statement (survey item) the index was composed using

the formula $(m : 5) \times 100$, where m represents the mean of respondents on a disagreement/agreement variable scale with values from 1 (maximum disagreement) to 5 (maximum agreement). Thus, value 5 represents the maximum value that the mean can take. In this way, every normalized index can take a value between 0% and 100%. If a statement has a positive tendency, the 0% value represents the most negative value; in the opposite case, if a statement has a negative tendency, the 0% value represents the most positive value. The value 50% represents an average value; values superior or inferior to it can be considered critical or not in accordance to the statement tendency (Wammi 2016). The values inferior to 30% or superior to 70% can be defined as exceptionally positive or negative in accordance to the statement tendency (Wammi 2016).

In addition to creating 20 normalized indexes (one for each statement), aggregated indexes were also created. More specifically, the researcher, following the WAMMI sample report (Wammi 2016) and the literature (Kirakowski et al. 1998, Wammi 2016), created six normalized indexes that represent six different usability factors of the Chimera Revo website. Every factor is composed by aggregation of some selected WAMMI questionnaire statements (variables). Before aggregation some of the variables were recoded so that each has a positive tendency. The formula for creating the normalized indexes is the following: $[(m_1 + m_2 + \dots + m_n) : Z] \times 100$; where m_i ($i = 1 \dots n$) is the mean of the statement taken in account for creating the factor, Z is the maximum value obtainable by the sum of the maximum possible values of the mean of each used variables (in this case the maximum possible mean value reachable by each variable is 5). Each aggregated normalized index takes the value between 0% and 100% (the higher the value, the more positive valence the index acquires). According to literature (Wammi 2016), values between 50% and 100% are considered as positive values. Values superior to 70% are exceptionally positive, while values inferior to 30% are exceptionally negative.

The usability factors were not analysed only in general (for all respondents), but also explored in relation to four background variables: age and gender of respondents, respondents' use frequency of the Chimera Revo website, and respondents' internet skills level. For this purpose cross-tabulation analysis and Cramer's contingency coefficient (Kotz et al. 2006) were used as we are dealing with nominal and ordinal variables.

Finally, some *additional usability aspects* which were additionally measured on the request of the Chimera Revo founder were analysed and presented.

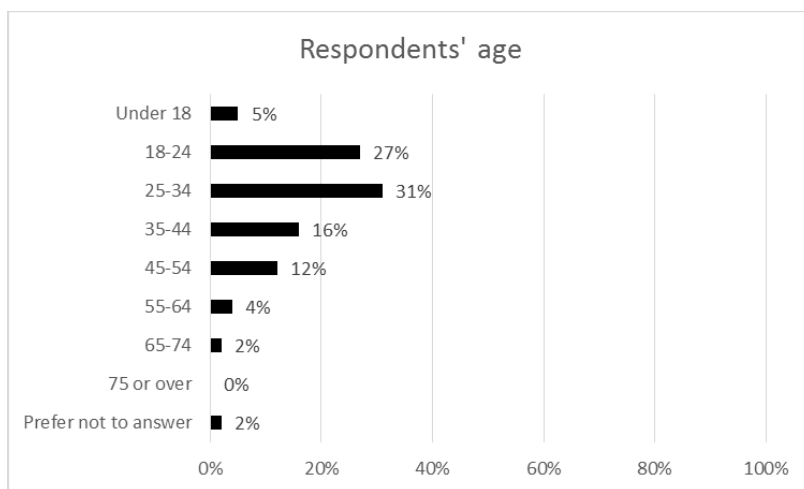
Most of the survey questions in the used questionnaire were close ended. For the few open ended questions the researcher coded himself responses into some new meaningful response categories.

4.4.3 Web survey results

4.4.3.1 Description of the sample

97% of respondents are male, while the remaining 3% of them are female.

Figure 4.26 Respondents' age (n=292).

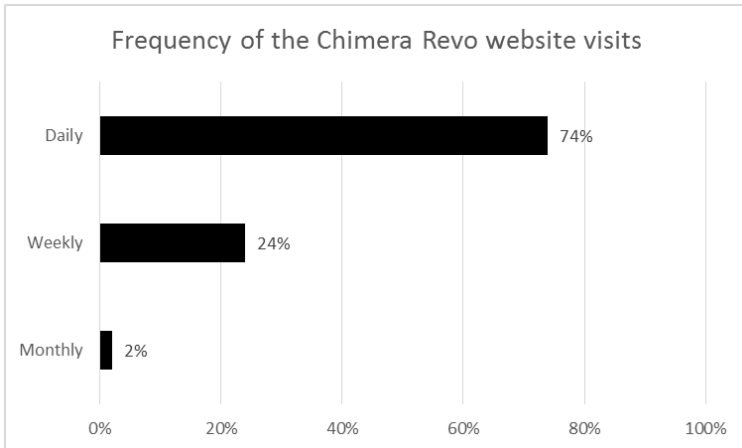


The majority of respondents (58%) has an age between 18 to 34 years old, followed by respondents between 35 to 54 years old (28%) (see Figure 4.26). 5% of respondents are under 18; likewise there is 6% of respondents that are between 55 to 74 years old.

The majority of respondents (64%) perceives themselves as experts on internet use. 31% of respondents perceives themselves as a fairly good internet users; while 5% as average internet users. Only 0,2% of respondents perceives themselves as fairly unskilled internet users.

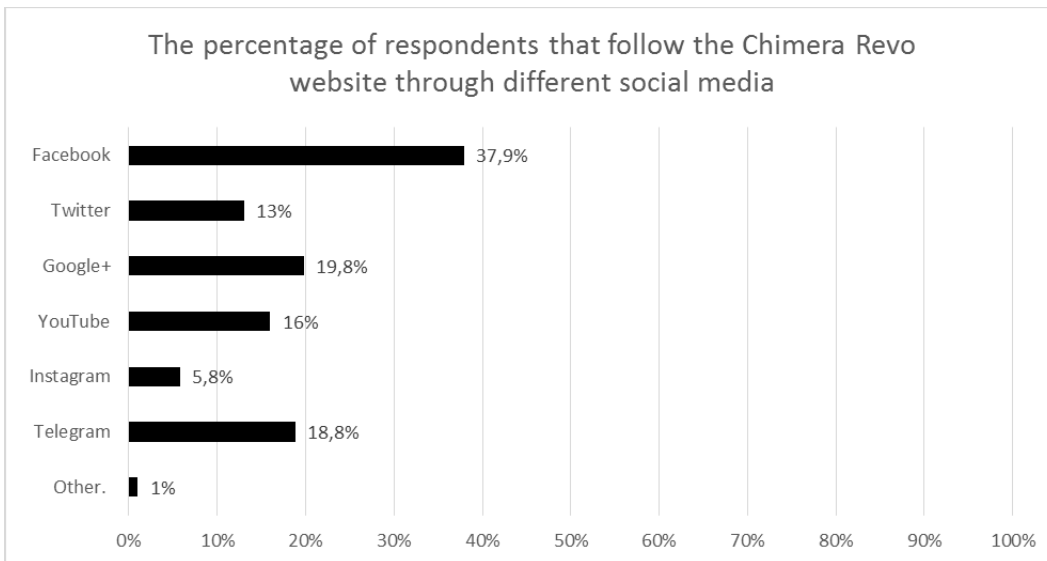
The majority of respondents visits the Chimera Revo website daily (74%) (see Figure 4.27). 24% of respondents visits the Chimera Revo website weekly, while 2% of them visits it monthly.

Figure 4.27 Frequency of the Chimera Revo website visits (n=292).



54% of respondents follow the Chimera Revo website through social media; while the remaining 46% of them do not use social media for following it. Most often they used it from Facebook (38% of respondents), followed by Google+ (20%), Telegram (19%), YouTube (16%), Twitter (13%), Instagram (6%), and other (1%) (see Figure 4.28).

Figure 4.28 The percentage of respondents that follow the Chimera Revo website through different social media (n=293).



4.4.3.2 Reasons for visiting Chimera Revo

The Chimera Revo website users have different reasons for visiting the website. Table 4.29 shows that the main users' reason for visiting the Chimera Revo website is to read news (81%), followed by to find out guides about software, devices, apps, etc (63%), to read feature news (62%), to read reviews of smartphones, tablets, apps, etc (53%), to read editorial news (35%), to find out new offers (22%), to read news about Linux (3,5%), and other reasons (2,4 %). This is in line with the fact that

the majority of the treated topics refers to news, feature news, guides and reviews about software, devices, etc (see Section 4.1.2).

Table 4.29 Users' reasons for visiting the Chimera Revo website (n=424).

	Users' reasons for visiting the Chimera Revo website	Frequency	Percentage
1	Read news.	345	81%
2	Find out guides about software, devices, apps, etc.	266	63%
3	Read feature news.	262	62%
4	Read reviews of smartphones, tablets, apps, etc.	225	53%
5	Read editorial news.	147	35%
6	Find out new offers.	93	22%
7	Read news about Linux.	15	3,5%
8	Other.	10	2,4%
	Total	424	

4.4.3.3 Usability factors

As already explained, the questionnaire included 20 statements from the WAMMI questionnaire which are related to six usability factors: attractiveness, controllability, efficiency, helpfulness, learnability and global usability score (GUS) (Kirakowski et al. 1998, Wammi 2016). Figure 4.30 presents values for the normalized indexes related to these statements, created as described in Section 4.4.2. The statements that represent critical aspects about the website usability are represented by red bars, while green bars represent statement indexes that are recognized as favourable.

We can see (see Figure 4.30) that there are three critical statements. They refer to some annoying features of the Chimera Revo website (60%), to its introductory information (54%) and its navigability (52%). These results do not match the expectations of the website developers that, as said in Section 4.1.3, tried to create a highly usable website while avoiding the use of complex graphics, implementing well the main structure of the website, and structure the website elements in a way that enables the users to perform desired tasks easily.

On the other hand, the most favourable statement indexes concern the possibility to get what expected while clicking on a website element (82%), the website logic (80%) and the presence of interesting content (84%). These results match the expectations of the website developers (see Sections 4.1.2 and 4.1.3), especially in terms of availability of interesting content.

Figure 4.30 WAMMI usability statements. Normalized indexes.

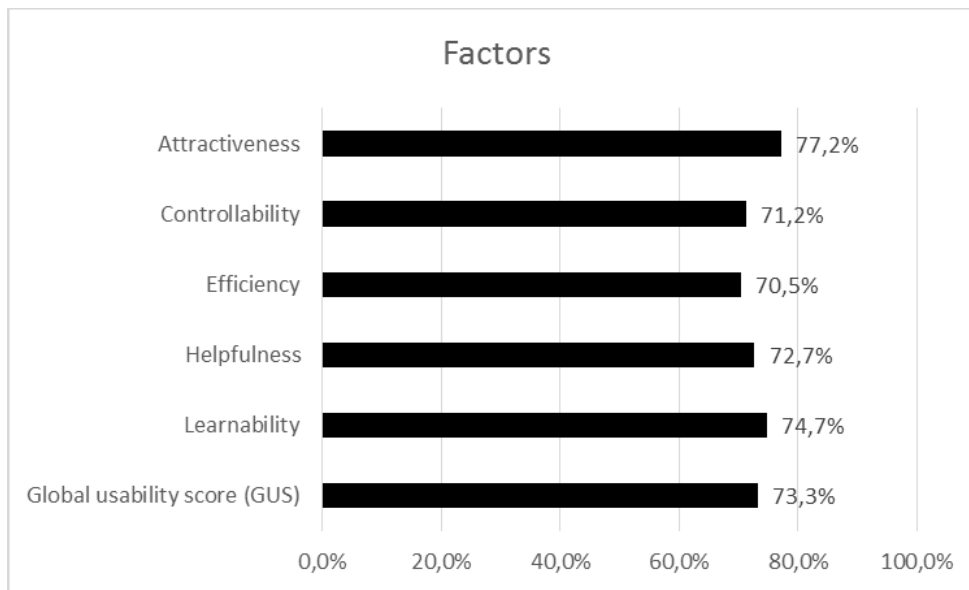


In addition to the analysis of individual 20 indexes on usability, we have also prepared aggregated indexes presenting usability factors: attractiveness, controllability, efficiency, helpfulness, learnability factors. Table 4.31 shows which statements belong to which factor. It is possible to notice that each statement has a determined tendency (positive or negative). For creating the factors using aggregation of variables, the researcher recoded the data conforming their tendency.

Table 4.31 The composition of the factors. Statements composing the factors: attractiveness, controllability, efficiency, helpfulness, learnability. (* Recoded statements).

Attractiveness
This website has much that is of interest to me.
The pages on this website are very attractive.
I don't like using this website.*
This website has some annoying features.*
Using this website is a waste of time.*
Controllability
It is difficult to move around this website.*
I can quickly find what I want on this website.
I feel in control when I'm using this website.
Remembering where I am on this website is difficult.*
I get what I expect when I click on things on this website.
Efficiency
This website is too slow.*
This website helps me find what I am looking for.
I can easily contact the people I want to on this website.
I feel efficient when I'm using this website.
Helpfulness
This website seems logical to me.
This website needs more introductory explanations.*
It is difficult to tell if this website has what I want.*
Learnability
Learning to find my way around this website is a problem.*
Using this website for the first time is easy.
Everything on this website is easy to understand.

Figure 4.32 Factors: attractiveness, controllability, efficiency, helpfulness, learnability, global usability score (GUS). Normalized indexes.



The values of each factor in general (without distinction between different categories of users) reach a positive value (see Figure 4.32). The most positive factor value is the one related to the attractiveness (77,2%), followed by the other related to the learnability (74,7%), helpfulness (72,7%), controllability (71,2%), efficiency (70,5%). Also the global usability score reaches a high positive value (73,3%).

In addition to analysing usability factors for all respondents, we looked also at difference among different categories of users. Since the analysed sample is composed of 97% male and 3% female respondents, it is not meaningful to explore the differences between men and women. However, we explored differences for respondents of different age, internet skills level and frequency of the website visits.

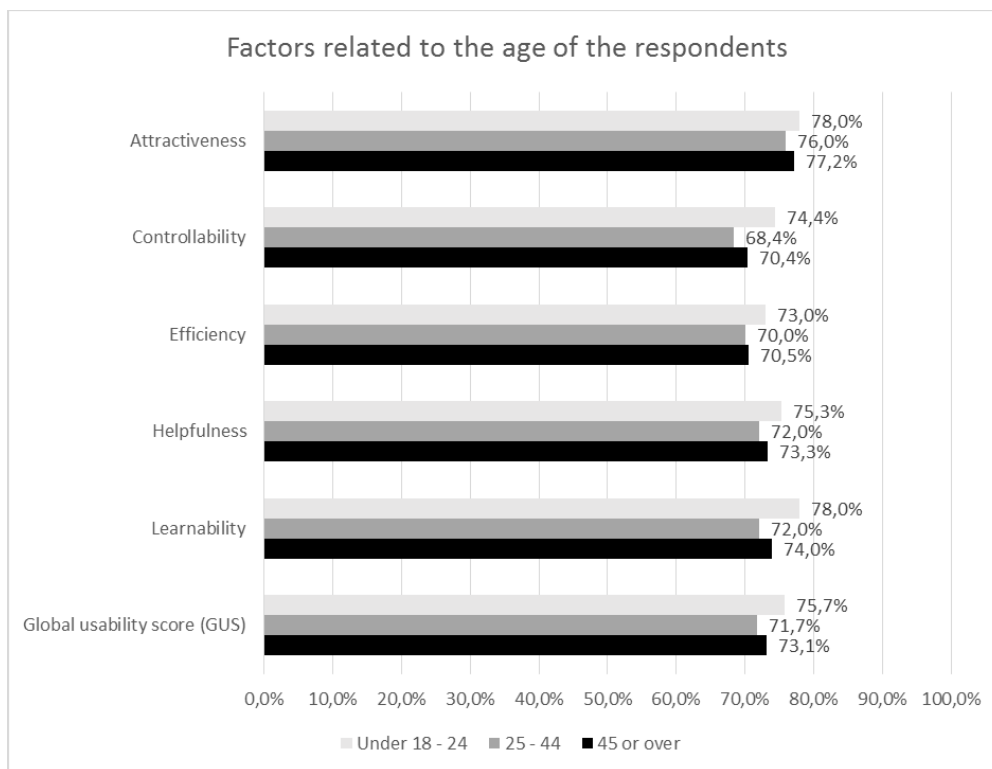
As regards the age of respondents, every factor, regardless of the age category, reaches a positive value (see Figure 4.33). As already showed, the most positive factor values are related to the attractiveness, while the less positive factor values are related to the efficiency and the controllability. However, there are some differences between the age categories: the factor values are always the most positive for the youngest respondents.

Similarly, as regards the frequency of visits of the Chimero Revo website, every factor value is positive, regardless of the category of respondents (see Figure 4.34). However, there are differences

in relation to the use frequency: the majority of the factor values are more positive in the case of the oldest respondents, except for the factor values related to the attractiveness and efficiency.

As regards the expert level of respondents⁴, again every factor reaches a positive value, regardless of the category of respondents, with the most positive factor values related to attractiveness (76,8%, 78% and 78%) (see Figure 4.35). However, there is some difference among the categories of respondents. Expert respondents consider all aspects more or at least as positive as the other two groups, except for the attractiveness factor which they rate it somewhat less positive than the other two groups. The respondents which rated themselves as average users (in our case these are the least experiences), on the other hand, rated all aspects less or at least as positive as the other two groups, except for the attractiveness factor. It looks like that for the majority of factors, the Internet skill level is related to the rating of the factors which are in most cases rated more positive by more skilled users.

Figure 4.33 Factors related to the age of respondents. Normalized indexes.



⁴Although originally four categories of Internet skills level have been defined (see Section 4.4.3.1), the category of the fairly unskilled respondents is not presented here as only one case matched this specific characteristic.

Figure 4.34 Factors related to the daily, weekly, monthly use of the Chimera Revo website about respondents. Normalized indexes.

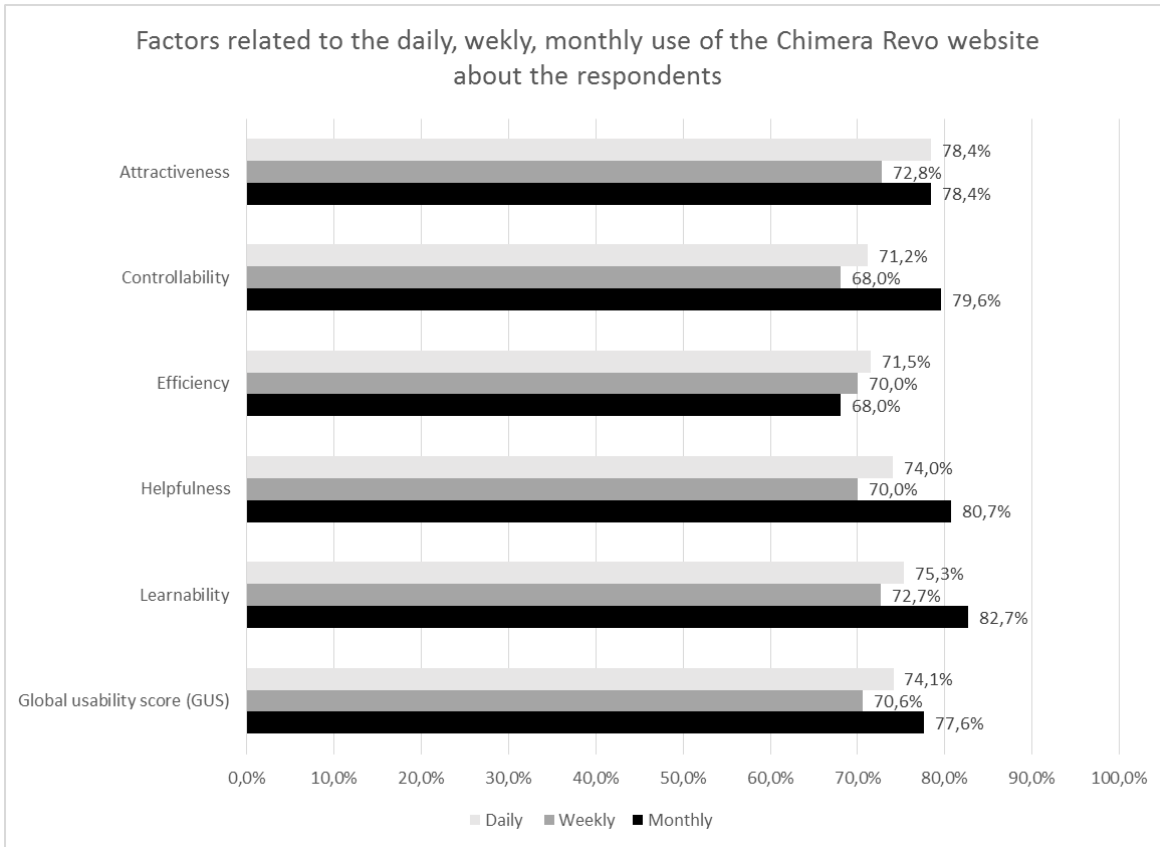
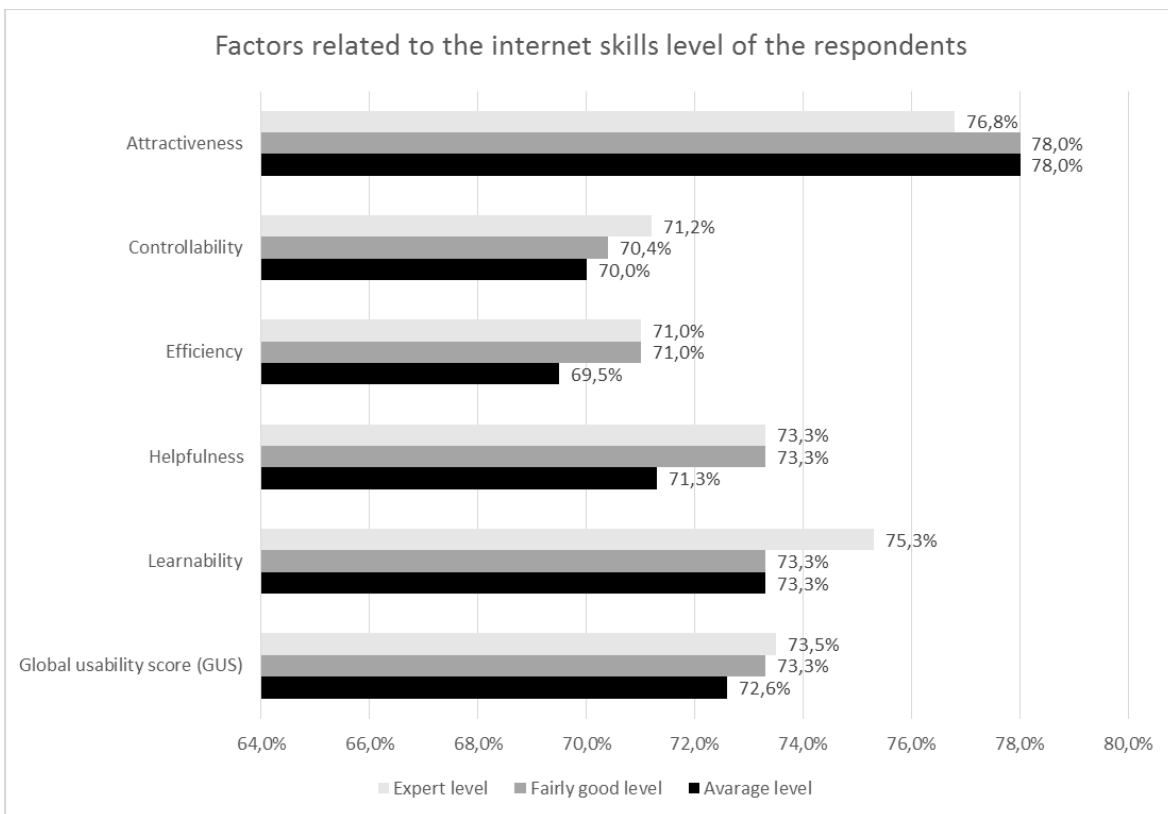
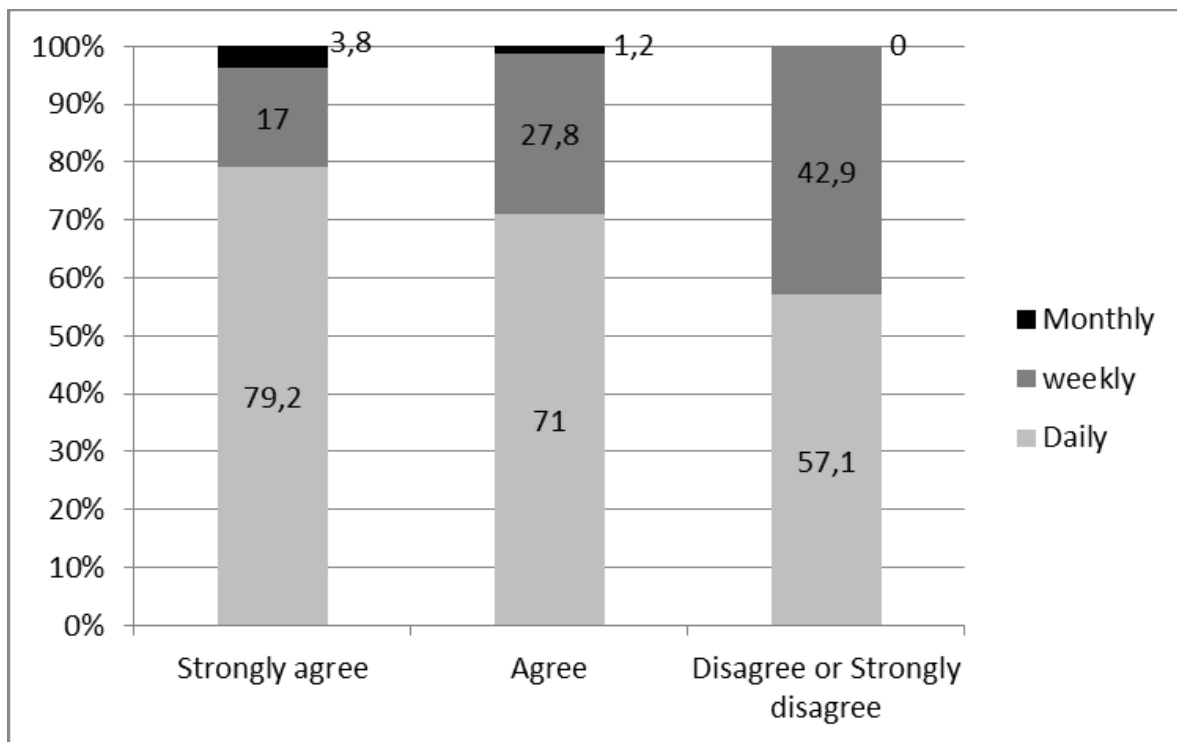


Figure 4.35 Factors related to the internet skills level of respondents. Normalized indexes.



In addition to looking at difference between categories of respondents and aggregated factor values, the researcher also evaluated the relationship between the background variables and individual 20 WAMMI statements (in the form of original variables). Cramer's V was calculated for each relationship and presented in Table 4.37. They indicate that there are not strong correlations between the variables (the maximum value of V is 0,219 and the minimum value of V is 0,051) what is in line with the findings on the relationship between aggregated factors and background variables where not much differences were observed among different categories of users. Here, the strongest correlation refer to the agreement on statement "This website has much that is of interest to me" and frequency of the Chimera Revo visits: those who agree more are also more frequent visitors (see Figure 4.36).

Figure 4.36 Relative frequencies related to the contingency table between the statement "This website has much that is of interest to me" and the variable related to the frequency of the Chimera Revo visits (n=290).



Basically, it is possible to notice that the majority of Cramer's V values related to the 20 WAMMI statements are the highest for the relation with respondents' age, following the frequency of website visits. This indicates that usability assessment is somewhat more related with the age of respondents, following their frequency of visits and least related to their internet skills level (see Table 4.37).

Table 4.37 Cramer V as a measure of correlation between background variables and 20 WAMMI statements.

V of Cramer	WAMMI statements	Age	Usage frequency	Internet skills level
Q2a	This website has much that is of interest to me.	0,158	0,219	0,08
Q2b	It is difficult to move around this website.	0,14	0,137	0,122
Q2c	I can quickly find what I want on this website.	0,158	0,065	0,058
Q2d	This website seems logical to me.	0,133	0,111	0,109
Q2e	This website needs more introductory explanations.	0,174	0,128	0,102
Q2f	The pages on this website are very attractive.	0,178	0,097	0,166
Q2g	I feel in control when I'm using this website.	0,187	0,155	0,105
Q2h	This website is too slow.	0,173	0,125	0,107
Q2i	This website helps me find what I am looking for.	0,205	0,122	0,082
Q2j	Learning to find my way around this website is a problem.	0,153	0,071	0,115
Q3a	I don't like using this website.	0,182	0,162	0,111
Q3b	I can easily contact the people I want to on this website.	0,177	0,106	0,078
Q3c	I feel efficient when I'm using this website.	0,185	0,095	0,089
Q3d	It is difficult to tell if this website has what I want.	0,158	0,175	0,1
Q3e	Using this website for the first time is easy.	0,202	0,087	0,093
Q3f	This website has some annoying features.	0,181	0,088	0,196
Q3g	Remembering where I am on this website is difficult.	0,205	0,134	0,115
Q3h	Using this website is a waste of time.	0,144	0,199	0,073
Q3i	I get what I expect when I click on things on this website.	0,157	0,137	0,128
Q3j	Everything on this website is easy to understand.	0,148	0,181	0,128

To summarize, using the WAMMI methodology of usability assessment, the Chimera Revo website reaches positive benchmarks. In fact, each factor value for usability factors is positive. According to respondents, the website is well structured, offers useful content, is easy to use. Looking at the results, it is possible to notice that the attractiveness factor is the most favourable factor (the website structure is pleasant and interesting content is provided) what is not in line with some of the results presented further in Section 4.4.3.4. On the other hand, the less favourable factor values are related to controllability and efficiency. The respondents feel that their capacity to surf efficiently and effectively the website while performing the tasks is less valuable than other aspects such as the possibility to find interesting content, the capability to learn easily how to use the website.

4.4.3.4 Additional usability aspects: usability of specific website sections, best features, features to improve

The researcher, in agreement with Abatemarco, created additional survey questions related to specific sections of the Chimera Revo website and its YouTube channel.

Four of these questions are in the form of statements, similar to the statements from the WAMMI questionnaire. Also for these statements, the researcher created normalized indexes, following the above described methodology of the WAMMI questionnaire. Their analysis (see Figure 4.38) shows that every normalized statement index represents a positive evaluation. Respondents are most positive about the section Specifiche tecniche (Engl. Technical Specifications) (index value of 82%), but very positive also about Offerte (Engl. Offers; 70%), Youtube videos (70%) and format of videos (68%).

Figure 4.38 Statements related to specific sections of the Chimera Revo website and its YouTube channel. Normalized indexes.

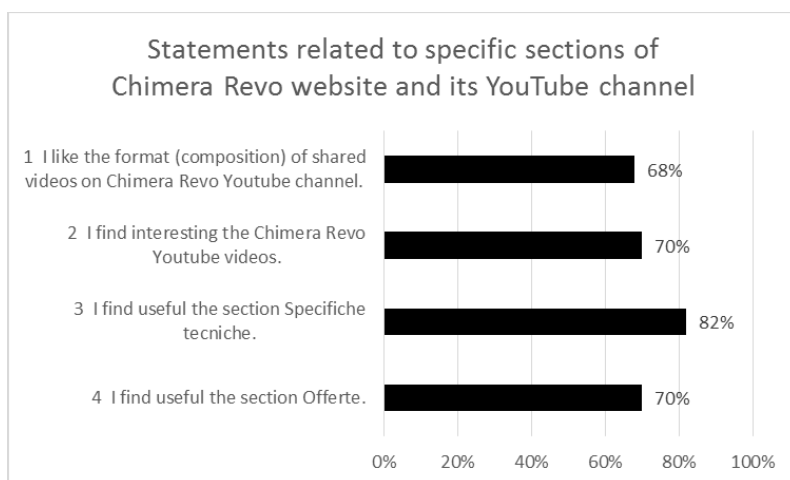
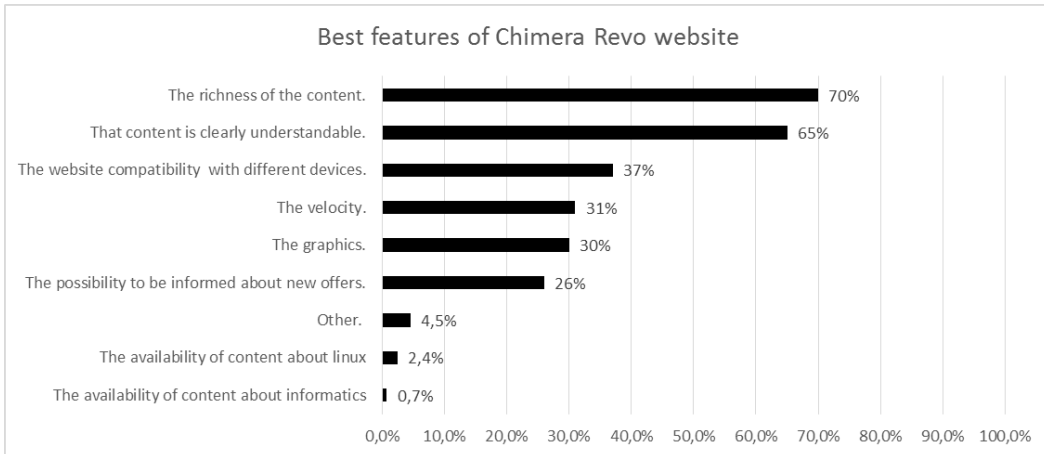


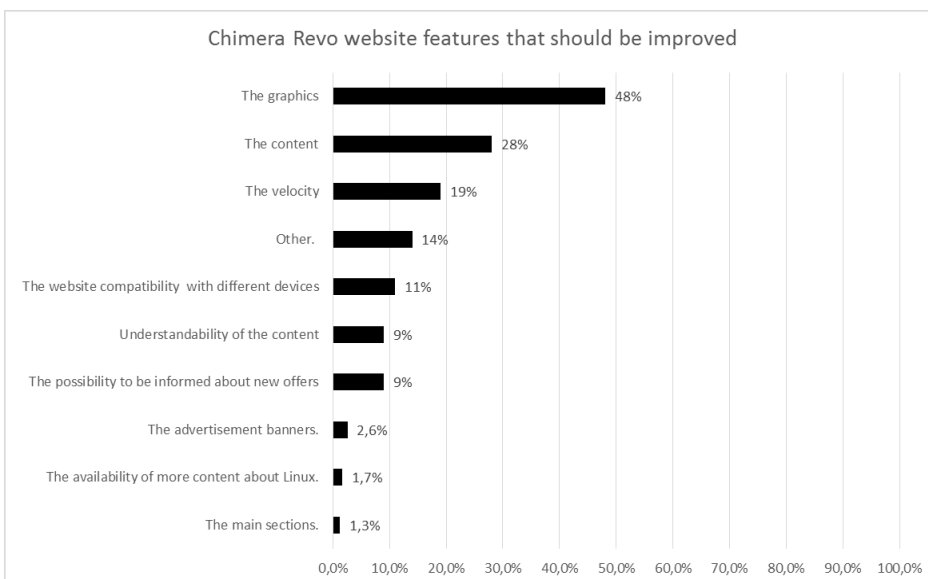
Figure 4.39 Best features of Chimera Revo website (n: 292).



Looking at Figure 4.39, it is possible to find out that the best feature of the Chimera Revo website is the richness of the content (according to 70% of respondents), followed by the understandability of the content (65% of respondents). Other website features are considered best by a much smaller share of respondents: the website compatibility with different devices (37% of respondents), the website velocity (31% of respondents), the website graphics (30% of respondents), the possibility to be informed about new offers (26% of respondents). All the other features are almost not considered the best.

These results partially match the expectations of the Chimera Revo team as regards richness and understandability of content, while not as regards website graphics, velocity and compatibility with different devices (see Sections 4.1.2 and 4.1.3).

Figure 4.40 Chimera Revo website features that should be improved. (n=229).



The most important website feature that should be improved is the website graphics (according to 48% of respondents), followed by the website content (28% of respondents), the website velocity (19% of respondents), other features (14% of respondents), the website compatibility with different devices (11% of respondents), the understandability of the website content (9% of respondents), the possibility to be informed about new offers (9% of respondents) (see Figure 4.40). Features related to advertisement banners, main sections and availability of content about Linux are almost not considered for improvements. This result is in contrast with the expectations of the website developers. Although they tried to simplify the website layout (graphics) (see Section 4.1.3), this feature, according to respondents, is the first one that should be improved.

For some of the features above we also included further questions on why they should be improved and results are presented in Figures 4.41 to 4.46. Among those who think the velocity should be improved (19% of respondents) the majority feels that they cannot effectively surf the website. Among the respondents who think the website content should be improved (28% of respondents) the majority thinks that the content is not interesting and that more feature content is needed. The majority of respondents who think that the website graphics should be improved (48% of respondents) does not like it. Among the respondents who think that the understandability of the Chimera Revo website content should be improved (9% of respondents) the majority considers the content not clearly understandable. The majority of respondents who think that website compatibility with different devices should be improved (11% of respondents) has difficulties to surf the website using different devices. Among the respondents who think that the possibility to be informed through the website about new offers should be improved (9%) the majority does not find convenient offers.

Figure 4.41 Why the website velocity should be improved (n=44).

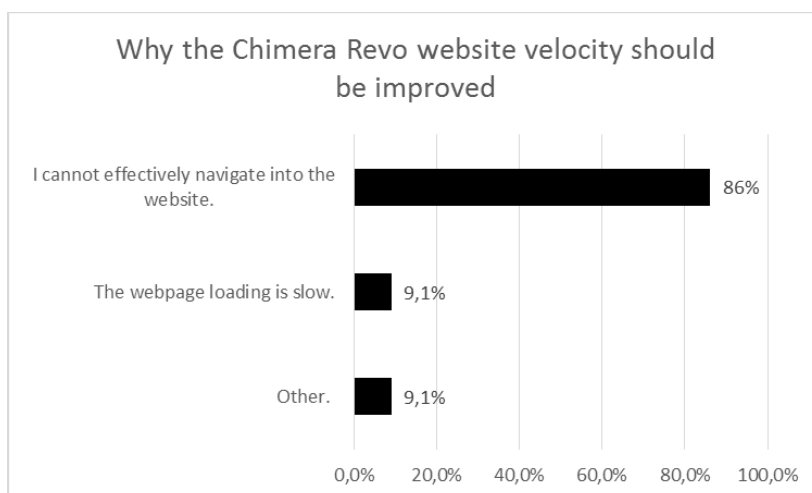


Figure 4.42 Why the Chimera Revo website content should be improved (n=57).

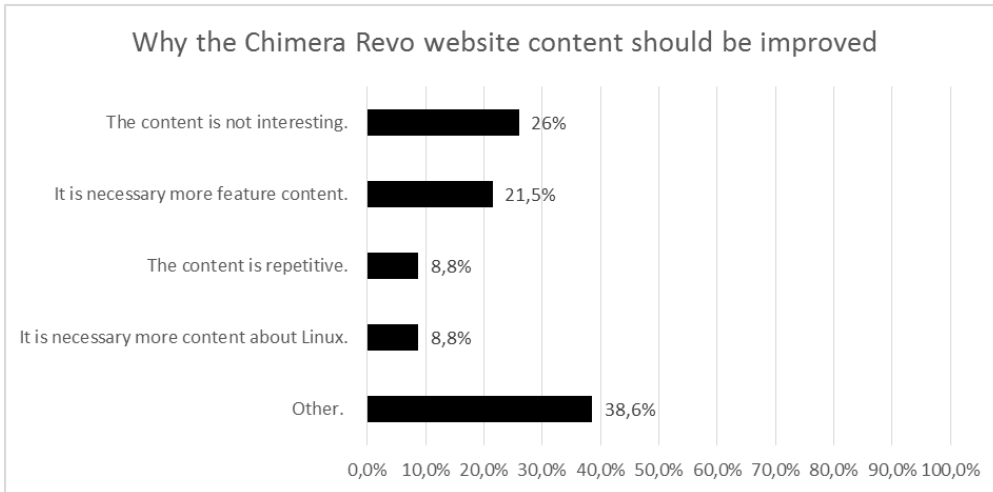


Figure 4.43 Why the Chimera Revo website graphics should be improved (n=106).

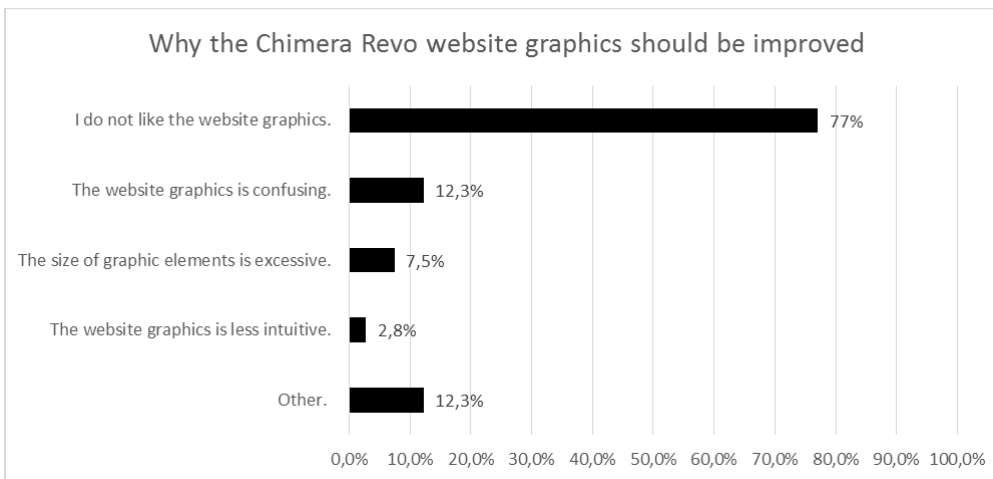


Figure 4.44 Why the understandability of the Chimera Revo website content should be improved (n=17).

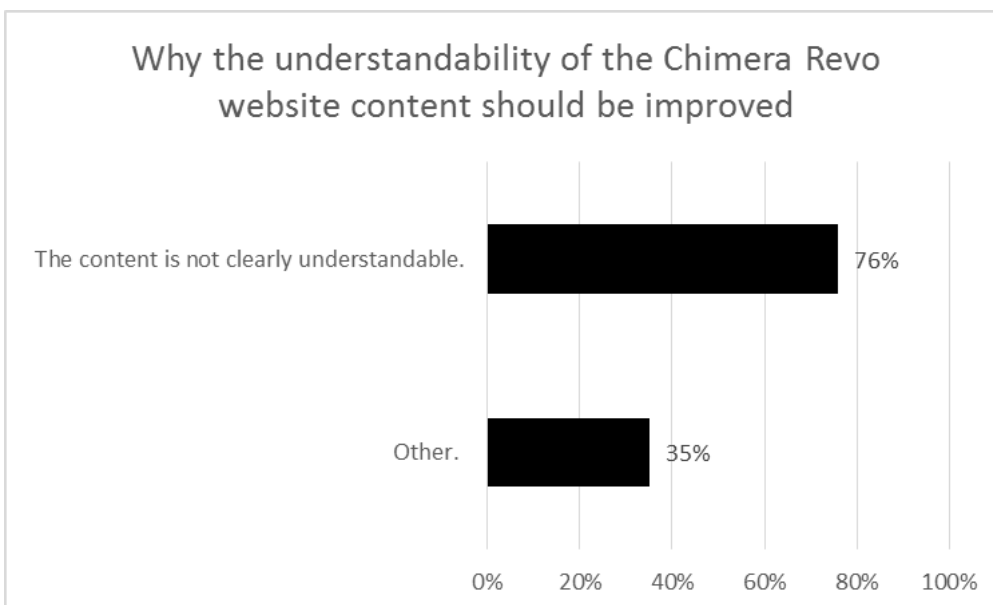


Figure 4.45 Why the Chimera Revo website compatibility with different devices should be improved (n=25).

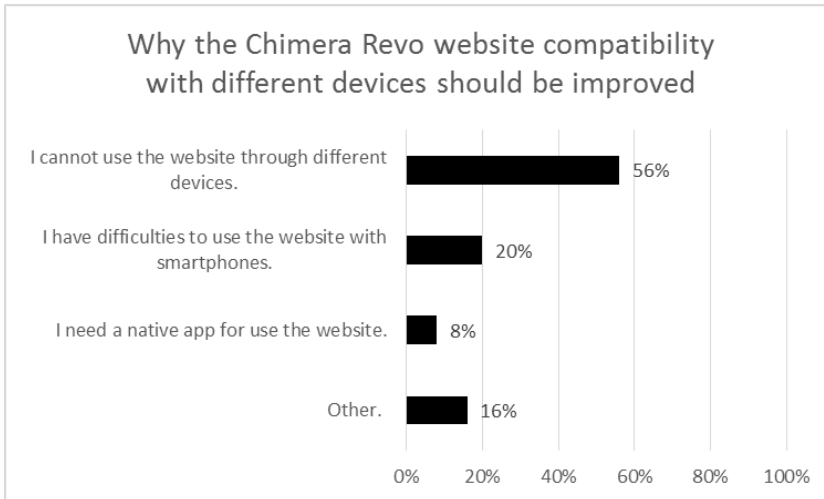
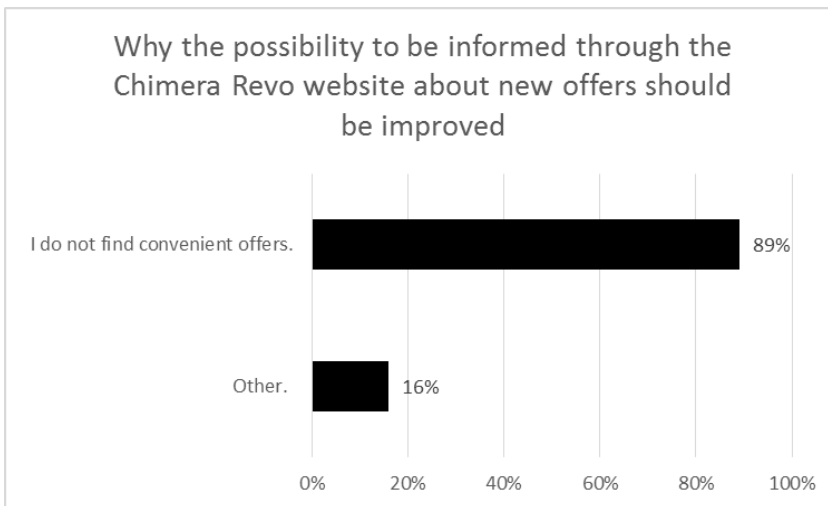


Figure 4.46 Why the possibility to be informed through Chimera Revo website about new offers should be improved (n=19).



In Section 4.4.3.3 we found that when respondents evaluated specific statements about attractiveness of the website, the factor related to website graphics reached the most positive value. This is in contrast with the results here showing that according to respondents the website graphics was the most important feature that should be improved.

4.4.4 Report summary

As showed by the report, it is possible to assert that the Chimera Revo website obtained positive evaluations on usability as regards indexes related to the attractiveness, the controllability, the efficiency, the helpfulness, the learnability, the global usability score (GUS). Despite this, the Chimera Revo website is affected by some usability issues as some of the individual dimensions of the factors that do not reach positive values concerning the features of the Chimera Revo website, its

introductory information and its navigability. In addition, the analysis highlighted that the biggest usability issues of the Chimera Revo website are related to the website graphics, to the website content and to the website velocity.

5 Conclusions and discussion on comparing heuristic evaluation and web survey methods

The initial chapters (2 and 3) provided theoretical overviews of the User-Centered Design (UCD) approach and the usability assessment methods in the process of creation, development, implementation, and maintenance of the websites. The empirical part of the study focused on two specific methods (heuristic evaluation and web survey) for evaluating website usability (in this case, Chimera Revo). This comparative methodology allowed the researcher to explore the respective strengths and weaknesses of both methods. The following section reports the findings and considerations on using these two methods.

The *heuristic evaluation* requires fewer resources in terms of time and money, with the most costly resource being the work of the evaluators. Heuristic evaluation provides time-savings compared with conducting a web survey. In fact, already during the collection of data, the evaluator is able to create the heuristic evaluation report. However, if the heuristic evaluation method is performed by several evaluators, successive elaboration of the report is necessary; this strategy necessitates merging the insights of the various experts, thereby imposing additional time and cost factors.

Several important aspects should be considered when performing heuristic evaluation, and determine the quality of the output. One important consideration is careful selection of the heuristics to be evaluated. Every heuristic is related to a particular usability aspect of a website, and needs to be properly evaluated.

Evaluator experience is another important factor for heuristic evaluation; if an expert is highly experienced in heuristic evaluation and UCD for designing websites, he/she can be more efficient and effective in identifying usability problems. For this, the researcher considers the experience of an evaluator as a great support during the usability assessment process.

However, when only one evaluator is used, this can become a weak point of the heuristic evaluation as an additional expert would probably find some additional usability problems. For this reason, Nielsen (1994, 26) suggests using a group of evaluators for heuristic evaluation in order to overcome the specifics of individual evaluators and to uncover the majority of the usability problems that can affect a website.

The *web survey* is an expensive usability assessment method in terms of time, while being less costly than any other survey method (e.g. face-to-face interview). In comparison to heuristic evaluation, the majority of costs are related to the equipment and software; however in many cases, free software and online hosting of the web questionnaire can be used (as in this particular case when 1KA was used). The time is thus a more critical resource while performing the web survey. The most time consuming phases of the process are:

- Questionnaire development: it is important to develop and design an appropriate, valid questionnaire for gathering data that can explain a phenomenon.
- Data collection: it is important to fix an appropriate range of time for recruiting participants and collecting data in order to have a sufficient database for the data analysis process.
- Data analysis: The data are analysed following the data collection process. Although it is possible to analyse partial data (before the data collection process is finished) it is not possible to provide stable insights before the data collection is completely finished.

In the present study, the participant recruitment and data collection phases were most challenging. In this particular case, the researcher did not have a contact list of Chimera Revo website users, to invite them to participate in the web survey. This forced the researcher to create an appropriate strategy to recruit as many as possible from the target population of the Chimera Revo project. Often, the creation of an appropriate recruitment strategy can increase the costs of the web survey. For instance, it is possible to involve respondents using paid invitations banners placed on specific websites or to offer incentives.

Another consideration is the (non)response rate. Invited website visitors may decide not to participate in the web survey at all, or else start to answer to the questionnaire, but leave it prematurely. In this particular study, the response was very low; 0,07% of the Chimera Revo website users of the field period (see Section 4.4.1.3) provided usable data for the analysis. Despite this, we consider the sample size sufficient for analysis, as Dumas and Salzman (2006, 126) showed that, for usability assessment of software, computer systems, etc., a sample size of 10 to 12 participants is sufficient for usability assessment using a questionnaire survey.

A basic difference in the two methods is who performs the usability assessment. While the heuristic evaluation method is based on the evaluation of an individual or limited group of experts, the web survey method potentially reaches a large group of website visitors. The collected data thus come from different respondents who have different knowledge, background and experiences. This

important aspect provides broader opportunities to uncover the majority of the usability issues related to a website, which may also differ from the issues discovered by the experts via heuristic evaluation.

This leads to differences in the results obtained by the two methods. In the specific case, the results of the usability methods differ from each other; this is due to the nature of the usability assessment methods. The heuristic evaluation focused on specific Nielsen's (2002) heuristics while the questionnaire was based on the WAMMI project (Wammi 2016). Each method focuses on specific usability aspects that are covered in a different way, partially covered or not covered by the other. The two methods also differ in how the results are reported. The heuristic evaluation provides results in the form of a list, specifying the usability problems in detail (see Section 4.3.2), while the web survey provides less detailed results in terms of specific usability problems while focusing on general usability factors (see Section 4.4.3).

In conclusion, based on the experience of the present study, it is recommended to use the heuristic evaluation and web survey approaches concurrently; the use of one method does not preclude the use of the other. In practice, the use of these two usability assessments in combination would ensure to uncover the majority of the usability problems that can affect a website, by including both experts and website users in the assessment process.

Ocenjevanje uporabnosti spletnih mest: Primerjava metod

Magistrsko delo primerja dve metodi ocenjevanja uporabnosti spletnih mest. V teoretičnem delu avtor predstavi pristop načrtovanja storitev in izdelkov, ki je usmerjen na uporabnika (angl. *User-Centered Design* ali UCD; Abras in drugi 2004, 1), ter ga aplicira na ustvarjanje, razvoj in vzdrževanje spletnih mest. Sledi pregled metod za ocenjevanje uporabnosti spletnih mest, pri čemer sta najbolj poudarjeni dve metodi: hevristično ocenjevanje in spletna anketa. V empiričnem delu avtor uporabi in primerja ti dve metodi pri ocenjevanju uporabnosti spletnega mesta *Chimera Revo*, italijanskega spletnega mesta, ki ponuja novice o tehnologiji, pametnih telefonih, tablicah, programski opremi, aplikacijah, operacijskih sistemih itd.

Z uporabo *hevrističnega ocenjevanja* je avtor ocenil spletno mesto z uporabo 10 priporočil za oblikovanje spletnih mest, kot jih je podal Nielsen (2002). Teh 10 priporočil se nanaša na najpomembnejše vidike spletnih mest, ki lahko povečajo njihovo uporabnost in poslovno vrednost. Hevristično ocenjevanje je pokazalo na prisotnost težav z uporabnostjo, ki se vežejo na 7 od 10 Nielsenovih priporočil: objava informacij o podjetju, visoko pomembnih nalogah, polje za iskanje, vsebina spletnega mesta, hipertekstovne povezave in grafika.

Avtor je med uporabniki spletnega mesta izvedel *spletno anketo*, ki je vključevala WAMMI merski instrument (Wammi 2016). WAMMI (Website Analysis and MeasureMent Inventory) je projekt, ki je namenjen ocenjevanju uporabnosti spletnih strani (Kirakowski et al. 1998, Wammi 2016). Spletna anketa je pokazala, da uporabniki ocenjevalnega spletnega mesta pozitivno ocenjujejo njegovo uporabnost z vidika naslednjih dimenzij: privlačnost, nadzor, učinkovitost, pomoč, učljivost ter skupna ocena uporabnosti. Pokazali pa so se tudi nekateri problemi, povezani z nekaterimi posameznimi dimenzijami faktorji uporabnosti, predvsem v zvezi z uvodnimi informacijami, premikanjem po straneh, grafiko, vsebino in hitrostjo delovanja spletnega mesta.

V zadnjem delu (Poglavje 5) je avtor primerjal dve uporabljeni metodi ocenjevanja uporabnosti. Med njima so se pokazale razlike, ki izhajajo predvsem iz tega, da je hevristično ocenjevanje izvedeno z enim ali več strokovnjaki, ki ocenjujejo spletno mesto upoštevajoč neka priporočila (hevristiko), medtem ko s spletno anketo odkrivamo morebitne težave preko vključevanja uporabnikov spletnega mesta. V tem specifičnem primeru se je pokazalo, da se ti dve metodi osredotočata na različne vidike uporabnosti in le del teh vidikov je pokrit z obema metoda. Metodi se razlikujeta tudi v tem, kako so rezultati predstavljeni. V primeru hevrističnega ocenjevanja so rezultati predstavljeni v obliki seznama s podrobnostmi o odkritih problemih, medtem ko so rezultati spletne ankete manj podrobni in se osredotočajo bolj na splošne dimenzije uporabnosti.

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Annexes

Annexes A: Invitation texts translated in English.

Invitation texts shared through Chimera Revo Facebook, Google+, Telegram channels :

1. Help us to improve your Chimera Revo. Spending a few minutes on answering the survey (through the link), you will help us to improve our services. Thank you for the help.
2. Help us to give the best Chimera Revo experience. Take a few minutes to answer the survey (through the link). You will help to develop the best Chimera Revo experience. Your feedback is important. Thank you for the help.
3. Contribute to improve Chimera Revo. Answering to the survey (through the link), you will help us in improving your Chimera Revo experience. Thank you for the help.

Invitation texts shared through Chimera Revo Twitter account:

1. Help us to improve your Chimera Revo. Give us your feedback. It is important.
2. Help us to give the best Chimera Revo experience. Give us your feedback. It is important.
3. Contribute to improve Chimera Revo. Give us your feedback. It is important.

Invitation text shared through the Chimera Revo website post:

Providing you the best Chimera Revo experience is important for us. We daily try to create useful content that can help you during the use of software, devices, during the choice of a new purchase and so on.

For continuing to do so, this we need your help. Answering to the survey, provided through the link below, you will give us your feedback. It is important. You will help us to improve the website usability.

This survey has been created by Marco Aurelio Iannone (blogger freelance and Chimera Revo user) in collaboration with our team.

This survey is part of the master thesis "Web Usability Assessment: Comparison of methods" of Marco Aurelio Iannone, supervised by Prof. Dr. Katja Lozar Manfreda at the study programme of Social Informatics of University of Ljubljana.

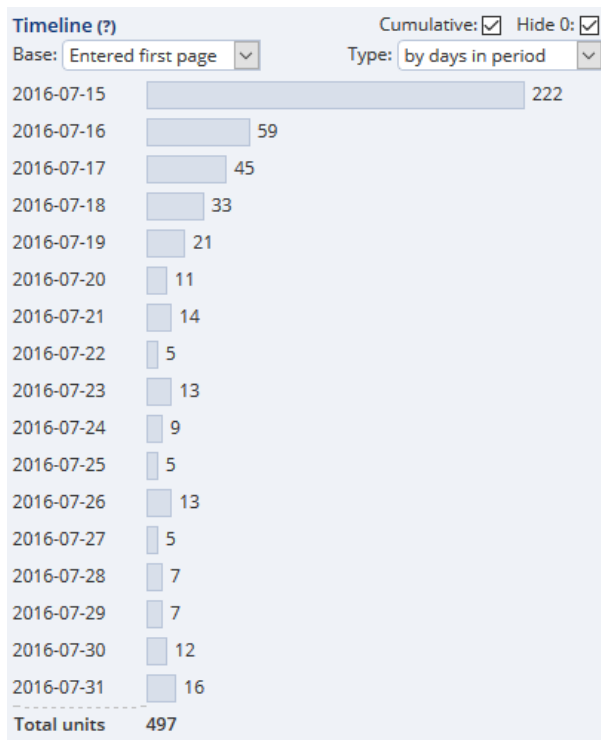
The survey will take you approximately 5 minutes.

Your answers are anonymous and your data will be protected according to the legislation on data privacy.

Thank you in advance for your cooperation. In case of further questions you can contact Marco Aurelio Iannone: marc.a.iannone [at] gmail [dot] com

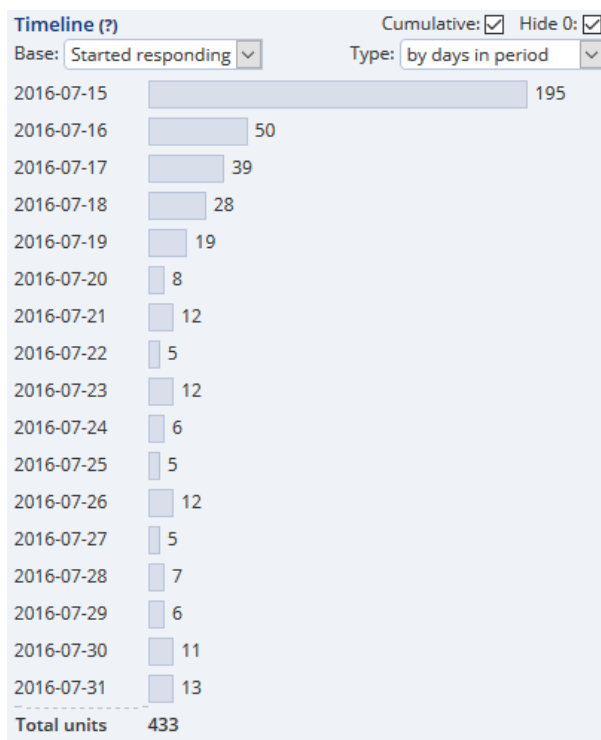
Annexes B: Timeline referred to the visitors.

Figure B.1 Timeline referred to the visitors that entered the first page of the questionnaire.



Source: 1KA (2016).

Figure B.2 Timeline referred to the visitors that started to answer to the questionnaire.



Source: 1KA (2016).

Annexes C: Frequency report from the web survey involving the Chimera Revo website users.

Q1	Language										
	Answers	Frequency	Percent	Valid	Cumulative						
	1 (English)	0	0%	0%	0%						
	2 (Italiano)	424	100%	100%	100%						
Valid	Valid	424	100%	100%							
Q1 reasons	What are your main reasons for visiting the Chimera Revo website?										
	Subquestion	Units					Counts				
		Frequency	Valid	% – Valid		% –	Frequency	%			
Q1 reasonsa	Read news.	345	424	81%	424	81%	345	25%			
Q1 reasonsb	Read reviews of smartphones, tablets, apps, etc.	225	424	53%	424	53%	225	17%			
Q1 reasonsc	Read editorial news.	147	424	35%	424	35%	147	11%			
Q1 reasonsd	Read feature news.	262	424	62%	424	62%	262	19%			
Q1 reasonse	Find out new offers.	93	424	22%	424	22%	93	7%			
Q1 reasonsf	Find out guides about software, devices, apps, etc.	266	424	63%	424	63%	266	20%			
Q1 reasonsg	Other. Please, specify.	25	424	6%	424	6%	25	2%			
	Total valid		424		424		1363	100%			
Q2	How much do you agree or disagree with the following statements regarding the website Chimera Revo?										
	Subquestion	Answers						Valid	Units	Average	Std. deviation
		Strongly Disagree	Disagree	Nor Disagree / Nor Agree	Agree	Strongly Agree	Valid				
Q2a	This website has much that is of interest to me.	3 (1%)	5 (2%)	30 (10%)	172 (55%)	102 (33%)	312 (100%)	312	424	4.2	0.7
Q2b	It is difficult to move around this website.	39 (13%)	124 (40%)	73 (24%)	51 (17%)	20 (7%)	307 (100%)	307	424	2.6	1.1
Q2c	I can quickly find what I want on this website.	15 (5%)	49 (16%)	89 (30%)	118 (39%)	29 (10%)	300 (100%)	300	424	3.3	1.0
Q2d	This website seems logical to me.	3 (1%)	10 (3%)	53 (17%)	161 (53%)	76 (25%)	303 (100%)	303	424	4.0	0.8
Q2e	This website needs more introductory explanations.	31 (10%)	105 (34%)	114 (37%)	46 (15%)	9 (3%)	305 (100%)	305	424	2.7	1.0
Q2f	The pages on this website are very attractive.	12 (4%)	35 (12%)	74 (24%)	144 (47%)	39 (13%)	304 (100%)	304	424	3.5	1.0
Q2g	I feel in control when I'm using this website.	15 (5%)	34 (11%)	96 (32%)	124 (41%)	34 (11%)	303 (100%)	303	424	3.4	1.0
Q2h	This website is too slow.	60 (19%)	147 (48%)	67 (22%)	27 (9%)	7 (2%)	308 (100%)	308	424	2.3	0.9
Q2i	This website helps me find what I am looking for.	6 (2%)	21 (7%)	80 (26%)	150 (49%)	50 (16%)	307 (100%)	307	424	3.7	0.9
Q2j	Learning to find my way around this website is a problem.	111 (36%)	109 (36%)	47 (15%)	27 (9%)	11 (4%)	305 (100%)	305	424	2.1	1.1

Q3 And how much do you agree or disagree with the following statements regarding the website Chimera Revo?											
	Subquestion	Answers						Valid	Units	Average	Std. deviation
		Strongly Disagree	Disagree	Nor Disagree / Nor Agree	Agree	Strongly Disagree	Valid				
Q3a	I don't like using this website.	131 (42%)	120 (39%)	35 (11%)	20 (6%)	4 (1%)	310 (100%)	310	424	1.9	0.9
Q3b	I can easily contact the people I want to on this website.	13 (4%)	35 (12%)	181 (61%)	50 (17%)	17 (6%)	296 (100%)	296	424	3.1	0.8
Q3c	I feel efficient when I'm using this website.	2 (1%)	17 (6%)	104 (36%)	129 (44%)	39 (13%)	291 (100%)	291	424	3.6	0.8
Q3d	It is difficult to tell if this website has what I want.	51 (17%)	127 (43%)	77 (26%)	36 (12%)	5 (2%)	296 (100%)	296	424	2.4	1.0
Q3e	Using this website for the first time is easy.	15 (5%)	31 (10%)	55 (19%)	135 (45%)	61 (21%)	297 (100%)	297	424	3.7	1.1
Q3f	This website has some annoying features.	28 (9%)	80 (27%)	68 (23%)	91 (31%)	28 (9%)	295 (100%)	295	424	3.0	1.2
Q3g	Remembering where I am on this website is difficult.	55 (19%)	119 (40%)	78 (26%)	36 (12%)	9 (3%)	297 (100%)	297	424	2.4	1.0
Q3h	Using this website is a waste of time.	171 (58%)	98 (33%)	26 (9%)	0 (0%)	2 (1%)	297 (100%)	297	424	1.5	0.7
Q3i	I get what I expect when I click on things on this website.	2 (1%)	6 (2%)	33 (11%)	177 (60%)	78 (26%)	296 (100%)	296	424	4.1	0.7
Q3j	Everything on this website is easy to understand.	5 (2%)	29 (10%)	75 (26%)	139 (47%)	45 (15%)	293 (100%)	293	424	3.6	0.9
Q4sections	Next questions refer to some specific sections of the Chimera Revo website and its Youtube channel. How much do you agree or disagree with the following statements?										
	Subquestion	Answers						Valid	Units	Average	Std. deviation
		Strongly Disagree	Disagree	Nor Disagree / Nor Agree	Agree	Strongly agree	Valid				
Q4sectionsa	I find useful the section Offerte.	22 (7%)	33 (11%)	85 (28%)	105 (35%)	56 (19%)	301 (100%)	301	424	3.5	1.1
Q4sectionsb	I find useful the section Specifiche tecniche.	3 (1%)	7 (2%)	43 (15%)	138 (47%)	100 (34%)	291 (100%)	291	424	4.1	0.8
Q4sectionsc	I find interesting the Chimera Revo Youtube videos.	12 (4%)	22 (8%)	111 (38%)	99 (34%)	45 (16%)	289 (100%)	289	424	3.5	1.0
Q4sectionsd	I like the format (composition) of shared videos on Chimera Revo Youtube channel.	12 (4%)	21 (7%)	122 (42%)	99 (34%)	36 (12%)	290 (100%)	290	424	3.4	0.9
Q5bestfeat	What do you think are the best features of the Chimera Revo website?										
	Subquestion	Units					Counts				
		Frequency	Valid	% – Valid		% –	Frequency	%			
Q5bestfeata	The velocity.	91	292	31%	424	21%	91	12%			
Q5bestfeatb	The richness of the content.	204	292	70%	424	48%	204	26%			
Q5bestfeatc	The graphics.	89	292	30%	424	21%	89	11%			
Q5bestfeatd	That content is clearly understandable.	190	292	65%	424	45%	190	24%			
Q5bestfeatf	The website compatibility with different devices.	109	292	37%	424	26%	109	14%			

Q5bestfeatf	The possibility to be informed about new offers.	75	292	26%	424	18%	75	10%
Q5bestfeatg	Other. Please, specify:	23	292	8%	424	5%	23	3%
	Total valid		292		424		781	100%

Q6impfeat What features of this website do you think should be improved?								
Subquestion		Units					Counts	
		Frequency	Valid	% – Valid		% –	Frequency	%
Q6impfeata	The velocity	44	229	19%	424	10%	44	13%
Q6impfeatb	The content	63	229	28%	424	15%	63	19%
Q6impfeate	The graphics	110	229	48%	424	26%	110	33%
Q6impfeate	Understandability of the content	21	229	9%	424	5%	21	6%
Q6impfeate	The website compatibility with different devices	26	229	11%	424	6%	26	8%
Q6impfeatf	The possibility to be informed about new offers	20	229	9%	424	5%	20	6%
Q6impfeatg	Other. Please, specify:	45	229	20%	424	11%	45	14%
	Total valid		229		424		329	100%

Q7whyvel Why do you think velocity should be improved?								
Subquestion		Units					Counts	
		Frequency	Valid	% – Valid		% –	Frequency	%
Q7whyvela	I cannot effectively navigate into the website.	38	44	86%	424	9%	38	83%
Q7whyvelb	Other. Please, specify.	8	44	18%	424	2%	8	17%
	Total valid		44		424		46	100%

Q8whycont Why do you think content should be improved?								
Subquestion		Units					Counts	
		Frequency	Valid	% – Valid		% –	Frequency	%
Q8whyconta	The content is not interesting.	15	57	26%	424	4%	15	25%
Q8whycontb	Other. Please, specify:	44	57	77%	424	10%	44	75%
	Total valid		57		424		59	100%

Q9whygraph Why do you think website graphics should be improved?								
Subquestion		Units					Counts	
		Frequency	Valid	% – Valid		% –	Frequency	%
Q9whygrapha	I do not like the website graphics.	82	106	77%	424	19%	82	69%
Q9whygraphb	Other. Please, specify.	37	106	35%	424	9%	37	31%

	Total valid		106		424		119	100%
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Q10whyunde Why do you think the understandability of the content should be improved?								
Subquestion		Units					Counts	
		Frequency	Valid	% – Valid		% –	Frequency	%
Q10whyundea	The content is not clearly understandable.	13	17	76%	424	3%	13	68%
Q10whyundeb	Other. Please, specify.	6	17	35%	424	1%	6	32%
Total valid			17		424		19	100%

Q11whycomp Why do you think the website compatibility with different devices should be improved?								
Subquestion		Units					Counts	
		Frequency	Valid	% – Valid		% –	Frequency	%
Q11whycompa	I cannot use the website through different devices.	14	25	56%	424	3%	14	56%
Q11whycompb	Other. Please, specify.	11	25	44%	424	3%	11	44%
Total valid			25		424		25	100%

Q12whyoff Why do you think the possibility to be informed about new offers should be improved?								
Subquestion		Units					Counts	
		Frequency	Valid	% – Valid		% –	Frequency	%
Q12whyoffa	I do not find convenient offers.	17	19	89%	424	4%	17	85%
Q12whyoffb	Other. Please, specify.	3	19	16%	424	1%	3	15%
Total valid			19		424		20	100%

Q13ynsoc Do you follow Chimera Revo through social media?					
Answers		Frequency	Percent	Valid	Cumulative
1 (Yes)		158	37%	54%	54%
2 (No)		135	32%	46%	100%
Valid	Valid	293	69%	100%	

Q14social Through which social media do you follow the Chimera Revo website?								
Subquestion		Units					Counts	
		Frequency	Valid	% – Valid		% –	Frequency	%
Q14sociala	Facebook	111	159	70%	424	26%	111	34%
Q14socialb	Twitter	38	159	24%	424	9%	38	12%
Q14socialc	Google+	58	159	36%	424	14%	58	18%
Q14sociald	YouTube	47	159	30%	424	11%	47	14%

Q14sociala	Instagram	17	159	11%	424	4%	17	5%
Q14socialf	Telegram	55	159	35%	424	13%	55	17%
Q14socialg	Other. Please, specify:	3	159	2%	424	1%	3	1%
	Total valid		159		424		329	100%

Q15sex	Gender:				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Male)	282	67%	97%	97%
	2 (Female)	10	2%	3%	100%
Valid	Valid	292	69%	100%	

Q16age	What is your age?				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Under 18)	16	4%	5%	5%
	2 (18–24)	79	19%	27%	33%
	3 (25–35)	90	21%	31%	63%
	4 (35–44)	47	11%	16%	79%
	5 (45–54)	35	8%	12%	91%
	6 (55–64)	13	3%	4%	96%
	7 (65–74)	5	1%	2%	98%
	8 (75 or over)	0	0%	0%	98%
	9 (Prefer not to answer)	7	2%	2%	100%
Valid	Valid	292	69%	100%	

Q17whenuse	How often do you visit the Chimera Revo website?				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Daily)	214	50%	74%	74%
	2 (Weekly)	69	16%	24%	98%
	3 (Monthly)	7	2%	2%	100%
Valid	Valid	290	69%	100%	

Q19skillra	How would you rate your internet skills?				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Expert level)	187	44%	64%	64%
	2 (I am fairly good)	89	21%	30%	95%

	3 (Avarage)	15	4%	5%	100%
	4 (I am fairly unskilled)	1	0%	0%	100%
Valid	Valid	292	69%	100%	