Online surveys: comparative tool analysis for the creation and administration of e-surveys

Questionários online: análise comparativa de ferramentas para a criação e aplicação de e-surveys

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Abstract

Introduction: The availability of a wide range of tools for collecting data through online surveys (e-surveys) offers new opportunities for users to choose them. However, it also makes the choice process more difficult. It becomes relevant to map the best existing tools and analyze them through the lens of uniform objective criteria. **Method:** It carries out an exploratory search, based on secondary data, to map the existing e-survey tools. It creates an analysis grid and applies to 15 tools selected from the initial mapping. After, it applies a grid of comparative evaluation and scoring to 10 tools chosen from the 15 analyzed . **Results:** It provides a systematic and updated survey of the existing e-survey tools and it presents a scored evaluation of its main features. It summarizes the main characteristics and functionalities of the three best-rated tools (SurveyMonkey, SurveyGizmo and SoGoSurvey), providing potential users with relevant data to make an informed choice. **Conclusions:** It highlights the need for a methodical evaluation of e-survey tools since there are several tools with very similar characteristics. It also highlights the need to consider the user's requirements and the objectives of the questionnaire during this assessment. This paper will have a high potential for practical use by researchers, students or professionals in the private sector who need to work with e-surveys.

Keywords: Online surveys; Comparative analysis; Data collection tools.

Resumo

Introdução: *A disponibilidade de uma grande quantidade de ferramentas para a coleta de dados através de questionários online (e-surveys) oferece novas oportunidades de escolha aos utilizadores, mas também dificulta o processo de seleção. Neste sentido, torna-se relevante mapear as ferramentas existentes e analisá-las à lente de critérios objetivos uniformes.* ***Método:*** *Foi realizada uma pesquisa exploratória, com base em dados secundários, para mapeamento das ferramentas de e-surveys existentes. Foi criada e aplicada uma grelha de análise a 15 ferramentas selecionadas num mapeamento inicial. Foi criado um quadro de avaliação comparativa e de pontuação aplicado a dez ferramentas escolhidas dentre as 15 analisadas.* ***Resultados:*** *É proporcionado um levantamento sistemático e atualizado das ferramentas de e-surveys existentes e apresentada uma avaliação pontuada das suas principais funcionalidades. São sintetizadas as principais características e funcionalidades das três ferramentas melhor pontuadas (SurveyMonkey, SurveyGizmo e SoGoSurvey), proporcionando aos potenciais utilizadores dados relevantes para que façam uma escolha informada.* ***Conclusão:*** *É evidenciada a necessidade de uma avaliação metódica das ferramentas de e-surveys, dada a existência de muitas ferramentas com características semelhantes. Destaca-se a importância de atender aos condicionalismos do utilizador e aos objetivos da aplicação do questionário. A presente pesquisa terá elevadas potencialidades de uso prático por parte de investigadores, estudantes ou profissionais do setor privado que necessitem de trabalhar com e-surveys.*

Palavras-chave: *Questionários online; Análise comparativa; Ferramentas de coleta de dados.*

INTRODUÇÃO

In the current digital era, the *Internet* crosses all of the areas of the human activity (Schmidt & Cohen, 2013), which is translated in a continuous increase in the number of users and connected devices, at national level (PORDATA, 2020) as much as worldwide (International Telecommunication Union, 2020). The growth and development of new technologies based on the web has been watched, from tools that assiste the creation and management of content, until those that enhance the colaboration of the users. The availability of the most valuable types of digital tools, owned and *open-access*, enlarging the possibilities of choice to the users, such as the related benefits, also ends up complicating the work of the users, that do not know how to choose which tool is more adequate to its needs. Regarding the tools to create online surveys (*e-surveys*), the profusion of the supply is illustrated by the number of results obtained when a research is done through *survey tools*[1] and by the number of identified available tools[2].

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[1] Em março de 2020, foram obtidos cerca de 768 Milhões de resultados no Google
[2] Obtiveram-se 75 ferramentas inicialmente

As foreseen by few author in the midst of the last decade, in the last fifteen years, the *online* surveys affirmed themselves as a technique of data collection broadly used to various endings, scientific, academic and in a business context (Evans and Mathur, 2005; Lozar Manfreda, Batagelj, and Vehovar, 2006). As synthesized by Daikeler, Bošnjak, and Lozar Manfreda (2020) the success *online* surveys is due to a set of factors, which stand out: 1) the decrease of the technical limitation due to the improvement of the digital competences of the survey respondents; 2) better levels of coverage in the access to the *Internet*; 3) the availability of a higher number of devices with easy access to the *Internet* (*wi-fi* connections) and friendly (for example, touch screens); 4) decrease of the cost to *Internet* access; besides the 5) the contact with the people through another means has become harder because, for example, there is a decreasing number of family aggregates with a house phone.

In this scenario, the purpose of this work is to analyse tools to the creation and application of *online* surveys and, through this analysis, to determinate which three are more adequate to the effect, taking into consideration the funcionalities that they offer and its applicability in academic research context, as much as in business to obtain data related to the satisfaction of clients and/or employees, for example.

Besides the introduction, the text presents a section of literature review dedicated to the technique of data collection through surveys and the distinctive aspects of the *e-surveys*. It is, later on, presented with details the conceived and applied methodology to the data collection, analysis and evaluation of the tools of *online* surveys. In a third section, the results of the global appreciation of the tools of the *e-surveys* are presented and discussed, with the characterization of the three considered with the best perfomances facing the evaluation that they were submitted. The texts ends with the conclusions, on which is presented a general reflection of the developed work.

Considering the generalized use of tools of *online* surveys, the present article intends to trace a framework of the existent supply and to do a characterization, complemented with a evaluative approach, of the existent options to the effect. The relevance of the thematic finds here a justification, reinforced by the fact of the existance of very few bibliography in portuguese about the matter and also the necessity of its update (Walter, 2013).

SURVEYS: A LITERATURE REVIEW

The survey can defined as an instrument of data collection that includes a set of questions with the purpose of gathering information from a groups of respondents (Moreira, 2004). It is an essencial instrument among the tools destined to data collection, once it allows to collect opinions, demographic data or *feedback* in a direct manner, and normally at a reduced cost, besides enabling the elaboration of statistics (Greenlaw & Brown-Welty, 2009). As explained by Parizot (2015, p. 85), this technique of data collection sustains the quantitative approaches, in which it is intended to mesure the existence of characteristics but also its relations:

> The main interest of the research through surveys is to gather a large quantity of informations, factual as much as subjective, with a important number of individuals – the representativity of this sample allowing to infer the results obtained with the researched to a group of the study population. The objective of these researches can be the one of mesuring the frequency of characteristics (situations, behavior, opinions or attitudes...) on a given population, but in social and human sciences it aims mainly to analyze the relation between these characteristics.

Even though the creation of a survey migh seem simple, it is necessary to apply time and effort, developing a global approach, that implies the fitting of the survey in a more general scope of the project/objective in which it adheres to. As underlined by Sue and Ritter (2007, p. 1), "to apply the surveys effectively, it is important to understand that a survey is na element of a process that starts with the definitions of objectives and ends with the analysis of the data and result reports"[3].

The surveys must be integrated in a perspective of *Total Survey Design* (TDS) since the fitting into the project (of academic or scientific investigation, of client satisfaction, probing, evaluation, etc.) global is a critical point to the succes of the survey use. In that sense, it matter to put into practice a holistic approach considering all the steps of development and application of the survey. With the existence of different approach, regarding sequencing of the procedures of use of the surveys as tools of data collection (Gil, 2002), we considered it as more adjusted to the vision by Sue and Ritter (2007). According to the approach drawn by these authors, it is necessary to attend the eight steps inherent to the use of survey and a technique of data collection:

a) Define objectives: determinate what is intended to know and why, project to whom the results might interest and attend the costs of data collection;

b) Define the universe or population and choose a sample: use a existent sample or create it, select methods of probability sampling and not probability to create the sample;

c) Conceive the data collection strategy: evaluate the available time and resources, choose one modality of administration of the survey;

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[3]Texto Original: "to employ surveys most effectively, it is important to understand that a questionnaire is one element of a process that begins with defining objectives and ends with data analysis and reporting results".

d) Collect the data: monitor the answer and use reminder, if necessary/ applicable;

e) Manage the data: create a codification, import or export the data, clean the data, transform/work the data;

f) Analyze the data;

g) Disseminate the results: write a report or do an oral presentation, for example.

The main characteristics of the research by surveys cover the standardization in the application and the comparability of the answers (Parizot, 2015). The standardization implies that the similar answers given by different people are considered as equivalent in the moment of analysis. Consequently, it is necessary to put exavtly the same question to the group of respondents and also homogenize the environment of application of the survey, because the conditions of its realization are always susceptible to influence the answers. The differences in the answers reflect the differences related to what the respondents have to say, and not to the stimuli resulting of the application of the survey. In that sense, the respondent understand the question in the same way and produce answers with similar meaning and, therefore, comparable.

Thus, one of the critical aspects of the use of surveys is related with the formulation of the questions. Write a survey consists into transform the questions of research into indicators and then into answers that will be put to the respondents (Parizot, 2015). These question can assume two shapes: closed questions (provide to the respondent the choice of answer between a set of options given by the researcher) and open question (allow the respondent to formulate the answers it desires). As for its content, the questions can focus over "facts", about beliefs, attitudes, opinions, judgements; about behaviors; or about the reasons of certain behaviors, attitudes (Moreira, 2004).

Besides these aspects related to the form and the content of the surveys, in a perspective of *Total Survey Design* it is also important to consider the way of distribution of the survey.

Traditionally, the modalities of distribution of the surveys used to include the use of the postal mail and of telephones but, since the beggining of the 21th century, the spread of the surveys in the Web through e-mail started to gain space and the computer started to be an essencial instrument not only in data treatment, but also in collection. In fact, midst the 20th century, the use of the computer in researches by survey started with CATI (*computer-assisted telephone interviewing*), in which the interviewer registered, directly on the computer, the answers the interviewed gave by the phone, and evolved to the CAPI (*computer-assisted personal interviewing*), in which the interviewer collects the answers directly from a research "face to face" with the interviewed (Lozar Manfreda et al., 2006; Parizot, 2015).

Nowadays, four modalities of application of the surveys stand out: by postal mail, by phone, in person (face to face) and *online*. Each of these modalities presents advantages and disadvantages, it is up to the responsible for the execution of the research by research to choose the better option, according to the objectuves and available resources. On Tabela 1, the main advantages and disadvanteges of each modality are catalogued synthetically, having a more profound analysis right after about the *online* surveys.

Modality of application	Advantages	Disadvantages
Postal mail	low cost enlarged geographic reach without interviewer bias The anonymity allows sensible questions	low answer rate long answer period difficulty to implements questions of contingency not knowing who answers the research
Phone	limited coverage quick answer allows complex question broad geographic reach	it might be confused with a sales call intrusive necessity to monitor the calls no visual support
In person (face to face interview)	good answer rate allows complex questions tolerance to complex interviews	limited geographic reach time-consuming interviewer bias difficulty to approach sensible question
Online	low cost quick efficient easy implementation of contingency questions direct data registration broad geographic reach	coveraged biasviés da cobertura software dependenchy not knowing who answers the survey

Table 1. Comparation of the modalities of survey application.
Source: adapted from Sue and Ritter (2007, p. 7).

The *online* surveys have many advantages to the organization or person that develops and applies them. According to Vasconcellos and Guedes (2007), the cost of elaboration can be reduced or excluded, unless a more expensive option is chosen; the data are presented immediately after the survey is answered; facility to use bigger samples; the similar data are easily groupe and can be presented percentually, highlighting the differences, making the analysis easier, reducing error and time of writing; among others.

Besides that, Ilieva, Baron, and Healey (2001) reinforce that the velocity of data collection is much superior and does not rely on geographic location of the respondent, being fit to international comparation. From the respondent's point of view, some advantages can also be listed, such as flexibility and convenience, once it is possible to complete the survey when it is convenient, with no need to move to a controlled place; the absence of an interviewer, making the respondent to feel more at ease to answer with more sincerity; possibility to nclude new stimuli (such as sounds, colors, imagery, animations, etc.) at a low or non-existent cost, aiming to get the attention of the respondent and obtain a higher number of answers (Hayslett and Wildemuth, 2004; Kays, Gathercoal, and Buhrow, 2012).

However, as synthesized by some authors (Evans and Mathur, 2005, p. 201-202, ; Vasconcellos and Guedes, 2007, p. 10-11), tthe online surveys present disadvantages:

a) Limitation of the respondents that have access to the intert and technological competences to the use of the devices, possibly enabling a sample representative of the population;

b) Impersonality and privacy problems;

c) Difficulty to include incentive to the submission of the answer;

d) Use of little attractive surveys, due to inefficiency of the layout and the lack of flexibility of the *layout*;

e) Problems with the survey engagement, because the respondents might consider it as an invasion of privacy or "spam", ignoring andqor eliminating the answer requests;

f) Low answer rate, in relation to the other survey application methods (mail, fax etc.);

g) Low data reliability – the respondents might distort, on purpose or not, its answers and might interpret wrongly the question, taking it to a different path to the result;

h) Difficulty of access to a sufficient number of *e-mail* addresses valid to the surveys difusion.

To the success of the *online* surveys, avoinding rushed, thoughtless answers or even the abandonament of the process of response, Guin, Baker, Mechling, and Ruyle (2012) enunciate some recomendations, namely

to the *design* of the survey, combining properly text, graphic elements, gamification components and visual functionalities. Furthermore, it will matter to limit the extension of the survey to the minimum of question, balance the cognitive effort required of the respondent and not overburden with excessive requests to participate of surveys.

Naturally, in order to an *online* survey to sustain the objectives of the research or project in which it is inserted, the choice of the tool used for the creation, distribution, collection, storage and, sometimes also, treatment of data, is a critical point. This choice has to be based on knowledge and evaluation of the available tools. In fact, the choice of the tool of the e-survey must rely mainly on the necessity and characteristics of the research (Walter, 2013). Thus, the following topic we will explicitate the methodology used to carry out a comparative analysis of the tools of the *online* surveys.

METHODOLOGY TO THE COMPARATIVE ANALYSIS OF TOOLS

The methodology used to carry out a comparative approach to the tools of *online* surveys was based on a adaptation of a framework of analysis previously created and tested by Marra and Bogue (2006). Four categories were defined, related to the functionalities of development, functionalities of implementation and functionalities of access/representation of the data, beside other important aspects to take into consideration. Inside each one of these categories, the most relevant characteristics were included, as illustrated on Tabela 2. Thus, on the functionalities of development all types of available answers and itens to be added, the insertion of restrict boxes written with instructionas and other useful indications, the possibility of implementation of instrumental logic, the capacity to foresee/test the final product, as well as the layout options of the survey, namely the *design*, the order of the questions, spacing and edges, among other were taken into consideration. The functionalities of implementation include the aspects related to the release of the survey, such as the capacity to edit the instrument of data collection after the release, the access to the URL and/or its incorporation in *e-mail* message, besides its monitorization of the answers, with access to the increase of the number of respondents, its traking and techniques to increase the answer rate. The functionalities of access and representation of data regard the places of storageof data and the possibilities of *download* of data in different formats. The last category allowed the identification of tools *open-source*, of the price, of *interface* aspects of the use, of security of the server to the protection of data against intruders and against data loss besides other special functionalities.

Funcionalities of Development	• Selection of types of answer. • Selection of types of itens to add. • Implementation of instrumental logic: access do determined questions depending on the answer to previous questions. • Ability to foresee and/or test the final product; • Layout/Customization of the tool: design, order of the questions, spacing, edges;
Functionalities of Implementation	• Allow the users gain access to the instrument of data collection (editing after this step might result in data loss); • Allow access to the URL and its incorporation in e-mail or as a link in a website; • Implementation of instrumental logic: access do determined questions depending on the answer to previous questions. • Monitorization of answers: how many submissions, download of inside data to the tracking of certain respondents, providing useful information to the users so the answer rate can be increased and thus improve the data of the general evaluation;
Functionalities of Access/ Data Representation	• Allow data storage in cloud; • Allow the download of data in different formats;
Other Relevant Aspects	• Open-source or owned tools; • Price; • Interface of the user; • Security of the server – for data protection; • Security of the server –to avoid data loss; • Availability of special functionalities.

Table 2. Main characteristics and functionalities of the tools of online surveys.
Source: adapted from Marra and Bogue (2006).

This board of generic analysis was applied to the tools of the *online* surveys to the first contact with its characteristics, being user later to structure the criteria of an evaluative board for the tools, as explained next.

At the stage of mapping the existent tools, researches were carried out on search engines with relevant terms and consulted *web* sites and magazines specialized in technology and *software*. To beggin the research of survey tools, the following *query* was used: "*top 10 survey tools*", on *Google* general. The results provided the access to articles of revision of tools of the *e-surveys* published on magazines or *sites* of technologies and *software*. This procedure allowed us to understand which tools that, in general, had the best critics, which we selected to a preliminary analysis.

At the end of mapping, 75 tools were lifted, The choice of the tools in which the board of generic analysis was applied [Table 2] was based on various factors: a) integration at the tops of the classifications in various *sites* and magazines about technology and *software*; b) the integration in other articles of comparation of tools. Thus, after the gathering of 75 different tools, followed an identification of the 15 that were more frequently mentioned and better classified: SurveyMonkey, SurveyGizmo, Qualtrics Research Core, SoGoSurvey, Zoho Survey, Formstack, QuestionPro, Proprofs Survey Maker, Survio, LimeSurvey, HostedSurvey, Survicate, Nicereply, SurveyLegend e TypeForm [Tabela 3].

Designation of the tool	Web Site
SurveyMonkey	https://pt.surveymonkey.com/
Surveygizmo	https://www.surveygizmo.com/
Qualtrics Research Core	https://www.qualtrics.com/
SoGoSurvey	https://www.sogosurvey.com/
Zoho Survey	https://www.zoho.com
Formstack	https://www.formstack.com/
QuestionPro	https://www.questionpro.com
Proprofs Survey Maker	https://www.proprofs.com/survey/
Survio	https://www.survio.com
LimeSurvey	https://www.limesurvey.org
HostedSurvey	https://hostedsurvey.net/
Survicate	https://survicate.com
Nicereply	https://www.nicereply.com/
SurveyLegend	https://www.surveylegend.com/
TypeForm	https://www.typeform.com/

Table 3. Listing of the tools of the e-surveys object of general analysis.
Source: own elaboration, 2020 [All links were active on August of 2020].

From these 15 tools, ten were selected to which a board of evaluation of *online* survey tools was applied [Tabela 4], with the objective to make a global point system of these ten and identify the three with higher score. To the selection of the ten tools, the eliminatory factor was the impossibility of a free trial or the free version to offer basic functionalities.

To nan objective comparative evaluation, based on the board of generic analysis and on the knowledge obtained from the mapping of existent tools, according to the information available at the following *sites*, the board with the evaluation criteria was elaborated [Tabela 4], to which was applied a scale of four levels, of zero (nonexistent or insufficient) to three (excelent) [Figura 1].

0	1	2	3
Inexistente ou Insuficiente	Suficiente	Bom	Excelente

Figure 1. Scale.
Source: own elaboration, 2020.

On this board of evaluation of the tools of *online* surveys, 13 criteria of measurement were taken into consideration and to each one was applied a scale of specific evaluation in four levels. These were defined based on the main characteristics associated with the tools of creation of surveys, given that, to integrate the evaluation board, each of the characteristics would have to be observed during an exploratory analysis of the *softwares* and susceptible to be compared between themselves. The first criteria regards the possibilities of selection of types of answer (text, multiple choice, verification boxes, etc.) and allowed to classify the tools in a broad spectrum of possibilities, once the existence of only five options until 15 or more options for the types of answers susceptible to be used. The criteria regarding selection of the types of itens to add includes the basic option of text until the complete option of text, images, pages and *scripts*. Regarding the insertion of written boxes, the impossibility of insertion of written boxes and various grades at the facility of implementation as well as availability of an editing instrument were considered. The implementation of instrumental logic or ramification logic is evaluated in a scaled related to its inexistence, but also the facility of use, when existent.

The existence of a *preview* mode and/or test is important to observe the behavior of the survey operation before applying it, to correct eventual errors, having been evaluated on a scale that predicts the impossibility of a test/*preview* until the co-existenceate of both options and other tools of survey evaluation. The criteria related to layout options allowed to identify the tools that do not supply options of personalized design, which are allowed through a code and which present tools to construct a basic layout or with many options. The personalization options constructed another criteria significantly relevant once it influences on the possibilities of graphic presentation of the survey which can be inexistent, to include a variable number of models or allow the creation of models.

The criteria about access to *URL/Link* for incorporation in *e-mail* or *site* is very relevant, because it is related with the possibilities of disclosure of the survey on digital platforms and can only make available an *URL/Link* or provide the incorporation and connection of the survey on social media and *offline access*. The option of monitoring of answers were evaluated considering only the possibility of *download* of the data until its real-time

visualization, with notification and new answers and filters. The criteria related to format of the data predicts the impossibility of *download* in three or more formats including *CVS* or *XML*.

In the forms of structure representation of the data it was predicted the existence of text until the conjunction of text, graphics, reports and tools of statistics analysis. It was also considered as criteria of evaluation the fact of the tool to be totally free of cost or with various options of paymant plans and free trial periods, being the one free of charge the most valued. The last criteria to be considered was the more general reach and influence over the *interface* of the user, taking into consideration the intuitive use and friendly character.

Designation of the criteria	Evaluation scale
Selection of the Types of Answer	0 – 5 Types 1 – >5 Types 2 – >10 Types 3 – 15 Types
Selection of the Types of Itens to Add	0 – Only Text 1 – Text and Images 2 – Text, Images amd Pages 3 – Text, Images, Pages and Scripts
Insertion of Written Boxes	0 – No possibility of insertion of written boxes. 1 – Diffculty to implement basic editing options. 2 – Easy to implement editing instrument wiht basic options. 3 – Easy to implement editing instrument with many options.
Implementation of Instrumental Logic or Ramification Logic	0 – Not possible 1 – Possible, but complex to implement. 2 – Possible and easy to implement. 3 – Intuitive implementation.
Existence of Preview/Test Mode	0 – No Preview/Test mode. 1 – Preview only. 2 – Preview and Test. 3 – Preview, test and other tools of survey evaluation.
Layout Options	0 – No layout possibilities. 1 – Layout through code. 2 – Layout tool with basic options. 3 – Layout tool with many options.
Personalization Options	0 – No personalization possibilities. 1 – Basic Personalization. 2 – Different models. 3 – Different models and creation of personalized models.
Access to URL/Link for E-mail or Site Incorporation	0 – Only in URL/link 1 – URL/link and incorporation in e-mail or site. 2 – URL/link, incorporation, connection with social media. 3 – URL/link, incorporation, connection with social media and offline access.
Answer Monitoring Options	0 – Only after data download. 1 – Visualization on real time. 2 – Visualization on real time and notification for new answers. 3 – Visualization on real time, notifications for new answers and filters.
Formats of Download of the Data	0 – Does not allow data download. 1 – 2 formats. 2 – 3 or more formats. 3 – 3 or more formats including CSV or XML.
Forms of Structured Representation of Data	0 – Only text. 1 – Text and Graphics. 2 – Text, Graphics and with Report creation. 3 – Text, Graphics, Reports and tools of statistics analysis.
Open-Source or Pay	0 – Only payed plans with possibility for Trial. 1 – Free limited plan and without possibility for Trial of the other plans. 2 – Limited free plan and with possibility for Trial of the other plans. 3 – Totally free.
Interface of the User	0 – No tutorial and little intuitive. 1 – With tutorial, little intuitive. 2 – Intuitive and complex interface of the user. 3 – Intuitive and friendly user interface.

Table 4. Board of evaluation of the tools of online surveys.
Source: own elaboration, 2020.

Next, the results of the application of the board of tools of the *online* surveys will be shown.

RESULTS AND DISCUSSION

From the reading of information available on *web* sites of the tools, visualization of tutorials of tool use, when existent, and of the creation of test surveys, it was possible to test the ten tools according to the outlined evaluation parameters. This approach provided a substantial knowledge of the tools of the *e-surveys*, which allowed to: *a*) score each tool and conclude, based on the score, which are the best three and *b*) compare the performance of each tool in each criteria [Appendix A]. The score of the tools according to the outlined criteria and parameters of evaluation constitutes an exercise of evaluative synthesis that will facilitate the potential user to select the more adequate tool for its needs, according to the functionalities that are more relevant to each specific context.

Given the limits of extension of the present work, we will focus on our more detailed analysis of the three best tools from the *corpus* of the research, namely the SurveyMonkey, the SurveyGizmo and the SoGoSurvey. Not only did they have the best scores (34, 32 and 33 points, respectively), but also corresponded to the few in which none of the functionalities had been evaluated as insufficient or inexistent [Attachment A].

The three chosen tools are based on *cloud* and include basic free plans for undefined time, except SurveyGizmo which the free period of use is 14 days long. All of them provides payed personal, business plans, via contract with the respective enterprises of comercialization. Those follow the Regulamento Geral sobre a Proteção de Dados (RGPD), besides this, the SurveyMonkey also follows the *Consumer Privacy Act* da Califórnia (CCPA). All of them allow the inclusion of *Net Promoter Score*, which consists on a method of user satisfaction evaluation to a product, service or business, belonging always to payed plans; the same applies to the instrumental logic, or ramification logic, that consistis in a resource that alters the next question or page to which the respondents are directed to, based on the answer given to the current/selected question.

The SurveyMonkey that present a question bank, with various examples; provides a wide range of 20 types of questions. Regarding insertion of boxes, it allows texts, images, questions, action, and even *custom scripts*, as well as the SoGoSurvey. This tool allows to test and pre-view the survey, estimating a time of conclusion. In terms of personalization, it allows color change, logo insertion, *layout*, footnotes, backgroubd and fount change. The disclosure of the survey is possible through *Link/URL*, socail media, incorporation in *website* and *e-mail* and buy segmented answers. The tool also enables the purchase of answers of a determined demographic group, constituting the only with this resource. Regarding the analysis of the results, it enables the creation of rules for the presentation of information and it allows the *download* of the data in the formats *CSV, PDF, XLS, PPTX* and *SPSS*. It also allows the sharing of the data through the creation, throught the tool of a disclousure URL, that can be distributed by the user.

The SurveyGizmo, besides the already referred resources, it stands out for its broad spectrum of questions and by the fact that it allows the importation of surveys elaborated on *MS Word*. The layout option are basic, consisting in a simple text editor and image, audio and video insertion. For personalization, it provides options to the selection of backgrounds, themes, logo insertion and customization in *HTML/CSS*. In terms of disclousure, it is possible to share by *Link/URL, QR code*, by social media and incorporation on *website* and *e-mail*. It enables the creation of personalized reports and *download* in the same format as *CSV*, allowimg the choice of delimitators.

Lastly, the SoGoSurvey presents more than 20 types of quesrtions. The layout options are diverse, allowing to change size, shape and color of the text, insert hiperlinks, brands, among others. The personalization is relatively scarce, counting on about five themes, with basic and predefined color pallets; however, it enables the insertion of logo and header and footnote personalization. Besides that, it allows to obtain a *PDF* or *MS Word* copy, free of charge, or *Scanner-Ready*, of the own survey model to fill out. In terms of survey disclousure, it is possible to share through *Link/URL, QR* code, through social media, incorporation on *website* and *e-mail*. The tool allows the importation with *Excel* and *CSV* extensions. For data analysis, it is possible to export t *Excel, CSV, XML, SPSS, Access, MS Word, HTML* and *SoGoSurvey1*, however, on contraty of the other both, the reports are created automatically.

It is possible, on the three tools, personalize and visualize the survey at the devices: *desktop, tablet* and telephone, so the referred does not loose its form. Regarding visualization of the results, the three allow monitoring on real time, however, the application of filters it is possible only on SurveyMonkey and SurveyGizmo.

As seen on the board, few differences exist between the tools in most of the evaluation criteria. As the main divergence points and that might take the user to choose one tool over another, the *interface* of the user, the implementation of instrumental logic, the *preview/test* mode and the answer monitoring options highlighted. The one that stands out, in general terms, is the SurveyMonkey as the more complete and balanced tool, which the score was never lower than good on any of the aspects, as the others had to abdicate of complexity and quality on some functionalities. For example, the SurveyGizmo has an implementation of less intuitive instrumental logic, and the SoGoSurvey has a very intuitive user *interface*, but simpler, having less answer options.

CONCLUSION

On first place, this study indicated the necessity to define and apply evaluation and choice criteria of a tool of creation of online surveys, considering the broad spectrum of choices offered by the market and the similarity of functionalities provided by the tools. Through the application of the evaluation board, it was possible to identify the strong and weak points of each one, helping the decision of the user, once the different functionalities of the tools were pointedm which separeted one from another, in a comparative perspective.

It was also noted that the best tools only give access to all the functionalities with the memebership to a payed plan, which only justifies its use on situations that determined functionalities are indispensable (for example, the implementation of instrumental logic), being that, for simple purposes, the user can choose a more friendly financial solution.

Thus, even after identified the three best tools, it is noted the importance that the needs of the user and the objective of the survey will have on the decision of which one to use. Besides that, it is necessary to take into consideration that, even reconizing the utility and potential of this type of *software*, it is essential to have good planning and outlining of the objectives for the quality of the work that will be carried out, once that, on its own, the use of this tools can not ensure to reach the intended results of the project or investigation.

Lastly, we must to highlight that, even with the possibilities offered by theses tools and the great financaial and time advantages of application of the *online* surveys, in some cases, the relevance of the combined use of the two modalities (*online* and postal mail) stands, in order not only to obtain a higher answer rate but also to ensure that the broader number of demographic groups are reached, avoiding data bias.

Software / Características e Funcionalidades	Funcionalidades de Desenvolvimento							Funcionalidades de Implementação		Funcionalidades de Acesso/Representação dos Dados		Outros Aspetos	
	Seleção dos Tipos de Resposta	Seleção de Tipos de Itens a Adicionar	Inserção de Campos Escritos	Implementação de Lógica Instrumental	Existência de modo Preview/Teste	Opções de Formatação	Opções de Personalização	Acesso ao URL/Link para incorporação em e-mail ou site	Opções de Monitorização de Respostas	Formatos de Download dos Dados	Formas de Representação Estruturada dos Dados	Open-Source ou Paga	Interface do Utilizador
SurveyMonkey	3	2	3	2	3	3	3	2	3	3	3	2	2
SurveyGizmo	3	3	2	1	3	3	2	3	3	3	2	2	1
SoGoSurvey	2	3	2	3	1	3	3	2	1	3	2	2	3
Zoho Survey	3	2	2	1	2	3	3	3	1	1	2	2	0
Formstack	2	2	1	0	2	3	3	0	1	3	0	0	1
QuestionPro	2	1	2	1	2	3	2	0	1	3	1	1	3
SurveyLegend	2	2	3	0	1	3	1	2	2	3	1	1	3
Survio	2	2	2	2	3	0	2	2	2	3	1	1	3
LimeSurvey	3	1	2	0	1	3	1	3	2	3	0	3	1
Survicate	1	0	1	3	1	0	2	1	2	1	1	1	3

Figure 2. Comparative table with the evaluation of the tools.
Source: own elaboration, 2020.

REFERENCES

Daikeler, J., Bošnjak, M., & Lozar Manfreda, K. (2020). Web versus other survey modes: an updated and extended meta-analysis comparing response rates. *Journal of Survey Statistics and Methodology*, *8*(3), 513–539. doi: 10.1093/jssam/smz008

Evans, J. R., & Mathur, A. (2005). The value of online surveys. *Internet research*, *15*(2), 195—219. doi: 10.1108/10662240510590360

Gil, A. C. (2002). *Como elaborar projetos de pesquisa*. São Paulo: Atlas.

Greenlaw, C., & Brown-Welty, S. (2009). A comparison of web-based and paper-based survey methods: testing assumptions of survey mode and response cost. *Evaluation review*, *33*(5), 464–480. doi: 10.1177/0193841X09340214

Guin, T. D.-L., Baker, R., Mechling, J., & Ruyle, E. (2012). Myths and realities of respondent engagement in online surveys. *International Journal of Market Research*, *54*(5), 613–633. doi: 10.2501/IJMR-54-5-613-633

Hayslett, M. M., & Wildemuth, B. M. (2004). Pixels or pencils? the relative effectiveness of web-based versus paper surveys. *Library & Information Science Research*, *26*(1), 73–93. doi: 10.1016/j.lisr.2003.11.005

Ilieva, J., Baron, S., & Healey, N. M. (2001). Online surveys in international marketing research: pros and cons. In *Manchester metropolitan university business school working paper series*. Retrieved from https://e-space.mmu.ac.uk/1640/1/ilievawp01_10.pdf

International Telecommunication Union. (2020). *The itu ict sdg indicators*. Retrieved from https://www.itu.int/en/ITU-D/Statistics/Pages/SDGs-ITU-ICT-indicators.aspx

Kays, K., Gathercoal, K., & Buhrow, W. (2012). Does survey format influence self-disclosure on sensitive question items? *Computers in Human Behavior*, *28*(1), 251–256. doi: 10.1016/j.chb.2011.09.007

Lozar Manfreda, K., Batagelj, Z., & Vehovar, V. (2006). Design of web survey questionnaires: Three basic experiments. *Journal of computer-mediated communication*, *7*(3), 0–0. doi: 10.1111/j.1083-6101.2002.tb00149.x

Marra, R. M., & Bogue, B. (2006). A critical assessment of online survey tools. In *Proceedings of the 2006 women in engineering programs and advocates network conference.*

Moreira, J. M. (2004). *Questionários: teoria e prática*. Coimbra: Almedina.

Parizot, I. (2015). A pesquisa por questionário. In *A pesquisa sociológica* (p. 85—101). Patropólis: Vozes.

PORDATA. (2020). *Ciência, tecnologia e sociedade de informação: Computadores e internet*. Retrieved from https://www.pordata.pt/Subtema/Municipios/Computadores+e+Internet-227

Schmidt, E., & Cohen, J. (2013). *A nova era digital: reformulando o futuro das pessoas, das nações e da economia*. Lisboa: Dom Quixote.

Sue, V. M., & Ritter, L. A. (2007). *Conducting online surveys*. Thousand Oaks: Sage.

Vasconcellos, L., & Guedes, L. (2007). E-surveys: vantagens e limitações dos questionários eletrônicos via internet no contexto da pesquisa científica. In *X semead: Seminários em administração da fea-usp* (p. 1—16). Retrieved from http://sistema.semead.com.br/10semead/sistema/resultado/trabalhosPDF/420.pdf

Walter, O. M. F. C. (2013). Análise de ferramentas gratuitas para condução de survey online. *Produto & Produção*, *14*(2), 44—58. doi: 10.22456/1983-8026.22172