



## **A STRUCTURAL APPROACH FOR ONLINE SURVEYS – VALIDATE, MOTIVATE AND PROVIDE TRUST**

***Knut Linke***

*University of Latvia*

*Raiņa bulv. 19, Riga, LV-1586, Latvia*

*E-mail: knutlinke@gmail.com*

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### **Abstract**

The article targets the issues which are rising in the environment of online interaction by proceeding information requests to an anonymous audience. The author has as target to understand possible issues during the preceding of online surveys from the organization and participant point of view to provide solutions in the sector of communication and technical infrastructure to increase the validity from the results of an online survey.

To understand the possible issues in an online survey first the different possibilities for errors are defined through expert interviews with experts in the online environment. With this information users are researched to understand the perspective of participants and the motivation for signups and providing of personal information. For this the drivers for the providing of truth and the reasons for the trust in providing that information are defined. With the gathered information the drivers for a valid interaction are defined.

To support the validation directly during the usage, state of the art technics, based on learning out of former online surveys are provide, to avoid the usage of non-valid data. To support the participant during their interaction by providing content in a survey or by filling out a questionnaire several technics are described and provided with the goal to increase the quality from the content and to avoid wrong data. Out of the collected and aggregated information as also from the provided best practices and possible solutions for the setup from the infrastructure of online survey platforms, a technical and process oriented framework is provided to increase the quality of online questionnaires.

### **Introduction**

In the current time, the Internet as communication channel is responsible to gather more and more information. Also empirical research is preceded with this technic to react fast and cost effective on the research market and in the global environment. Beside the traditional procedure, with the collection of personal information or opinions during a personal contact, via a face to face interview, a questionnaire, which is provided by a person or a telephone interview, surveys via the Internet are more anonym. This allows the participant to answer complete anonymous and maybe also to answer in a not correct way.



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The anonymous environment leads to an issue, which also exists in a personal interview, but which has an expected higher possibility on the online environment – the providing from wrong data and information. This leads to the situation that people can estimate that an online survey has not the scientific output as a normal survey would have. To avoid this situation and to increase the quality from data and the research itself, this article provides information about influences on the data quality and provides directions to satisfy participants more effectively, as also provides technical ideas how to increase data quality also from the technical perspective.

To the end from the article, the findings of research are aggregated to display the most effective factors in the supporting from users and visitors to participate in online survey with a high efficiency. In this context ideas for best practices are determined, which tries to be on the first side to influence the participant and to support him on the second side during his participation.

## Relevance

For the author as also for all students or researchers which use online surveys as research medium the data quality in online surveys is an important issue. In this case, the influences factors are research, to understand the influence for an upcoming research for the doctoral thesis. This is done to understand user behavior in a more correct direction and to use questionnaires with a higher success.

With the finding from this article, which were aggregated in the conclusion section, suggestions and factors are identified, which should be supported during an online survey to increase the quality from the data as also the participant from the visitors and user of an survey itself. Those will allow researches in general and other peoples who wants to precede a survey in an online environment to increase also their quality and with this the results itself.

By following those best practices, the author will try to increase the quality from his research during April-May 2012 for the definition of online milieus which made the usage from online surveys for the gathering of information in this sector necessary.

## Empirical Background

Empirical research is necessary for our daily life. It is used for marketing approaches, advertisement, media, forecast or as basement for changes in politics. It has as target, to be useful in our daily life and tries for this to support researcher in their daily life to supported hypothesis and to establish theories. This happened always in the context to provide a relationship between a scientific approach and the reality itself [1]. In this context it is important, to be able to measure a situation or to research in information, to break down a situation or context into variables with different indicators, which allows the measurement from those [2]. To be able to measure the response from participants, which is mostly the motivational reason behind a questionnaire, a number or scale must be defined for an empirical relative. To support the participants in this situation, the usage from scale is highly recommended. For the sector of scale, nominal scales, ordinal scale, interval scales or ratio scales are possible [3]. Based on the situation, the right scale must be selected for the too measured empirical relative.



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To gather the necessary information for this research it is mandatory to describe the methods which are used in this research. For this the methods group discussion, interviews and questionnaires are described. In this context, the terms from open and closed questions are explained.

One of the most used techniques, which is well known from the daily life of human beings, are questionnaires. Those can consider of the mentioned open or closed questions. A Questionnaire contains mostly several questions which are provided with additional information, to participants, which are part of a target group. Those target groups should be selected in combination with the hypothesis or area in which is researched. Normally questionnaires are handled manually with the target group as print out. The filled out questionnaires are collected and insert in a database or balance sheet to provide the ability for further research. The important factor for the usage of questionnaires is that advantage of standardization. With this a comparing from the answers is possible, which is needed to provide objectivity, reliability and validity. For the publication from a questionnaire two other directions exists, except the face to face providing from the questionnaire. It is also possible to gather information via telephone, based on the questionnaire, where a researcher is reading the questions and answers to the participant and, as option, which is interesting for this paper, via an online questionnaire. In this case, the questionnaire is sending out to selected amount of people or is available for all persons which want to participate. The past has provided a good acceptance from this technique, but it is important to understand how to support the user during the usage process [4]. For all content in questionnaires, it is important to have the right questions – open or closed, they must be wisely selected.

With the term of open questions, the ability to participants is given to answer in that direction as the participant wants to answer. The participant writes the answer or response down. With this qualitative approach it is possible to gather all kinds of response and to receive the broadest band of response as possible. From the context of those answers, possible answers can be subtracted and suggested to the participant by transferring those open questions into closed question. During this process it must be keep in mind, not to influence the participant during those suggestions. For the analyses from those answers it is hard to establish a scale and the response must be sorted manually, based on the assumption and experience the researcher has in this sector. By using closed questions, a participant is only allows the response on a scale or with the selection out of predefined answers. The approach of closed questions is to follow the approach from scales to make it possible to measure answers in a direct way. With this, the quantitative approach is supported. With the results, a direct measurement is possible and results can also be measured in a mathematical direction, via dedicated analyses methods.

In this context, it is mostly recommended to collect first possible way of responses. In this approach, first open questions are preceded and as next, out of the results, closed questions are established. Beside the mentioned questionnaires, which is preceded without a high level of interaction between researcher and participants, two other methods must be mentioned and explained. Those are group discussions and interviews, so called psychological research methods.

Group discussions have several advantages. People are able to providing and establish knowledge and ideas more effective in a group as one human being itself. The psychology of a group has displayed in the past, that solutions can be find more effective, that the group



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members can influence them in the group, which increase the level of ideas and reflection and that the people in a group, react based on a good structure, which establish a group normally by itself, more spontaneous and with this the group reacts fast and effective on changes. For a group discussion it can be possible just to discuss topics, or to guide the members through a prepared guideline. It always has a basic conversation guideline, which sets the boarders for the discussion itself. The discussions can follow approaches from brainstorming, pure discussion about a topic or explorations of predefined topics. With this, an additional qualitative method is available to gather, as mentioned, ideas and factors for closed questions or quantitative research.

As last technic, the interview approach needs to be introduced. Interviews itself can be provided in a face to face interview, which allows to see the direct response from the participant and to react faster on his reactions. If it is not possible to interview a person face to face a telephone interview is also possible. This method allows also to handle a dedicate amount of persons in fast way as it is possible by face to face interviews, based on the transaction time for the change of the place to meet up with the next interview partner, which is a similar advantage as by providing from questionnaires via telephone. Both interviews can be handled in a closed direction, by only providing the questions. With this an interview guideline is followed. This allows the researcher and with this, the scientific approach behind the research, to receive standardized answers. Standardized in that direction, that the source from the response is standardized, this allows a more detailed interpretation from the results, also for other researchers. If the researcher does not provide additional information the interview can be called a closed interview. When a topic is discussed in general, this method is then called an open interview. Based on the factor that in this case, a discussion can go quickly in a direction which does not fit the approach of the research anymore the exploration of the direction from the research can be done, to support the output. In this case, the interview is a so called explorative interview [5].

For the following research, the introduced methods will be used to determine the mentioned framework for online surveys.

### Research

To receive a dedicated understanding about the influence factors about the handling from private information in the communication via the Internet and the providing of those in online surveys, dedicated methods, which were introduced in the sector from the empirical background, were used. For this, the method of interviews, in person and via telephone, were used and supported by a questionnaire, which was filled out manually.

As first step, a group interview was done with 12 students from the University of Applied Science Weserbergland on November 16<sup>th</sup>, 2011. Following on the gather information an interview was preceded with Torben Friedrich, a politician from the German pirate party, a political party which had their focus on data protection and online usage, on November 19<sup>th</sup>, 2011. Out of the information from the interviews a questionnaire was build which was handed out offline to 65 people. Beside the questionnaire, additional telephone interviews were done to receive more information regarding the providing from personal information in an online environment. In the following the several research steps are described in a more detail way.



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As described, in the first step a group interview was preceded. Those had as goal to gather as much information as possible about influence factors. The group interview was started with 12 students in the sector of Business Informatics with a specialization in application development. With those persons, a group was found which has to work on a daily base with user interaction and with the gathering of information in applications. The participating students could be divided into 3 females and 9 males in the age range between 19 and 40 years. Before the discussion started, the participants were informed that the discussion has as target to gather as much information as possible about the handling of private information in the Internet. During the discussion the following two topics were during a moderation discussed:

- When do you share private information in the Internet?
- When do you provide valid data or invalid data in the Internet?

For each question a dedicated amount of ideas and results were provided from the group. Interesting were during the discussion that several approaches for the communication of information in the Internet exists. Out of the provided information the following findings can be determined, which influences the information sharing behavior of people.

- It must be distinguished in which situation is share personal information with another person or website.
- It must be distinguished with whom I share the information.
- It must be clear under which circumstances I share the information.
- Under which reasons and for which goal do I share the information.
- How serious is the environment in which I share information and to which institution or person do I share the information.
- What is the added value from the participation? It should be clear, what the participant gets out from the interaction.
- A user must be aware that information are directly provided by the usage from the Internet itself, such as forums or search engines.

To increase the deepness of those results and to get a better understanding from the user perspective, the mentioned interview with the politician Torben Friedrich was setup. Based on this political work Mr. Friedrich has a deep knowledge about Internet privacy and especially the current post-privacy discussion. Before the interview was preceded Torben Friedrich was informed, that the interview has as goal to find influence factors for the valid providing of personal data in the Internet and factors which would influence the providing of valid information in online surveys or which would influence the participation in online surveys in a negative direction by providing non valid information.

The interview with Torben Friedrich, which was preceded based on predefined questions, resulted in the following findings:

- A relationship should be established with the person/organization to which I send information, to increase a higher efficiency in the response.
- It must be clear who is working with the information, after the information is send.
- Can the participant influence or change something with the information which is provided?
- Do I understand the goals from the requesting of information and do I agree on them?



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- It should be understandable what will be done with the information and how the result will influence the participants life.
- The security features and functions, which support the data transfer, must be understandable for the participant.

Together with the findings from the group interview, those findings were the basement for a questionnaire regarding honest in the participation in the Internet. The questionnaire was preceded with Business Administration and Business Informatics students, as also with additional people in the hometown from the author. The questionnaire itself had the following questions.

Table 1

## Questionnaire “Honesty in the Internet”

Gender:	<input type="radio"/> M / <input type="radio"/> F										
Age:	_____										
Start Internet usage (Month/Year):	_____										
<u>You are providing valid personal information in the Internet if:</u>	<b>Do not agree</b>		–			<b>Neutral</b>		–		<b>I agree</b>	
	1	2	3	4	5	6	7				
A1. You want to test the service:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A2. Use the service for a longer period of time:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A3. Friends or acquaintance have sign up:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A4. You want to use a service for business purpose:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A5. You want to use a service for private purpose:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<b>Do not agree</b>		–			<b>Neutral</b>		–		<b>I agree</b>	
<u>You are answering honest in the Internet, if:</u>	1	2	3	4	5	6	7				
B1. You are expecting an added value from the participation, like a price:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B2. You are expecting an added value from your participation, like a change from the current situation (i.e. in politics):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B3. The survey is related to myself:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B4. The survey is in combination with a raffle:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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B5. You are in a relationship with the person how is requesting information from you:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B6. The Internet form is secured with a codification like HTTPS:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B7. The questioner is serious:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B8. You have to fill out an empty attribute:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<u>What is for you important to accept a survey as serious?</u>	<b>Do not agree – Neutral – I agree</b>						
	1	2	3	4	5	6	7
C1. Internet address of the survey:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C2. Design (no advertisement, lean illustration):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C3. Scientific questions:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C4. Objective questions:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C5. Kind of language:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<u>Are you responding to a survey in a more positive way, if:</u>	<b>Do not agree – Neutral – I agree</b>						
	1	2	3	4	5	6	7
D1. You can win a price:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D2. The answers can be get connected to you:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D3. You are in a relation with the institution which sets up the survey:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D4. An ID or PIN is displayed on the address from the survey:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For the age, as also for the time period, since when the Internet is used, free text field were used. The answer possibilities for the questions A1 – D4 were designed as closed answers with a seven-level Likert scale, to allow the participants to differentiate their answers in a certain manner. The questionnaire itself was answered by 65 people (24 women and 41 men), with an average age of 23 years (median: 21, mode: 21) in a general age range between 18 and 54 years. This focus on younger people happened first based on the later approach from the research, which focusses also in younger people as also on the handing out from the research in a local university. Based on this place, the most participants were also students. Those students were mostly from the sector of business administration and business IT. The preceded questionnaire was well accepted and the feedback was well. For the results a database was setup



to gather all the data and to be sure that the data is inserted correct. After this, the data was analyzed in MS Excel to receive the median, mode and standard deviation for each question. The result displays, beside that fact the average start year for the Internet usage was in 2001, to following figures.

Table 2

### Results “Honesty in the Internet”

	Median	Mode	Standard deviation
A1. You want to test the service:	2	1	1.73
A2. Use the service for a longer period of time:	6	6	1.65
A3. Friends or acquaintance have sign up:	6	6	1.62
A4. You want to use a service for business purpose:	7	7	1.59
A5. You want to use a service for private purpose:	5	6	1.61
B1. You are expecting an added value from the participation, like a price:	5	6	1.69
B2. You are expecting an added value from your participation, like a change from the current situation (i.e. in politics):	5	5	1.54
B3. The survey is related to myself:	5	5	1.61
B4. The survey is in combination with a raffle:	3	2	1.58
B5. You are in a relationship with the person how is requesting information from you:	6	7	1.53
B6. The Internet form is secured with a codification like HTTPS:	5	6	1.65
B7. The questioner is serious:	6	6	1.46
B8. You have to fill out an empty attribute:	4	4	1.47
C1. Internet address of the survey:	6	6	1.70
C2. Design (no advertisement, lean illustration):	6	6	1.52
C3. Scientific questions:	6	6	1.44
C4. Objective questions:	5	6	1.54
C5. Kind of language:	6	6	1.60
D1. You can win a price:	4	6	1.85
D2. The answers can be get connected to you:	5	5	1.73
D3. You are in a relation with the institution which sets up the survey:	5	5	1.50
D4. An ID or PIN is displayed on the address from the survey:	4	4	1.74

The results provide a basic ability to receive information out of it, also if the amount of participants is with 65 people not as high as it should be. The request how a person act (A1) if s/he tries the service, displays clear that a test of a service results with a high possibility in the providing of wrong personal data, based on the situation that it is not planned to use the service for a longer time period. With this in mind, it should be avoided to let the user in a test situation. The user should receive the assumption that a long term usage would made sense. In this case,



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the participants answered in median with a 6 (A2) comparing to 2 (A1). Interesting is in this context the differentiation between business and private providing of personal information. The median from A4 displays with a 7 displays for the providing of information in a business context (A4) a very high support, instead of a 5 for providing information in a private situation (A5). This means that for business purpose nearly everyone provides his real information and response with true information. In the private sector, and with this it is more related to each person itself, the willingness is reduced. In this context the question A3 is very interesting. It displays that a person response more valid personal information if friends or acquaintances have already sign up to the network or service. In this case, the willingness to provide more valid information is higher as in the response on the question A5. This means in the case that friends have signed up, which would also be a private situation, the willingness is higher to provide more valid data. Those questions, which were related to the personal added value of a person displays a lower influences on the personal behavior in responding (B1-B3). Interesting is in this situation the response on question B4, the providing of a raffle in combination with the answering behavior. In this context, the response of a person is not valid, based on the possible winning. This is displayed in the average response of 3.14, a median of 3 and a mode of 2. A high influences on the valid response to a survey or on a questionnaire has the relationship between the person how participates and the person or organization which provides the survey (B5). This provides an opportunity for further questionnaires, if a relationship can be established to the participants. Those can be done by providing personal and additional information regarding the questionnaire and the organization or the organizer itself. This is attended with the response to seriousness from the organization or person which published the questionnaire (B7), which has also a high influences and a high response rate. The usage of encryption technics is also supported by the users, which is displayed in a positive average and mode (B6). For the proceeding of surveys in general is the response on B8 interesting. This question asked for the response on empty fields, where the user has to insert information. In this case, the response was neutral overall. A direct look onto the figures, displays that slightly more people answered positive, as negative, but this can mean, that the responding on those free questions is not as supported as it should be. For this, the usage from those questions should be avoided online, based on the missing direct interaction with the participant. In the sector from the factors for the question section regarding „What is for you important to accept a survey as serious?” all factors (C1 – C5) displays a similar influence, with a median and mode of 6 (except the median for C3 with a 5). For further online questionnaires this means that all of those factors should be taken into account for the building of a survey. In the sector of positive answers during a survey, the providing from a price has and significant influence on the behavior from a participant (D1). The relationship to the person or institution, which provides the survey (D3), has the same influence as the ability that the answer can be connected to the participant. In both cases a little positive influence can be measured, in the average, as also in the median and mode. The question D4, if an ID or PIN in the URL influences the behavior in responding, was mostly rated as neutral. This provides two options, first the participants do not care about that information in the URL from a survey or, which is also supported by the additional and personal requests, during the hand out from the survey, that they didn't understand the question and were not able to understand the relation between an ID and the survey itself.



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After the questioner two additional telephone interviews were done with persons who work business related in marketing departments in the Internet sector. This happened first, to double check the results from the survey and second to understand if additional factors exist. The first interview was preceded on December 28<sup>th</sup>, 2011 with Nina Mayerhoff, Managing Director Non Book Products at Buch.de Internetstores AG. This interview had as finding that trust is the mandatory basement for the communication and interaction with possible customers and visitors. Buch.de supports this active as company by providing trust first to their customers. This is being done, as best practice, by let customers first receives the goods, before the pay via money transfer. During this procedure, the customer is support by providing him the ability, after receiving the good, to setup an automatic bank collection for one time only. In this context it is also highlighted, that the way of gathering information has an influence on the success possibility. If data is collected where the customer see no connection to the procedure itself, the data will not be provided or only with a higher level of failure.

In addition to this telephone interview, an additional interview was done via telephone on January 5<sup>th</sup>, 2012 Jens Loddeke, Product Manager Mail at the leading German Internet portal 1&1. The interview was preceded with the same questions and provided as findings, that a user can sometimes not distinguish if private or business data are communicated. In general it was determined that user will mostly communicate private information, from the private as also business perspective, when a position needs to be done or will be done by the person. This can happened for business as also for private reasons. Highly interesting was the response on the request why people will not provide valid information. It was suggested, that the main reason for users would be to stay anonym and to avoid the providing of private data, instead of try just to passing the sign up process quite fast. In this context, and based on the business experiences, it was also stayed out that the design itself can support users in providing private information. A good design can also bring users in the position to provide data or information for a non-serious signup.

With all this feedback a framework of statements can be defined, which allows the design and communication of an online survey more successful. Beside this feedback from users and business participants it is also important to understand the possibility, which is provided from the technical area for the supporting of online surveys. During past survey, in the years 2009 and 2010, the members from the German Pirate party were investigated from the author of this article. During those investigations it has be determined, that a contact page for participants should exists, as also an information page about the data privacy. For the content of the information page about data privacy it was helpful, if people, which works on their daily business on this topic, review those formulation. This was helpful not only from the legal side of view, but also from the user point of view, regarding the understanding from the formulation and the communicated content. That approach also leads to the situation that the participating persons supported those surveys via the forwarding from the request to support the survey and that the reacted on requests regarding the data protection. In this context it was also helpful to let those people check the security functions of the technical framework, to receive also their support in this direction. For the security functions from the system it is important to avoid, so far the system is not an invitation only system, where each interaction can be tracked individual and could be set into relation with a dedicated and know user, that SQL injection, as hacking mechanism, is checked by the database itself. With SQL injection, existing data can be deleted



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from the database or can be changed. That mechanism must be implemented for fields, as also for requests itself. For this it is also important to work with “get” mechanism on the server side from the application instead of “push” variables. Regarding the acceptance of online survey it must be checked in advance if the server can work with a high amount of requests to handle several users at the same time. In the past, when supporters resend invitations for previous surveys, this has become an issue, when more as 5 persons insert content at the same time. For this, also the amount of questions should be reduced on a level of 20 variables per request page at one time to reduce possible data lost as also to reduce the amount of transferred data for the database to a level which let the server works efficient with the provided data. Is good practices, to avoid the inserting of data from the same person in a survey and with this the inserting of wrong data, could be defined the HASH5 encryption from IP-address and Operating system, as also the same variable and browser in addition. This allows in an anonymous way to compare the sending computers and with this the check if a system has insert data several times. Of course is in this situation the manual double check of validity from the insert data possible and the insert data should not be deleted only based on a double HASH5 code.

### Conclusion

To increase the participation on a survey several factors must be taken into consideration. During this article, the way to gather those factors were described in a manner which allows each person to understand the way from the gather of the information and the way factors were determined. Based on that information the most important findings are highlighted in following part to support the honest answering in online participation.

Overall the following requirements can be determined for online surveys and questionnaires:

- Trust must be established, which can be supported by the design from the survey as also from the way of communication from the questions and descriptions.
- The target and goal of the questionnaire must be understandable for the participants. If the direct communication from the survey is not possible at the beginning from the research, the participant should be receiving possible information after the participation. At the beginning the user should be information in this case that it is not possible to provide additional information at the beginning.
- The provider of the survey should be communicated and it should be understandable which targets the provider has.
- For the design an approach should be used, which is free of advertisement (noncommercial) and which should create trust and did not deflect the user from the participation.
- It should be possible for a person to receive additional information about the scientific work, also after the participation.
- To support the data protection the user should have the possibility to erase his data after the participation. Also it should be possible to change possible answers afterwards.



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In addition to these requirements onto questionnaires, additional factors could be determined, which influence the providing of honest information in online surveys:

- Should questions should be preferred and free text field, where participants can insert individual response should be avoided. This should be done, to avoid extra barriers in the inserting of information and data for the participant. This barrier can be a reason for a participant to insert invalid or wrong information. For this closed questions should be preferred.
- The user should be informed, if private or business related information should be communicated and that a distinguishing between both can be necessary to avoid extra complexity for him.
- It should be tried to establish a relationship with the participant in a direction that the motivation from the person how has established the survey is understandable, but it must be communicated also in such a situation, that the survey must be answered honest and true.
- It should be avoided that the participant has the feeling that s/he can test the survey. For this at the end from the questionnaire a question “Did you filled out the questionnaire honest? If not, if you only tested it, please click here” can help in this situation. This helps the user to be honest and maybe to proceed the questionnaire again and at those moment with valid information.
- A participant should have the possibility to share the survey with his friends or associates, if this would create an added value for the research, to establish an additional relationship with the survey.

For the technical setup, if a system is developed independently for an online survey, it must be kept in mind, to communicate the data protection and to check if SQL Injection is avoided. Also a contact possibility should be provided. As last factor, the ability from the server to serve under load, if a high amount of users access the survey, should be checked or taken into consideration to be aware to respond in such a situation fast and successful.

By following those suggestions, from the three sections above, the quality from the preceding of online survey to fulfil a questionnaire in the Internet, will be increased. For this, the following of the suggestions can be recommended for person who wants to precede such an empirical technique like an online survey.

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