RETENTION OF GREEN ROOFS FOLLOWING THE QUESTIONNAIRE AND ITS RESPONDENT´S ANSWERS

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ABSTRACT

Questions can provide answers to meet the needs of teaching, knowledge, growth in understanding. However, it is clear that no matter how simple or complex the problem is well clear and relevant question has much greater use to the interviewer as an issue that is vague, poorly defined, or irrelevant. The main idea of this paper is presented with a questionnaire and processing of questions aimed at the retention properties of green roofs. The questionnaire is part of ongoing dissertation dealing with this topic.

Key words: anova, green roofs, retention, variance of responds.

1   INTRODUCTION

Questionnaires provide relatively inexpensive, quick and efficient method of obtaining large amounts of information from a large sample of people. Data can be relatively quick to assemble. Compared interviews, questionnaires are useful, practical.

The questionnaire is part of a dissertation focused on the retention properties of green roofs. The questions involve numerous hidden themes that are essential for the processing of green roofs problems and issues associated with them. Total 20 questions should provide an overview of the 200 respondents [1].

2   BASIC INFO ABOUT THE RESNPONDENT

Respondent before answering the questions had to fill in the data concerning his personal information. These data are used to process the responses according to criteria that are precisely those preliminary questions - gender, age, education, country of employment and place of living.

3   CLIMATE CHANGE

Questions 1-3 on topic of climate change provide basic information about the respondent´s opinion about climate changes. Closed-ended questions ask about the topicality of issues such as climate change, human migration and Kyoto protocol.

1 Do you consider the question of the climate change as current issue?
- [ ] yes
- [ ] partially yes
- [ ] don´t know
- [ ] partially no
- [ ] no

2 Do you think human migration (f. e. in North Africa) is related to the climate change?
- [ ] yes
- [ ] partially yes
- [ ] don´t know
- [ ] partially no

☐ no

3 Are agreements like the Kyoto protocol (Framework convention on climate change) necessary?

☐ yes
☐ partially yes
☐ don´t know
☐ partially no
☐ no

4 ECOLOGY

Questions 4-5 on topic of ecological issues focus on the topic of ecology and its importance to the respondents. These closed-ended questions are directly asking the respondents their opinion, there is no extra information needed to answer these questions because they are very clear and personal. The aim of these questions is to have information if people are truly interested in these topics, or if it is only worldwide issue known thanks to few people in higher positions or activists.

4 Are the questions of ecology important for you?

☐ yes
☐ partially
☐ no

5 Would you like to be informed about possibilities how to protect the environment?

☐ yes
☐ don´t care
☐ no

5 MICROURBANISM

Closed-ended questions 6-9 on topic of microurbanism provide basic information about the respondent´s opinion about microurbanism. Question about lack of green areas is personal, questions about affecting microclimate and the question about building systems need some background about the topic of microclimate and microurbanism.

6 Is the lack of green areas in town affecting you?

☐ yes
☐ partially yes
☐ don´t know
☐ partially no
☐ no

7 Are you familiar with building systems like: „Nature-Based Solutions", „Re-Naturing Cities"?

☐ yes
☐ maybe yes, but I am not familiar with these terms
☐ no

8 Do you think hard surfaces cause change in a microclimate in the local areas?

☐ yes
☐ partially yes
☐ don´t know
☐ partially no
☐ no

9 Do you think building green roofs may affect change in a microclimate in the local areas?

☐ yes
☐ partially yes
☐ don´t know
☐ partially no
☐ no

6   LEGISLATION

Closed-ended questions 10-11 on topic of legislation are to provide information about legislation of green roofs where the respondents live. Second question is to make the respondent think and express his/her opinion.

10 Is the legislation of green roofs secured in the country you currently live/work/study in?
☐ yes
☐ don´t know
☐ no
11 Do you think building green roofs on new buildings and reconstructions should be mandatory?
☐ yes
☐ don´t know
☐ no

7   GREEN ROOF

Open-ended questions 12-16 on topic of green roofs are to provide information about green roofs. Information about them, respondent´s objections, desire to have one, reason to build one and the last question is very general question, more common term of the roof to the respondent.

12 Is there enough information about the green roofs in the country you currently live/work/study in?
☐ yes
☐ don´t know
☐ no
13 Do you have any reservations about the green roofs?
☐ yes (please specify your reservations) ...
☐ no
14 Would you like to have a green roof on a building you currently live/ work/study in?
☐ yes
☐ don´t care
☐ no (why) ...
15 What would be your reason to build a green roof?
☐ saving money
☐ technical specifications
☐ ecology and sustainability
☐ no reason
☐ something else (define) ...
16 Which name of the roof is more common?
☐ green roof
☐ vegetative roof
☐ don´t know

8   RETENTION

Questions17-18 on topic of retention focus on the topic of retention qualities of green roofs. Second, also closed-ended question should provide basic information about respondent´s opinion about using retained water from green roof.

17 Do you know that green roof has retention features (ability to keep the water)?
☐ yes
☐ no
18 Can you imagine yourself using retained water, after filtration, for f. e. watering the garden, cleaning the car, washing clothes?
☐ yes

☐ no

9   ECONOMY

Questions 19-20 on topic of economical situation focus on the topic of green roof economy.

Question on topic of education of people is to obtain the knowledge, if the questionnaire informed the respondents, if they learnt something new, if it was maybe helpful for them. According to this question, there might be an idea that people would like to be informed about current topics like ecology, microclimate etc.

19 If you built a green roof, in how many years would you expect the rate of return on the money?
☐ 1-10 years
☐ 11-20 years
☐ don´t know
☐ I am not interested in investing in building a green roof
20 Should owners of green roofs have financial benefits of sewerage charge?
☐ yes
☐ don´t know
☐ no

10   YES VS NO

84% of respondents answered the question Do you know that green roof has retention features (ability to keep the water)? yes, 16% answered the question no (Fig. 1).

Fig. 1 84 vs 16 percent   **Fig. 2 86 vs 14 percent**

86% of respondents answered the question Can you imagine yourself using retained water, after filtration, for f. e. watering the garden, cleaning the car, washing clothes? yes, 14% answered the question no (Fig. 2).

11   ANOVA

Analysis of Variance (ANOVA) is a statistical method used to test differences between two or more means [2] stands for analysis of variance. ANOVA is used to determine whether there are any statistically significant differences between the means of three or more independent (unrelated) groups [3]. In 1918, Ronald Fisher developed a test called the analysis of variance. This test is also called the Fisher analysis of variance, which is used to do the analysis of variance between and within the groups whenever the groups are more than two [4].
Aim of this article is analysis of respondent´s answers following few criteria focusing on differences in answers. The research focuses on two factors. First, if the differences in answers are statistically distinctive, or second, if the differences in answers are statistically indistinctive.

11.1   Men vs women

Questions regarding the retention responded with pronounced differences men versus women.

11.2 21-30 vs 31-40 vs 41-50 vs 51-60 vs >61

Questions relating to retention in terms of age responded with the smallest differences respondents aged> 61, then 51-61, then 31-40 and 41> 50 Age range 21-30 years answered to the questions with the most differences.

11.3 Secondary vs higher education

Respondents with completed secondary education showed minor differences in responses. In contrast, respondents with higher completed education have a very significant differences in the answers to the asked questions.

11.4 Sciences

The respondents answered the questions about retention with the smallest differences in answers in this order: Medical sciences, agricultural sciences, natural sciences, humanities, social sciences, technology sciences. Diversity differences in responses is probably related to the number of respondents of each completed education.

11.5 Apartment vs family house vs dormitory

Respondents residing in the dormitories agreed on answeres the most.. Differences in responses are among respondents living in family houses and the largest differences are observed from the answers of respondents living in apartments.

11.6 Eastern vs western vs northern vs southern vs central Europe vs world

Respondents living in western European countries were consistent in most responses. Then respondents from northern, eastern Europe, world, southern Europe. Absolutely the biggest differences in responses were among the respondents from central Europe.

12 CONCLUSION

The aim of this paper was to demonstrate the diversity of responses to each question, taking into account more criteria. Standard evaluations of questionnaires answered with one aspect is statistically insufficient. Pointing out only two questions in terms of age, sex, education etc. We have many variations, such as a questionnaire to assess how the various issues look from various angles. Sample of processed data is a prerequisite for successful evaluation questionnaire as part of the dissertation.

13 ACKNOWLEDGEMENT

Literature

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