

SPEED DATING IN SCIENCE (SDS): AN INNOVATIVE DECISION-MAKING PROCESS TO FOSTER PUBLIC DEBATE IN AGRICULTURE

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ABSTRACT

There are several techniques to support group decision such as brainstorming, nominal groups, Delphi method and electronic meeting. The objective of this paper is to apply a decision-making process based on speed dating philosophy to promote a free debate about Azorean agriculture. Volunteers participated in a SDS workshop in Terceira Island (Azores). The results show that the SDS was a constructive technique and people were very motivated to participate. The outcome of the SDS shows a desirable transformation of familiar to business agriculture, the importance of the recovery of rural traditions, research and development and food safety for Azorean agriculture.

Keywords: Agriculture, Azores (Portugal), Decision-making, Group decision, Speed Dating in Science (SDS).

INTRODUCTION

There are several qualitative techniques to support group decision. In the past, an individual took the burden of decision upon their shoulders, nevertheless, nowadays this process is changing and experts advise that the decision-making be made by a group/team of individuals. Groups' communication is useful to share information, generate and organize ideas, draft policies and procedures, build a consensus and make decisions, among others (Dennis, 1991). The engagement of a group, using qualitative techniques, allows the highest accuracy of the decisions, fosters strong motivation, improves coordination and guarantees a better control of decisions (Teixeira, 2005). However, (Teixeira, 2005) points out to some disadvantages for the group decision making, as the time taken/spent is generally long, indecision periods may be long-lasting and accountability for the final decision may be diluted (co-responsibility of decisions).

In spite of the importance of the feeling and experience that some managers still use to take their decisions, there is currently a call to use the decision technique as a tool to support it and avoiding a substantial part of the risk incorporation in decisions. In this paper, a different way of engaging participants' is proposed, based on the philosophy of gender speed dating ((Messinger, 2015)). It started as a highly engaging and temporally compact classroom exercise, using simulated speed dating, to achieve and generate debate about interactions according to gender theory, among undergraduate social sciences and gender studies students. Speed Dating Science (SDS) intends to be a technique that promotes the debate between research groups and other agents (farmers' associations, governing authorities, agricultural students, and agricultural professionals). This technique was used in the meeting *Agriculture and Maintenance of the Territory: parallels and paradoxes*¹. The meeting had as main objectives the developing and testing of a different decision making processes and their application to the rural development of the Azores as a case-study, in order to gather the different views of all participants (bottom up perspective). This paper aims to present this methodology and how it may be advantageously used in a complex paradigm – the agricultural context in small isolated islands. Besides the introduction, the second section includes a brief state of art where the main techniques in group decision are pointed out and debated. The details of the used methodology and the results with the group's discussion of the SDS are further illustrated and, finally the main conclusions of the paper are thus presented.

THEORETICAL CONTEXT – Supporting the decision making process

There are quite a few techniques that are used to support the decision making process in groups, for instance: Brainstorming, Nominal Group, Delphi and Electronic Meeting.

Brainstorming is the most popular group creativity technique. A group of six to twelve participants sit around a table to gather and debate alternatives (list of ideas) to find a solution for a problem. All ideas are listed, without being subjected to any kind of criticism or rules; they must be recorded, even if some appear to be unlikely ((Kohn, 2011); (Hender, 2001); (Teixeira, 2005). This technique is based on four rules: (1) the criticism is ruled out during the come up with ideas, to avoid early evaluation and concomitant blocking of the creative process; (2) all ideas are welcomed, because sometimes the best ideas are those which seems previously wild and far out; (3) it is desirable to achieve a great number of ideas, to increase the probability of getting a successful solution; and (4) the combination and improvement of the stated ideas are sought out, to encourage the generation of different ideas, building on the ideas of the group. The main steps of the Brainstorming idea technique are the reading of the problem, the coming up with innovative ideas by free association and to produce other and different ideas and solutions. This technique has obvious advantages, namely in the sharing of ideas by the different members

¹ For furthest information consult the Facebook page: <https://www.facebook.com/Speed-Dating-in-Science-Agriculture-and-Maintenance-of-the-Territory-1478786838804159/>

of the group, but (Kohn, 2011) pointed out the inefficiency of this technique due to the face fixation that could have impact in the achievement of the idea to solve the problem. Generally, brainstorm is useful as the first step of the decision process ((Teixeira, 2005). The Nominal Group Technique (NGT) is a debate face-to-face, both systematic and independent ((Teixeira, 2005); (Varga-Atkins, 2011). At first, all members in the group make their self-work and, afterwards they share it with the purpose of getting consensus in the group. The technique starts with a short explanation about the purpose of the session, the rules and its structure of the meeting provided by the facilitator. The first step, during the first silence break, expects to gather individual responses to the problem. The second step, aims to clarify and consolidate the previous ideas: each participant points out and reads or writes their ideas to solve the problem in a board. After a second silence break, where each participant ranks their top five responses in order of importance, the group debates and ranks solutions, achieving a final ranking, which portrays the best solution of the group, and the process ends.

Although, similar to the Nominal Group Technique, the Delphi Technique doesn't allow the face-to face debate ((Oliveira, 2009), (Marques, 2017). Previously, a Delphi panel is built, where experts are selected based on knowledge, experience and constructive critical opinion. The first step is the definition of the problem, followed by an application of questionnaires, which are confidential, individuals and independent. The second step is the filling up of the questionnaires (by email, website or mail) and the receiving of the replies. Finally, all information is gathered by an expert, and the questionnaires are reorganized, revised, and updated to the second Delphi round. If the group didn't achieve a consensus, it has to repeat the second and third steps, until they achieve it ((Teixeira, 2005), (Oliveira, 2009), (Marques, 2017). The Delphi technique is useful because it allows the participation of experts who live far away, however it has some limitations, namely the difficulty of getting results in urgent decisions, or when the group needs a face-to-face debate.

Another important technique is the Electronic Meeting Systems (EMS), which is a group decision-making technique using computer technology. A group up to fifty people seat around a U-table, with a computer terminal for each player and a large-screen at the top of the meeting room, where the posts of the players appear simultaneously ((Teixeira, 2005). Dennis & Vogel (1991) divided this system group tool into four phases, with limited time: electronic brainstorming, idea organization, vote, and topic comment. Dennis & Vogel (1991) were convinced that the use of EMS could improve group processes and its outcomes in many cases. For instance, allowing the work of all the members simultaneously, providing equal opportunities for all, and discouraging behavior that could negatively affect the meeting output. Other advantages came from including larger groups, the availability of using external information and the development of an organizational memory from consecutives meetings. Furthermore, this method guarantees confidentiality, ensures fast responses and promotes honesty. Its main disadvantages are the lack of face-to-face debate and the requirement of a sophisticated tool (computer set and screen); besides, some participants may be slow writers in a keyboard, or not be familiar with those ((Teixeira, 2005). It is advisable that final decisions are decided after these meetings, when all have had time to reflect about the information collected.

In a valuable contribution, Pepper *et al.* (2011) compared oral and electronic meetings. On the one hand, oral meetings are natural and people are comfortable with speaking, but they might find the burden of taking turns and waiting for comments to be written on a board frustrating. On the other hand, in an electronic meeting, group members must learn how to use the software, and typing is less natural

than speaking. However, if the meeting takes less time, and has an acceptable translation quality, this technique may be perceived as easy to use and useful. Pepper *et al.* (2011) show that participants in pseudo-oral, electronic and multilingual meetings were able to understand the previous comments in up to five languages. Nevertheless, these authors found some limitations to electronic meetings, namely the small subset of European languages that was used, and the fact that only translations to English were made so far. Comprehension of translations between other languages could be different; group members in the pseudo oral meetings did not actually say anything because the text needed to be identical between the treatments and participants might have behaved differently in this simulated environment. Besides, some results could have been affected by members' dissatisfaction with the overall process. Finally, they concluded, that more research is demanded to refine the technique and choose the most beneficial. Furthermore, there were no significant differences between the two types of meetings in terms of usefulness, which leads us to the conclusion that for certain sets of languages and topics, an electronic meeting with machine translation is a viable alternative to the more traditional, oral setting. They concluded that for the different groups, languages, and topic, electronic, multilingual meetings can be used effectively and efficiently (Pepper, 2011).

Qualitative decision making processes have been applied and evaluated into different fields of research such as agriculture, environment, health and tourism.

Kohn and Smith (2011) assessed the usefulness of brainstorming, examining three experiments whether or not fixations effects occurred during the brainstorming and they found that this technique restrains and conforms the breath of ideas while facing the members face. This research compared one manipulated group against individual brainstorming. This step allows the creation the nominal groups from individuals, and assessed the results: quantity, variety and novelty of ideas achieved in brainstorming.

Hender *et al.* (2001) evaluated the use of different creative techniques using a Group Support System (GSS). Their essay described the tests for three creative techniques, including Brainstorming (a technique without external stimulus), Assumption Reversals (a technique using the reversal of the assumptions previously made as a related stimuli) and Analogies (a technique that uses statements about the similarity of different situations - unrelated stimuli). They found that although the Assumption Reversals had produced the most ideas, they were less creative than the ideas produced by Analogies and Brainstorming techniques. These findings may be useful for the selection of creativity techniques according to the needs of the problem.

Varga-Atkins *et al.* (2011), carried out the Nominal Technique Group, to inquire about student experiences of e-learning in different educational environments. This technique seemed the best suited to single topic evaluations or when items for action need to be identified and less suited to researching general experiences, or when complex topics needs exploring. In this research, the warmed up group discussion to the topics in question was understood as an advantage, and this technique was considered a useful alternative to student feedback sessions.

In Azores dairy sector, Oliveira *et al.* (2009) used the Delphi Method to reveal the potential decision in agricultural decision about the dairy quota abolition in the European Union and their impacts at local dairy farms. Twenty-three representatives (associations, cooperatives, professors and researchers, farmers, international advisors, politicians, technicians) of five organizations formed the Delphi panel. There were two rounds, the first with twenty-three elements and the second with seventeen. The main findings pointed out for a gradual abolition of the dairy quota in the European Union, the decreasing dependence of cereal quantity in the Azores, as well as a diversification of activities in Azores, such as the introduction of innovative dairy products and the branding of “Azores” as a quality product. Najafi *et al.* (2018) recently used the Delphi Technique to validate a logic qualitative model for supporting mothers during labor and childbirth. The research engaged 25 experts, of different specialties, to rate and discuss the best ways to support Iranian mothers and a consensus was achieved in the third round. The main findings were the clarification of the principles and standards regarding how to operationalize and achieve a supportive care during labor and delivering. In recent years, the Delphi technique has been increasingly used in tourism research, namely in the survey about the strategic importance of business tourism in the Central Region of Portugal ((Marques, 2017)). These authors noticed that in that region there was a qualified and diverse tourism offer, which was complemented by a number of venues and quality accommodation that could provide a worthy tourism experience. At first, data was collected through a Delphi survey to identify regional tourism stakeholders' perceptions of the importance and potential of business tourism development and strategies that should be located in these territories; a consensus was reached in the third round. In the first round the panel included thirty-seven experts, but that number decreased to twenty-nine and twenty-eight in the second and third rounds, respectively. The stakeholders identified the business tourism as a strategic sector to develop and point out a few strategies to develop this territory.

Similar events to Speed Dating in Science, SDS, were found in a Google search (online websites) such as “World Café” held in the Azores University (Arroz, 2015), and Science Speed Dating (a research competition), held on Lisbon Medicine Faculty (SSD, 2018). The first one aimed to obtain new strategies to promote nature conservation in the Azores and was organized in five tables, from which different questions were to be answered in 10-minute periods. Groups of about 10 persons, moved from table to table, and their contributions were written in large scenery paper by the chair. Coffee and other beverages and finger food were available during the entire session, to add a feeling of informality. Different stakeholders were present, including the Regional Director of the Environment, the nine Natural Parks Directors and other staff, researchers, students and more interested persons. After one hour work, the chairs of each table presented the main conclusions to the general public, which were later written and circulated by all the participants (Arroz, 2015). The second one, was composed of two parallel categories, the Basic Research Category and the Clinical Research Category, each one aiming to promote scientific and clinical research from an early stage and encouraging health science students to submit their research project. They mentioned Research Competition, offered a unique set where undergraduate and recently graduated students can experience the research world (Faculty., 2018).

METHODOLOGY

A qualitative technique of decision making process was chosen for this study due to the disruptive situation of agriculture in the Azores, without historical series of data. The SDS technique was selected and developed according to the traditional approach formalized into six steps (Kay, 1998); (Teixeira, 2005).

At first, the thematic was identified (the rural development of Azores) and several problems related with the group meetings were recognized, such as the lack of attendance in previous organized conferences, seminars and workshops, possibly due to the lack of motivation and interest in the meeting configuration. Secondly, it some data and information that justified the problem were collected, such as, boredom/ annoying/ passive participation in a traditional conference (just listening), where people get tired of receiving information, when they also have something to contribute to the theme. Thirdly, several alternatives for the group meeting were considered, such as electronic meetings, Delphi techniques, brainstorming, and so on. Fourthly, the “SDS - Agriculture and Maintenance of the Territory”, was selected since it was perceived as an innovative approach, which was developed by the team of the Project and funded by Azores Government. Finally, the SDS was held in the University of the Azores (UAz), in its *Campus of Angra do Heroísmo* (Terceira Island).

The SDS consists of a face to-face debate in a relaxed environment. This informal and high-energy chat allows the encouragement and interaction of the participants (different kinds of players); they are able to talk with each other, ask questions, and learn about fields of research without any kind of awkwardness. The SDS workshop event was thus launched, involving the environment, social, cultural and the economic dimensions of agriculture.

The meeting was structured in four main parts: (1) an open session - with invited European speakers of three different universities, according to their scientific knowledge about sustainable rural development and management, following the traditional philosophy; (2) a roundtable – Policies in Rural - with local representative of the Regional Government of the Azores as the main actors of defining the Azorean rural and environmental policies; and (3) the SDS. In the final session, the results of DSD were presented.

This scientific meeting engaged about sixty-two participants, but the SDS part engaged nineteen volunteer participants’ and three chairs (Figures 1 and 2). As a methodology, it was built a joined event (the SDS program available on Facebook page) with traditional approach (invited speakers, attendants with papers, a round table, and then the innovative decision making process- the SDS).

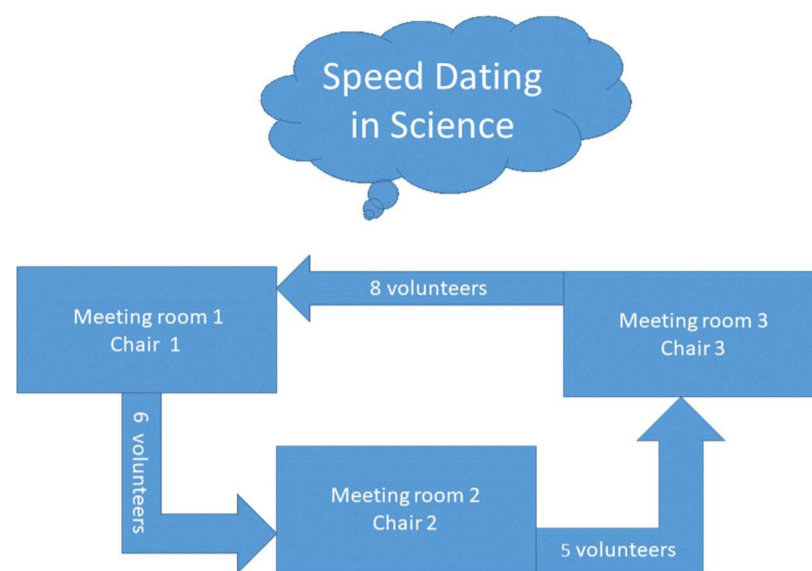


Figura 1. The organization of the Speed Dating Science in three rounds.

Previously, a number of discussion issues (questions) were decided. The six questions debated were: 1) What kind of problems (environmental and socioeconomics concerns) could change the sustainability of the territory? 2) What is the role of agriculture to maintain the sustainability of the territory (favorable or not)? 3) What are the activities that promote a sustainable rural development? 4) List three sentences that define the sustainable rural development and the influence of agriculture on it? 5) What is the role of the different players (politicians, producers, technical, academic, associations and citizens) in the sustainable rural development? 6) What kind of territory management conditions could be included to mitigate the climate changes? After deciding on the questions, the chairpersons were invited; chairs were experts in different fields, biology, economy and climate change.

On the day, the rules of the SDS were explained and any doubts from the audience were clarified. Then, three groups with eight, five and six volunteers were formed according to different ages, academic background and gender, with the objective of having the highest diversity of players in each group. Each group was then led to the different rooms (Figure 2), where a chairperson welcomed the group and proposed two questions to be reflected upon, for the period of thirty minutes.



Figura 2. The Speed Dating Science groups in the meeting rooms.

Each leader worked as a facilitator, assisting the group participants in order to highlight the meeting purpose and promote and register the discussion. The chairperson function was to promote the brainstorming, asking for at least two ideas about each question, to foster debate among the participants about the SDS rural development and record all the answers (there were not wrong answers, all of them were important). The questions were always the same in each meeting room. The chairperson stayed in the meeting room while the volunteers were referred to the following room. As a result, the three volunteers' groups responded to the six questions, and they could only contact the persons in their own group.

DISCUSSION

The SDS was held in a relaxing, friendly and comfortable setting, in which it was easy to participate with satisfaction and motivation. Many ideas were put forward in each group. No conflicts or criticisms of any kind arose during the session among the participants. Everybody presented their opinions and solutions with conviction and defended them firmly in a constructive debate. Two of the six questions were not found to be a valid topics and were removed of this paper discussion (Questions 4 [*List three sentences that define the rural sustainable rural development and the influence of agriculture on it*] and 6 [*What kind of territory management conditions could be included to mitigate the climate changes?*]).

The results of the three rounds of SDS in rural development are summarized in the following paragraphs.

What kind of problems (environmental and socioeconomics concerns) could change the sustainability of the territory?

The main perspective was based on Azores economic, social and environmental issues, including several fields of knowledge (production, sociology, economy and ecology) to improve the communication between people and to achieve the best solution. The main ideas and training should converge to foster an integrated development and a better farm management. The main industry of the Azores is dairy cattle and, for the participants, mainly the young ones, there is a great dependency of European environmental and agricultural policies. Even so, the Azores are one of the outermost European regions, and these regions have their own policies. Additionally, the lack of income in rural areas was pointed out as a factor to hinder the territory sustainability. The globalization was seen as an opportunity but also as a threat, however the participants felt that Azorean people aren't significantly affected by the globalization. Other exposed problems were the lack of medical care and good quality schools, and both factors may also promote the rural exodus. Besides, the geographical distance of the different Azorean islands from to world market restrains the trade. However, attention was drawn to the support of European policies in order to reduce transports costs. Another controversial note was about the awareness of the participants that were fulfilled simultaneously by higher production and its exports. The sustainability of rural territory would be improved by facilities, such us, asphalt paving, water lines, and adaptation to climate change, especially in rural areas. The environmental natural disasters (draining and landslides) and the introduction of invasive exotic species could change the rural environment and affect its depopulation. As a synthesis, without people and humanized landscape, rural development is unlikely.

What is the role of agriculture to maintain the sustainability of the territory (favorable or not)?

Everybody agreed that agriculture has an important role to preserve the territory, and it was even said that it was the best driver of rural development. It was understood that the humanized landscape was a consequence of fixing population in rural areas and the farmers' retirement might be undesirable. The need of local self-supply, both of energy and agricultural products was pointed out and the Agricultural Common Policy was criticized for promoting milk production, dairy industries and cereals, instead of promoting agricultural diversified crops, such us wine, olive oil, and vegetables needed for self-supply. The urgency to develop Azorean agricultural brands and to increase advertising for local products with high quality (ice-creams and yogurt) was also mentioned, and it was generally believed that people are willing to pay for agricultural products of better quality. The technological innovation was agreed as essential to the conservation of territory, based on the knowledge and training, in order to increase the expiration date of Azorean products, such as Azores' wine and honey. The Azores' economy is shifting from dairy to forest as in a previous era, it changed from forest to dairy. This back and forth ought to guarantee the ecological minimum requirements. Moreover, forests and pastures are understood to be the best way to conserve Azorean territory.

What are the activities/investments that promote a sustainable rural development? It was said that the decentralization of the public health and other services such as water, energy and electricity should have a higher support from governmental institutions. The

establishment of young farmers, is thought to be desirable to promote development among the people; thus, major investments should be made in agricultural training, institutional innovation, information and citizenship, especially encouraging integrated investments. The marketing and organization of local agricultural products is also viewed as a promotor of rural development. Finally, it was said that the added value originated by Azorean products should remain in the Azores.

What is role of the different players (politicians, producers, technical, academic, associations and citizens) in the sustainable rural development?

The main ideas were to develop education and governance models in order to get a sustainable development. Also, the importance of reducing imports and increasing exports of value added products was reinforced, with the purpose of increasing the farmers' management and technology knowledge and income. Besides, that dairy production should be based on endogenous resources and urges the balance and control between agriculture and environment competition, innovation, autonomy and self-supply.

CONCLUSIONS

The workshop SDS – *Agriculture and Maintenance of the Territory: parallels and paradoxes* was focused on the Azorean reality and is linked with its rural development concerns. The purpose of this SDS was to encourage group discussion about Azores rural development and that was successfully achieved. This dynamic participation can improve the knowledge of people's perspectives regarding rural development. The outcome of SDS is important and should be considered in the future Azorean rural development policies and plans.

This kind of event (SDS), showed very positive aspects, such as, the presence of stress-free and motivated participants, instead of passive bystanders to oral presentations. Each person contributed with their own ideas, experiences and knowledge, consequently promoting the enrichment of this event.

Among the methodologies that promote group decision, there are two types of methods, those which allow, or do not allow, a face-to-face debate. In spite of the advantages of technologies such as Delphi and other electronic meetings, namely their confidentiality, and fast time of response, the lack of human relationship, that is possible in a face-to-face interaction, may not be the best approach in all cases. Face-to-face interactions allow for a direct confrontation among different approaches and perspectives, and the consensus is reached after a strong debate. This methodology may be preferable in case of very complex issues, where a large diversity of stakeholders is needed, such as the best strategy to achieve sustainable development in a region.

With regard to the SDS – rural development case study, one can highlight the importance of encouraging people, especially the younger ones, to stay in the territory, changing the paradigm of familiar agriculture in a way of promoting agriculture as a noble and attractive activity providing enough income to rural families. From the stated perspectives, the rural world seems to have a major importance in the context of cultural and immaterial heritage, and great value was conveyed to the keeping of cultural traditions and the territorial

occupation of the smallest Azorean islands, such as, *Corvo*, *Graciosa* and *Santa Maria Island*. It is understood that there is a dissociation between humankind and nature; nevertheless, this may be repaired by communicating with the intergenerational actors of the Azorean society. At last, one of the most important ideas in all the three groups was the importance of converting the traditional familiar dairy farms into a more profitable and modernized activity, in order to promote the territory settlement in rural areas. Nonetheless the good results obtained, more research is required to improve SDS in future applications. It would be important to test different ways of dividing the groups (more homogeneous versus more heterogeneous), easier ways to lead the groups to the different rooms, and new techniques to get better consensus in a relaxed and productive debate.

ACKNOWLEDGEMENTS

We acknowledge the Regional Government of Azores' Grant (M3.3B/ORG.RC/008/2016), the Volunteers participants in the SDS, the Chairs of the meeting, Dr. António Félix Rodrigues, Dr. Rosalina Gabriel and Dr. Tomaz Dentinho, the Azores University (UAc), the Trás-os-Montes and Alto Douro University (UTAD), the Centre of Applied Economics Studies of the Atlantic (CEEApLA) and the Centre for Transdisciplinary Development Studies (CETRAD).

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