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Paper

Strategic design for Research and Innovation through a participatory approach: lessons learnt in a Veterinary Public Health Institution

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Abstract

The article describes the results and the experience gained in using a participatory approach to design a strategic development plan (SDP) in a veterinary public health institute. The bottom-up approach utilised was co-designed between the units of "Research and Innovation" and "Training". It included a survey administered to the institute staff (570 people) to collect inputs on three relevant areas: i) innovative research topics; ii) innovation needed to improve services; iii) new tools to carry out activities. After the survey, the following criteria were used to prioritise the research topics: appropriateness, relevance, capacity, impact and innovativeness. Based on the priority topics identified, small working groups were set up on a voluntary basis. The working groups, following the EuropeAid method, co-designed a SDP, set over a three-year period, with indications on aims, objectives, outputs, activities, SMART indicators, means of verification and targets. The method proved useful in continuing the process of institutional innovation, especially by stimulating the participation and commitment of younger innovative staff at the bottom of the hierarchical pyramid. The integration of the described method into regular management procedures would be desirable, to achieve more effective results.

Keywords

Buttom-up approach, Co-design, Participatory design, Public health administration, Research and innovation, Research policy design, Strategic thinking, Veterinary Public Health

Introduction

The public sector represents the largest employer in all "Organization for Economic Co-operation and Development" (OECD) countries (Rizzica, 2020). According to the OECD, in Italy, it was employing roughly 13.4% of the labour force in 2017, compared to 18% on average worldwide (OECD, 2019; Rizzica, 2020). Due to its economic weight in terms of Gross Domestic Product (GDP), there is an increasing need to improve its efficiency and effectiveness, not least in view of the new and growing global challenges (Arundel et al., 2019; Boon and Edler, 2018; Torfing and Ansell, 2017), as the recent COVID crisis has dramatically highlighted.

Public administrations, especially the sector of health services, are challenged by the need for fast innovation uptake and development reforms (Arundel et al., 2019; Shipalana, 2020; Zarychta et al., 2019). Looking at the Public Health System (PHS) most innovative ideas hardly translate into new products or improved services (Gupta et al., 2016; Nolte, 2018). This *inertia* that often affects the PHS, is mainly caused by its complexity, which is also increasing over time. Complexity is often due to the interaction between several elements, which makes the mechanism rigid and less responsive to change inputs (Coiera, 2011). It is therefore required to explore new tools and approaches to improve its innovative capacity (Côté-Boileau et al., 2019).

While reorganisations are implemented to improve the PHS and create an environment more receptive to innovation,

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they often fail to achieve this goal given the inertia often observed in the sector (Braithwaite et al., 2005; Coiera, 2011; Danis and Usher, 2017; Denis and Forest, 2012). Other levers of change are thus needed to unleash innovation mechanisms (Danis and Usher, 2017).

Strategic thinking is therefore crucially relevant to drive forward the development and innovation of public administrations ahead (Arundel et al., 2019; Kettunen et al., 2020). Development and innovation are achieved not only by looking forward and identifying future scenarios, but also by planning objectives within the framework of local possibilities (Schroth et al., 2020; Shaik and Dhir, 2020). This is particularly true for the public Research and Innovation sector which plays an important role in the innovation of PHS in order to meet current societal challenges(Marabelli, 2012).

Furthermore, the recent economic crises, also touching the scientific knowledge system, imposed severe restrictions on new recruitments. This prevented a generational change in Italy since the early 2000s, depriving the public administration of new skills and competencies (Calvo-Sotomayor et al., 2019; Rizzica, 2020). Moreover, insufficient attention to technological progress, combined with decades of top-down approaches applied to decision and planning in the research and development process has weakened the proactivity of professionals, limiting their focus on accomplishing tasks set elsewhere (Casebourne, 2014).

The overall innovation process of the PHS may be challenging to pursue in environments characterised by a lack of motivation for innovation, not least for the additional workload without incentives that such an activity normally entails (Casebourne, 2014). In this context, even the most motivated employee may desist from bringing innovations to the table. Innovators, usually young people in lower hierarchical positions, may also find obstacles in co-workers who are less inclined to change and more interested in preserving the *status quo* (Janssen, 2003). The compartmentalised nature of public administration further complicates the sharing of innovation opportunities, which may even be rejected by most senior colleagues (Janssen, 2003). In the long run, this scenario leads to a lack of shared vision, loss of belonging and demotivation, causing people to leave their workplace in search of more stimulating environments.

In international settings, participatory approaches - to designing innovation priorities are recognised as useful tools to avoid compartmentalisation and increase the acceptability of strategies among stakeholders, including staff (Bagni, 2010; Björgvinsson et al., 2010; Hardy et al., 2020; Hinrichs and Johnston, 2020; Macq et al., 2020; van den Hove, 2000). Participatory approaches, being multidisciplinary and flexible tools, encourage bottom-up problem solving strategies and, hence, stakeholder involvement (Catley et al., 2012; Kettunen et al., 2020; Zeemering, 2018).

It is worth to note that, while in international level setting the design of strategic priorities in research and development, with high long-term visioning, is open to a vast number of possibilities with global idealistic aims, at local level setting a strategy, within a defined scope or space, is striving with current constraints, such as lack of resources, technologies, difficulties in time management and adaptation to local use and costumes (Schroth et al., 2020).

If, on one hand, the narrower the scope and the territorial focus, the easier the setting the specific policies, on the other hand, the possibility of engaging in innovative goals to change the “traditional” *status quo* becomes more limited (Schroth et al., 2020). Thus, a Strategic Development Plan (SDP) of a publicly funded local health administration, must be approached even more carefully to be accepted and achieve results. Participatory approaches may be extremely useful in this context, where shared vision, sense of belonging and appropriate communication among different professionals are desirable.

In this article, the authors wish to describe their experiences in designing and developing a SDP through a participatory approach, in a local administration, operating within the Veterinary Public Health sector. The positive and negative elements of the experience, as well as the lessons learnt, are discussed to ameliorate future attempts to speed up innovation in local health public administrations.

Materials and methods

The study was carried out at the Istituto Zooprofilattico Sperimentale del Lazio e della Toscana M. Aleandri (IZSLT), one out of ten Italian Veterinary Public Health Institutes operating within the Ministry of Health network. The IZSLT performs laboratory diagnostic tests, field activities as well as research activities connected to risk analysis, crisis management and contingency planning, both in the sector of food and feed safety as well as in animal health and welfare. The IZSLT adopts, on a yearly basis, the SDP, a document outlining research and innovation priorities. This plan aims at: a) rationalising and optimising the resources managed by the Institute; b) harmonising scientific research and development projects; c) enhancing skills, professionalism and technology. As a rule, the development of this document has been traditionally carried out exclusively by the Top Management, applying a top-down approach.

A new experimental methodology to design the 2021 SDP was then proposed by the Research, Innovation and International Cooperation Unit of the IZSLT. The new methodology, based on a bottom-up strategy, was agreed with

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the Top Management before implementation. A summary of the method is outlined in Figure 1. Initially, the scope and the target of the study were defined. Then planning on the information to collect and the tools to utilise were detailed. Once it was decided to make use of an online survey, a communication campaign, in cooperation with the Training and Communication Unit of the IZSLT, was launched to inform the whole personnel.

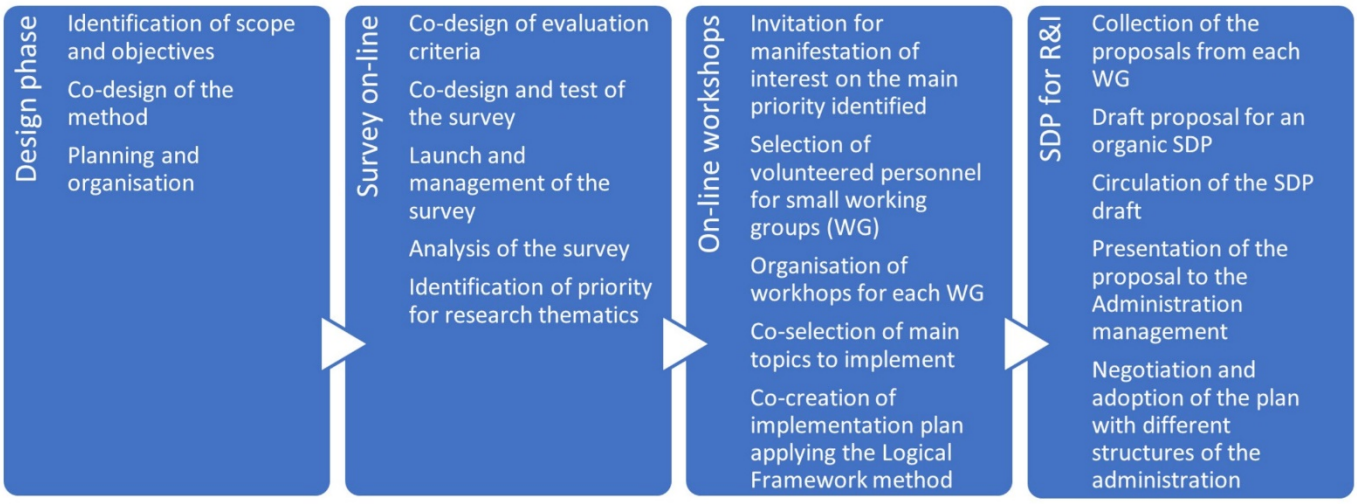

Figure 1. Stages of the method utilised for the co-creation of the Strategic Development Plan.

The survey was launched through an invitation e-mail, containing a link to the online survey and a link to some additional reading, to inform on internationally identified priority and a brief explanation of the aim and the method in use. The e-mail was sent to all IZSLT personnel (n=570) on the 7th of September 2020. Two reminders, respectively at 7 and 14 days after the first mail, were then forwarded in order to solicit answers. During the whole survey a support service via e-mail was made available.

The survey consisted of 3 questions on which to gather opinion:

- New research topics to focus on;
- Main innovation needed to improve the administration service;
- New tools needed to carry out activities.

All the questions were open-ended with a limited amount of rows (2-3) for each answer. Anonymity was guaranteed, and respondents were also allowed to add comments.

The use of open-ended questions and qualitative data collection methods was chosen to elicit a wide range of responses, accommodate unexpected insights, explore diverse perspectives, and capture the depth and richness of individual experiences. This approach aligns with the subsequent in-depth analysis facilitated by the Logical Framework Approach, ensuring a robust and comprehensive understanding of the research subject. Finally, the average of the responses was calculated.

Innovations and new tools proposed were organised and collected into categories and subcategories. Instead, the research thematic areas were organised in categories and further analysed accordingly with previously agreed criteria with multidisciplinary groups (Hub and Spokes groups) already existing within the IZSLT.

Accordingly with previous studies (COHRED, 2000; Messori et al., 2017), the thematic areas of research were analysed by the following criteria: appropriateness, relevance, capability, impact and innovativeness (Figure 2).

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Figure 2. Criteria adapted from the COHRED Manual for Research Priority Setting (COHRED, 2000)

The research topics were scored from 1 to 5 for each identified criteria by a panel of 8 experts belonging to the Research, Innovation and International Cooperation Unit and the Training and Communication Unit. The scoring average has been utilised to create two main groups: research priority and high research priority. Inside each group, priority was assigned starting from the average scoring for innovation aspects.

The main priorities among the research topics, resulting from their scoring, were discussed during online workshops in breakout sessions with a restricted number of experts who explicitly manifested interest for the areas of research. The groups defined a specific implementation plan to carry out in the next 3 years, following the EuropeAid Logical Framework method (Table I) (EC, 2004).

	Description	**Indicator**	**Baseline**	**Source of Verification**	**Target**	**Assumptions**
Goal : **(overall objective):**	*Broad long-term impact to which the project contributes (link to the policy aim)*					
Outcomes: **(specific objectives):**	*Expected benefits to the targeted groups at the end of the project (3 years)*	*Variable that provides a simple and reliable mean to measure the achievement of the corresponding result.*	*The value of the indicator(s) prior to the intervention.*	*Sources of information and methods used to collect and report the progress (where/from whom, when, how).*	*The intended final value of the indicator(s)* *(quantity, quality, time).*	*Factors outside project management's control that may impact on the results.*
Outputs:	*Direct tangible results (goods and services) that the project will deliver*	*(see above)*	*(see above)*	*(see above)*	*(see above)*	*(see above)*
	Description			**Resources**	**Start date**	**End-date**
Activities:	*Key tasks to be carried out to deliver the planned outputs*			*Who will carry out each activity*	*Start date for each activity*	*Deadline of each activity*

Table I. Explicative table of the Logical Framework method adjusted from EuropeAid (EC, 2004).

The results of the survey and the proposed implementation plan were presented to the Top Management for negotiation and adoption among the different Units of the IZSLT.

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A timely return of information was provided to the participants of the process sharing the drafts of the survey report and the annual implementation plan. Furthermore, the implementation plan was distributed via e-mail to all the IZSLT managers with the opportunity to refine workshop outputs and contribute their ideas for building a final version of the strategic development plan.

Results

The participation in the survey counted around 16% (n=90) of the invited personnel (n=570). The open questions of the survey received a variety of answers. They were reorganised in three sections (scientific topics, innovations, new tools) and comments.

Responses for innovations were classified into the subcategories: sample check-in, communications, training, and management area. Responses for tools were organised into the following subcategories: laboratory equipment; IT tools to improve communications, structures, other technological tools, other requests. Differently, the 76 responses, collected for scientific topics were aggregated in 30 fields. After the prioritisation, according to the agreed criteria (appropriateness, relevance, capability, impact and innovation), 7 fields were considered of high priority for interventions within IZSLT: environmental sustainability, digital innovations, genomics, GIS & environmental epidemiology, food technologies & local food chains; Insect farming: animal health & feed security.

Three of them were exploited in the implementation plan for the next three years, the others were reserved for the years to come.

Moreover, the continuous connections and exchange of information among specialists all over the participatory process allowed to reach several informal results. First of all, the interactions among specialists, that usually do not work together, favoured a multidisciplinary environment and enhanced the shaping of collective ideas through mutual learning. Receiving inputs directly from scientists working in the field helped retrieve direct specific information promoting as well immediate circulation of information and creation of internal research networks while sharing purpose of actions.

Discussions

The participatory approach, described above, delivered a long list of innovations, tools and priorities for research topics, conveying the focus of the personnel on the achievement of institutional development and innovation. Even if this list could have been achieved by a traditional top-down approach, the participatory one provided several additional informal results that added value to the DSP.

Implementing the design “with” the researchers - and not “for” the researchers - helped them to build a sense of ownership over the activities, and to set up clear expectations about the results. The multidisciplinary environment, created during the round-table discussions, favoured the shaping of ideas around a common vision and mutual learning from peer to peer among specialists of different sectors. The sense of belonging to the idea proposed and shared with colleagues enhanced the commitment of individuals which has often been recognised as the basis of a fast uptake of strategic decisions and innovations (Casebourne, 2014; Kettunen et al., 2020; Zeemering, 2018). In the best cases, participatory methods can help to empower the marginalised innovative people to participate in and have some control over research and interventions which affect them and the overall system (Ebata et al., 2020).

If clear advantages in the use of participatory approach methods to widespread innovations are recognizable, the use of this method opens to new challenges for the system. First, those relating to leadership and management. The risk of a lack of legitimacy of the new strategy proposed by a bottom-up strategy, in a context where top-down approaches have always been the *status quo*, could be feasible and should be faced. The democratisation of decision-making through participatory approaches deals with the potential effects of decentralization (Kaethler et al., 2017; Zarychta et al., 2019). In this regard, possible obstacles from current managers who may feel a lack of control over the *status quo* and the personnel for management of current activities, should not be underestimated.

Early and broad stakeholder involvement is therefore crucial, particularly by involving managers as part of the co-designing process.

Furthermore, integration of participatory methods into different institutional contexts requires management of innovation, development of specific skills and new working procedures that could support such innovative strategy. To achieve development in the public health sector, it is important to bear in mind that the introduction of an innovative work path is complex. The World Health Organisation (WHO) recognises that the introduction of an innovation should not be considered a single event, but a series of implementation processes (Nolte, 2018). The difficulties in the implementation of these processes will be linearly related to the complexity of the organisation system to innovate

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(Coiera, 2011).

Accordingly with previous studies, critical areas of improvement have been identified in facilitating discussion while building linkages, maintaining communications, adopting methods enabling to provide different perspectives, assuring coordination, management and monitoring of participatory activities, selecting and using means for conveying findings to the relevant stakeholders (Martin and Sherington, 1997; Schroth et al., 2020).

As these activities are often recognised as time-consuming, a cost-effectiveness evaluation should always be estimated before starting the participatory process. Particularly, to avoid a lack of adequate governance during the process, it is necessary to assure sufficient resources for a dedicated management team from the very beginning (Sinni, 2017). Furthermore, it should be reminded that previous studies highlighted the difficult positions for the participatory practitioners, such as co-designers or planners involved in co-production (Kaethler et al., 2017; Lodato and DiSalvo, 2018). In fact, on one hand, not taking a critical stance from the *status quo* can lead to legitimising and normalising the dominant logic of the elite: on the other hand, taking a critical stance from the *status quo* can result in a loss of access and trust from stakeholders and - ultimately - in being side-lined from influential design or planning processes (Kaethler et al., 2017). Thus, methods to legitimate and facilitate the participatory process management team should be taken into consideration. On top, budget should be also allocated to implement the results of the participatory approach.

If there is evidence that management methods, which encourage bottom-up innovation, result in better outcomes than traditional top-down policy driven innovation, the administration framework is likely to matter (Arundel et al., 2019). It is even more productive to develop a governance model that supports a strategic innovation management which systematically raises self-innovation (Arundel et al., 2019). This could be possible by creating an innovative culture within the organisation, integrating the new procedures with public service norms, empowering employees, motivating them through meritocratic incentives and awarding innovations (Casebourne, 2014).

The relevance of job satisfaction and motivation is crucial in any public health sector. The heavy cutback intervention of the last years over the public health sector, with reduction of incentives, lack of renewal of the working environment, difficulties for career advancement, call for more attention on methods to increase employee's motivation to achieve efficiency, effectiveness and productivity (Reina and Scarozza, 2021).

A participation rate of 16% can be considered relatively high according to literature, where an average response rate to a web survey is 11% (Jin, 2011; Manfreda et al., 2008), although a higher value was expected as this was an internal survey with a potential feedback effect on the participants. Cycyota and Harrison, analysing response rate data from 231 studies that surveyed executives and appeared in top management journals from 1992 to 2003, found an overall response rate of 32% (SD= 17%). When that number is adjusted by not including studies that used prior screening for consent, the median response rate is 28% (Cycyota and Harrison, 2006). Several hypotheses have been considered regarding the obtained participation in the survey, the lack of time and motivation of personnel to participate being the most plausible. Moreover, the survey was launched post-summer break in the middle of the COVID-19 emergency, crossing-timeline with new additional emergency activities required of personnel. The lack of time exacerbated a probable lack of motivation to respond to the survey. Besides, a lack of meritocratic incentives and, probably previous negative experiences with participatory approaches within the organisation, where the return of information and commitment to take consequent actions could have been enhanced, may have also played a role.

To rebuild trust and avoid a lack of commitment from staff, the proposed participatory approach introduced also a detailed implementation plan, including an annual monitoring of performed tasks. Furthermore, timely feedback to all personnel was provided sharing the outputs.

In fact, the dissemination of results was a key step of the proposed methodology as openness and transparency lend to legitimacy of results.

The SDP was distributed via e-mail to all IZSLT managers providing the opportunity to refine workshop outputs and contribute with their thoughts for building a final version. As highlighted by other authors, co-authoring among the participants has several advantages: firstly, it promotes ownership during priority exercise boosting the quality of outputs and increasing the likelihood that these outputs will be implemented at a later stage; secondly, it indicates on collaborative nature of research and policy interaction and, finally, it enhances the credibility of strategic setting planning by illustrating the breadth of participants (Sutherland et al., 2011).

Overall, the experience outlined in this work agrees with the findings of WHO regarding the need for several factors to enable the implementation processes of innovation such as leadership and management, early widespread of stakeholder involvement, evaluation of cost-effectiveness, dedicated resources, effective communication across the organisation, adaptation of the innovation to the local setting, ongoing monitoring and timely feedback about progress achieved (Nolte, 2018).

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Conclusions

The authors strongly believe in the usefulness of participatory approaches for starting the institutional innovation process and speeding up the achievement of results in local public health organisations. The authors also recognise participatory approaches as stimulating methods that encourage the emergence of innovative ideas, especially when these arise from junior staff. Furthermore, they facilitate mutual learning, convey to employees a common vision and focused actions, and enhance networking and commitment to reach objectives felt like their own, improving mutual confidence between the different levels through more transparent decision making. However, challenges reside on the lack of resources to forefront participatory activities and their further implementation of results. Thus, it is essential to foster management procedures that support and legitimate the participatory process and its results.

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