University extension allied to education and research through the Poli exhibition

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ABSTRACT

Extension is one of the university education columns, promoting interaction between educational institutions and other society sectors, through the articulation of the scientific knowledge application, teaching and research to the community needs. In particular, extension events disseminate technical-scientific knowledge, constituting an important interaction tool for the university. Assessment is one of the most important stages of the extension event, as it allows to identify strengths and weaknesses for improvement. In this context, the paper describe the MOSTRA POLI event which involve the participation of engineering and physics courses and its evaluation as a subsidy for improvement actions. The methodology included the development of an evaluation instrument, implementation activities and results analysis. The findings identify perspectives for improvements related to the paper submission and resubmission deadlines; in addition to highlighting the strengths of participation and papers publication in registered proceedings. The main contribution is considered to be the dissemination of knowledge produced by the university and the collaborative environment between participants.

Keywords: University extension, Event, Mostra Poli, Engineering, Education.

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INTRODUCTION

University extension was conceived in nineteenth-century England from the perspective of the development of continuing education (GADOTTI, 2024). Currently, extension is understood as allied to education and research, which promotes social development, articulating the practical application of scientific knowledge, teaching, and research to the needs of the local community, interacting with and transforming social reality (BARBOSA et al., 2019; PIRES, 2020; BORRÁS et al., 2023).

Extension actions involve the following modalities (FRANZ et al., 2015; TUMELERO, 2018; DWYER et al., 2017; UPE, 2021): program, project, course, workshop, event, and service delivery.

Among the extension actions, the event is an organization, promotion or performance in a program, implying public presentation and, also, free or for a specific clientele, of dissemination of knowledge, process or cultural, scientific or technological products, developed or recognized by the institution as a forum, congresses, seminars, symposiums, musicals, theater and others (GONÇALVES et al., 2020; UPE, 2021).

Events are also considered actions of academic and pedagogical interest that can be of a sporadic nature, of an educational, technical, social, scientific, sports and artistic nature (RODRIGUES et al., 2013; CAPRIOLI et al., 2019).

It is considered that the event is the right place to show university extension, as attested by several authors (GOMES et al., 2017; BARRETO et al., 2019; OLIVEIRA et al., 2019; RODRIGUES JR. et al., 2020), in which the exchange of experiences and the integration between projects and programs, between teaching, extension and research occurs.

Among the stages of an event, evaluation should be a systematic target of action, as it helps to identify the weaknesses to be corrected and celebrate the success of the successes, making it increasingly successful (NIKOLIĆ, 2015; SANTANA et al., 2015; GOMES et al., 2017).

Santana et al. (2015) emphasize that the experience of building based on frequent evaluation and feedback results in contributions to the management of extension and the management of a university's events.

Therefore, the Extension, Innovation and Research Exhibition, or simply MOSTRA POLI, is considered the main annual event of the Polytechnic School (POLI) of the University of Pernambuco (UPE).

POLY SHOW EXTENSION EVENT

MOSTRA POLI is an event that is part of the UPE University Week, being organized by the Sectorial Coordination of Extension and Culture (CSEC), whose objective is to present the work

developed by POLI professors and students, promoting the exchange of experiences among participants (CSEC, 2021).

The event was created in 2014, with an annual periodicity, the work presentations are defined according to the modality (monitoring, course completion works, extension, scientific initiation, master's and doctorate).

MOSTRA POLI encompasses the institution's 8 courses: civil engineering, computer engineering, control and automation engineering, electrical and electronic engineering, electrical and electrotechnical engineering, electrical engineering, telecommunications, mechanical engineering and materials physics (POLI, 2021).

Table 1 illustrates the phases contemplated for the achievement of the POLI EXHIBITION.

TABLE. 1: QUANTITATIVE OF THE POLI SHOW

Phase	Denomination	Descriptive
1	Abstract submission	Abstract must be formatted according to the guidelines of the template available for download on a specific homepage. It cannot exceed two pages, including: title, authors' names (student, advisor and other co-authors) and references.
2	Evaluation of abstracts	Carried out by 3 professors from POLI (scientific committee).
3	Submission of the final version of the abstracts	Corrected abstract considering the requests of the Scientific Committee.
4	Submission of the presentation	Carried out according to the guidelines of the template available on a specific homepage.
5	Presentation and evaluation of papers	Carried out considering the area of knowledge with evaluation by 3 professors of POLI (scientific committee).
6	Compilation of the evaluation of the works	Collection of the grades provided by the evaluators, resulting in the definition of the best positioned works.

The proceedings are published under ISSN 2359-2249 on *the Platform & Workflow by OJS/PKP* (http://revistas.poli.br/index.php/anais/index).

Figure 1 illustrates the cover of the proceedings of the 2020 POLI EXHIBITION; while Table 2 gathers the number of approved abstracts and members of the scientific committee of the initial and evaluated editions of the event.

FIGURE. 1: ANNALS OF THE 2014 AND 2020 POLI EXHIBITIONS

Each abstract indicated in Table 2 is associated with a main author of the work submitted to MOSTRA POLI.

TABLE. 2: NUMBERS OF THE 2014 AND 2020 POLY EXHIBITIONS

Year	Abstracts (authors)	Scientific Committee	Total
2014	50	21	77
2020	119	39	174

It should be noted that in the period of 7 years, the number of approved abstracts increased by 238%; while, participation varied by up to 385% in the scientific committee.

OBJECTIVE

The main objective of this work was to describe and evaluate the POLI EXHIBITION of the year 2020, based on the satisfaction of the authors of papers and scientific committee.

METHODOLOGY

The methodology of the work consisted of a descriptive quantitative research, based on a data collection procedure through questionnaires applied to the authors of papers and scientific committee. Table 3 lists the steps adopted for the development of this study.

TABLE. 3: RESEARCH STAGES

Stage	Descriptive
1	Literature review on the development of extension events and their importance in the university context.
2	Description of the EXHIBITION within the scope of POLI/UPE.
3	Development of the satisfaction assessment questionnaire of the main stakeholders of the MOSTRA POLI 2020 event.
4	Structuring and implementation of the evaluation.
5	Data collection and analysis of results.

Steps 1 and 2 were presented earlier; while steps 3, 4 and 5 are described below.

DEVELOPMENT OF THE ASSESSMENT QUESTIONNAIRE

The questionnaire was developed with the objective of characterizing the respondents, assessing satisfaction with the elements of the event and deadlines for activities.

The characterization of the respondents included 4 questions, the elements were evaluated in 7 questions; while 2 specific questions about deadlines were asked exclusively for the authors of papers and the scientific committee.

Table 4 gathers the topics and items that make up the questionnaire, and also includes the division of the specific questions asked to the authors of the papers and the scientific committee.

TABLE. 4: MOSTRA POLI 2020 EVALUATION QUESTIONNAIRE

Topics	Items	
Characterization of the participants	• Origin • Participation Category • Knowledge of the event • Option to hold the event	
Strengths and weaknesses	• Importance for POLI • Annals with ISSN • Faculty participation • Student Participation • Continuity of participation • Existence/organization • Quality of work	
Specific Elements	Authors	• Submission deadline • Deadline for correction of the abstract (resubmission)
	Scientific Committee	• Abstract evaluation deadline • Deadline for evaluation of the corrected abstract

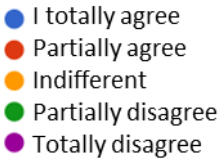
The items questioned in the topic of characterization of the respondent participants correspond to the direct questions. For the items of the strengths and weaknesses topics and specific elements, the questions were formulated based on the Likert scale (MCLEOD, 2019).

The Likert scale is a quantitative method used in questionnaires to evaluate questions according to the audience's level of agreement on the statements presented, and is so named because

it was created by Rensis Likert, a sociologist at the University of Michigan in the USA (MCLEOD, 2019; PRADO, 2020).

The distribution used of the levels of the Likert scale was as follows (Figure 2): strongly agree, partially agree, indifferent, partially disagree, and strongly disagree (MCLEOD, 2019; MACEDO, 2020; PRADO, 2020).

FIGURE. 2: LIKERT SCALE CRITERIA IN THE EVALUATION OF THE ELEMENTS



In agreement with Macedo (2020), the adoption of the Likert scale in the MOSTRA POLI survey allowed us to measure the degree of compliance of respondents with the proposed statements, the level of importance attributed to an activity and, finally, the evaluation of the activity.

STRUCTURING AND IMPLEMENTATION OF THE ASSESSMENT

The structuring stage of the evaluation began with the parameterization of the survey questionnaire in a form in the Google environment, with the initial message of introduction of the survey forwarded in the initial part of the form, which was used because it is free, online, simple to use, quick to complete and intuitive. In addition, it allowed you to organize and analyze the information to improve sharing and access.

The implementation stage of the evaluation was carried out with the configuration of Google Forms to send an email with the invitation to fill it out, from the registration of e-mails of authors of the work and scientific committee of MOSTRA POLI. The settings established in the form required a mandatory response, issue a response receipt, limit to one response, and show a progress bar.

DATA COLLECTION AND ANALYSIS OF RESULTS

The data collection stage was carried out in July 2021, with a deadline of 3 days for responses. At the end of the initial deadline, an additional 2 days of deadline were provided.

The control of receiving responses was programmed through formLimiter-PROD (a supplementary application that allows limiting the application of a form by setting a date and time, after which the capture of responses in Google Forms is terminated).

The analysis of the results included the division by topics and items for each of the participation categories and also a comparison between them. The results and key considerations are presented below.

PRESENTATION AND ANALYSIS OF RESULTS

CHARACTERIZATION OF PARTICIPANTS

The entirety of the respondents, i.e., 100%, comes from POLI, whether they are professors or students of the institution. The presenting authors were exclusively made up of students, and the scientific committee was made up only of professors.

Table 5 shows the results of respondents by participation category. The % column represents the percentage of respondents in relation to the total number of participants per category in MOSTRA POLI 2020 (as shown in Table 5).

TABLE. 5: PARAMETERS OF THE MOSTRA POLI 2020 EVALUATION QUESTIONNAIRE

Participation Category	Respondents	%
Authors	42	35,3
Scientific Committee	20	51,3

Based on the results shown in Table 5, the participation of the scientific committee and authors in descending order was verified. It is possible to associate the result with those participants who have a more durable contact with the POLI/UPE institutional e-mail, since the scientific committee is made up of professors, whose permanence at the university is longer than authors, mostly formed by students, many of whom have already graduated.

Figure 3 illustrates the means by which participants became aware of the event; while Figure 4 illustrates the preferred option for holding the event.

FIGURE. 3: MEDIA OF KNOWLEDGE OF MOSTRA POLI 2020

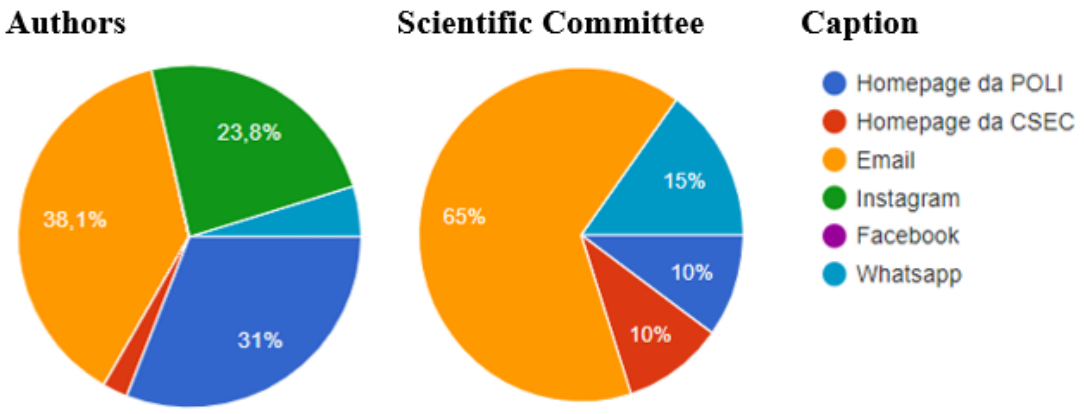
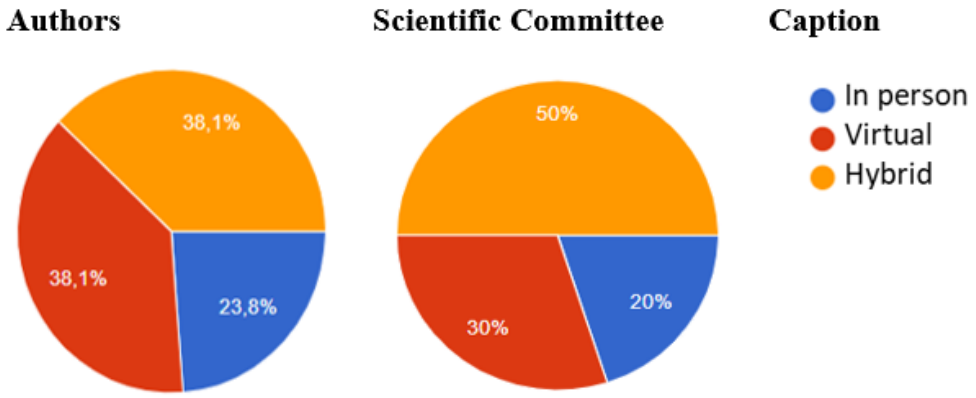


FIGURE. 4: PREFERRED OPTION FOR HOLDING THE EVENT



According to the results of Figures 3 and 4, the following can be considered:

- e-mail was the main means of knowledge of MOSTRA POLI 2020 by the scientific committee and presenting authors;
- the hybrid option emerged as the main preference for the realization of the EXHIBITION; while, the second option was virtual and the third was face-to-face.

The pandemic context must have influenced the option for the hybrid format of MOSTRA POLI 2020, considering the success of the virtual activities, but not ruling out the option of presence in accordance with the activity to be carried out.

STRENGTHS AND WEAKNESSES

Figures 5 to 10 bring together the results of the evaluation of the elements (pertinent to strengths and weaknesses - internal environment) of MOSTRA POLI 2020.

FIGURE. 5: IMPORTANCE AS A MAJOR ANNUAL EVENT

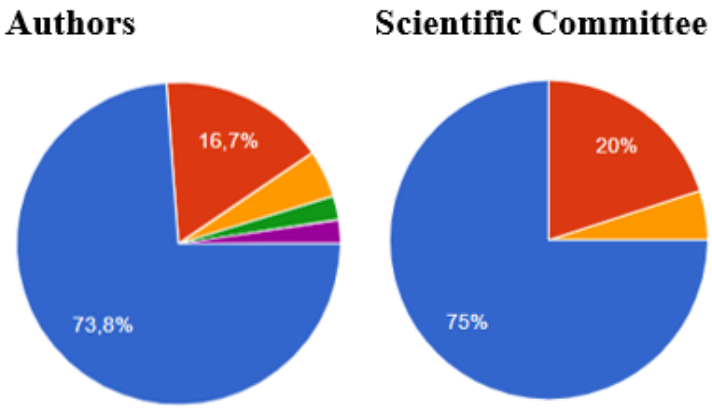


FIGURE. 6: ANNALS WITH ISSN AS MAIN STRENGTHS

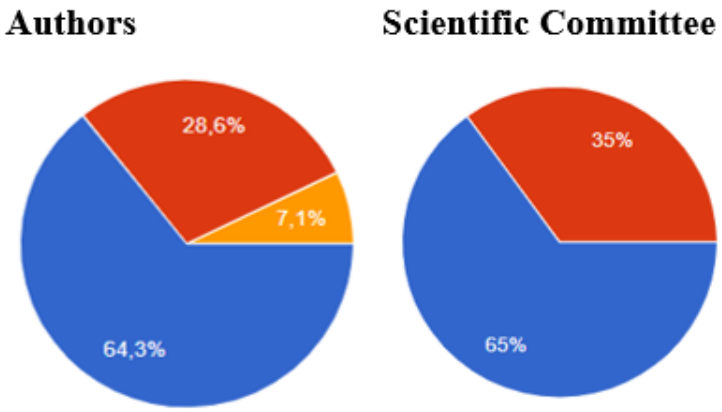


FIGURE. 7: FACULTY PARTICIPATION AS MAIN STRENGTHS

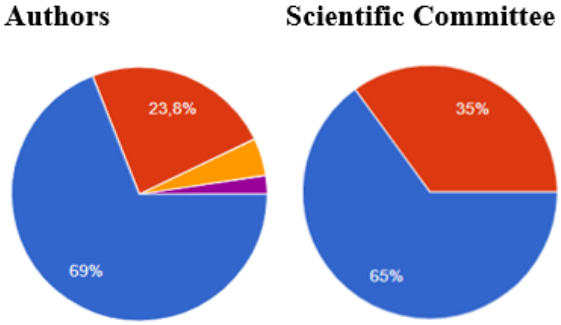


FIGURE. 8: STUDENT PARTICIPATION AS KEY STRENGTHS

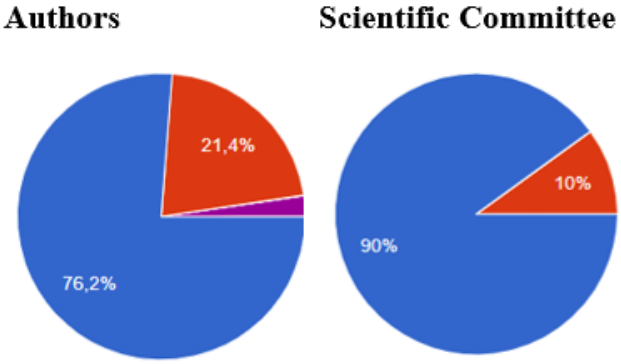


FIGURE. 9: SATISFACTION BY EXISTENCE/ORGANIZATION

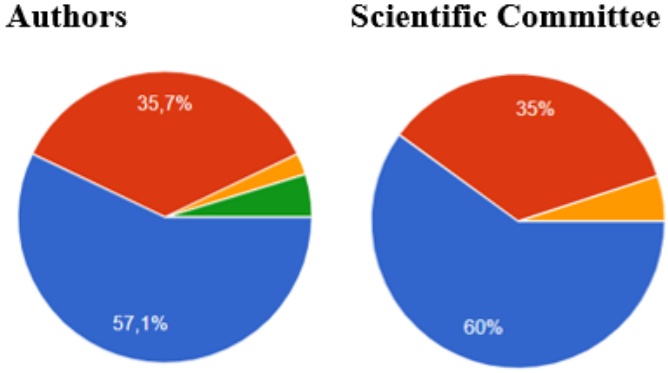
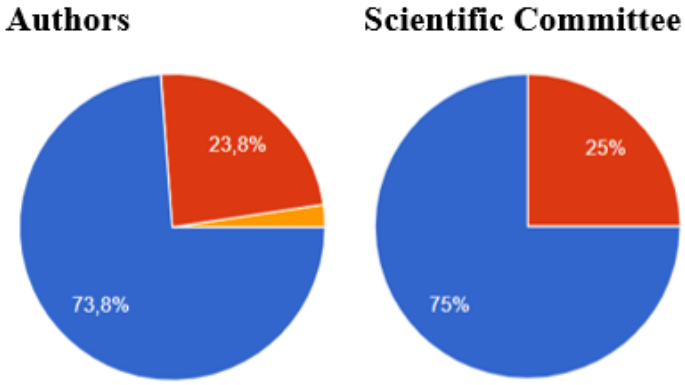


FIGURE. 10: SATISFACTION WITH THE QUALITY OF THE WORK



According to the results of Figures 5 to 10, the following considerations can be made:

- most agree that the MOSTRA is the main annual technical-scientific event of POLI, whose descending order points to the following agreement: scientific committee and authors. This fact demonstrates the importance of the occurrence of the event for the institution;
- among the main strengths, in descending order, the majority agree with student participation, tying with teacher participation and the publication of ISSN annals. On the other hand, student participation has the highest percentage of total agreement in relation to faculty participation and publication in annals;
- the majority agrees as to the satisfaction with the existence and organization of MOSTRA POLI 2020. The mean partial agreement shows room for improvement in this item;
- The majority agree that they are satisfied with the quality (knowledge, clarity of exposition and content) of the works presented. The proximity of the partial agreement of the presenting authors and the scientific committee demonstrates the harmony among the respondents regarding the margin for action in the improvement of this item.

There is agreement on 96% of continuous participation in MOSTRA POLI 2020, with only 11.9% of the authors of papers showing discontinuity of participation. It can be assumed that this situation is in line with the graduation of students and the completion of university graduation.

SPECIFIC ELEMENTS

Figures 11 and 12 gather the results of the evaluation of the specific topics questioned to the authors of the papers and the scientific committee of MOSTRA POLI 2020, respectively.

FIGURE. 11: Specific Topics Asked to Authors

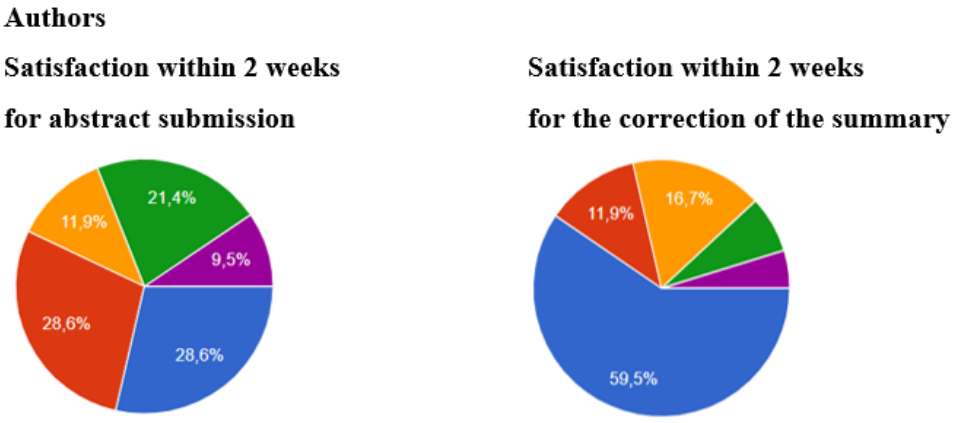
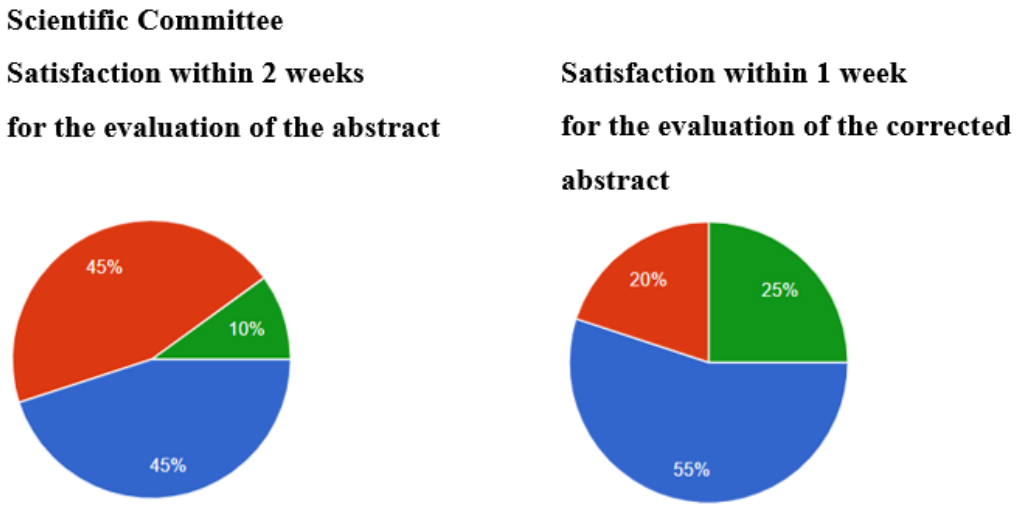


FIGURE. 12: SPECIFIC TOPICS QUESTIONED TO THE SCIENTIFIC COMMITTEE



According to the results in Figure 11, the following considerations can be made from the authors' point of view:

- the majority agree on the 2-week deadline for abstract submission; while 30.9% disagreed;
- the majority agree on the 2-week deadline for the correction of the abstract; while only 11.9% disagreed;
- Compared to the disagreement on the submission deadline, the disagreement on the correction deadline is much smaller, close to the third.

According to the results of Figure 12, the following considerations can be made from the point of view of the scientific committee:

- the majority agree on the 2-week deadline for the evaluation of the abstract; while only 10% disagreed;
- the majority agreed on the deadline of 1 week for the evaluation of the corrected abstract; while 25% disagreed;

- Compared to the disagreement regarding the deadline for evaluating the abstract, the disagreement regarding the deadline of half the time for the evaluation of the corrected abstract is 2.5 times higher.

FINAL THOUGHTS

The main opportunities for improvement of the MOSTRA POLI event corresponded to the three items with the lowest percentage of agreement, in descending order: the 2-week deadline for the submission of the abstract – with the authors, the 1-week deadline for the evaluation of the corrected abstract (after the request for corrections) and the 2-week deadline for the correction of the abstract – with the scientific committee.

The main highlights (strengths) of MOSTRA POLI corresponded to the three items with the highest percentage of agreement, in descending order: student participation, faculty participation and the publication of annals with ISSN.

Finally, the main contribution of this study is the description of the methodology and implementation of the evaluation of the satisfaction of extension events, indicating alternatives for the improvement of similar events.

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