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Topic (iii): Getting the support of all people when implementing data editing

Implementing a new editing system –getting everyone on board

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I. Introduction

1. In 2013, the division for Health statistics at Statistics Norway introduced new methods aimed at reducing the cost and improving efficiency of the editing process. Central to this new system were methods based on selective editing and a shift from a micro-oriented perspective to a more macro-oriented approach.
2. In the past there had been no explicit strategy for editing. The editing staff were in almost all cases, left to their own devices and the prevailing norm at the division was micro-editing. In addition, to an editing strategy largely guided by personal preference, there was no system in place for securing the transfer of knowledge, both between statistical areas and to successors. For most statistics at the division there are relatively few observations and the editing staff itself is mostly in charge in allocating the time needed at the expense of other work tasks. With the consequence that a substantial part of the editing staff checked every unit in detail for their own statistic, resulting in an editing process that was very time consuming.
3. Which units would be prioritized in the editing process depended largely upon the personal experience and preferences of the individual doing the editing. Investigating the effect of the micro oriented editing had on results showed that, although there were a lot of corrections made to the data, the majority of the corrections had a negligible impact on the final results. And with no system in place for evaluating the effect of editing being done, the same procedures were repeated year after year.
4. Looking at how the division approached editing it became clear that there was a lot of room for improvement both to quality and efficiency. First and foremost, the new approach would have to move away from the time consuming micro-oriented approach to a more efficient approach. It also needed to be based on established methodology to safeguard quality.
5. Selective editing involves a focus on errors that can have an impact on the overall results, i.e. at the aggregate level. We wanted to develop a control system which can flag suspicious values and prioritize units for further investigation. Control and eventual correction of the highest priority cases can be done by an iterative process with new rounds of checks and new error messages after each round of corrections. Selective editing with consistent prioritization of critical error messages are effective use of resources.
6. Documentation of the editing process is also of importance to ensure and document the quality of the data. Good documentation makes it possible to improve data collection and editing in subsequent surveys. Fewer errors in input data will increase the data quality. Identifying the causes of errors is essential to improve future data collections.

II. Gaining support for a new approach

7. Having established that there was a need for a new approach to editing and an idea of how it could be achieved the next step on the agenda was gaining support from relevant parties. It was recognized that to enable this project to succeed, support from the Division for statistical methods, management and the editing staff was needed.

8. The Division for statistical methods was needed to review the methodological framework and make suggestions. Their support was also essential in legitimizing the methodological underpinning of the new system being developed.

9. Without support from management it would have been impossible to move the project forward. And to successfully implement the system the editing staff needed to give their support.

A. Statisticians

10. Statisticians employed by the Division for statistical methods give regular courses in statistical data editing. The courses give an introduction to recommended practices of data editing, how to analyse the data editing and the most used macro methods to select suspicious observations. The methods are programmed with macros in SAS- enterprise guide and graphics are an important tool to visualize the results. The course is not sufficient to go from micro editing to macro editing, but gives insight in what is possible.

11. By attending courses held by the Division for statistical methods new ideas were generated and support for how editing should be approached was gained. It also marked the start of an ongoing collaboration between project members and statisticians from the Division for statistical methods in implementing a more methodological sound approach to editing.

B. Management

12. With the potential benefits of a more standardized editing framework, significantly more efficient working procedures and improved quality, the concept was well received at management level.

13. One of the problems with the previous system was that it was difficult to move editing staff across different statistical areas without an extensive training period. With a more standardized system in place it would be easier to move resources where they were needed the most.

14. The prospect of greater efficiency and improved quality was welcomed by the management. In order to sell the idea to the management it was necessary to present the idea in such a way that it would be viewed as feasible. By presenting a prototype of the system, based on the new methodological approach, efficiency gains quickly become obvious. In addition, with a focus on good design, low user threshold and a strategy for educating the editing staff the management was on board.

C. Editing staff

15. It is always a challenge to introduce a new system to an audience that vary greatly in knowledge and skills. Therefore it was important to give a good first impression that did not deter some of the editing staff. The prototype was presented and a general overview of the new approach was given. Overall the feedback from the editing staff was positive and the project felt it had the necessary support to move ahead.

III. Strategies for implementing change

16. When implementing the new editing system it was decided that a design with a focus on ease of use was essential towards a successful implementation. Next was to present the ideas underpinning the system in a simple way and to keep repeating the message. When the editing staff were first given access to the new editing system, small courses and workshops were set up to support the staff in making the transition.

A. Design

17. In designing the system, the need for ease of use and standardization were identified as two key components. To facilitate the implementation we wanted the technical user threshold to be as low as possible. It was also essential to standardize the system so that it could be applied to all statistics. Paramount to achieving this was the linking of technical expertise with professional knowledge. Experience had shown that when technical expertise and professional knowledge were clearly separated from each other, the technical solutions that resulted from such collaboration had a tendency to be sub-optimal.

18. One of the design goals was that each individual on the editing staff should be capable of using the system without much prior knowledge. In general the editing staff had limited knowledge and experience with software beyond simple spreadsheet solutions. Although SAS was available to the editing staff, it wasn't seen as much use for editing. With the arrival of SAS Enterprise Guide, and the possibility of using prompts, new ways opened up for users to manipulate parameters without ever having to see any programming code. It was decided to capitalize on this development and create a system developed in SAS Enterprise Guide where the code would be hidden from the user so that all interaction between the system and the user would be handled using prompts.

19. Another key factor in the design was standardization. The goal here was that when editing staff moved from one statistics to another the interface would be the same. Any adaptations that were needed in order to make a statistic fit the system framework had to be done in the code and hidden from the user. In the development phase of the system those two factors, ease of use and standardization, contributed to a substantial part of the resources spent on development.

B. Lectures

20. With little in the way of a methodological base underpinning the approach to editing, it was recognized that editing staff needed some additional schooling in the main principle behind the new editing system. It was decided that editing staff should be invited to a couple of lectures as the new system became available.

21. The lectures focused on the why and the how of the new approach to editing at the division. The main purpose of these lectures was not that every participant should know all the methodology behind the new editing system. For that, both the education and the experience level among the staff were too varied. Instead, the aim was that editing staff should have a good general knowledge of why selective editing and a more macro-oriented approach were preferred over the current micro-oriented approach. The goal was that everyone should know that:

- (a) It's not important to look at every unit in the data.
- (b) Data units that are important for aggregated levels in statistics should be prioritized in the editing process.
- (c) The new editing system helps you identify those units based on methodology

22. These three simple messages would be repeated again and again in various forums during the implementation process.

C. Courses and Workshops

23. To facilitate a change in the approach to editing it was recognized that editing staff also needed to be involved and engaged in the process. Mixing short courses with workshops was the chosen tool for this. A couple of hours every other week would be set aside for this purpose and management encouraged participation. This would allow the editing staff to free up time to get more familiar with the new system, and it enabled a forum for editing staff to make suggestions and get answers for questions they may have concerning the new system and the implementation process. The feedback from the editing staff would then again be used to make short presentations addressing concerns and also reiterating the main points why the divisions is implementing this system and how it works.

D. Evaluating strategies

24. While the implementation is still a work in progress an initial assessment on what has worked and what has not worked so far can be made.

25. Focusing on design has been one of the most successful strategies. Editing staff that started using the system have quickly adapted to it, even with little or no prior experience with SAS.

26. The initial lectures kicked off the start of the implementation process. In attendance was not only editing staff but staff in general and the feedback it generated was positive. These lectures also created a spark that marked the start of a change in how the division approached its work beyond the work done by the editing staff. And the ideas that were presented in these lectures would also eventually spread to other divisions.

27. Implementing courses and workshops showed that providing courses that would target all the editing staff in attendance was challenging. The reason for this lay in the diverse professional background of the editing staff. Going forward, it was decided that instead of trying to address problems as a group, the workshops should focus more on one-to-one interaction. The main problem in implementing this strategy was that it did not reach everyone. Attending courses and workshops was voluntarily for the editing staff and while some attended every session some did not attend any sessions at all.

IV. Barriers to change

28. Moving forward with implementation, the project had a lot of positive factors going for it. The project was receiving great support from management, who on several occasions made it clear to the division that the new approach was the way forward. The editing staff raised no objection to the new system. External divisions expressed interest in adapting the system for their statistics. The Division for statistical methods was giving the project its backing and speaking up for it. In sum, the impetus for making a change in approach was strong.

29. Still, it was observed that not everyone was on-board in making a transition to the new system. So what barriers could be present that made some chose not to implement the new system while others did? What are the potential explanatory factors for not making the change?

A. Not enough time

30. An often cited reason for not making changes is that there is not enough time to make the necessary changes. Daily job routines fill up the day and there is just not enough room to start implementing any new system. This points to a crucial factor for any project that sets out to make changes. To implement major changes in an organization both sufficient resources and time needs to be allocated to the project if you want a successful result. But one should also be aware that, "not enough time" is an often used as an excuse for not wanting to make changes in the first place.

31. Going forward with the implementation process at the Division for health statistics it was felt that there had been given adequate time, sufficient resources had been allocated and there was an offer of extensive support given. Did the project fail to communicate the importance of prioritizing the implementation of the new system over daily job routines?

B. Fear of change

32. There could be potentially several reasons for the editing staff to fear change. Some may be apprehensive about potential change in work tasks as a side effect of implementing the new system. By this they don't question the efficiency of the new approach, they worry about what tasks would be assigned to them in replacement of the time previously spent editing. With rapid changes in technology and demands on education, some might fear they will be given new job tasks they can't perform satisfactorily.

33. Others may fear a loss of control going from a micro-oriented approach where each and every unit was examined to a system that told them what to look at. Without the necessary knowledge in statistical methods and a relatively low expertise in the use of software tools in general, the editing system could become a black box that does something to the data that is not understood and where they have no control.

34. Editing staff that have worked in the field for several years may be considered experts in their knowledge and use of the current approach to editing. By changing the approach suddenly, some of their knowledge and expertise becomes obsolete. In other words, they fear devaluations of their expertise.

35. Looking at the implementation process it could be argued that not enough focus was put on alleviating fears that might arise as a consequence of change. Courses and workshops were not an adequate tool to address the fear of change in all its aspects. They could be a good tool in alleviating the fear linked to a sense of loss of control, but as mentioned above, not everyone was attending these sessions and thus it failed to reach everyone.

C. Indirect criticism

36. In introducing a system that claims to be more efficient and produce results of better quality you run the risk of alienating some of its potential users. It may be interpreted as a criticism of the work they have done in the past. They may have put in a lot of effort in their work and their diligence might have gained praise. It could be difficult for them to detach their effort and good work from the system they have been using. So in introducing a new and better approach they feel that their previous work is being devaluated and not appreciated.

37. The problem of indirect criticism was something the project was acutely aware of from the start. In meetings with the editing staff, great pains were taken to ensure the staff that this was in no way any criticism of their previous work effort. It is the system that needed improvements not its workers. Still, this may be hard to overcome.

V. Identifying new strategies

38. Witnessing that there are still a subset of the editing staff showing no sign of adapting to the new approach and the current strategies are not adequate in addressing this issue, new strategies need to be identified.

39. As described above the barriers to change are probably multifaceted but there are indications that the causes for resistance are more related to work culture rather than the features of the new system itself. That means that new strategies being developed should target work culture as its primary objective.

40. One strategy is to not do anything at all, relying on positive feedback from those who have already adapted, to convince those who have not in the long run.

41. Should a more active approach be taken, management will have to play the central role. It is they who need to establish a dialog with parties in question and alleviate potential fears related to a change in approach. And if not successful it is they who need to decide if they should make a more direct demand of compliance or not.

42. While it's important to get everybody on-board it is equally important to have a strategy in place for the training of new members joining the editing staff. Management needs to ensure that new employees are getting training in the new system and by staff members who are using the system and not by members of the staff who have resisted changing their approach to editing.

VI. Conclusion

43. What had started as a small project inside the Division for health statistics aimed at improving the efficiency and quality of the editing process rapidly caught on. What initially was an approach limited to a few statistics and members of the editing staff quickly expanded to encompass most of the divisions statistics and from that statistics outside the division itself.

44. Being conscious of implementation challenges already before the system was in development, proved to be an important factor in its success. In developing the system, the main goal was to have a user friendly interface combined with a sound methodological approach that demanded little in the way of prior expertise. In addition, the elements of the interface should be standardized as far as possible across statistics making it easy for editing staff to go from one statistic to another without additional training.

45. Though the new system expanded more rapidly than first expected, it was still observed that some chose not to make use of the new tool available. It became clear that the three strategies for implementation, design, lectures and courses and workshops were not sufficient to address all issues with regards to implementation.

46. Three hypotheses were suggested to explain what could cause the resistance to change that was being observed. The first hypotheses dealt with the issue of not sufficient time or resources to start a transition to the new system. The second suggested fear of change in various forms could be the cause. The last hypothesis pointed to the possibility that the new approach was being perceived as a criticism of work done in the past and because of that, a potential cause for resistance. Of the three hypotheses, the latter two were judged to be the stronger.

47. Any new strategies designed to overcome the remaining barriers to change would have to involve the management. It is management who have to engage those who are reluctant to make a transition, either by resolving the underlying problem, or making demands on compliance. There is also the possibility that the problem resolves itself.

48. Going forward it is important to have a strategy in place to make sure that the training of new employees will be in accordance with the new approach to editing.