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Beyond the sampling errors: the effects of Centralised data collection on Total Survey Errors

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TSE DEFINITION AND USE

Wide approach of conceptual framework aimed at enhancing all problems facing surveys beyond those of sampling error (Groves, Lyberg, 2011)

TSE paradigm can be considered as a conceptual foundation of the field of survey methodology

TSE framework is at the design stage of a survey a tool to balance costs and various errors

The framework has enhanced the interdisciplinary nature of the field activity: sampling concerns variable error properties while the framework encourages attention to biases from various sources and the tradeoff of biases

TSE and INFORMATION QUALITY

- TSE is not the only way to think about information quality
- Considering traditional four quality dimensions: credibility, relevance, estimator quality, and data quality TSE can be placed in the dimension of estimator quality
- The user orientation to quality is normally absent

PERSPECTIVE OF PRESENTATION

In literature the concept of TSE normally refers to the breakdown of the error with reference to a single survey

A different perspective consists of focusing transversely on factors insisting on all surveys or on clusters of surveys of a NIS, considering technical, statistical and organizational solutions

In particular the scope of this work is to verify the effects of a centralized data collection model on the TSE

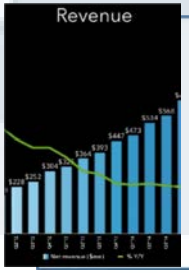
Centralised Data Collection (CDC) and Total Survey Error (TSE)

TSE identifies two major divisions based on variance and bias on one hand and errors of observation and non-observation on the other

Errors of non- observation usually include coverage error, sampling error, and both unit and item nonresponse

Errors of observation involve differences between reported/recorded values of a survey variable and some ‘‘true’’ or underlying value

Introduction in Istat (Italian National Statistical Institute) of CDC allowed non- observation error reduction in surveys by increasing response rates



CDC involved the observation error reduction by fostering innovative data collection tools and the standardization and harmonization of procedures

Centralised DC in Istat: main characteristics

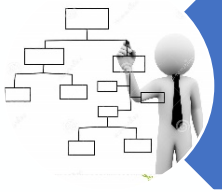
During 2016 Istat launched a Modernization Program

The program designed and implemented a new organizational set-up characterized by the centralization of all the support services, clearly separated from thematic statistical production

The new model restricts the role of production structures only to thematic aspects, while the “cross” expertises are all assigned to specialized sectors

The "transversalization" of many services fostered specialization of HR and harmonization of procedures notably in the field of Data Collection (DC)

Centralised DC in Istat: main characteristics



The introduction of a specialistic data collection, led to review of the organizational structure of data collection processes and to redesign of many of the management procedures

Before reorganization, statistical processes were organized according to the classical 'stovepipe' model, that involved independent, non-integrated, processes including all the necessary skills

The old approach, effective in terms of achieving the objectives set, involved low overall efficiency level, due to overlapping redundancies and lack of integration among processes, increasing the costs of the surveys

Among the main Program there is also the valorization of administrative sources for statistical purposes and the construction of an integrated system of registers

Average response rates for CAWI clusters before and after CDC introduction

Cluster: Short term economic surveys (CAWI)	• + 19.4 pp
Cluster: Structural economic surveys (CAWI)	• +9.0 pp
Cluster: «Sectorial» culture and agriculture surveys (CAWI)	• +6,3 pp

Effects on observation error

Effects on data collection periods

Average reduction for business structural surveys (CAWI)

- 37.2 solar days

Average reduction for "sectorial" surveys (CAWI)

- 53.3 solar days

Effects on quality non statistical dimension

Innovations introduced in surveys by CDC

Innovations introduced in surveys are mainly based on:

1. The design and implementation of innovative **management tools and services**

2. Rationalization of the **management processes and procedures**: standardization and generalization

Example of innovation introduced in business surveys

The Business Statistical Portal (BSP)

Objectives :

- Streamline the operations required by respondents to fulfill their response obligations, with an overall reduction of the respondent burden
- Increase both ordinary and extraordinary (e.g. news) communications on the survey events and activities
- Standardize and harmonize data collection procedures in order to increase overall efficiency

Effects on both observation and non observation errors

Examples of innovative management tools and services

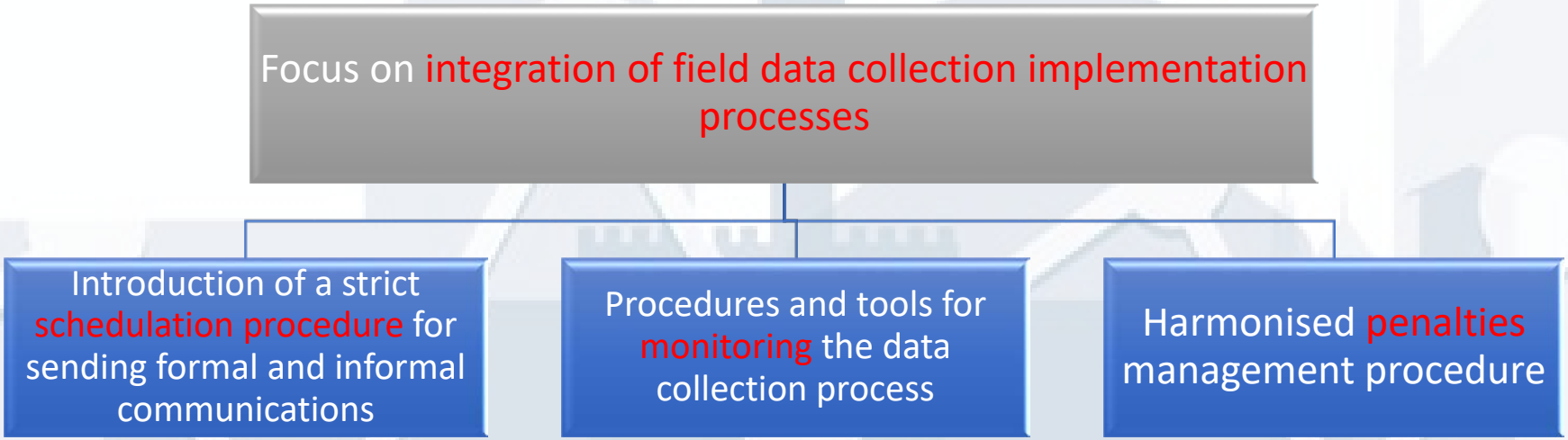
Centralised inbound and outbound Contact center services

- Progressive centralization of:
  - support and assistance services addressed to the units involved in the surveys (inbound)
  - telephone alert and reminders addressed to non-respondent units (outbound).

The coordinated management of the service ensures strong standardization

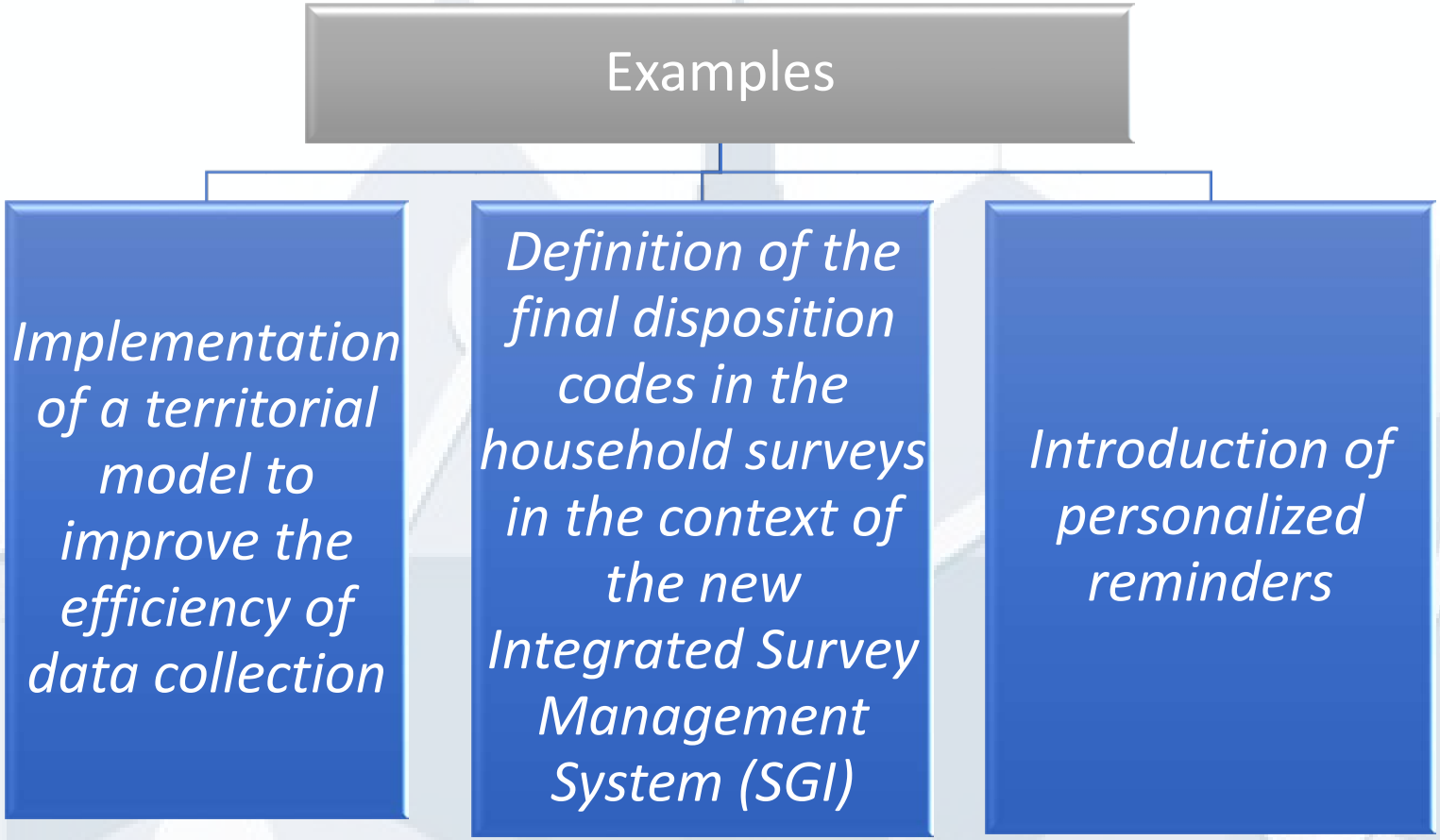
Effects on both observation and non observation errors

Examples of process standardization



Effects on both observation and non observation errors

Representative experiences of process innovation introduced in different data collection domains



Effects on both observation and non observation errors

Conclusions

There are clear signs of positive impact of CDC on TSE. Measurement of the TSE reduction requires much resources

The introduction of CDC produced significant results in terms of increasing response rates, reductions in the data collection periods, product and process innovations, involving reductions both in terms of observation and non-observation errors

Efficiency gains can be re-used in further process and product innovation activities, in the quality of the outputs and to respond to new needs of statistical information. They can also represent the base for statistical burden reduction or simply in reducing costs

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