# A Territorial Model for Centralised Data Collection Implementation

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## Abstract

The Italian National Statistical Institute (ISTAT) carries out the survey on the maritime transport of goods and passengers, as required by the Regulation (EU) No. 1090/2010 of the European Parliament and of the Council. The survey is a census as it refers to the final overall amount of the arrivals and departures recorded in Italian ports.

In order to improve the quality of data collection, within the new ISTAT organizational structure, introduced during 2016, the Central Directorate for data collection was created, specifically dedicated to the design, organization, implementation and integration of the data collection activities.

Then a specific project assigned to a selected number of ISTAT territorial offices the new role of conducting data collection activities on the territory.

The analysis is aimed at presenting the improvements both in terms of process efficiency and quality of the results expected from the new data collection approach.[4]

| Keywords | JEL code |
|---|---|
| *Data collection, maritime transport, process efficiency* | *C81* |

## INTRODUCTION

During 2016 the Italian National Statistical Institute (ISTAT) launched a wide modernization programme whose main objective was to increase the supply and the quality of the information produced by improving the effectiveness and efficiency of the statistical processes. The new organizational set-up was based on centralization of all the support services, which were clearly separated from statistical production processes, in order to increase overall effectiveness and efficiency. The new set-up introduced a Directorate dedicated specifically to the design, organization, implementation and integration of the data

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collection (DC) activities, called Central Directorate for data collection. The introduction of a specialist Data Collection, led also to the redesign of many of the management procedures adopted according to the Generic Statistical Business Process Model, already adopted with success by other statistical institutes. As the Central Directorate for data collection also the ISTAT's Territorial offices (UUTT) were located in the new *Department for data collection and development of methods and technologies for the production and dissemination of statistical information*, so establishing the foundations for closer cooperation. Then a specific project assigned to a selected number of these territorial offices the new role of conducting data collection activities on the territory.

The new organizational structure provides the following 8 offices located on the Italian national territory: – Piemonte, Valle D'Aosta and Liguria RMB; – Lombardia RMC; – Veneto and Friuli Venezia Giulia RMD; – Emilia Romagna, Toscana and Umbria RME; – Marche, Abruzzo and Puglia RMF; – Lazio, Molise and Calabria RMG; – Campania and Basilicata RMH; – Sicilia and Sardegna RMI. Each territorial office may include one or more regional offices.

In this framework, the new model introduces a more integrated management of the data collection process of the Survey on maritime transport conducted in Italy. It lays the foundations for a more complete review of the collection process, to be implemented in the next years, which involves the methods for preparing survey lists, the introduction of more efficient data acquisition and monitoring systems, the use of administrative sources that can reduce the weight of the direct survey. The solution outlined in this document is a first step in this direction.

## 1 THE ROLE ASSUMED BY THE TERRITORIAL OFFICES IN THE NEW ORGANIZATIONAL SETUP

In the above mentioned framework Istat started a new project that assigned to territorial offices a central role, in carrying out several cross-cutting data collection activities on the territory. In particular, ISTAT territorial offices were entrusted with several tasks typical of centralized Data Collection offices: checking and updating the lists of companies involved in the surveys, carrying out and monitoring data collection on the territory, providing support and assistance to users. The new model assigns a specific role to one leader territorial office that carries out a coordination of the data collection activities for all the offices in the territory. The same lead office also maintains relations with the structure dedicated to managing the implementation of data collection at central level (Division conducting data collection from direct surveys). The selection of the lead office is based on the experience accumulated in the specific subject area investigated. So, for the first time in Italy the activity of the Territorial offices in the field of data collection was not limited to the territory under its jurisdiction but is extended nationwide. During the start-up phase, the new management project for data collection on the territory is limited to a small number of activities: survey on Maritime transport, survey of Road accidents, Demographic statistics. At the conclusion of this opening phase, it is planned to extend it to other thematic sectors such as structural business statistics, tourism, environmental statistics.

In order to describe the new role of UUTT during the data collection phase, the case study of the Territorial Office for Marche, Abruzzo and Puglia (RMF) will be presented in the next paragraph. Starting from the survey edition 2018, it co-ordinates the activities of data collection on Maritime Transport statistics, in collaboration with the ISTAT Division for the implementation of data collection from direct surveys in the Central Directorate for Data Collection. During the start-up phase of the project, all the data collection activities taken over by the central structure were transferred to the territorial office through videoconferences and face-to-face meetings held at the headquarters in Rome. In particular, the transfer concerned the use of the tools applied for data capturing (named "Tramar"), for monitoring the DC, for the management of reminders, for assistance and support to respondents. Then, they were entrusted with the main activities typical of the centralized data collection such as the task of updating the lists of respondents, carrying out and monitoring data collection on the territory, providing technical support

for the correct filling out of the survey questionnaires, ensuring the consistency of the data acquired. In fact, the Territorial offices also carry out an activity of first level checking the information reported in the ISTAT Tramar questionnaires, filled out by the Maritime Agents, Forwarders, Recipients.

As it is foreseen, for the purpose of the survey, reminders for the transmission of monthly data will be sent periodically to respondents who will be contacted by relevant Istat Territorial Offices in order to collect updated contact information (i.e, phone and/or email addresses). This information is useful to reach people authorized to carry out the operations of declaration of boarding and landing of goods and passengers. Lastly, ISTAT's territorial offices make a consistency check with the administrative data available at the Ministry of Infrastructures and Transport (named PMIS system – Port Management Information System), also with a view to activating the desired interoperability between the PMIS system and the ISTAT system for the automatic exchange of data of statistical interest.

## 2 A CASE STUDY OF PROCESS INNOVATION: THE ROLE OF MARCHE, ABRUZZO AND PUGLIA (RMF) TERRITORIAL OFFICE IN DC IMPLEMENTATION FOR MARITIME TRANSPORT SURVEY

The reorganization of the data collection for maritime transport survey, that entrusted a coordination role to the Territorial office Marche, Abruzzo and Puglia, has determined the redesign of the flow of interventions to support respondents and of the checks of coverage and quality on information collected. Firstly, the redesign requested the revision of methods for monitoring the data collection trend by redefining the reports deducible from the dedicated web application (named "Tramarint" see Section 3), that is both an application for monitoring the survey trend, and a collaboration tool between Territorial Offices and Maritime Agencies. It offers facilities to manage the exchanges of information between ISTAT and the Maritime Agencies, in particular for the requests of password for accreditation to the data capturing system, for the modifications of the delegation powers, for restoring questionnaires to be modified. This last functionality allows, by operating on Tramarint back-office system, to support respondents for changes and restoration of previously entered questionnaires and which must be made accessible again to the Agency's completion. Tramarint is currently accessible only by the Territorial Office, to which it returns the views on the summaries of the inserted questionnaires and a summary of the compilation of the relevant questionnaire sections in relation to the specific characteristics of the ships surveyed, the goods moved, the passengers transported.

The Tramarint monitoring system, when its management was taken over by the Marche, Abruzzo and Puglia Territorial office, presented only partial reports. It was therefore necessary to expand the contents of the reports and to design and implement a new layout in order to rebuild the entire survey year for every single movement of ships arriving or departing. With the new display, the information refers to the whole registry of the marine agency and ship's marine data and in particular the ship code IMO (International Maritime Organization), a unique code assigned to the vessel when the keel was laid by the IHS Fairplay,[5] ex-Lloyd's Register – Fairplay.

The monitoring activity is carried out on the basis of two archives: the first is TRAMAR, the ISTAT website which collects the flow of the data of the survey with ISTAT ownership, according to Regulation (EU) No. 1090/2010 prescriptions. The second is the ADES (Arrivals Departures Enhanced Statistics) archive, which is fed by the flow deriving from the mandatory administrative records, for each arrival and departure of ships from/to any Italian port by the Shipper. The Recipient is the legal figure assuming

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[5] Persons performing ship recommendation activities, assisting the master in respect of local authorities or third parties, receiving or delivering goods, embarking and disembarking passengers, acquiring freight, concluding transport contracts for goods and passengers with release of the relative documents, as well as any other activity for the protection of the interests assigned to him.

all the responsibilities related to the various aspects of port security and tax declarations on goods and passengers transported, with an additional requirement for cruise ships to communicate the list of passengers to the Ministry of the Interior for national security purposes. The Statistical Archive ADES is transmitted to ISTAT by the Statistical Office of the Ministry, that acquires the micro data (single trip of each ship identified by a code that is called visit_id) in possession of the Port Authorities and available for large and medium-sized Italian ports through the PMIS Portal.

Currently, the ADES file is acquired by the Division for integration of administrative sources and registers of the Central Directorate of Data Collection, and integration of the registers is carried out monthly. The file is transferred to the production Division that carries out the linkage with the data recorded in the ISTAT data capturing system in order to verify the exact correspondence between the data contained in the two databases that should not differ in anything except the fact that ISTAT, on the basis of what is prescribed by Eurostat to all Member States, requires a set of variables that is wider than those required for the PMIS system. Therefore, the comparison between the two archives should return an empty file in case of exact correspondence between the arrival/departure communications sent to the Port authorities and the TRAMAR forms. The condition is rarely verified, although the respondents are the same maritime agencies that feed both flows. The complexity associated with the identification of ships and agencies to be subject to reminder or quality control mainly concerns the enucleation of the following cases: alleged duplication, compilation of only one of the two types of travel (arrival only or departure only), excess of declarations of empty vessels in cabotage movements for which it is presumed that the ship is unlikely to arrive or depart effectively empty. It follows the need for a continuous exchange between the National Coordination Office and all the local offices, concerning the issue of the various territorial completeness checks of ships operating between the same ports of origin and destination. In such situations, very frequently it is necessary to determine both the correspondence of the number of trips and the correspondence in the definition of the type of ships and, as previously mentioned, the truthful correspondence of the indication of "empty ship". For this reason, in order to support information exchanges the Marche, Abruzzo and Puglia Territorial Office deemed it essential to activate a specific collaboration web area using the opportunity offered by the ISTAT Intranet. In addition to the need for frequent exchanges between the various territorial offices of the files monitored and the results, it allows to discuss any changes found by ISTAT territorial referents before requesting the Maritime Agency to formally communicate the changes. Only after the opportune exchanges of information between the territorial offices and the ISTAT lead office of Marche, Abruzzo and Puglia, the formal communication channel is activated. The collaboration area is also used to share the survey administrative documentation among all the involed actors on the territory in all the phases of the survey, notably between ISTAT and the maritime agencies. Example of this documentation are the informative letter to start the survey, the monthly alerts and the quarterly and annual reminders. The collaboration area also has the function of interchanging external source documents such as ministerial circulars, initiatives by trade associations such as "Federagenti" and "Assoporti", as well as lists and possible modifications of the territorial articulation of the Port Authorities and of the Port System Authorities, introduced by a recent legislation on port services in Italy.

**Figure 1**  Sharing information area among Territorial offices

**Note:** Figure available in the online version of Statistika: Statistics and Economy Journal No. 2/2020.
**Source:** ISTAT – Italian National Statistical Institute

## 3 DATA COLLECTION PROCEDURE OF THE ISTAT SURVEY ON MARITIME TRANSPORT

The data collection procedure is accessible by connecting to the secure site: <*https://indata.istat.it/tramar*> (and registering on first access). To receive the login credentials (username and password) to the Tramar

service it is necessary to fill in a form containing the information related to the subject to be granted and to the possible third party that he delegates to send the data. The user is in fact associated with the maritime agency, which can delegate a third party (for example a forwarder) to sending data through Tramar service. In the event that there is a person performing this task for several shipping agencies, the form must be completed for each agency; this subject will therefore be in possession of as many users as there are agencies that he represents in the use of the Tramar service.

## 3.1 Use of the web procedure

In occasion of first access the respondent has to connect to the website: *<https://indata.istat.it/tramar>* (the site is protected with SSL protocol that guarantees its authenticity and the protection of transmitted data). In the registration procedure the respondent is required to: 1) enter the user code and initial password contained in the e-mail sent by ISTAT; 2) enter the  personal password; 3) press the Confirm key. The personal password, known only by the respondent, replaces the temporary one (not valid for the procedure). On the Web page the following functions are also available: 1) Survey: a brief illustration of the Survey; 2) Instructions: guide to completing the questionnaire with any updates; 3) Contacts: contains the e-mail address and telephone numbers for contacts with the toll-free number and the contact person for the survey and data collection. These functions can be accessed independently of the registration procedure. Once the registration procedure is completed, the respondent is enabled and can immediately proceed with the filling in using the Questionnaire button.

## 3.2 Web questionnaire

The home page of the Questionnaire displays first part containing the personal data related to the user, previously provided to ISTAT. These are not directly editable, except for the field relative to the email address to which the respondent wants to receive the return receipt of the electronic form. To insert a new declaration, the user must enter by typing or using the appropriate calendar key, the date of arrival/ departure of the ship subject to the declaration. The user cannot enter a date later than the day the form was filled. Alternatively, if the user wants to upload a file without inserting individual declarations, he/she can proceed with uploading via 'Upload templates' from files that can be found on the right side of the calendar. The files to be accepted by the system must comply with the specifications, available in the 'Instructions and communications section'. The third part of the initial screen relates to the summaries of the inserted declarations or uploaded files.

**Figure 2**  Home page of the web questionnaire

**Note:** Figure available in the online version of Statistika: Statistics and Economy Journal No. 2/2020.
**Source:** ISTAT – Italian National Statistical Institute

From January 2018, it is requested to insert the Visit_ID issued by the Port Authorities in place of the field "name Shipowner". The Visit_ID is a "unique national ship stop code" consisting of 13 characters: a) the first 5 characters identify the port according to the UNECE code; b) the following 2 identify the year; c) the remaining 6 represent a progressive number corresponding to the ship stop. In case an incorrect Visit_ID is inserted, which does not respect these characteristics, a warning window will open a guide for solving the error. Typing the IMO (International Maritime Organization) number the user will automatically obtain all the characteristics related to the ship. In the event that only some of the characteristics of the ship are different, the important thing is that the type of ship, the net tonnage and the gross tonnage are correct. Once completed the compilation of the electronic questionnaire, the user will proceed with the next phase of checking and sending, through the appropriate screen. The checks carried out in this way are not to be considered exhaustive, since they mainly concern checks
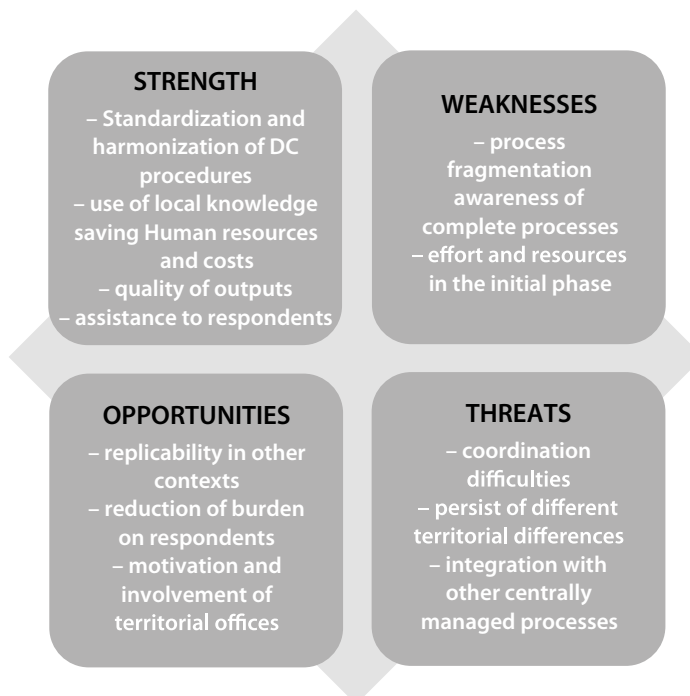
on the quantities of goods by port of origin/destination. Once the checks have been completed, the user must proceed by verifying, and possibly modifying, the e-mail address to which he/she wishes to receive a return receipt stating that the declaration has been sent correctly. This will only happen if the user authorizes the sending by the appropriate check box. After making the final dispatch, it will no longer be possible for the user to modify the declaration of arrival/departure entered. It will instead be possible to save a copy of the form in PDF format on the user's computer.

## CONCLUSION – RESULTS AND FINAL CONSIDERATIONS

The case study concerning the involvement of the Marche, Abruzzo and Puglia Territorial Office in the DC implementation introduces an innovative way of managing data collection, that is characterized by a distributed throughout the territory approach, opposed to the standard model which provides for a centralized approach. The new mode has the main objective of streamlining the investigation procedures by adopting a standardized approach to data collection, in order to increase the overall efficiency of the process. The case study of the Marche, Abruzzo and Puglia Territorial office also demonstrated the active role of the UUTT in the DC activities as a national reference, not limited to the sphere of the single office. In fact the first results point out the capacity of a Territorial office to assume the role of leadership in the management of the DC activities, of coordinating the activities of other offices/territorial entities as well as the role of reference to the central structures that deal with the management of the collection.

A first phase involves critical issues related to the consistent use of resources of the Central Data Collection Directorate, due to the rigidity of the existing data capturing and survey management systems; the difficulty of extending the harmonization and rationalization objectives typical of data collection

**Figure 3** SWOT Analysis



**STRENGTH**
– Standardization and harmonization of DC procedures
– use of local knowledge saving Human resources and costs
– quality of outputs
– assistance to respondents

**WEAKNESSES**
– process fragmentation awareness of complete processes
– effort and resources in the initial phase

**OPPORTUNITIES**
– replicability in other contexts
– reduction of burden on respondents
– motivation and involvement of territorial offices

**THREATS**
– coordination difficulties
– persist of different territorial differences
– integration with other centrally managed processes

**Source:** ISTAT – Italian National Statistical Institute

on the territory and the tendency to "mix" thematic and non-thematic topics. In the experience of maritime transport survey, the Marche, Abruzzo and Puglia office also demonstrated the ability to manage links with any intermediate bodies involved (other than ISTAT). The first results obtained showed a strong rationalization of the collection process with deep revisions of the modalities of relations with the agencies involved in the survey, in the roles of the external and internal actors involved and in the checks on the data made during the DC phase.

The process innovations introduced represent an example of solutions oriented to the standardization and harmonization of data collection management processes. In particular the procedures guarantee quality and harmonization of the survey lists, in order to avoid problems of poor updating and undercovering of the Registers and the possibility of reaching all the units involved in the samples.

The following SWOT analysis points out schematically strengths, weaknesses, opportunities and threats of the proposed approach.

The case study considered, moreover, represents a prototype model that can be of reference for the application in other research contexts and it may also be extended to other statistical surveys in the future.

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