

Penalties management strategy and customised return of statistical information to enterprises involved in official economic surveys¹

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Abstract

The increasing statistical burden that official statistical surveys impose on the Italian business system determines a decreasing motivation to actively collaborate in direct surveys. The lack of motivation often translates into decreasing participation rates and growing impatience. This situation leads the National statistical institutes to identify alternative strategies oriented to identify new statistical sources and to automate some phases of the data collection process.

In the above mentioned framework Istat started to investigate, from a statistical point of view, the role of penalties in ensuring adequate participation of companies, notably the most influential ones, in official statistical surveys. The attention was also focused on the possible “side-effects” on other dimensions of the Total Survey Error and on the possible alternative tools (new sources, new technologies) and solutions (organizational, communication) to be adopted during data collection in order to ensure awareness among companies and to make the provision of data by users more “sustainable”.

The analysis mainly concerned the economic surveys carried out during the years 2021 and 2022, distinctly in the contexts of the structural and short-term economic surveys, which provided for two substantially different systems of application.

The indicators used for the analysis are the response rates of the various surveys and the penalty-rates applied. The context is that of the centralized data collection model, adopted by Istat.

A complementary solution, already partially implemented by Istat for some years in the context of the Centralized Data Collection model and the Business Statistical Portal of companies, consists in returning to companies a set of useful information to understand the specific trend of their sector of belonging and their positioning in the markets, motivating them to participate in surveys.

In this context, the objective of the paper is to define an optimal structural framework, based on the information available, of the sector of economic activity to which each company belongs, as well as information on the reference markets and on its competitive positioning, providing useful guidelines for planning of such systems.

The framework will be defined on the basis of the experience already acquired in Istat and on similar experiences carried out in other NIS and may constitute a basis of reference and comparison with other institutions that intend to design and implement a return system.

1.1 Penalties management strategy and quality of economic official surveys

Since the year 2016 Istat introduced generalized and strict criteria for penalties management as a consequence of introduction of a centralized data collection model [7], [8], [9].

In the past, while respecting the regulatory requirements, penalties were managed by a “local approach” that adopted specific criteria for each direct survey. According to this approach each survey adopted a specific and autonomous DC solution, involving no or partial integration among processes.

¹ Contributors: S. Binci paragraph 1.3; S. Curatolo paragraphs 1.4.1 and 1.4.2 F. Monetti paragraphs 1.2.1 and 1.2.2 ; P. Papa paragraphs 1.1 and 1.5, P. Bosso paragraphs 2.1, 2.2, 2.3, 2.4.

The generalization involved some specific basic penalties management criteria that were applied to all the surveys: 1) Defined and strict deadlines for the transmission of data; 2) Predefined inclusion/exclusion criteria in the lists of units subject to penalties; 3) Definition of a penalties provision procedure shared among all involved stakeholders (DC, thematic, legal, technical experts). Within the scope of these general criteria, the application of penalties provides for two different procedures for the two types of structural and short-term surveys.

In Italy the legal framework for penalties (articles 7 and 11 of the legislative decree n. 322/1989) is updated annually by means of a specific decree that identifies the surveys subject to penalties and the related penalty thresholds determined in terms of the number of employees or turnover. According to this legislation obligation and penalties do not coincide, as most of the official surveys have an obligation but do not provide for the application of penalties.

Operational application criteria are set out in specific methodological notes published on the Istat website and in the information letters sent in the start-up phase of each survey.

It is important to stress that, according to Italian legislation, the economic amount of the penalty is not commensurate with the "statistical damage" caused by the defaulting unit but it is fixed and equal for all defaults (amount about 1032 Euros). For instance, the same amount is applied to a company that has omitted the delivery of data for one month and one that has omitted 12 months. This documents describes the third step of the work carried out by ISTAT on the effectiveness of penalties application on business surveys. The first one [10] presented the features of the new penalty procedure designed for STS surveys and the preliminary effects on response rates. The second [11] included the effects of the new procedure, after the first year of real application, on response rates of the STS surveys, pointing out possible negative «side effects» in terms of quality of the information produced. The third step extends the analysis to first months of the year 2022, to structural business surveys and to the types of non-compliance underlying the penalties application.

1.2.1. Short-term economic surveys. New penalty management procedure

In 2021 Istat, for the first time, fully implemented the strict criteria provided by the new penalty procedure introduced for short-term surveys in 2018. Istat delayed the implementation of the new procedure firstly to give companies time to familiarize with the new criteria. Subsequently due to the regulatory measures issued by the government to lighten the burden of the Covid19 health emergency on businesses.

The new criteria concerned the time articulation of penalties on an annual basis and the provision of the administrative penalties in the following cases [10]:

- Unit is non-responding for one or more periods (*default A*)
- Unit provides the data beyond the days of tolerance with respect to each monthly or quarterly deadline, varying from survey to survey (*default B*)

- Unit provides the data beyond the annual cumulative tolerance (less than the sum of the tolerance of the single periods).

1.2.2. Short-term economic surveys. main results

Defaulting companies for the 2021 survey year were 3.428 out of 16.299 potentially subject to non-compliance assessment, specifically 2.280 for the monthly surveys and 1.148 for the quarterly surveys. No company was defaulting for providing data beyond the annual cumulative delay. With reference to monthly surveys, about 50% of companies were subject to penalties for having

provided the data lately (*default B*), 25% of these provided data after the set deadlines for a single period. Non-responding companies are about 27% (*default A*), 11% of these responding for 11 periods (Graph 1).

Table 1 shows that Industrial production survey (IPI) and Industry turnover and orders survey (FATT) are the surveys with the highest percentage of enterprises defaulting for providing data beyond the monthly deadline, respectively about 64% and 62%. On the other hand, surveys on Industrial producer prices are those that recorded the largest number of non-responding companies, about 56% both for non-domestic market (PPID) and domestic market (PPID), compared to about 16% of companies that provided data after the deadlines. This trend is partly justified by the closure, for these surveys, of the acquisition systems a few days after the expiry of the tolerance period.

Figure 1 - Monthly short-term business surveys: companies subject to administrative penalties by type of violation (%), years 2021.

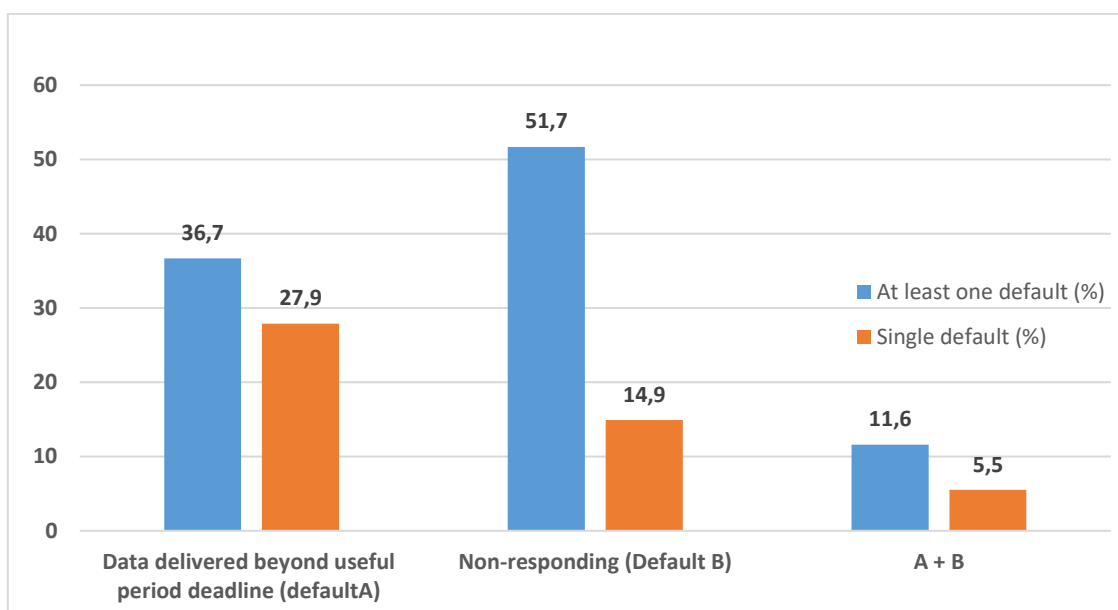


Table 1 - Companies subject to administrative penalties by monthly short-term business surveys and type of violation, years 2021

Survey	Defaulting units (number)	Type of violation (%)		
		Data delivered beyond useful period deadline (A)	Non-responding (B)	A + B
Retail trade (DETT)	213	48.8	19.7	31.5
Industry turnover and orders (FATT)	497	62.8	17.9	19.3
Industrial production (IPI)	643	64.7	18.8	16.5
Employment in large enterprises (OCC)	438	50.7	22.6	26.7
Industrial producer prices, domestic market (PPID)	187	16.6	56.1	27.3
Industrial producer prices, non domestic market (PPIND)	143	16.8	55.9	27.3
Industrial import prices (PREIMP)	159	24.5	52.2	23.3

Referring to quarterly surveys, the largest percentage of defaulting companies is concentrated in the type of *default B* (51.7%); the remaining companies subject to assessment fall into types A and A + B, respectively for 36.7 and 11.7%.

This trend is partly due to the closure of the acquisition system of Services producer prices survey (PPS) at the end of each quarterly tolerance period: the closure of the data acquisition system implies that all the non-compliant companies fall within the type of *default B*. Also the other two quarterly surveys recorded the highest number of defaulting enterprises in the type of *default B*: respectively 47.8% for Service Turnover survey (FAS) and 50.9% for Job Vacancies survey (VELA).

Figure 2 - Quarterly short-term business surveys, companies subject to administrative penalties by type of violation (%), years 2021

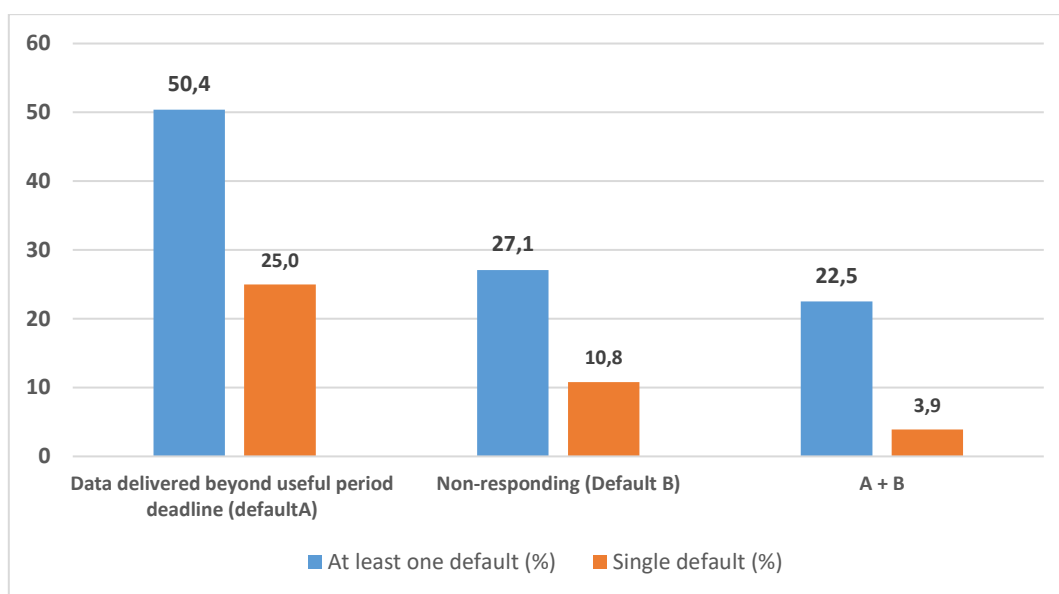


Table 2 - Companies subject to administrative penalties by quarterly short-term business surveys and type of violation, years 2021.

Survey	N. Units penalized	Type of violation (%)		
		Data provides beyond useful period deadline (A)	Non-responding (B)	A + B
Service Turnover (FAS)	716	40,4	47,8	11,9
Services producer prices (PPS)	63	0,0	100,0	0,0
Job Vacancy (VELA)	369	35,8	50,9	13,3

1.3. Main results: impact on response rates

As shown in the following tables, the new system has undoubtedly led to significant increases in response rates (rr) for the main short-term surveys, ensuring participation of companies on final results, notably the most influential ones. The comparison was carried out at the end of the useful periods, among year 2016 (last survey edition run before CDC introduction), year 2017 (first survey edition run after CDC introduction), year 2018 (the first survey edition run after the introduction of the new penalty organization) year 2021 (when the new management is now fully operational) and years 2022 (to verify the effects of the new fully operational penalties system).

Considering only the enterprises virtually subject to penalty (Table 4), the response rate (rr) increased of about 18 percentage points (pp) in 2018 starting from 72 percent in 2016. As the data collection process in 2017 and 2018 is characterized by the same new tools and methodologies

introduced with the CDC, by comparing 2017 and 2018 results it is possible to focus on the effect due exclusively to the introduction of the new penalty procedure [10] It shows an average raise of about 13 pp starting from 77 percent in 2017. The increase is consolidated over the following years, reaching 90 and 93 percent, respectively in 2021 (in this year the threshold of employees is lowered for some surveys, causing a slight decrease in their rr compared to 2018) and 2022 (the growth is due to the effects of the penalties received by enterprises in 2021)

The introduction of the new penalty organization allowed the positive average variation of 18 pp in rr in 2018 also for the surveys as a whole, including companies that were not virtually subject to penalty as under the penalty threshold, meaning that the impact of the new management criteria has positive effects also on smaller units (Table 3). The increase in terms of rr is also confirmed in 2021 and 2022 compared to 2018, respectively of 1 and 4 pp.

Table 3 - Short-term business surveys - Average response rates (%)

Survey		Year 2016	Year 2017	Year 2018	Year 2021	Year 2022
Employment in large enterprises	OCC1	68	71	87	84	92
Industrial producer prices	PPI	78	83	93	94	92
Retail trade	DETT	39	45	70	78	79
Industry turnover and orders	FATT	74	77	87	90	90
Industrial production	IPI	60	66	84	90	91
Service turnover (Q)	FAS	64	71	75	79	94
Services producer prices (Q)	PPS	80	79	91	81	90

Table 4 - Short-term business surveys - Average response rates (%) of enterprises virtually subject to penalties

Survey		Year 2016	Year 2017	Year 2018	Year 2021	Year 2022*
Employment in large enterprises	OCC1	68	71	87	84	92
Industrial producer prices	PPI	75	86	96	97	95
Retail trade	DETT*	63	68	87	85	90
Industry turnover and orders	FATT	86	90	95	96	97
Industrial production	IPI	63	72	91	94	95
Service turnover (Q)	FAS*	73	77	87	90	96
Services producer prices (Q)	PPS*	80	79	91	84	93

*Period Jan-Aug 2022/I-II trim 2022

**In 2021, the threshold for penalties lowers to 100 employees, except for PPS that introduces a threshold for the first time

1.4.1 Structural economic surveys: penalties management procedure

The structural economic surveys have an annual or multi-year periodicity and provide for a single supply of the requested data within a defined collection period. Once the deadline for data transmission has expired, the units are considered non-compliant and subject to penalty, if over the threshold values provided for by the legislation in force. Generally, the threshold value is represented by the employees reported in the business registers adopted by the survey owner, whose number can vary from one survey to another. Only in some cases the volume of turnover is considered as a threshold value in addition to the number of employees.

1.4.2 Structural economic surveys: main results

Table 5 shows the main structural economic business surveys, only for the PMI (SBS small and medium companies), GVC (Global Value Chain) and COVID surveys it is not imposed the administrative penalty measure.

PMI and COVID are the surveys with the lowest response rate, both are not subject to penalty.

Considering only the units shared between PMI, CPUE (Economic Units Permanent Census carried out in 2019), COVID and SCI (SBS large companies), similar by type of eligible units and technique, it emerges that the provision of penalties allows to obtain higher rr. In particular the rr of the joint units between the PMI and CPUE is respectively of 53.4 and 75.0 percent.

Focusing the analysis on the size class more than 50 employees, the threshold value for the applicability of the penalty in CPUE (Economic Units Permanent Census), the rr increased to 65.2% per PMI and 86.1% for CPUE, despite the difference between the two rr always remains about 21%. Moreover relating COVID e SCI (edition 2022), the rr of the joint units are higher for the survey subject to administrative penalties that recorded an increase of about 27 pp respect to COVID.

Comparing the response rate for the years 2021 and 2022, it emerges that the penalty rate records similar levels in the two years. The use of the administrative penalties met the active collaboration of the involved enterprises, despite the Covid19 health emergency.

Focusing on the years 2021/2022 respect the years 2017/2018, the variation over time of the penalty rate mainly depends on changes of the threshold value passed from 500 to 250 employees.

Table 5 - Structural surveys: average response and units subject to penalties rates

Survey	Year 2017/2018			Year 2021			Year 2022		
	Sampled units (number)	Average response rates (%)	Defaulting units (%)	Sampled units (number)	Average response rates (%)	Defaulting units (%)	Sampled units (number)	Average response rates (%)	Defaulting units (%)
CIS Community innovation survey	32,018	68.1	0.7	-	-	-	39,534	62.3	0.6
SCI – SBS large companies	10,558	76.4	1.3	3,811	86.7	8.9	3,997	85.7	9.6
PMI-SBS small and medium companies	74,207	43.5	-	82,022	48.8	-	77,611	43.3	-
RFI	-	-	-	83	84.7	-	87	89.7	5.7
OUTWARD	6,326	69.8	0.2	5,899	68.2	1.1	5,982	67.3	0.8
INWARD	7,791	74.4	0.2	8,937	68.4	1.7	-	-	-
RCL-LCS	-	-	-	-	-	-	24,528	61.7	1.9
PRODCOM	39,799	56.2	0.1						
R&D1	17,977	76.5	0.4	39,115	66.8	0.6	30,826	72.8	1.0
IULGI	10,536	80.4	0.8	8,473	83.0	2.3	8,222	82.2	2.2
ICT	32,255	67.0	0.2	32,929	63.5	0.6	33,992	63.0	0.6
GVC- Global Value Chain	-	-	-	35,969	64.7	-	-	-	-
COVID Survey	-	-	-	90,470	46.0	-	-	-	-

1.5. Conclusions

In official business surveys the obligation is a necessary component of the DC strategy as it ensures completeness and timeliness of the information collected. A DC based only on awareness and free collaboration is not enough, as companies increasingly experience statistical obligations as a direct cost and this issue can prevail on the awareness of importance to provide accurate statistical information for official surveys.

In fact, completeness as represented by response rate is not the only issue to consider in order to evaluate the quality of survey results as equally important is the nonresponse bias. In other terms, considering the components of TSE (Total Survey Error) [1], [6] the improvements on the “Non-response error dimension” can be partly offset by the increase of the “measurement error” component and nonresponse bias.

ISTAT receives more and more frequently communication of complains by companies involved in the surveys and several of them open legal disputes. Some companies declare that they, in order to meet deadlines, provide provisional data that are not validated and deliberately decide to pay the penalties without delivering data.

Therefore, effective DC approach requires a balance between obligation and awareness. The only obligation can involve negative side effects that can impact on the quality of the survey results. The penalty procedure currently applied by ISTAT is very effective in the short period as it has increased substantially response rates and timeliness of the direct survey but it presents some sustainability risks in the medium term, as it is perceived as too rigid and oppressive by companies.

For STS surveys the analyses carried out on defaulting units pointed out a relevant share of penalties applied for defaults concerning just one period, so a possible compromise could concern the introduction of further flexibility in the form of a "bonus" for a single period, even if both the effects on the completeness of the data collected and legal feasibility must be carefully investigated.

Building a two-way communication flow between NSI and the enterprises involved in business surveys by designing a return of customised statistical information is a possible balancing strategy.

2.1. Part 2. Design of a new system for statistical information return to companies involved in economic surveys, as part of the Statistical Business Portal

The Italian companies are involved in many official statistical surveys. The information provided is necessary so that the central and local administrations can understand in detail the structure of Italian business market and analyze the short-time economic phenomena. For this reason, the business units involved in statistical surveys spend a lot of resources in order to retrieve, collect and filling out the numerous information required in the questionnaires and thus fulfill the statistical obligations. Moreover, participating in official surveys is not optional for companies; they are obliged by law to complete these surveys and in Italy the penalty system for those who do not comply with statistical obligations is very rigid.

The large number of surveys and the associated obligation are a burden for the business units. This burden is the reason for the widespread reduction in response rates affecting the business surveys in the last years. Furthermore, the response burden doesn't only concern the decrease in response rates but can also affect the quality of the data provided.

The management of the response burden is therefore an high priority in the production of statistical information, underlined primarily by the Code of Conduct for European Statistics. It is an essential condition for the quality of future statistical production, therefore it's necessary for the Statistical Institutes to study strategies to reduce the response burden or to compensate, at least partially, the units involved in the surveys for the commitment that the statistical obligations require.

2.1 The idea of the project

The basic idea of the project is to return “customised information” to the business units involved in the economic surveys to compensate the response burden. Customised information means returning a benchmark, that is a structural framework about the activity sector to which the business units belong and information about their reference markets. A customised information requires a profiling preliminary activity of the enterprises. The profiling activity can be based on the main study domains, as the size of the business units, the geographic localisation, the activity sector. Then the identified business clusters are put in a reference benchmarking framework.

The aims of an informative service so designed are:

- *balance the statistical burden* building a two-way information flow, so that the enterprises provide data required and Istat return personalised information;
- *encourage the enterprises to collaborate to Istat surveys* and improve the quality of data provided;
- *provide information more adapted to the real needs* of the business units and already structured for their internal use.

Istat mission is the production and free and timely dissemination of statistical data. The information covers all relevant topics and it is disseminated through different services/products, but it is not necessarily provided according to a business-oriented approach. For example the thematic databases are information services which allow to the users to browse and use the data available with a deep level of detail, useful for specific aims. Using the different information services however requires time and skills to select and build a reference information frameworks.

Customised information via Business Portal instead, at full capacity, provide information already structured and personalised for the business units. The information will be available using the following services:

- *Selection* - Companies can select the most relevant data for their business: short-term indicators (production, turnover, export, sentiment indicators) and structural indicators (productivity, profitability);
- *Customization* - The information is already filtered according to the relevant characteristics of the enterprises (economic sector, size, location);
- *Analysis and data visualization* - The information is displayed by synthetic indicators and effective
- *Benchmarking* - Positioning indicators, based on microdata and in compliance with confidentiality, provide the competitive positioning of the enterprises in their reference markets.

2.2 Phases and activities of the project

The project of a customised information return system in Istat (Italian National Statistical Institute) took place in two phases. The first phase started in 2015 with the start up of the Business Portal and it concluded in 2018. The second phase started in 2020, suspended due to Covid-19 emergency and restarted in the current year 2022.

The first phase of the project (2015-2018)

The first phase involved the identification of the short-term and structural indicators to return to enterprises and the IT implementation in the Business Portal. The Portal includes the section *Statistical Data* dedicated to the return of personalised information to the companies involved in the surveys. The first phase has been an experimental step with the aim to produce a prototypal customised information service.

In the following Figures are reported some example of indicators provide in the first prototypal release, in the section *Statistical Data*. The *Figure 3* shows some examples of short-term indicators, broken down by activity sector; the *Figures 4* and *5* show some examples of information returned about the foreign trade.

Figure 3 – Short-term indexes by sector of activity

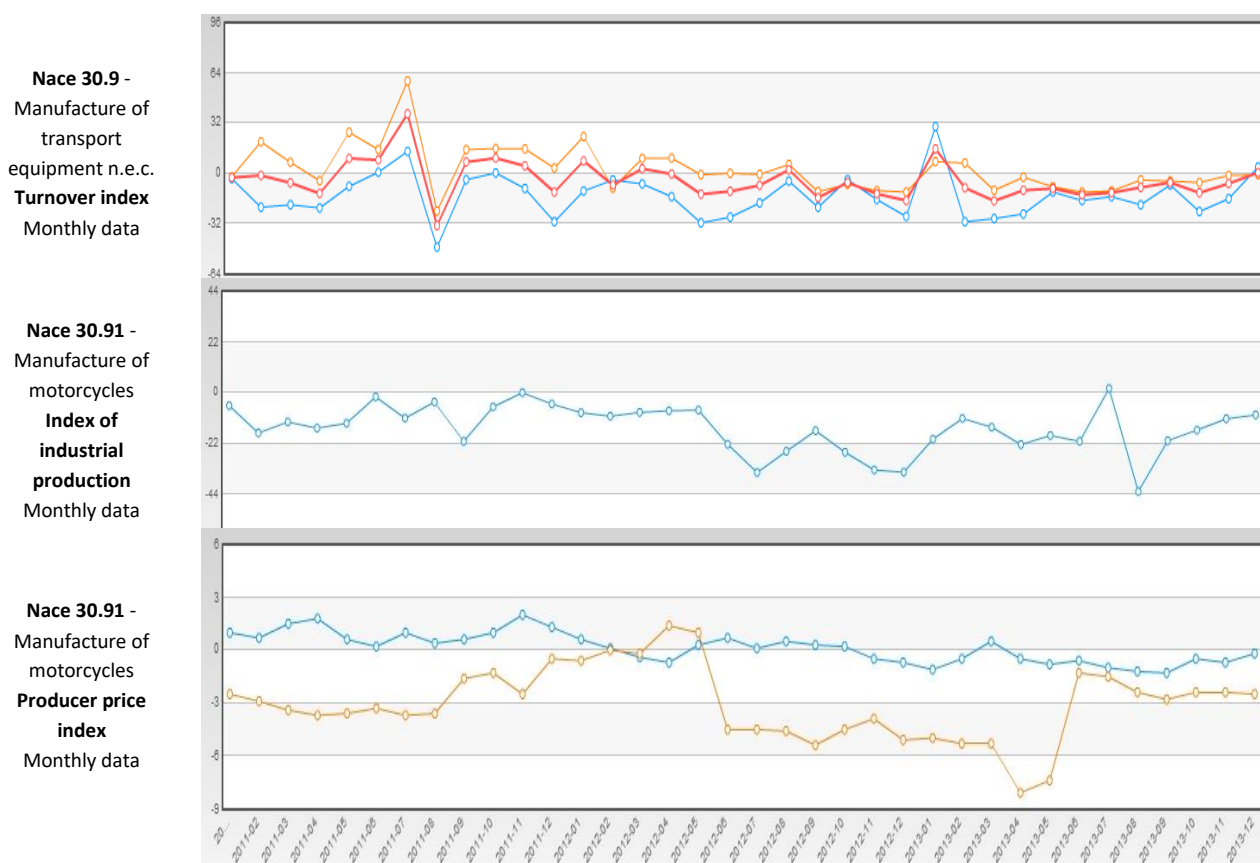


Figure 4 – Markets and reference products for the company export.

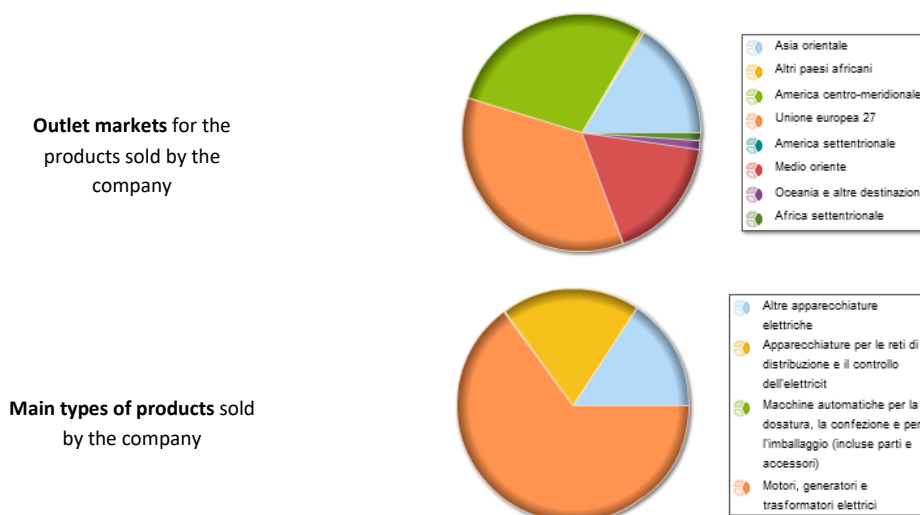
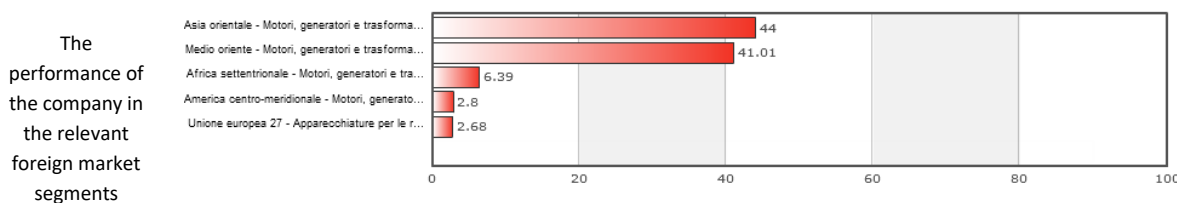


Figure 5 – Performance of companies in the foreign markets



The second phase of the project (2022)

The second phase involved the redesign of the system according to the new data collection organization in Istat (2016) and the compliance with the current privacy legislation. In fact, a focus point of the project concerns confidentiality and data protection assessment.

The redesign implied a new production process which includes four phases, as summarized in the following figures.

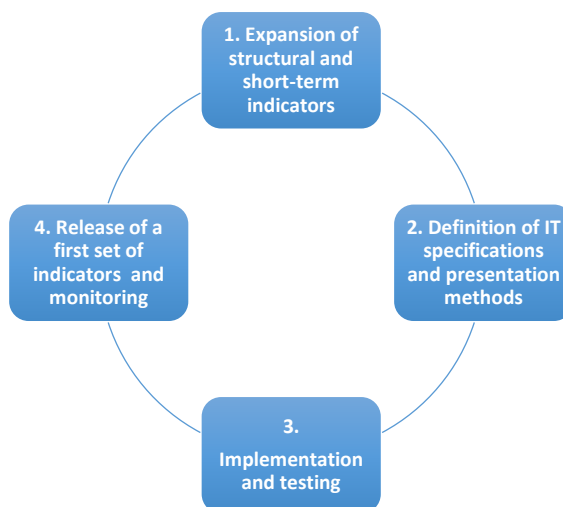


Figure 6 – Phases of redesign

The project will be developed in several steps that involve the progressive integration of information over time. The process is circular. A first release of indicators will be produced and then, subsequently, the system can be fed with further information that will emerge both from internal analyses and from the feedback coming from the users. The last phase includes the collect of opinion from the users about the information system to obtain suggestions for procedure improvement. Each phase involves a set of activities, as following.

1. Expansion of structural and short-term indicators	2. Definition of technical specifications and dissemination methods	3. Implementation and testing	4. Release of a first set of indicators
<ul style="list-style-type: none"> ▪ Find skills and resources necessary for the development of the project; ▪ Recognition of the internal information available and usable for the project; ▪ Identification of a first set of coherent indicators (absolute values, relative values, indexes) ▪ Identification of profiling variables (sector of activity, geographic localization, size, ...); ▪ Check of legal aspects (protection of personal data and confidentiality of respondents); ▪ Share the hypotheses of indicators with internal and external experts (companies, sectorial associations). 	<ul style="list-style-type: none"> ▪ Definition of technical specifications and (automatic) methods of supplying sources; ▪ Definition of the methods of dissemination of information and navigation in the system; ▪ Share of dissemination hypotheses with internal and external experts (companies, sectorial associations). 	<ul style="list-style-type: none"> ▪ System development and implementation; ▪ Test the functionalities and usability of the system; ▪ Design of a system for monitoring the user access to the indicators implemented (paradata); ▪ Find access procedures for all companies and implementation. 	<ul style="list-style-type: none"> ▪ Activation of the first release of new indicators, in the Statistics Portal, section statistical data ▪ Collection the opinion of business units concerning the new customized information system; ▪ Analyze feed-back from the users and planning improvement actions.

The redesign process implied the solution of several problems, in particular:

- address the technical problem by designing and building a solution (technical specification document outlines, IT implementation and testing);
- define a coherent set of indicators for the enterprises assessment; that implies different skills and brainstorming activity with internal expert and stakeholders;
- guarantee the compliance with the confidentiality and privacy issues;
- define the strategy for effective information dissemination.

As far as the last point, the main issues to resolve are:

- *Compliance with confidentiality requirements.* The information will always be returned in aggregate form in compliance with current legislation on the protection of the confidentiality of respondents and any industrial secret.

- *Compliance with dissemination standard procedures.* The information will be produced and returned with standard procedures, in line with the dissemination methods adopted by Istat, ensuring the same level of detail and the same access possibilities for all Italian companies.
- *Equal access to information for all users.* To ensure equal treatment of users, all companies must be able to access the "Statistical data" section and obtain the personalized information available.
- *Timeliness and Punctuality.* To satisfied the needs of enterprises the information will provided in compliance with the timeliness and punctuality dimensions. That will be possible using automatic solutions for the information system update.

2.3 Conclusions

The building of a customised information system to the business units could be an opportunity to reduce and balance the statistical burden and the rigidity of the Italian penalty system, but there are still some problem to resolve and information to acquire. There are currently two areas in which we are working towards the goal:

1. Find a shared solution with the legal office of Istat to ensure equal treatment of Italian companies. The solution could be allow all companies access to the Business Portal. Even companies currently not authorized to access, as they are not involved in Istat surveys, will be able to request access credentials within the web Portal or directly from the institutional website.
2. Studying a first set of benchmark indicators able to be update automatically. This issue is necessary to ensure timeliness and punctuality in providing information to the users.

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