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عِصَامًا
YEARS



الهيئة العامة للإحصاء
General Authority for Statistics

Methodology and Quality Report for Research and Development Survey Statistics

V-4.0

Quality management

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1. Contact

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1.2. Contact organization unit	General Department of Business and Trade Statistics
1.3. Contact person function	Director General of the General Department of Business and Trade Statistics
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1.5. Contact email address	info@stats.gov.sa
1.6. Contact phone number	199009

2. Methodology and Quality Update

2.1. Latest Update on Methodology and Quality	12/11/2025
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3. Statistical Presentation

3.1. Data description
<p>Research and Development Statistics Survey is an annual survey concerned with research and development fields in the Kingdom of Saudi Arabia. It aims to provide economic indicators on funding, expenditure, and employees in the field of research and development.</p> <p>Research and Development Statistics Survey is a survey conducted to collect data on the basic characteristics, as follows:</p> <ul style="list-style-type: none">• Study the volume of funding and expenditure on R&D across all sectors.

- Study the number of employees in the field of R&D for all sectors.

Data is also used to estimate:

- Funding in the field of R&D by sector.
- Expenditure on the field of R&D by sector.
- Expenditure on the field of R&D by economic activity.
- Expenditure on the field of R&D by volume.
- Employees in the field of R&D by sector.
- Researchers in the field of R&D by sector.
- Researchers in the field of R&D by sex and sector.

3.2. Classifications

The following classifications are applied in the Research and Development Statistics Survey.

The Frascati Manual for conducting research and development surveys:

It is a statistical classification based on the International Standard Industrial Classification of All Economic Activities (ISIC4), used to describe the productive activities of an establishment.

It is a document that outlines the methodology for collecting statistics for R&D. This was prepared and published by the Organization for Economic Co-operation and Development (OECD).

The guide is available on the UNESCO

website: unesdoc.unesco.org/ark:/48223/pf0000227748_ara

The National Classification for Economic Activities (ISIC4):

It is a statistical classification based on the International Standard Industrial Classification of All Economic Activities (ISIC4), used to describe the productive activities of an establishment.

Metadata is collected through interviews, so that outputs can be produced in accordance with all relevant classifications.

The classifications are available on the GASTAT's website: www.stats.gov.sa

3.3. Statistical concepts and definitions

Terminologies and concepts of the Research and Development Statistics Survey:

- Research and development:

It includes every creative and systematic work undertaken with the aim of increasing the stock of knowledge, including knowledge of humanity, culture, and society to invent new applications of available knowledge. The research and development term includes basic research, applied research, and experimental development.

- Funding in the field of research and development:

It includes all funding in the field of R&D that was funded for R&D by the sector.

- Expenditure on research and development:

It includes all R&D Expenditure, including operational Expenditure, employees

compensation, and R&D capital expenditure (what is spent within the establishment or on a third party, provided that it is within the Kingdom's borders).

- Main economic activity:

The economic activity of any establishment is defined as all the activities or services the establishment engages in or provides, resulting in returns. Sometimes, the establishment may not generate financial returns from its activities, as is the case with charitable organizations that rely on donations. In the case of having multiple economic activities for a single establishment, the most revenue-generating activity is chosen. The classification of economic activity for establishments is based on the International Standard Industrial Classification (ISIC4).

- Employees in R&D:

They are all individuals directly involved in R&D, as well as those providing direct services to R&D activities, such as R&D managers, administrative officers, technicians, and office staff. Whether provided by the establishment itself or by a third party, as long as it is within the borders of the Kingdom. It excludes individuals who provide indirect support and assistance, such as restaurant staff, maintenance staff, administrative, and security staff.

- Government sector:

This sector comprises all departments, offices, and other authorities that provide common services to the community, but typically do not sell them, except for higher education. These services cannot be adequately and economically secured in any other way. These authorities include those that regulate state affairs, economic policies, and social matters for the group, as well as non-profit institutions overseen by the state and often funded by it. However, they are not subject to higher education sector management. This sector

includes the departments of research and research institutes affiliated with ministries, standalone government research institutes, and other authorities conducting research in the field of state assets. This excludes government business institutions.

- Business sector:

This sector encompasses all companies, organizations, and institutions whose primary activity is marketing goods and services (excluding higher education institutions) offered for sale at an economically competitive price to the public. It also includes non-profit organizations providing services to these institutions. The sector includes government business institutions (public sector).

- Higher education sector:

This sector comprises all universities, schools, technology institutes, and other post-secondary education institutions, regardless of their funding source or legal status. It also includes all research institutes, testing centers, and clinics operating under the direct supervision, management, or collaboration with higher education institutions. It's worth noting that this sector does not encompass all research institutes under the supervision of the Ministry of Higher Education or similar ministries, even if the ministry's name suggests an affiliation with higher education. These research institutions usually fall into the state sector. If one of these research institutions operates under the direct supervision or management of higher education institutions such as universities, colleges, technical institutes and other higher education institutions, it falls within the higher education sector.

- Researchers:

Professionals involved in designing and innovating new knowledge. Researchers conduct research and improve or develop concepts, theories, models, technologies, devices, software, or operating methods. Managers and administrators involved in planning and managing the scientific and technical aspects of research are also classified as "researchers". Doctoral students working in research and development should also be counted as "researchers".

- Technicians and their equivalents:

They are individuals whose main tasks require technical knowledge and expertise in one or more fields of engineering, physical sciences, life sciences (technicians), or social sciences, humanities, and the arts. They participate in R&D to carry out scientific and technical tasks that require the application of operational concepts and methods, as well as the use of research equipment, usually under the supervision of researchers.

- Support employees:

This category includes skilled and unskilled craftsmen, as well as administrative, secretarial, and general service employees who participate in R&D projects or are directly associated with them, providing services to researchers.

- Full timer:

An employee who works full-time (8 hours per day) for one year.

- Part-timer.

An employee who works fewer hours than the usual working hours (8 hours per day).

- Part timers with a working hours percentage of 25%.

An employee who works full-time (8 hours per day) for three months, or an employee who works less than half of the time (two hours per day) for a year.

- Part timers with a working hours percentage of 50%.

An employee who works full-time (8 hours per day) for six months, or an employee who works half-of the time (4 hours per day) for one year.

3.4. Data sources

The R&D survey data are based on two sources:

First source: A comprehensive enumeration of the survey framework, the 2022 business framework has been used. It is a basic framework for this survey and other economic research to be conducted by GASTAT in the future, through which all establishments are classified by economic activity and by the size of the establishment at the level of the Kingdom and administrative regions. The activities of these establishments are classified according to the National Classification of Economic Activities. (ISIC-4)

The disseminated key variables of the research and development survey data are :

- Funding in the field of R&D by sector.
- Expenditure on the field of R&D by sector.
- Expenditure on the field of R&D by economic activity.
- Expenditure on the field of R&D by volume.
- Employees in the field of R&D by sector.
- Researchers in the field of R&D by sector.
- Researchers in the field of R&D by sex and sector.

Second source: Administrative records from government entities.

The main published variables from the administrative data source are:

- Funding in the research and development field by sector.
- Expenditure in the research and development field by sector.
- Expenditure in the research and development field by economic activity.
- Expenditure in the research and development field by volume.
- Employees in the research and development field by sector.
- Researchers in the research and development field by sector.
- Researchers in the research and development field by sex and sector.

3.5. Designing the data collection tool

The questionnaire is divided into 3 sections:

- First: Establishment data.
- Second: Funding and expenditure on research and development.
- Third: Employees in the research and development field.

Method of calculating the indicators:

Number of employees in the field of R&D= Total Saudi, non-Saudi, male, and female employees working full-time + total Saudi, non-Saudi, male, and female employees working part-time 50%) *0.50 + total Saudi, non-Saudi, male, and female employees working part-time 25%) * 0.25

Number of employees in the field of R&D= Total Saudi, non-Saudi, male, and female employees working full-time + total Saudi, non-Saudi, male, and female employees working part-time 50%) *0.50 + total Saudi, non-Saudi, male, and female employees working part-time 25%) * 0.25

Navigation rules:

The questionnaire was designed in a modern electronic format, incorporating a set of business rules to verify the logical consistency of the entered data, thereby ensuring its accuracy and integrity and enhancing the reliability of the resulting outputs, and it includes 22 navigation rules.

3.6. Questionnaire test (cognitive test)

The cognitive test results from the previous survey year (2022) were used, and it was not necessary to repeat the test for the current year. The interview sample was drawn from a random selection of establishments. During the cognitive testing process, the following evaluation pillars were taken into consideration: (The general concept of the question, clarity of the question wording, clarity of the terms used in the question, and the appropriateness of the response options) until a report was produced summarizing the full results of the cognitive test.

3.7. Statistical population

The statistical population for the Research and Development Statistics Survey consists of all establishments engaged in R&D activities in the Kingdom of Saudi Arabia.

3.8. Sample Design

Not applicable, as the survey is a comprehensive enumeration of all research entities and entities that spend on R&D.

3.9. Statistical unit (sampling unit)

The statistical unit in the Research and Development Statistics Survey is the Entities.

3.10. Data collection

Data collection from the survey:

Research and Development Statistics Survey data is collected through:

- Computer-assisted Telephone Interviews (CATI).
- Computer-assisted Personal Interviews (CAPI).
- Computer-assisted Web Interviews (CAWI).

Data collection from administrative records:

In coordination with GASTAT's relevant departments involved in conducting the survey and managing data collection, the administrative data of the Research and Development Statistics Survey Publication is obtained from the relevant authorities. The data is stored in the authority's databases after undergoing auditing and review processes following approved statistical methods and recognized quality standards. If errors or discrepancies are discovered, the data is cross-referenced with the data source for correction or clarification.

3.11. Data collection frequency

The process of collecting Research and Development Statistics data is carried out on an annual basis.

3.12. Reference area

The Research and Development Statistics Survey covers all 13 administrative regions of the Kingdom of Saudi Arabia (Riyadh, Makkah, Al-Madinah, Qassim, Eastern Region, Asir, Tabuk, Hail, Northern Borders, Jazan, Najran, Al-Baha, and Al-Jouf).

3.13. Reference period (time reference)

References period to the variables or dataset as following:

Data are collected from the establishments included in the targeted sample during the designated survey period, and the questionnaires are completed accordingly. The data are usually attributed to the fiscal year preceding the implementation period.

3.14. Base period

Not applicable.

3.15. Measurement unit

Most results are measured in SAR (ﷲ), such as expenditure on R&D.

3.16. Time coverage

Research and Development Statistics results are available and comparable from 2021 to 2024.

3.17. Publication frequency

The results of the Research and Development Statistics are published annually according to the approved statistical plan.

4. Statistical processing

4.1. Error detection

Data is reviewed and matched to ensure their accuracy and precision in a way that suits their nature to give the presented statistics quality and accuracy. An example of this is the use of the IQR methodology (Interquartile Range), which is a widely applied and globally practiced method for identifying outliers.

The calculation is done:

- First quarter (Q1 / 25%): The average of the lower half of the dataset.
- Third quarter (Q3 / 75%): The average of the upper half of the dataset.

The interquartile range measures the spread of 50% of the data to highlight the values that significantly differ from the central tendency of the dataset.

The boundaries for outliers are determined as follows:

- Lower Bound: First quartile - 1.5 * Interquartile range (IQR).
- Upper Bound: Third quartile + 1.5 * Interquartile range (IQR).

Variables are identified as outliers if:

- The variable is less than the minimum.
- The variable is greater than the maximum.

After identifying outliers, the Business and Trade Statistics team analyzes and evaluates the outliers in the averages by comparing the mean and median across specific data set characteristics, using appropriate statistical measures and critical assessment of the outliers.

In addition to processing and tabulating the data to ensure its accuracy, all outputs are stored and uploaded to the database after being calculated by GASTAT. They are then reviewed and processed by specialists in the Business and Trade Statistics Department using modern technologies and software designed for this purpose.

4.2. Data integration and matching from multiple sources

Data obtained from administrative sources were used after being cross-checked with survey data to verify coherence. In case of discrepancies, the administrative data provider was consulted to approve the final data before integrating it into the survey database, ensuring the accuracy and comprehensiveness of the results.

4.3. Imputation and calibration

Compensation (for non-response cases or incomplete datasets):

The approach used for compensation in Research and Development Statistics, whether for establishments with complete non-response or missing data for specific variables. Reinterviews are allowed to obtain missing respondent data or to address cases of non-response. Subsequently, missing data or non-response are addressed by evaluating them to follow a scientific methodology for estimating results, considering several considerations, including historical data series, an acceptable range of missing data, and estimates based on stratum-level data.

Weighting:

The basic sample weights are calculated based on the strata used in its design and distribution, where the selection probability of establishment i from stratum h is, and thus the weight of the establishment selected in the sample is as follows:

$$w_{hi} = \frac{1}{\pi_{hi}}$$

Non-response weight adjustment:

Weight adjustment to compensate for non-response or missing data to ensure proper representation of the sample. This adjustment is made after data collection and processing, once response statuses are known, according to the following equation:

$$W_{hi}^* = W_{hi} \times f_{hNR}$$

Represents:

W_{hi}^* : Non-response adjusted weight within the stratum.

$$f_{hNR} = \frac{\sum_{hi \in R} W_{hi} + \sum_{hi \in NR} W_{hi}}{\sum_{hi \in R} W_{hi}}$$

Where:

R: Cases of response.

NR: Cases of non-response.

4.4. Seasonal adjustments

Not applicable, only final results will be published.

4.5. Adjustment of preliminary results

Not applicable, only final results will be published.

5. Used Resources

Description	Total
Total employees (GASTAT employees and researchers).	40
Total number of days in the data collection period (end date - start date).	35
Average number of interviews conducted per day (during data collection).	34

6. Quality dimensions

6.1. Suitability

A criterion that indicates how well the product meets users' needs.

6.1.1. User needs

Internal users in the GASTAT for the Research and Development Survey data:

- National accounts.

Some several external users and beneficiaries greatly benefit from the Research and Development Survey data, including:

- Government entities.
- Regional and international organizations.
- Research institutions.
- Media.
- Individuals.

Key variables that are mostly used by external users:

Research, Development, and Innovation Authority.	Funding, expenditure, number of employees, and number of researchers.
The UNESCO.	Expenditure, number of employees, and number of researchers.

6.1.2. Completeness

The R&D survey data is based on two main sources to provide comprehensive information on the volume of funding and expenditure on R&D as well as the numbers of employees (researchers-technicians-and other staff), and the status of the data is complete.

6.2. Accuracy and reliability

A standard that measures how close the calculations or estimates are to the exact or true values that reflect reality.

6.2.1. Overall accuracy

- The data collected is improved through the researchers, that have been selected according to a set of practical and objective criteria and training program related to the field of work.
- Alert, prevention, and correction rules are applied during the data collection process on the electronic questionnaire for the Research and Development Survey to improve data quality.
- Data is checked with previous years to identify any significant changes in the data.
- The internal consistency of the data is checked before it is finalized.
- The links between variables are checked and coherence between different data series is confirmed.

6.3. Timeliness and punctuality

A standard that measures the time gap between the availability of information and the occurrence of the event.

However, timeliness reflects the time difference between the date of data publication and the target date when it is actually published.

6.3.1. Timeliness

GASTAT is committed to applying the approved international standards for publishing statistics, including the timeliness standard issued by the European Statistical System. It announces and clarifies the publication dates of statistics through its official website via the statistical calendar. GASTAT adheres to the announced schedules, and in case of any delay, updates will be provided accordingly.

6.3.2. Punctuality

The publication is done according to the publication dates in the statistical calendar published for the Research and Development Statistics Survey on the website page of the General Authority for Statistics.

The data are available at the expected time, as scheduled in the statistical release calendar, If the publication is delayed, reasons shall be provided.

6.4. Coherence and comparability

The ability for users to access data, the availability of accurate or complete data, and the availability of a methodology and quality report.

6.4.1. Comparability - geographical

The data follow standardized international definitions and standards, ensuring their comparability both nationally and internationally.

6.4.2. Comparability - over time

The survey began in 2021 as an annual survey and is comparable over time.

6.4.3. Coherence- Cross domain

The data are consistent, as their coherence is verified against all other statistics containing similar indicators. These procedures help ensure integration and harmonization among statistics, thereby enhancing the reliability of the data and the quality of the analyses based on them, while ensuring that the results are free from any unjustified inconsistencies.

6.4.4. Coherence- Sub-annual and annual statistics

Not applicable.

6.4.5. Coherence- National Accounts

Not applicable.

6.4.6. Coherence- Internal

The Research and Development Statistics have full internal coherence, as they are all based on the same corpus of microdata, and they are calculated using the same estimation methods.

6.5. Accessibility and clarity

The ability for users to access data, the availability of accurate or complete data, and the availability of a methodology and quality report.

6.5.1. Press releases

The announcements for each publication are available on the statistical calendar as mentioned in 10.1. The press releases can be viewed on the website of GASTAT on the link:

[Press release](#)

6.5.2. Publications

GASTAT issues Research and Development Statistics publications and reports regularly within a pre-prepared dissemination plan and are published on GASTAT's website. GASTAT is keen to publish its publications in a way that serves all users of different types, including publications in different formats that contain (publication tables, data graphs of indicators and data, methodology and quality report, and questionnaires) in both English and Arabic.

The Research and Development Statistics results are available at:

[Research and Development Statistics](#)

6.5.3. Online database

The data is published on the statistical database:

[GASTAT \(stats.gov.sa\)](https://stats.gov.sa)

6.5.4. Microdata accessibility

Accurate data is unit-level disaggregated data obtained from multiple sources such as sample statistical surveys, general population and housing censuses, and administrative systems, providing detailed information about the characteristics of individuals, families, business entities, and geographical areas, supporting the construction and development of statistical indicators and scientific research.

Different types of microdata files to meet diverse information needs:

- Public use:

It consists of sets of records containing information on individuals, households, or business entities anonymized in such a way that the respondent cannot be identified either directly, **such as:** (name, address, contact number, identity number etc.) or indirectly (by combining different - especially rare - characteristics of respondents) **such as:** (age, occupation, education etc.).

- Scientific use:

These files were established based on a specific methodology according to the data requester's requirements to extract the datasets with specific characteristics used for strategic studies, decision-making, and scientific research by individuals, households, and enterprises; while ensuring they contain no direct identifiers and are subject to confidentiality protection controls.

Qualified users who meet the standards and procedures of confidentiality protection can access the files of scientific use of accurate data through GASTAT's platform "ITAHA", while the most sensitive data for use is shared by visiting the accurate data laboratory within a secure environment managed by GASTAT.

6.5.5. References and standards

The concepts, definitions, issues, and classifications in the Research and Development Statistics are based on the following international standards:

- System of National Accounts 2008:

[National Accounts System](#)

- In addition to the Frascati Manual for conducting research and development surveys:

[Frascati Manual](#)

7. Quality assurance

GASTAT declares that it considers the following principles: Impartiality, ensuring that the statistical product is user-oriented, maintaining the quality of processes and outputs, enhancing the effectiveness of statistical operations, and reducing the burden on respondents.

Data is validated through procedures and quality controls that are applied during the process at various stages, **such as:** (data entry, data collection, and other final controls).

8. Quality assessment

GASTAT performs all statistical activities according to a national model (Generic Statistical Business Process Model - GSBPM). According to the GSBPM, the final phase of statistical activities is overall evaluation using information gathered in each phase or sub-process. This information is used to prepare the evaluation report, which outlines all the quality issues related to the specific statistical activity and serves as input for improvement actions.

9. Confidentiality

9.1. Confidentiality - Policy

According to Royal Decree No. 23 dated 07/12/1379, data must always be kept confidential and must be used by GASTAT for statistical purposes only.

Therefore, the data is protected in the data servers of GASTAT.

9.2. Confidentiality - Data Treatment

Data of SMEs survey are presented in the right tables in order to summarize, understand, as well as extract their results. Moreover, to compare them with other data and to obtain statistical significance about the selected study population. However, referring to such data indicated in tables is much easier than going back to check the original questionnaire that may include some data like names and addresses of individuals, and names of data providers, which violates the data confidentiality of statistical data.

“Anonymity of data” is one of the most important procedures. To keep data confidential, GASTAT removed information on individuals, households, or business entities in such a way that the respondent cannot be identified either directly, such as: (name, address, contact number, identity number etc.) or indirectly (by combining different, especially rare, characteristics of respondents), **such as:** (age, occupation, education, etc.).

10. Dissemination policy

10.1. Statistical calendar

Research and Development Statistics Survey has been included in the statistical calendar.

[Statistical Calendar](#)

10.2. User access

One of GASTAT's objectives is to better meet its clients' needs, so it immediately provides them with the publication's results upon its release.

It also receives questions and enquiries from clients about the publication and its results through various communication channels, such as:

- GASTAT official website: www.stats.gov.sa
- GASTAT official email address: info@stats.gov.sa
- Official visits to GASTAT's official head office in Riyadh or one of its branches in Saudi Arabia.
- Official letters.
- Statistical telephone: (199009).

11. Comments