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THE ROLE OF STATISTICAL INFORMATION IN DECISION-MAKING PROCESS

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Abstract :

This study aims to highlight the crucial role of statistical data and information in the processes of decision-making and policy formulation in general. The rapid growth of data science, driven by technological advancements, has broadened its application across various domains, making statistics an indispensable element influencing all aspects of daily life, including economics, finance, marketing, and insurance.

To assess the comprehension of the role and importance of statistical information in the decision-making process, we conducted a survey at Algiers 3 University (Faculty of Economic sciences, Commercial, and Management Sciences). The choice of this department was deliberate, considering its specialization, along with respondents' familiarity and prevailing perceptions regarding our subject and its broader implications.

The findings of our study emphasized the paramount role of statistics in contributing to development planning, prompting many countries to prioritize establishing or enhancing efficient statistical systems.

Keywords:

Data; Information; Statistics; Decision-making; Processes.

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1. INTRODUCTION:

In the contemporary context, data, and by extension, statistics, have emerged as the primary foundation upon which public decision-making relies. This is especially evident in the pursuit of effectiveness, efficiency, and the strategic guidance of national policies.

The possession of reliable statistics has evolved into a pivotal concern for governments striving for the well-being, equity, and optimization of their actions toward citizens. Consequently, there is a growing demand for comprehensive statistics that address the complex dimensions of social, economic, and environmental aspects of life.

This reflects the integral role that robust statistical information plays in informing and shaping government initiatives to enhance the overall quality of life for its citizens.

1.1. Problematic:

In light of the current economic conditions that our country is going through, obtaining accurate, comprehensive and up-to-date statistics has become an urgent necessity and an increasing development requirement at all levels**.**

Hence, through the foregoing, the following main problematic can be putted forward**:**

How does statistical information help in decision-making?

From which the following sub-questions will be emerged**:**

- ✓ What is the relationship between statistical data and the country's development plans**?**
- ✓ What are the most important sources and methods of collecting statistical data**?**

1.2. Hypotheses:

From the previous problem, the following hypotheses can be formulated**:**

1. The provision of updated statistical data contributes in giving a clear vision of the living reality in addition to the needs of citizens, qualifications of regions and development opportunities, which constitutes an important factor in developing, monitoring and evaluating public policies and in decision-making in general.
2. With the development of information and communication technologies, digitization and artificial intelligence, administrative registers have now become one of the most important sources of statistical data collection**.**

1.3. Importance of this study:

This study derives its importance from the importance of the subject that it deals with. It addresses the problematic of statistical data and its pivotal role for governments in setting and developing public policies for the nations.

It is considered a tool and a means that contributes and aids decision-making by deepening and enriching studies and analyzes with the aim of determining priorities for the allocation of resources and wealth of all kinds, as well as strategies, policies and procedures that will bring about a more coherent and harmonious sustainable local economic development.

Therefore, statistical indicators have become, today, the interface of countries that gives a comprehensive and detailed view of the extent of the development of any economy in the world, in addition to making many comparisons and benchmarking in various fields, that becomes nowadays at the forefront of public policy discussions in many countries, especially the advanced ones.

1.4. Study Methodology:

In this study, the descriptive analytical approach was relied upon, which in our view is appropriate for the study of this subject.

1.5. Study Structure:

To answer the above-mentioned problematic, we will divide this study into the following axes:

- ✓ Theoretical framework of statistics;
- ✓ Methods and sources of statistical data collection;
- ✓ The use of statistics to improve decision-making.

2. Theoretical framework of statistics:

2.1. Definition of statistics:

According to the General Director of the Senegalese Convergence Institute "Socialist Centre for Permanent Education SCPE", the term statistics has been around for more than 350 years ago and has various meanings depending on whether it is plural or singular. In 1935, there were more than 100 definitions of the term "statistics". Among the most important of these definitions, we can find:

- The term "statistics" comes from a Greek word meaning, "to observe». We can also derive the word from the Latin "status" which means "state", which is why originally we called statistician the one who dealt with affairs of State.
- Statistics is the science of making decisions under conditions of uncertainty.
- Statistics is the science whose object is the methodical grouping of social facts, to be evaluated numerically, such as consumption, industrial and agricultural production, population, etc. Thus, statistics refers to a set of scientific methods that make it possible to quantitatively analyze information in a rigorous manner.

- Statistics is one of the applied mathematical sciences, which uses more capable and efficient methods to collect, organize, present and describe data with the aim of extracting facts from them in the form of probabilities.

In our opinion, this last definition is the most complete and important definition, which, through its components, can bring out the basic functions of statistics, which will be presented in what follows.

2.2. Basic functions of statistics:

According to the General Authority for Statistics of the Kingdom of Saudi Arabia, the science of statistics includes the scientific method necessary to investigate the facts of phenomena and draw conclusions about them.

It also includes the theory necessary for measurement and decision-making in all economic, social and political fields. Thus, it gives researchers and scholars in those fields the most accurate tool for scientific research based on method and theory.

The science of statistics has multiple functions through which it is possible to extract many general facts and results that are necessary for setting and drawing development plans. Among these functions are the following:

- Counting and enumerating function;
- Data collection and summarization function;
- Graphic analysis of information function;
- Quantitative data analysis and interpretation function;
- Setting hypotheses and studying the relationship between variables function;
- Results extraction function;
- Decision making function;
- Inferential prediction function;
- Scientific research function.

2.3. Concepts related to statistics:

Statistics is one of the sciences of great importance to everyone who works with science and judges by the scientific method in the decisions he takes. Therefore, in order to understand the dimensions of this issue, we must first introduce and define some similar terms and concepts that accompanied the concept of statistics and perhaps among the terms that we often hear about, we find the term data, information, as well as indicators. So what is their definition and what is the differences between them? (General Authority for Statistics, 2018, p. 13)

- **Statistical data:** it is the raw material such as measurements and censuses, the values of observations of phenomena and experiences such as numbers and descriptive characteristics related to statistical fields or otherwise in relation to the conditions and activities of society.

- **Statistical information:** data that is processed either by tabulating, analyzing, summarizing, or by any other processing method to make it meaningful in relation to statistical fields.
- **Statistical indicators:** data or information in terms of their counterparts in time or space, or in terms of any of their sources, and they are usually calculated according to mathematical equations.

Accordingly, it is worth noting the need to differentiate between data and information in the field of scientific research.

Information is a fact that has been proven. It is the results of the data after processing it, using statistical methods, means of communication and various technology, in order to build theories and postulates on its basis. Unlike raw data that has no meaning and cannot be exploited unless it is treated, and from it we can say that data is one of the most important resources, on which contemporary life depends, in all fields, through the databases provided by the use of statistical methods according to quantitative and qualitative measures that help to study various phenomena.

3. Methods and sources of collecting statistical data:

3.1. Methods and means of collecting statistical data:

Each approach and method used in data collection has her own advantages and disadvantages. To choose the one we must use, the comparison can be made, according to three basic criteria, namely: the purpose of the research, the size of the population under study and the size of the budget allocated for this research.

Accordingly, study and research data can be collected in one of the following two ways (Moazazi & Zikio , 2021, p. 472):

3.1.1. Complete surveying method or census:

Where data are collected from all members and individuals of the population under study and research. In this regard, it is worth noting that we find 03 types of censuses carried out every ten years by the countries all over the world. Which are:

- The economic census;
- The general census of agriculture;
- The general census of population and housing.

This latter census was carried out by Algeria recently, through the National Bureau of Statistics for the period between (September 25 and October 9, 2022) in its sixth edition in the history of Algeria, which was under the slogan We count our present to make our future, after its successive editions 1966, 1977, 1987, 1998 and 2008.

This periodic operation carried out by the central statistical institutions of countries, through which they enumerate the population and housing in order to know their characteristics, geographical distribution, living conditions, needs and other information in order to create a statistical database that allows them to determine the needs and

priorities of citizens. So the government can translate it into public and sectoral policies that allow programming projects that improve and respond to the needs of citizens and society as a whole.

i. Advantages of this type of method:

- Avoiding making sampling errors when there is a complete coverage of individuals within the planned schedule and the fixed budget, as well as reducing the levels of non-response through good design of census work and a full-scale publicity campaign;
- High accuracy and credibility, in addition to full commitment to quality standards, whether at the data collection stage or in the follow-up stages within the specified schedule;
- Clarity and detail in the outputs of the censuses so that they respond to the needs of the various stakeholders by involving them in advance in the process of defining the content of the census and the topics for which data are collected;
- Applying legal and ethical standards to protect the confidentiality of individual data in all data collection and publishing results processes;
- Ensure the integration of the census database with other appropriate databases in the country.

ii. Disadvantages of this type of method:

- Requires a huge budget resulting from the high cost of the instantaneous and the simultaneous launch of the operation throughout the national territory ;
- Takes a lot of time and effort to prepare and to execute the operation;
- Needs a large number of data collectors.

3.1.2. Surveying sampling method:

Where data are collected from the members and individuals of a selected sample of the population under study in a way that represents the entire population to facilitate its extrapolation later. However, the success of this method depends on several factors, the most important of them are:

- ✓ How to determine the sample size;
- ✓ The method of selecting sample items and individuals ;
- ✓ The type of sample chosen.

i. Advantages of this type of method:

- Doesn’t require a huge budget ;
- It takes less time and effort;
- It does not need a large number of data collectors.

ii. Disadvantages of this type of method:

- High chances of falling and making sampling errors and bias;
- Low accuracy and credibility;
- Lack of clarity and even blurring of certain details in the outputs because its results are approximate.

3.2. Statistical data sources:

According to the General Authority for Statistics of the Kingdom of Saudi Arabia, there are two main sources for collecting statistical data, namely:

- **Field source (primary):** through which data is collected through censuses, research and statistical surveys using one of the data collection methods, the most important of which comes from the method of observation, personal interview, or by mail, over the phone, or using the World Wide Web (Internet),
- **Administrative registers (secondary):** so that it is considered another important source of statistical data, and this method through which statistical data is obtained from the reality of records kept in institutions and ministries, as most agencies in the government and private sectors keep their data related to their various activities in special records. Usually, the process of recording and saving is for non-statistical purposes, and therefore it is necessary to carry out processing and tabulation operations for this data until it is converted into useful statistical information.

Hence, we can know now the difference between the concept of the national system of statistics and the concept of the national statistical information system, which includes, in addition to the results of statistical surveys, information from administrative sources and registers, as it is less expensive and more complete in coverage than surveys**.**

In recent years, it has been noticed a focused attention on activating the role of information in the statistical system, so that the issue of establishing databases of official statistics from the reality of administrative registers has become the most preoccupying matter for statistical agencies nowadays. Especially after her importance as an important source of statistical data became clear.

Particularly in light of the social and economic disturbances and fluctuations, Caused by the covid-19 pandemic which negatively affected the conduct and implementation of the 2020 cycle censuses as well as the general quality and comparability of their results. Especially for countries where their national statistics offices still use classic and traditional methods in their censuses.

In response to the challenges posed by this pandemic, the United Nations Statistics Division, as the secretariat of the World Population and Housing Censuses Programme, has published in 2020 a series of international principles and recommendations on population and housing censuses in its third revision. Which advocates the use of Information and Communication Technologies (ICT) to help statistical offices and those responsible for national censuses, all over the world, to plan and carry out improved and

efficient censuses (Department of Economic and Social Affairs, Statistics Division, , 2020, p. 66).

3.3. Features of statistical data sources:

It is necessary that the statistical source, regardless of the party from which it was issued and collected, be characterized by characteristics, so that the statistical information and facts that are given by that source have a scientific and practical basis, represented in the following (Al-Atraqji, 1980, p. 22)**:**

- **Honesty and confidentiality:** The person, agency, institution or government department that collects statistical data and facts must be honest in recording statistical data and results as they are, without change and modification, and capable of in keeping the statistical secret away from personal matters ;
- **Scientific ability:** The data collector must be characterized by a scientific ability that enables him to collect data, otherwise the efforts made and the financial and material costs are meaningless because the data does not only mean his knowledge of statistical methods, but also his knowledge of the subject of the phenomenon or problem that he is researching in an accurate way that includes all aspects of the phenomenon **;**
- **Financial capacity:** The collection of data and statistics from various sources requires large funds, especially if it is related to the field source, as financial capacity is necessary. Therefore, statistics related to the population census, economic sectors, and other complex statistics are implemented and followed up by government agencies because they have the financial capacity to do so ;
- **Authority:** The data collector must have the ability to oblige those who have the data to give it and impose penalties according to the provisions of certain laws on those who refuse to provide it or on those who give false information. This is especially related to statistics conducted by government agencies because they are the only source that have this feature **.**

3.4. Quality of statistical data:

The importance of data quality lies in its credibility, since it is considered the raw material for information, meaning that if it is not good, we will definitely get bad information and we will build on it decisions that will be with a high probability of being wrong.

3.4.1. Data quality standards:

Although there are many researches and statistical studies that focuses at the issue of data quality, there is no clear and specific definition of it.

Therefore, we find that the European Statistical Office as a set of features and characteristics in the statistical product or service that meet the user's need and satisfaction has defined data quality.

As for the International Monetary Fund, data quality has been defined within the general framework for data quality assessment (DQAF) within a number of dimensions and levels required to reach the data quality stage. Which represented as fellow (United Nations, 2012, p. 10):

i. **Statistical system management :**

- ✓ Coordination of the national statistical system;
- ✓ Managing relationships with data users and data providers;
- ✓ Statistical standards management.

ii. **Institutional Environment management:**

- ✓ Professional independence;
- ✓ Neutrality, objectivity and transparency;
- ✓ Confidentiality and security of statistics;
- ✓ Commitment to quality;
- ✓ Resource sufficiency.

iii. **Statistical Operations management:**

- ✓ Methodological soundness;
- ✓ Cost effectiveness;
- ✓ Implementation safety;
- ✓ Managing the burden on the respondents.

iv. **Statistical outputs management**

- ✓ Convenience;
- ✓ Accuracy and reliability;
- ✓ Periodicity and timeliness;
- ✓ Accessibility and clarity;
- ✓ Consistency and comparability;
- ✓ Metadata accessibility.

3.4.2. Data quality assessment methods:

Among the most important methods for evaluating the quality of statistics, issued by the International Monetary Fund, we find:

i. **The United Nations Basic Statistical Principles:** These are ten principles that were endorsed by the United Nations Statistical Commission in 1994. Among these principles we find (United Nations, General Statistics Unit, 1994):

- Maintaining professional ethics and confidentiality,
- Responsibility, transparency and equality in obtaining official statistics,
- Announcing the legislation according to which the statistical systems operate,
- Coordination between statistical agencies and international cooperation to improve statistical systems.

ii. **General Data Dissemination Standard (GDDS):** This system encourages participating countries to develop mechanisms for collecting and disseminating economic, financial, social and demographic data at the macroeconomic level, meaning that it is characterized by the comprehensiveness of statistical data (Forum Secretariat, 21 Paris, 2004, p. 16).

iii. **Special Data Dissemination Standard (SDDS):** a standard that has the same dimensions as the General Standard for Data Dissemination, except that it is primarily concerned with countries that have global capital markets (Forum Secretariat, 21 Paris, 2004, p. 4).

4. The use of statistical information to improve decision-making:

4.1. The concept of decision:

It is the product of the comparison process between the proposed alternatives, and the decision in general is linked to the decision-making process and is a logical outcome of this process.

Decision-making is generally considered the essence of the administrative process. The administration always seeks to take the right decision in line with the desired goals, according to the available capabilities and resources and in light of the current situation.

Therefore, the decision aims to find the necessary solutions to the problems at hand, after collecting information, analyzing it, and finding alternatives and solutions. Hence, the decision-making process is choosing the optimal solution among a set of possible decisions (alternatives) and working on its implementation. (Bozmarn & Khathir, 2022, p. 208)

4.2. Decision making process:

In this process, we find a series of logical steps that precede the decision-making. Which can be summarized as follows:

- **Step1:** Identification of the problem or the situation.
- **Step2:** Data and information collection.
- **Step3:** Analyzing this data and information.
- **Step4:** Put forward solutions and alternatives to treat and solve the problem or situation.
- **Step5:** Evaluate each alternative and its consequences.

4.3. Types of decisions:

There are three levels of decision according to their importance**:** (Berbah & Nawi , 2019)

- **Strategic decisions:** They are taken by senior management in the organizational hierarchy. This type of decision is characterized by relative long-term stability, in addition to the huge financial allocations, and their focus on the goals and results to be reached because of the impact and impact of those decisions on the future of the organization as a whole;
- **Tactical decisions:** which are taken by the middle management and aim to provide the necessary means in order to achieve the goals and translate strategic plans, delegate authorities in addition to defining work relations and communication channels;
- **Executive or operational decisions:** which are taken by the executive departments, which are related to the problems of implementing the activity. They are automatic and do not require effort or reflexion, as they are closer to following instructions and directives than to choosing between alternatives**.**

4.4. Statistics and decision making

4.4.1. The importance of statistics in decision making

As we all know, today, effective decision-making is crucial to the success, development and survival of any business or organization. Unfortunately, the opposite is also true, failure to establish a culture that fosters effective, evidence-based decision-making can be crippling. That's why, in the contemporary times, majority of business decisions are taken with the help of one or more quantitative or statistical tools. Which did prove their usefulness, when applied, in improving decision-making.

So that , the production of statistics is no longer limited to the quantitative analysis and market research departments of companies. Rather, it went beyond that to the point that managers use statistics in a daily basis in every functional area of the business in order to improve their decision-making process.

On top of these improvements, we find that statistics-based decision-making : (Danielkievich, 2022)

- Offres the campanies a better understanding of both their business and their clients.
- Enables executives to have an objective look at their business, so that their business strategy becomes smarter, clearer, and more goal-oriented by transforming the following aspects of their businesses :
    - **Optimizing costs :** statistics assist companies in identifying operational gaps that contribute to excessive costs. Through financial performance analysis, businesses can achieve operational efficiency and streamline their processes.
    - **Launching new services or products:**Utilizing data allows businesses to evaluate the demand for new products or services and make informed investment decisions. Analytical tools facilitate the forecasting of market trends and predicting changes in consumer preferences and behavior;

- **Developing smart strategy:** Data serves as a comprehensive guide for strategic business decisions. Analytics and numerical insights aid in selecting the most beneficial and justified senario for business development;
- **Improving marketing effort:** Data-powered technology enables marketing specialists to draw conclusions about customer behavior. This insight allows marketers to adjust their messages to individual customers, creating a more personalized and effective approach;
- **Upgrading business model:** AI-powered decision-making tools conduct competitor analysis, helping businesses stay competitive and discover new revenue channels. For example, by analyzing subscription demand for different products or services, businesses can determine the suitability of implementing a subscription model in their target product segment.

4.4.2. Relationship between statistics and decision-making:

One of the promising indicators of the progress of any country, especially on the economic and social level, is the availability of an efficient statistical system that provides reliable and accurate statistics for the benefit of the researcher and decision-makers.

From here, we can say that statistical information contributes greatly to the decision making in the development planning process.

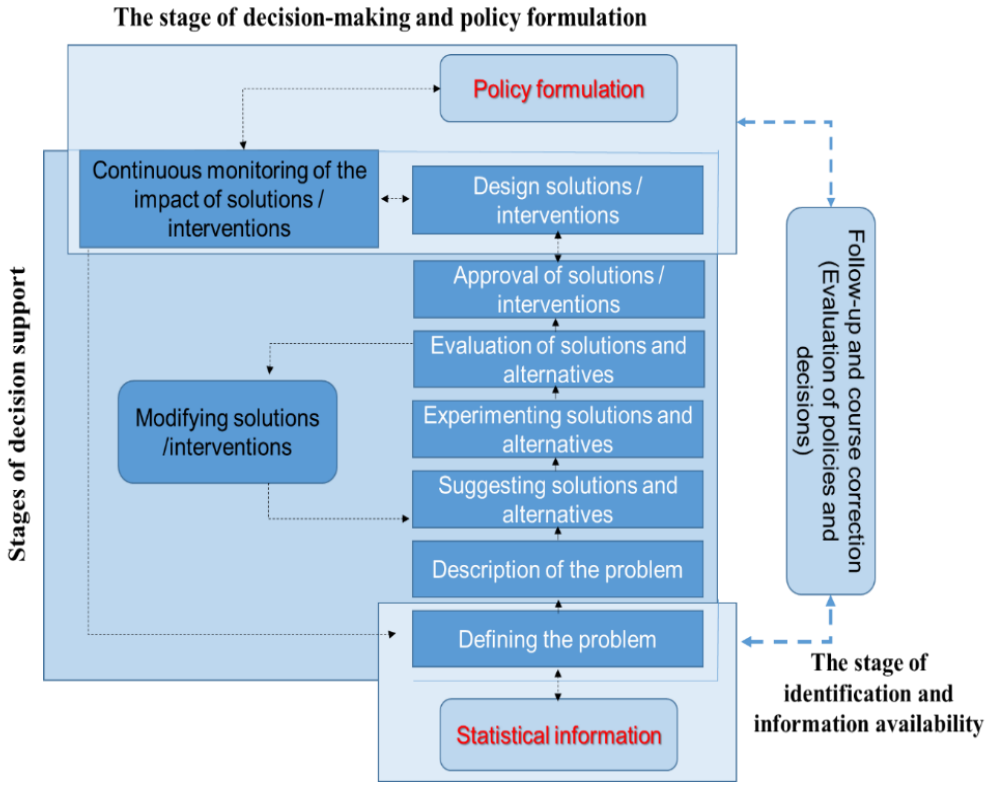
Therefore, it can be concluded from the above, that the most important aspects of this contribution might be represented in (Mogdish, 2010, pp. 5-6):

- Creating and designing development policy;
- Giving a clear and objective picture, at a specific point in time, which enables us to evaluate and monitor the extent of the development of the adopted policies and show the differences;
- Establishing follow-up, forecasting and correction systems for the stages of implementation of the development policy, through which measurement, control and monitoring can be carried out, thus providing the decision support team with warnings and forecasts of possible crises, so the negative effects can be avoided and necessary precautions can be taken to mitigate risks;
- Estimating and monitoring the volume of financial aid provided by some donor countries and agencies supporting development by providing the necessary official statistics, thus avoiding confrontation with global pressure groups and lobbies;
- Building correct decisions based on reliable statistics avoids the state from confronting international donor organizations and agencies that are sensitive towards incorrect decisions of public policies;
- Helps in make decisions at all levels, whether at the macro or micro economic level,
- Estimating the level of effectiveness and performance, as well as defining future priorities and tasks. Given that drawing up policies, development plans

and decision-making as a whole depends on the volume and quality of the information used, and therefore any deficiency, defect or misuse leads to incurring additional high financial and human costs without even reaching the expected goals.

From here, we can summarize the relationship between statistical information and decision-making, according to the following figure**,** which shows the stages that support the decision:

Figure N°01: Relationship between statistics and decision-making in developing policies



5. Case study:

To assess employees' awareness of the significance, role, and impact of statistics in the decision-making process, we initiated a survey at Algiers 3 University - Faculty of Economic sciences, Commercial, and Management Sciences. The survey was structured into multiple components.

The first segment focused on gathering personal information from respondents, encompassing details such as gender, age, professional experience, position, and educational level. In addition to two principal axes:

- The first one delved into general definitions and concepts of statistics, including statistical data sources and fundamental statistical functions;
- The second axis concentrated on the utilization of statistical information to enhance decision-making. It explored the role and importance of statistics in

decision-making, along with gauging the extent to which statistical information was employed in the decision-making process.

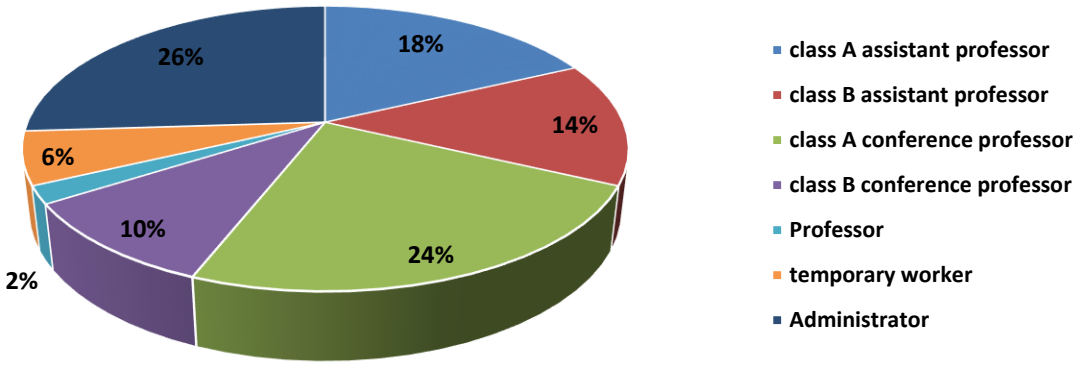
A total of 60 surveys were distributed and collected over a span exceeding 5 days, allowing ample time for participant responses. The survey with the exam period, facilitating ease of distribution to professors and administrators who were congregated during this period.

Out of the distributed surveys, 53 were returned, with 03 papers excluded due to incomplete responses. Consequently, 50 papers were deemed suitable for in-depth study, analysis, and the derivation of conclusions. The key findings can be summarized as follows:

5.1. Respondent Profile:

The graphs below illustrate the breakdown of responses based on the function and professional experience of the participants.

Figure N°02: Distribution of respondents' profiles according to the position occupied

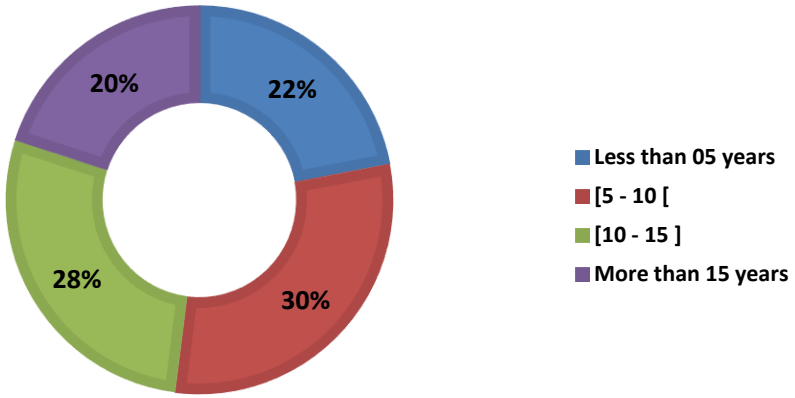


Source: Compiled by the researcher using data collected from questionnaires.

The outcomes reveal that the majority of respondents comprised professors, totaling 37 individuals, which accounts for 74% of the respondent pool. Administrators constituted the remaining 26%, with a count of 13 participants.

However, given the unique dynamics of the university environment it's status and its management structure.It's essential to note that within the administrator category, 13 individuals that were mentioned 05 professors who are included in that category includes who hold administrative functions, such as the head of the department.

Figure N°03: Distribution of respondents' profiles according to their professional experience

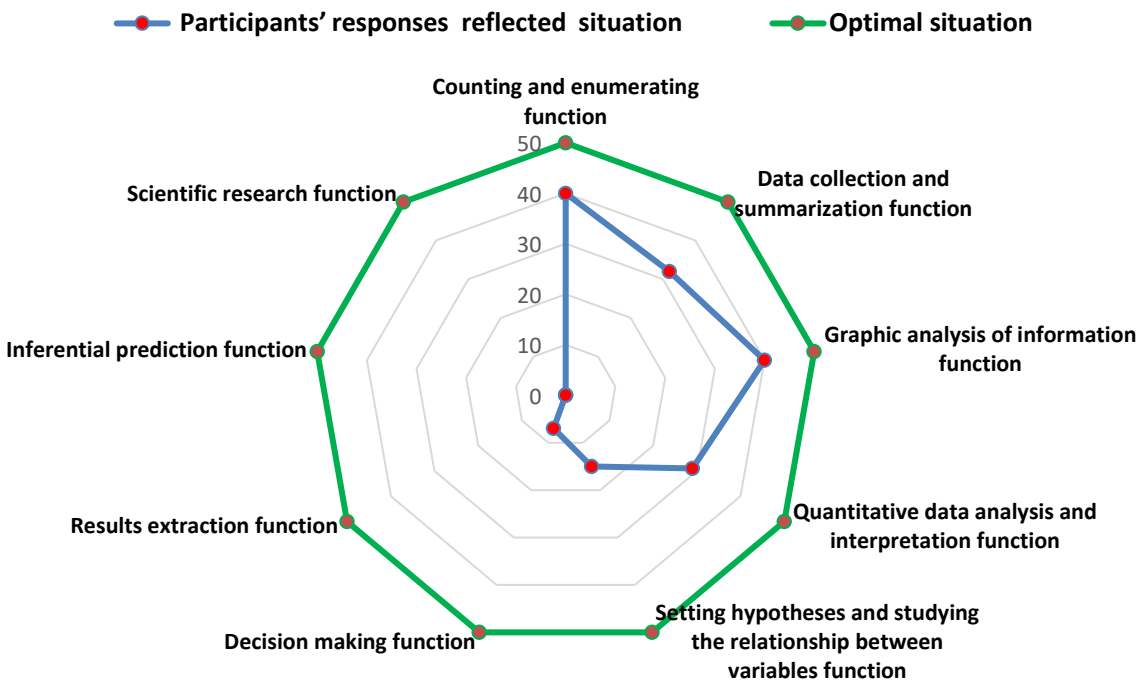


Source: Compiled by the researcher using data collected from questionnaires.

As per the same findings, nearly half of the respondents, comprising 48%, possess a professional experience exceeding 10 years.

5.2.General definitions and concepts of statistics:

Figure N°04: Basic functions of statistics

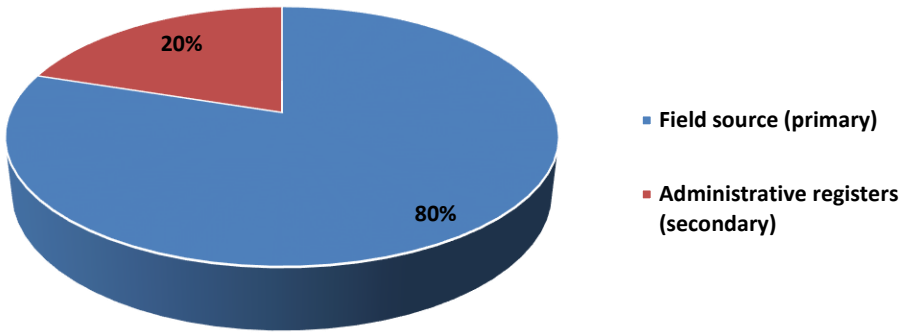


Source: Compiled by the researcher using data collected from questionnaires.

Based on these findings, the majority of respondents acknowledge a maximum of seven functions of statistics. 24.5% of them believe that statistics have a "Graphic analysis of information function" and "Counting and enumerating function". This is

closely followed by the "Data collection and summarization function," which garnered 19.6% of opinions. Additionally, the "Quantitative data analysis and interpretation function" received recognition from 17.8% of respondents. A smaller percentage, 9.2%, also identified the "Setting hypotheses and studying the relationship between variables function".

Figure N°05: Statistical data sources



Source: Compiled by the researcher using data collected from questionnaires.

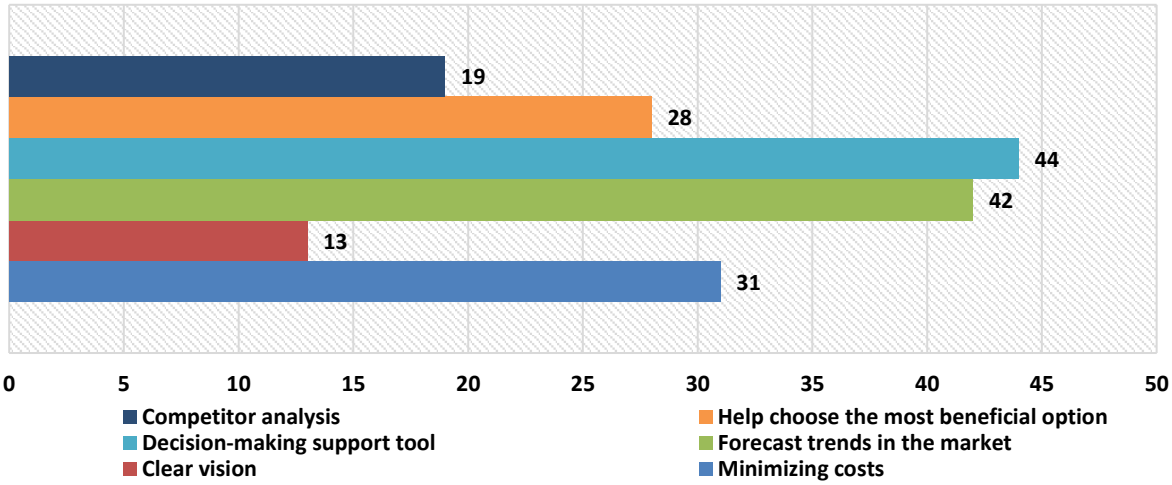
As illustrated by the graph, a significant majority of respondents, constituting 80% of the total, believe that data collection predominantly is carried out mainly, especially in this digital era with the current technological advances, by Field sources (primary sources) and namely through sampling and opinion surveys particularly in the case of market studies for businesses.

5.3.The use of statistical information to improve decision-making

According to the outlined classification below, the role and importance of statistics in decision-making were identified across three specific domains:

- **Essential Tool for Decision-Making** (88% agreement): A substantial 88% of respondents emphasized the pivotal role of statistics as an indispensable tool for decision-making. This underscores the importance of having reliable statistical data to elucidate the strategic vision and aid decision-makers in making matured, thoughtful, and well-considered decisions.
- **Forecasting Trends in the Market** (83% agreement):83% of respondents highlighted the role of statistics in forecasting market trends. This is particularly pertinent in predicting changes in consumer preferences and behaviors, whether in market studies, satisfaction surveys, or during the launch of new products.
- **Minimizing Costs** (62% agreement): 62% of responses identified one of the crucial roles of statistics in decision-making as the optimization of profits and financial performance. This optimization that is achievable through carefully considered decisions based on reliable statistical information that accurately reflects the real situation.

Figure N°06: The Role and importance of statistics in decision-makings



Source: Compiled by the researcher using data collected from questionnaires.

Table N°01: The use of statistical information in the decision-making processes

Question	Number	%
- In the course of your research and studies, did you deal with subjects that relate to decision-making?	**27**	**54**
-In the course of your research, did you conduct studies within companies that focus on subjects related to decision-making processes?	**16**	**32**
• If the answer is affirmative, have you observed whether these companies genuinely incorporate statistical information into their decision-making processes?	**11**	**68,7**

Source: Compiled by the researcher using data collected from questionnaires.

Based on the participants' responses:

- A significant majority, comprising more than half (54%) of the respondents, have engaged with themes and subjects related to decision-making, either during their academic and professional pursuits or within the scope of their research work. An outcome that aligns with expectations, given the nature and specialization of the department involved in the survey.
- Additionally, 32% of the participants have conducted studies related to themes that deals with decision-making, showcasing a notable level of familiarity with the subject of our study and its broader implications.
- Notably, a substantial 68.7% of these participants believe that companies indeed utilize statistical information in their decision-making processes. This indicates a prevailing perception among the respondents regarding the practical application of statistics in the business world and decision-making processus.

6. CONCLUSION:

In recent times, a multitude of changes and events has played a significant role in accelerating the rapid growth and development of data science. This field has evolved to encompass a broad spectrum of advanced technological concepts, including artificial intelligence, the Internet of Things, deep learning, and more.

The pervasive influence of data science is evident in its applications across various domains, touching virtually every aspect of our lives. From online transactions and purchases to social media feeds on platforms like Facebook, Instagram, Amazon, Netflix, and beyond, its impact is palpable. This omnipresence underscores the expanding role and increasing importance of statistics, which continues to grow in significance day by day.

The importance of data science arises from its integration of three domains of expertise: programming, mathematics, and statistics. This amalgamation enables the generation of fresh insights and facilitates the comprehension of vast datasets. Through data science, we can validate various theories regarding the behaviors of economic agents. Ultimately, this knowledge assists decision-makers in formulating policies that align with the evolving needs of society.

6.1. Results:

Based on our study, we have drawn the following conclusions:

- The provision of precise and current statistics plays a crucial role in the decision-making process. It not only offers a clear understanding of reality but also aids in the formulation of effective policies designed to address and fulfill specific needs of citizens. The decisions made are contingent upon continuous evaluation and the implementation of necessary corrections, (thereby substantiating the validity of our first hypothesis);
- According to the results obtained from our survey, 22% of respondents who have previously worked on topics related to our subject and have experience in the business world confirm the crucial role of statistical information in decision-making. They also confirm that companies indeed utilize statistical data in their decision-making processes;
- Our findings also shows that statistics assume a pivotal role at both macro and micro levels, serving as a fundamental tool for economic analysis. It becomes imperative to differentiate between mere data and meaningful information to guarantee the formulation of accurate and pertinent decisions. Recognizing that decisions based on misinformation are inherently flawed, it underscores the significance of distinguishing between accurate data and misinformation in the decision-making process;
- The interest of utilizing administrative registers to enhance census data collection has intensified in contemporary times, emerging as a paramount concern for

statistical agencies. Consequently, an escalating number of nations are actively exploring the feasibility of transitioning to a register-based census, particularly as they prepare for the upcoming census cycle in 2030 and beyond. (This growing trend substantiates the validity of our second hypothesis).

6.2. Recommendations:

Through what was stated in this study, the following recommendations can be made:

- Necessity to design an effective statistical information system that ensures the flow of information accurately, quickly and in a timely manner for all administrative and government levels, allowing them to make the right decisions.
- Providing effective mechanisms for coordinating and managing the statistical system.
- Improving and upgrading the place of statistics in the government in a new form as a decision making tool;
- Training employees on a permanent basis, in order to improve the level of their use of information systems, their applications and their appropriation to the standards and norms of quality, namely, in the process of production of statistics, especially in light of the rapid technological developments.

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