

The meaning of accuracy and precision in different fields

Qodirova Dilnoza Xoliq qizi

Student of International Journalism faculty, UZSWLU

Email: dilnozaqodirova0623@gmail.com

Abstract: The meaning of accuracy and precision varies in different fields within professional terminology due to the unique requirements of each field. In scientific research, accuracy and precision are essential to obtain reliable data that support scientific theories and technological developments. High-precision instruments and measurement techniques allow scientists to discover new phenomena and reliably confirm existing theories. Accurate data is essential for making informed decisions about environmental protection policies, public health measures and technological innovation.

Key words: Syntactic equivalence, pragmatic equivalence, functional equivalence, equivalence assessment, translation studies.

In engineering sciences such as civil engineering, mechanical engineering, electrical engineering and chemical engineering, accuracy and precision are important in the design of structures, machines, electrical systems, chemical processes, etc. Engineers rely on accurate measurements to ensure their designs meet safety standards, perform as intended, and comply with regulations. Precision manufacturing methods allow engineers to produce components with tight tolerances and complex geometries.

Medical terminology places great emphasis on accuracy and precision to support patient care, diagnosis, treatment planning, and medical research. Accurate clinical measurements help diagnose the disease and monitor the patient's response to treatment. Precision medicine approaches use detailed molecular information to tailor therapy to the genetic profiles and diseases of individual patients.

In financial terminology, precision and accuracy support sound investment decisions, risk management strategies and financial forecasts. Accurate financial information is essential to assess market trends, evaluate investment opportunities and effectively mitigate financial risks. Accurate numerical analyzes allow financial

professionals to accurately model complex scenarios and make informed decisions about asset allocation and portfolio diversification¹.

Challenges in Achieving Accuracy

Although accuracy and precision are the main goals of technical terminology in various fields, achieving a high level of both can be difficult due to several factors.

Measurement limitations: In many fields, measurement techniques have inherent limitations that can affect the accuracy of the data. For example, in astronomy, atmospheric distortions can affect the accuracy of telescopic observations. In metrology (the science of measurement), calibration errors in measuring instruments can cause uncertainty affecting measurement accuracy.²

Sampling errors: For example, in environmental science and epidemiology, sampling errors can affect the accuracy of data collected from natural systems or populations. Sampling bias or insufficient sample size can compromise the representativeness of data sets.

Instrument Errors: Instrument errors due to equipment failures or calibration problems can cause errors or mistakes in measurements. Regular maintenance and calibration protocols are essential to minimize instrument errors.

Human Errors: Human factors such as observer or user error can affect measurement accuracy. Training programs and standardized protocols help reduce human error in data collection procedures.

Computational challenges: In fields such as computational biology or data analysis, computational challenges can affect the accuracy of computer models or analyses. Issues such as data normalization, algorithmic biases, or computational artifacts may affect the reliability of the results.

Uncertainty Quantification: Quantifying the uncertainty associated with measurements or data is an important part of accuracy challenges. Methods such as error propagation analysis or Monte Carlo simulations help determine uncertainties and assess their impact on the reliability of measurements³.

In conclusion, accuracy and precision are key concepts in technical terminology in various fields including research, engineering, medicine, finance and many others.

¹ Drouin, P., & L'Homme, M. C. (2003) Towards a theoretical framework for terminological variation in specialized corpora. *Terminology* 9(2):163-199

² Bowker, L., & Pearson, J. (2002) *Working with specialized language: A practical guide to using corpora*. Routledge

³ Icht, H. & Draskau, J. (1985) *Terminology: An introduction*. John Benjamins Publishing

These concepts play a key role in ensuring the reliability, validity, clarity and detail of measurements, data and information in specific domains.

The understanding of precision ensures that the measured values closely match the actual or accepted values, while precision emphasizes the consistency or repeatability of the measurements. Balancing accuracy and precision is critical to obtaining high-quality data to support informed decision-making in specialist areas. The interplay between accuracy and precision affects various aspects of technical terminology, including scientific research methods, design processes, medical diagnoses and treatment planning, and financial modeling techniques. Although achieving a high level of both accuracy and precision is often the goal in interdisciplinary terminology; however, a trade-off may occur due to limitations in measurement techniques or resources.

Despite the challenges of measurement limitations, sampling error, instrumental error, human error, computing presents the challenge of quantifying measurement uncertainty; operators in specialized fields try to meet these challenges through rigorous methodical training programs, quality assurance measures for technological development; the goal is to improve the credibility of their work. By understanding the correct application of these concepts, professionals can improve the quality of their work. ultimately to promote innovation in the specialist terminology of their departments⁴.

LIST OF USED LITERATURE:

1. Drouin,P.,& L'Homme,M.C.(2003) Towards a theoretical framework for terminological variation in specialized corpora.Terminology 9(2):163-199
2. Bowker,L.,& Pearson,J.(2002) Working with specialized language:A practical guide to using corpora.Routledge
3. icht,H.& Draskau,J.(1985) Terminology:An introduction.John Benjamins Publishing
4. Kageura,K.& Umino,B.(1996) Methods for automatic term recognition:A review.Terminology 3(2):259-289
5. Gouadec,D.& Sager,J.C.(1997) Terminology and language planning:An alternative framework of practice and discourse.John Benjamins Publishing.

⁴ Kageura,K.& Umino,B.(1996) Methods for automatic term recognition:A review.Terminology 3(2):259-289