Strategies for Defining Technical Terms in Specialised Dictionaries: A Comparative Study

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ABSTRACT

This study explores the ways technical terms are defined in specialised dictionaries across various disciplines, focusing on the structural and functional aspects that enhance user comprehension. By analysing three representative dictionaries—the Dictionary of Statistics, the Hamlyn Dictionary of Business Terms, and the *Kamus Teknikal dan Kejuruteraan*—this research investigates how entries are organized, the inclusion of bilingual elements, cross-referencing techniques, and the use of supplementary materials such as front and back matters. The findings reveal significant variances in dictionary design tailored to user needs, from experts to learners, highlighting the balance between linguistic clarity and domain-specific precision. The study also discusses the challenges of lexical borrowing and term translatability in technical vocabularies, emphasizing the role of dictionary structures in supporting effective communication. Recommendations are made for future lexicographic practices aimed at improving usability and accessibility in specialised fields.

Keywords: specialised dictionaries, technical terminology, dictionary microstructure

INTRODUCTION

A specialised dictionary is designed to concentrate on a particular subject, domain, or academic discipline. It offers definitions, clarifications, synonyms, antonyms, examples, and other relevant information about the terms and concepts specific to that field. Also referred to as a technical dictionary, examples include a medical dictionary that addresses medical and healthcare terminology, a legal dictionary that covers legal terms and concepts, a music dictionary that explains musical elements and notation, and a slang dictionary that documents informal and nonstandard language used by certain communities or social groups. A specialised dictionary focuses on a particular subject, area, or discipline, providing definitions, explanations, synonyms, antonyms, examples, and other relevant

details about the terms and concepts specific to that field. Also called a technical dictionary, examples include medical dictionaries covering healthcare terminology, legal dictionaries explaining law-related terms, music dictionaries describing musical elements and notation, and slang dictionaries listing informal or nonstandard words used within certain social groups or languages.

Some metalexicographers argue that specialised dictionaries belong more to the field of terminography than lexicography. They view a specialised dictionary primarily as a tool designed to assist users with understanding terminology within a specific specialised domain. However, Bergenholtz and Tarp (2010) disagreed with making a clear distinction between lexicography and terminography based on these metalexicographers' perspectives, suggesting that their opinions lacked sufficient support because they were linguists without direct experience in dictionary compilation. This perspective implies that the separation of terminography and lexicography into two distinct disciplines, each with its own theoretical foundation, may be questionable. Likewise, Bergenholtz and Tarp (2010) used this argument to challenge whether lexicography and terminography should be seen as completely separate fields or whether they overlap during the dictionary development process. There were many arguments to publicise the differences between lexicography and terminography. Among others, there were claims that lexicographers make dictionaries with an alphabetical macrostructure and terminographers use a systematic macrostructure. In refute of this argument, Bergenholtz and Tarp (2010) viewed that both terminographers and lexicographers can present the dictionary articles either in an alphabetical or a systematic way, depending on the needs of the user. The interface of the dictionary is at the disposal of the terminographers or lexicographers as they deemed necessary to maximise assistance to the users.

Another issue was related to the status of users and purpose of using a dictionary. It was viewed that a terminography is catered for experts and a lexicography is for laymen. The purpose of using the dictionary between these two types of users is also different. It was viewed that experts and laymen used a specialised dictionary for different reasons. For the purpose of expert use, terminographers make a dictionary for experts for text production, or producing content, but lexicographers make a dictionary for laymen for text reception, or to understand written text. Bergenholtz and Tarp (2010) and Tarp (2010) strongly dismissed this idea because lexicographers never took into account the user needs during conceptions of dictionaries.

GENERAL LEARNER DICTIONARY (GLD) AND SPECIALISED LEARNER DICTIONARY

The distinctions between a General Learner Dictionary (GLD) and a Specialised Learner Dictionary (SLD) most likely be in terms of their features. It was previously mentioned that a clear-cut separation between these two dictionary types is unnecessary because, both in practice and in theory, they fulfil the same function. The differences between them can be seen as subtle and primarily related to specific contextual focus, content, and application.

Zhang and Guo (2010) explain that the goal of Specialised Learner Dictionaries (SLDs) in China was to support bilingual specialised education at the middle school, college, and university levels, where students typically had limited foreign language abilities and subject-specific knowledge. Their study aimed to develop a single dictionary that could address language and comprehension difficulties encountered in specialised learning. However, this proved challenging because the language and knowledge used in bilingual instruction for specialised subjects differed from those in general courses. Consequently, they emphasized the necessity of distinguishing SLDs from General Learner Dictionaries (GLDs). They suggested that lexicographers should organize dictionary content based on a detailed understanding of users' actual needs, knowledge frameworks, and scope of study. Only with this approach can specialised dictionaries effectively function as practical tools. For their context, this meant creating a bilingual specialised dictionary that combined both language and subject knowledge in one comprehensive resource.

Based on Zhang and Guo (2010) introspection of GLDs and SLD, several distinctions between GLD and SLDs inn terms of users, purposes, linguistic and functional structure, can be summarised as follow:

Table 1: Comparison of users, purposes, linguistic and functional structure between GLD and SLD

Scope	General Learner Dictionary (GLD)	Specialised Learner Dictionary (SLD)
Users	professional personnel and translators in special fields of study	students learning foreign language for special purposes/ professional/specialised knowledge
Purpose	They can be entirely descriptive, explaining terms and their concepts as they exist in reality. The broader the dictionary's coverage, the more effective and comprehensive it becomes.	Focused; they explain terms and their meanings in a selective, standardized manner. The more tailored the dictionary is to the user, the more effective it becomes, as students typically have limited comprehension and background knowledge.

Linguistic features	Collect all terms, proper nouns and nominal phrases in relevant academic fields. Focus on the referents or concepts that the *definienda* denote by means of encyclopaedic or linguistic description	Include necessary verbs, adjectives, adverbs and prepositions to form a systematic specialised foreign language. Focus on conceptual grammatical, collocational meaning, and selectional restriction that the *definienda* embody as linguistic properties
Functional features	Two types: 1. communication-oriented 2. knowledge-oriented The former is used for comprehension and translation from L2 to L1	Combination of these two types
Structural Features	A basic macrostructure is typically used, with most entries limited to nouns or proper names presented as a glossary. The microstructure features only headwords along with their translations or explanatory equivalents, and occasionally includes pronunciation guides and parts of speech. Definitions mainly describe names, referents, and concepts.	A more intricate macrostructure is used, incorporating verbs, adjectives, prepositions, and adverbs. The microstructure emphasizes describing linguistic features and the communicative roles of the entries. Specialised Learner Dictionaries (SLDs) are less concerned with social communication and differ from single-field specialised dictionaries, which offer encyclopaedic explanations, and terminological dictionaries, which provide conceptual meanings.

LEARNER NEEDS IN THE DEVELOPMENT OF SPECIALISED DICTIONARIES

Considering learner needs is crucial in the development of specialised dictionaries to ensure that these resources effectively support users in their specific learning contexts. Understanding the unique challenges and requirements of learners allows lexicographers to tailor the dictionary's content, structure, and features to address actual usage problems, such as comprehension difficulties or terminology production in specialised fields. By focusing on learner needs, specialised dictionaries can provide relevant explanations, examples, and linguistic information that enhance understanding and usability. This user-centred approach increases the dictionary's practical value, making it a more efficient and accessible tool for learners navigating complex subject areas.

The idea of user needs has become increasingly important in terminography and lexicography because it frames dictionary creation around making the dictionary genuinely useful by addressing the users' requirements. Bergenholtz and Tarp (2010) refer to a theory developed at the Centre for Lexicography at Aarhus School of Business, Denmark, called the Function Theory, which emphasizes understanding user needs. These needs are not only related to the type of user but also to the specific social context where the user might have particular lexicographic demands that drive dictionary use.

According to the Function Theory, comprehending user needs is essential for dictionary development. These needs go beyond categorizing users (such as laypeople, semi-experts, or experts) and must consider the particular situations and types of assistance users require from a dictionary. The theory views both general and specialised dictionaries as practical tools designed to meet these specific needs. This perspective challenges the traditional distinction between general and specialised dictionaries. Scholars at the Centre for Lexicography argue that regardless of the techniques or methods used in a dictionary's design, production, and presentation, dictionaries serve as utility tools whose effectiveness can be assessed through the lens of function theory (Bergenholtz and Tarp, 2010). They cite Humbley (2002), who noted that specialist dictionaries are increasingly adapted to align closely with users' needs, which has been facilitated by advances in information technology that offer new possibilities for lexicographers and terminologists (Humbley, 2002: 95 cited in Bergenholtz and Tarp, 2010).

Bergenholtz and Tarp (2010) stress the importance of examining learner needs when designing dictionaries but also recognize the complexities involved. A lack of accurate information on these needs can result in subjective assumptions about what learners require. They note that an individual's needs are always linked to specific contexts, and not all contexts are relevant to lexicographic work—only those in which dictionary consultation can address the needs effectively. Defining clear, context-specific needs is thus a challenging task. Nevertheless, the theory highlights that the relationship between user types, social situations, and user needs is central to lexicographic functionality. To better understand potential dictionary users, Bergenholtz and Tarp (2010, p. 31) proposed several profiling questions, such as:

- What is the users' first language?

- How well do they command their first language?
- What is their proficiency level in the target foreign language?
- How familiar are they with specific language for special purposes (LSP) in their mother tongue?
- How familiar are they with LSP in a foreign language?
- What experience do they have with translation?
- What is their general cultural knowledge?
- What is their knowledge of culture related to a specific foreign language?
- How much do they know about a particular subject or scientific field?

In practical lexicography and terminography, dictionaries are not developed in isolation. Investigating learner needs provides lexicographers and terminologists with insights into how dictionaries are used in real life and what functions they serve, which should be central considerations in creating specialised dictionaries.

For example, Zhang and Guo (2010) studied learner needs regarding Specialised Dictionaries in China to determine if existing English-Chinese specialised dictionaries (ECSDs) met the requirements of their users. Their survey involved 128 undergraduates from 36 universities across China. The study showed that all participants needed dictionaries for either receptive purposes—such as understanding unfamiliar specialised English terminology or translating English into Chinese—or productive purposes, including writing specialised English papers and abstracts or translating Chinese into English. Despite this need, only about 30% reported actively using these dictionaries. The researchers found that the dictionaries failed to fulfill actual user needs because learners often could not locate the information they required, rendering the dictionaries ineffective. Only 19.4% believed the dictionaries helped address challenges faced during bilingual or specialised English learning. Respondents reported that their ECSDs lacked comprehensive specialised terms and typically offered only Chinese equivalents without examples, making it difficult to grasp term meanings in context. Additionally, more than half of these dictionaries focused solely on specialised Chinese senses without covering general meanings or providing illustrative examples, and omitting common usage of nouns, verbs, or adjectives in specialised English. Despite these shortcomings, learners expressed a clear need to access such information and technical terms. The study concluded that learners have a strong demand for specialised dictionaries, although actual usage was low. This situation could improve significantly if dictionaries were better tailored to meet learners' needs and provided timely support when required.

ORGANISATION OF DICTIONARY STRUCTURES

Organizing a specialised dictionary in a systematic structure is essential to facilitate easy and efficient access to information. A clear and logical arrangement helps users quickly locate terms and relevant explanations without confusion or delay, which is

especially important for learners who may already face challenges with complex or technical content. Systematic structuring, including consistent categorization, clear microstructure entries, and effective indexing, enhances the usability of the dictionary by guiding users smoothly through the material. This approach not only improves comprehension but also supports learners in applying the knowledge accurately within their specialised fields, making the dictionary a more practical and user-friendly reference tool.

Zakaria (2025) discussed the dictionary structure by focusing on the physical and functional organization of specialised dictionaries, particularly those of Islamic terms. The structure of a specialised dictionary is composed of several interconnected layers: the megastructure (overall organisation and layout), macrostructure (arrangement of entries and headwords), outside matter (such as prefaces, user guides, indexes), and microstructure (detailed information within each entry including definitions, pronunciation, usage, and grammar). These components work together to ensure efficient access and comprehension for users. He highlighted the importance of a systematic and consistent dictionary structure to improve user experience, emphasizing that well-organized entries and clear presentation of information help users, especially learners and non-native speakers, to understand specialised concepts more effectively. The study noted that a balanced microstructure, which combines linguistic and encyclopedic information without overwhelming the user, is essential.

Zakaria (2025) also pointed out the need for thoughtful arrangement of entries, either alphabetically or thematically, to enhance the dictionary's usefulness as a quick-reference tool. Cross-references and semantic connections between terms (mediostructure) are also vital, allowing users to see relationships between related concepts. His study advocated future dictionary designs to focus on systematic structure, clarity, accessibility, and consistency to better serve learners and professionals in specialised domains.

DICTIONARY STRUCTURES

According to Zakaria (2025), dictionary structures consist of multiple essential components that work together to enhance usability and information accessibility. These include the megastructure, which organizes the overall layout; the macrostructure, which arranges entries and headwords systematically; the outside matter, comprising supportive materials such as prefaces and indexes; and the microstructure, which provides detailed information within each entry such as definitions, pronunciation, grammatical information, and contextual examples. His analysis emphasized that careful attention to these structures, particularly the microstructure and the distribution of information within entries, is crucial for presenting specialised terms in a clear and balanced manner. This systematic organisation not only supports effective comprehension but also ensures that users, especially learners and professionals, can navigate and utilize the dictionary efficiently. The study highlighted the importance of consistency in language use and the strategic placement of terms to improve accessibility and user experience in specialised dictionaries (Zakaria, 2025).

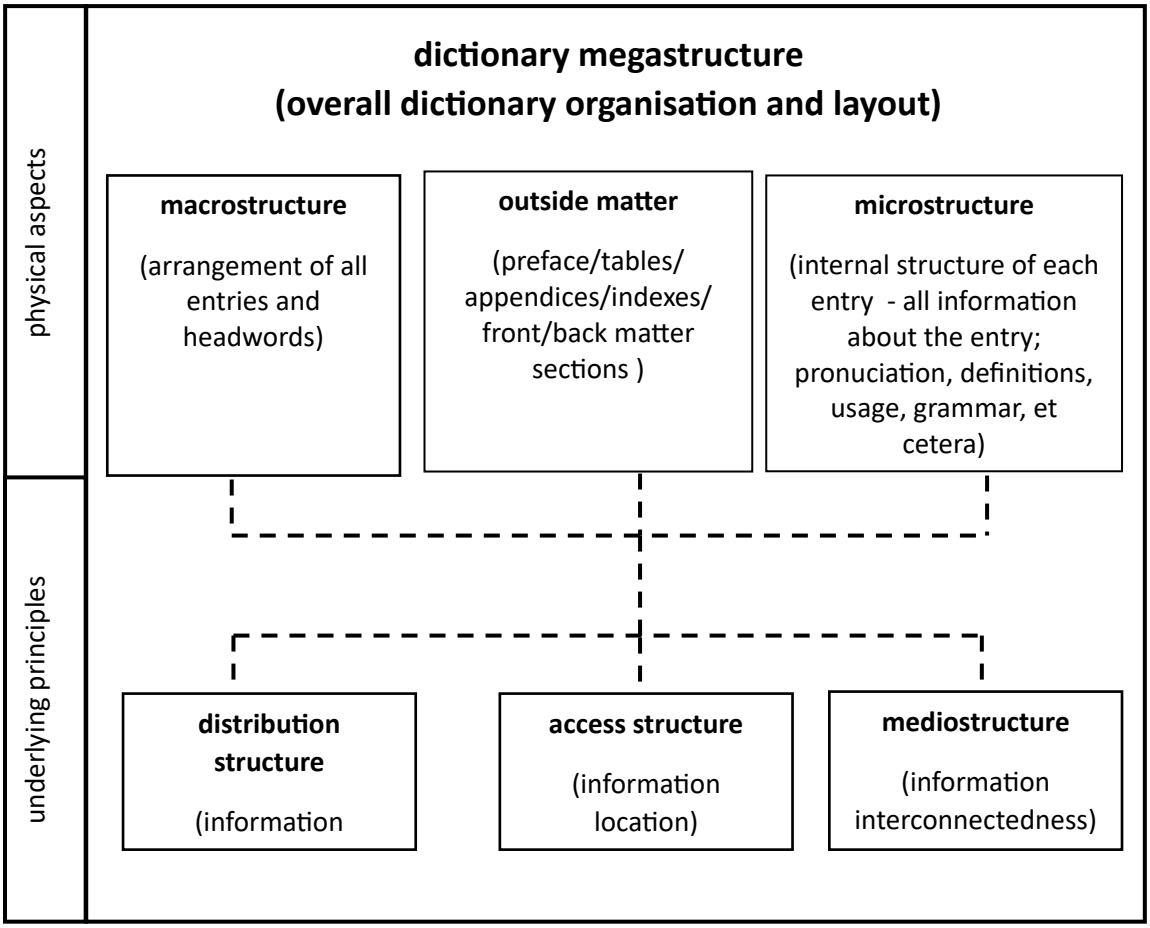


Diagram 1: Structures and Principles of Dictionary Design (Zakaria, 2025)

The microstructure focuses on the detailed information about each dictionary entry. Zhang and Guo (2010) explained that different types of words receive different kinds of treatment in the microstructure. Technical terms are often defined conceptually, with emphasis on specialised meanings within their specific fields. Grammatical words are described based on their syntactic functions, while scientific terms are explained with attention to their functional roles, properties, and effects within scientific contexts. This tailored approach ensures that each word receives the appropriate type of information to support users' understanding in specialised learning environments.

The distribution structure in specialised dictionaries refers to how much information is provided about each term. Zhang and Guo (2010) emphasized its importance in presenting information in a balanced manner. To achieve this balance, lexicographers must carefully consider both the macrostructure and microstructure of the dictionary, ensuring an appropriate mix of linguistic and encyclopaedic content for each term. They must also be meticulous in choosing the words and the amount of detail to include, so that explanations are both clear and concise. Additionally, the distribution structure helps maintain consistency and harmony in the language used throughout the dictionary. It also involves organizing the placement of terms strategically within the dictionary to make it easier for users to find the information they need quickly and efficiently.

ORGANISATION AND PRESENTATION OF INFORMATION IN THE DEFINITIONS OF SELECTED SPECIALISED DICTIONARIES

This study focuses on analysing the microstructure and distribution structure of specialised dictionaries. The microstructure pertains to the detailed information provided within each dictionary entry, such as definitions, grammatical data, examples, and specialised explanations tailored to different types of terms. The distribution structure concerns the balance and density of information presented for each term, ensuring an effective combination of linguistic and encyclopaedic content. By evaluating these two structures, the study aims to assess how well a specialised dictionary organizes and conveys information, enhancing its usability and accessibility for learners and users in specialised fields.

The study refers to these specialised dictionaries for analysis of information presented in the definitions of terms:

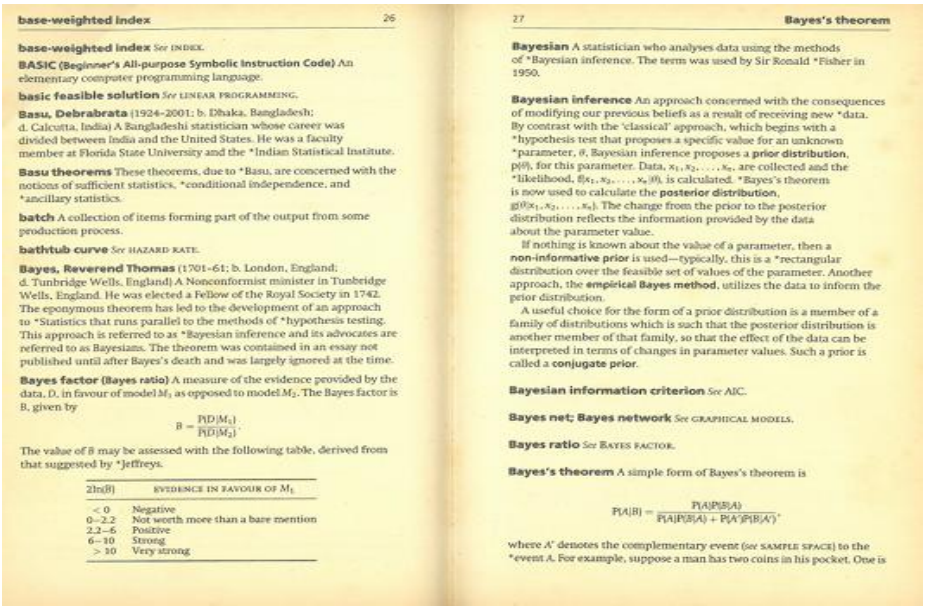
a) Dictionary of Statistics (Upton and Cook, 2004)

b) The Hamlyn Dictionary of Business Terms (Liebster and Horner, 1989)

c) *Kamus Teknikal dan Kejuteraan* – Technical and Engineering Dictionary (1995)

a) Entries And Definitions

The entries of a specialised dictionary typically follows a conventional format where entries are systematically arranged in alphabetical order, facilitating easy and quick access for users. Each entry usually begins with the term presented in lowercase letters and highlighted in bold to distinguish it clearly from the rest of the text. This is then followed by a precise definition that explains the term within its specialised field. The



base-weighted index 26

base-weighted index *See* INDEX.

BASIC (Beginner's All-purpose Symbolic Instruction Code) An elementary computer programming language.

basic feasible solution *See* LINEAR PROGRAMMING.

Basu, Debrabrata (1924–2001; b. Dhaka, Bangladesh; d. Calcutta, India) A Bangladeshi statistician whose career was divided between India and the United States. He was a faculty member at Florida State University and the *Indian Statistical Institute.

Basu theorems These theorems, due to *Basu, are concerned with the notions of sufficient statistics, *conditional independence, and *ancillary statistics.

batch A collection of items forming part of the output from some production process.

bathtub curve *See* HAZARD RATE.

Bayes, Reverend Thomas (1701–61; b. London, England; d. Tunbridge Wells, England) A Nonconformist minister in Tunbridge Wells, England. He was elected a Fellow of the Royal Society in 1742. The eponymous theorem has led to the development of an approach to *Statistics that runs parallel to the methods of *hypothesis testing. This approach is referred to as *Bayesian inference and its advocates are referred to as Bayesians. The theorem was contained in an essay not published until after Bayes's death and was largely ignored at the time.

Bayes factor (Bayes ratio) A measure of the evidence provided by the data, D, in favour of model M_1 as opposed to model M_2. The Bayes factor is B, given by

$$B = \frac{P(D|M_1)}{P(D|M_2)}.$$

The value of B may be assessed with the following table, derived from that suggested by *Jeffreys.

$2\ln(B)$	EVIDENCE IN FAVOUR OF M_1
< 0	Negative
0–2.2	Not worth more than a bare mention
2.2–6	Positive
6–10	Strong
> 10	Very strong

27 **Bayes's theorem**

Bayesian A statistician who analyses data using the methods of *Bayesian inference. The term was used by Sir Ronald *Fisher in 1950.

Bayesian inference An approach concerned with the consequences of modifying our previous beliefs as a result of receiving new *data. By contrast with the 'classical' approach, which begins with a *hypothesis test that proposes a specific value for an unknown *parameter, θ, Bayesian inference proposes a **prior distribution**, $p(\theta)$, for this parameter. Data, $x_1, x_2, \ldots, x_n$, are collected and the *likelihood, $f(x_1, x_2, \ldots, x_n|\theta)$, is calculated. *Bayes's theorem is now used to calculate the **posterior distribution**, $g(\theta|x_1, x_2, \ldots, x_n)$. The change from the prior to the posterior distribution reflects the information provided by the data about the parameter value.

If nothing is known about the value of a parameter, then a **non-informative prior** is used—typically, this is a *rectangular distribution over the feasible set of values of the parameter. Another approach, the **empirical Bayes method**, utilizes the data to inform the prior distribution.

A useful choice for the form of a prior distribution is a member of a family of distributions which is such that the posterior distribution is another member of that family, so that the effect of the data can be interpreted in terms of changes in parameter values. Such a prior is called a **conjugate prior**.

Bayesian information criterion *See* AIC.

Bayes net; Bayes network *See* GRAPHICAL MODELS.

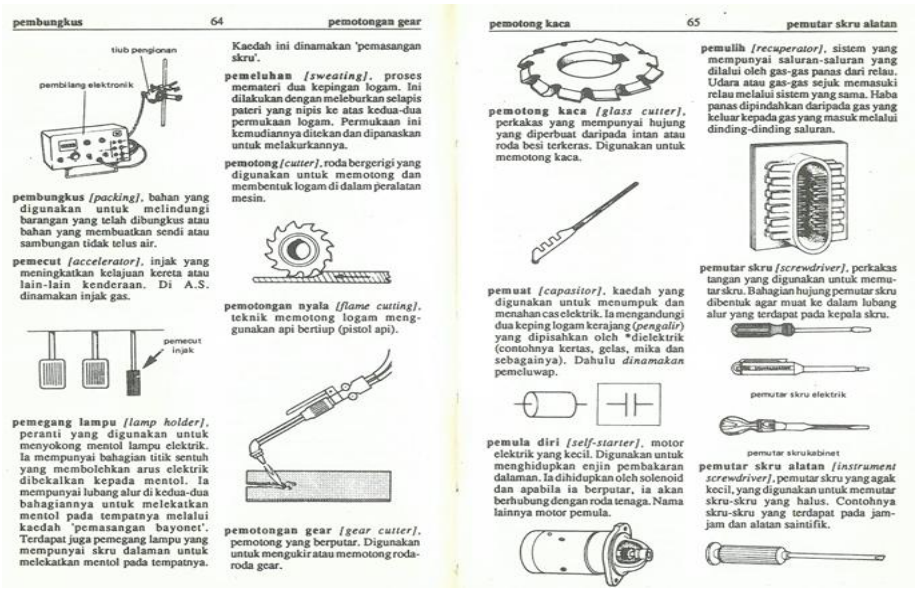
Bayes ratio *See* BAYES FACTOR.

Bayes's theorem A simple form of Bayes's theorem is

$$P(A|B) = \frac{P(A)P(B|A)}{P(A)P(B|A) + P(A')P(B|A')},$$

where A' denotes the complementary event (*see* SAMPLE SPACE) to the *event A. For example, suppose a man has two coins in his pocket. One is

Dictionary of Statistics (Upton & Cook, 2004, pp. 26-27)



pembungkus 64 pemotongan gear

tiub pengionan

pembilang elektronik

pembungkus *[packing]*, bahan yang digunakan untuk melindungi barangan yang telah dibungkus atau bahan yang membuatkan sendi atau sambungan tidak telus air.

pemecut *[accelerator]*, injak yang meningkatkan kelajuan kereta atau lain-lain kenderaan. Di A.S. dinamakan injak gas.

pemecut injak

pemegang lampu *[lamp holder]*, peranti yang digunakan untuk menyokong mentol lampu elektrik. Ia mempunyai bahagian titik sentuh yang membolehkan arus elektrik dibekalkan kepada mentol. Ia mempunyai lubang alur di kedua-dua bahagiannya untuk melekatkan mentol pada tempatnya melalui kaedah 'pemasangan bayonet'. Terdapat juga pemegang lampu yang mempunyai skru dalaman untuk melekatkan mentol pada tempatnya. Kaedah ini dinamakan 'pemasangan skru'.

pemeluhan *[sweating]*, proses memateri dua kepingan logam. Ini dilakukan dengan meleburkan selapis pateri yang nipis ke atas kedua-dua permukaan logam. Permukaan ini kemudiannya ditekan dan dipanaskan untuk melakurkannya.

pemotong *[cutter]*, roda bergerigi yang digunakan untuk memotong dan membentuk logam di dalam peralatan mesin.

pemotongan nyala *[flame cutting]*, teknik memotong logam menggunakan api bertiup (pistol api).

pemotongan gear *[gear cutter]*, pemotong yang berputar. Digunakan untuk mengukir atau memotong roda-roda gear.

pemotong kaca 65 pemutar skru alatan

pemotong kaca *[glass cutter]*, perkakas yang mempunyai hujung yang diperbuat daripada intan atau roda besi terkeras. Digunakan untuk memotong kaca.

pemuat *[capasitor]*, kaedah yang digunakan untuk menumpuk dan menahan cas elektrik. Ia mengandungi dua keping logam kerajang (*pengalir*) yang dipisahkan oleh *dielektrik (contohnya kertas, gelas, mika dan sebagainya). Dahulu *dinamakan* pemeluwap.

pemula diri *[self-starter]*, motor elektrik yang kecil. Digunakan untuk menghidupkan enjin pembakaran dalaman. Ia dihidupkan oleh solenoid dan apabila ia berputar, ia akan berhubung dengan roda tenaga. Nama lainnya motor pemula.

pemulih *[recuperator]*, sistem yang mempunyai saluran-saluran yang dilalui oleh gas-gas panas dari relau. Udara atau gas-gas sejuk memasuki relau melalui sistem yang sama. Haba panas dipindahkan daripada gas yang keluar kepada gas yang masuk melalui dinding-dinding saluran.

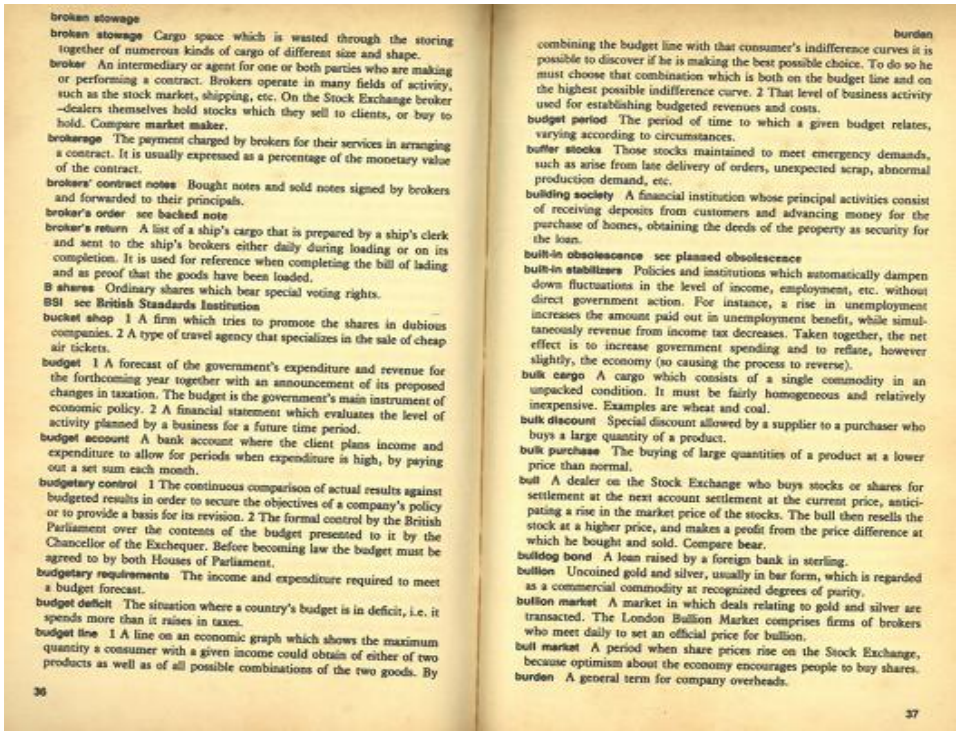
pemutar skru *[screwdriver]*, perkakas tangan yang digunakan untuk memutar skru. Bahagian hujung pemutar skru dibentuk agar muat ke dalam lubang alur yang terdapat pada kepala skru.

pemutar skru elektrik

pemutar skru kabinet

pemutar skru alatan *[instrument screwdriver]*, pemutar skru yang agak kecil, yang digunakan untuk memutar skru-skru yang halus. Contohnya skru-skru yang terdapat pada jam-jam dan alatan saintifik.

Kamus Teknikal dan Kejuteraan – Technical and Engineering Dictionary (1995, pp.64 -65)



broken stowage

broken stowage Cargo space which is wasted through the storing together of numerous kinds of cargo of different size and shape.

broker An intermediary or agent for one or both parties who are making or performing a contract. Brokers operate in many fields of activity, such as the stock market, shipping, etc. On the Stock Exchange broker –dealers themselves hold stocks which they sell to clients, or buy to hold. Compare **market maker**.

brokerage The payment charged by brokers for their services in arranging a contract. It is usually expressed as a percentage of the monetary value of the contract.

brokers' contract notes Bought notes and sold notes signed by brokers and forwarded to their principals.

broker's order see **backed note**

broker's return A list of a ship's cargo that is prepared by a ship's clerk and sent to the ship's brokers either daily during loading or on its completion. It is used for reference when completing the bill of lading and as proof that the goods have been loaded.

B shares Ordinary shares which bear special voting rights.

BSI see **British Standards Institution**

bucket shop 1 A firm which tries to promote the shares in dubious companies. 2 A type of travel agency that specializes in the sale of cheap air tickets.

budget 1 A forecast of the government's expenditure and revenue for the forthcoming year together with an announcement of its proposed changes in taxation. The budget is the government's main instrument of economic policy. 2 A financial statement which evaluates the level of activity planned by a business for a future time period.

budget account A bank account where the client plans income and expenditure to allow for periods when expenditure is high, by paying out a set sum each month.

budgetary control 1 The continuous comparison of actual results against budgeted results in order to secure the objectives of a company's policy or to provide a basis for its revision. 2 The formal control by the British Parliament over the contents of the budget presented to it by the Chancellor of the Exchequer. Before becoming law the budget must be agreed to by both Houses of Parliament.

budgetary requirements The income and expenditure required to meet a budget forecast.

budget deficit The situation where a country's budget is in deficit, i.e. it spends more than it raises in taxes.

budget line 1 A line on an economic graph which shows the maximum quantity a consumer with a given income could obtain of either of two products as well as of all possible combinations of the two goods. By

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burden

combining the budget line with that consumer's indifference curves it is possible to discover if he is making the best possible choice. To do so he must choose that combination which is both on the budget line and on the highest possible indifference curve. 2 That level of business activity used for establishing budgeted revenues and costs.

budget period The period of time to which a given budget relates, varying according to circumstances.

buffer stocks Those stocks maintained to meet emergency demands, such as arise from late delivery of orders, unexpected scrap, abnormal production demand, etc.

building society A financial institution whose principal activities consist of receiving deposits from customers and advancing money for the purchase of homes, obtaining the deeds of the property as security for the loan.

built-in obsolescence see **planned obsolescence**

built-in stabilizers Policies and institutions which automatically dampen down fluctuations in the level of income, employment, etc. without direct government action. For instance, a rise in unemployment increases the amount paid out in unemployment benefit, while simultaneously revenue from income tax decreases. Taken together, the net effect is to increase government spending and to reflate, however slightly, the economy (so causing the process to reverse).

bulk cargo A cargo which consists of a single commodity in an unpacked condition. It must be fairly homogeneous and relatively inexpensive. Examples are wheat and coal.

bulk discount Special discount allowed by a supplier to a purchaser who buys a large quantity of a product.

bulk purchase The buying of large quantities of a product at a lower price than normal.

bull A dealer on the Stock Exchange who buys stocks or shares for settlement at the next account settlement at the current price, anticipating a rise in the market price of the stocks. The bull then resells the stock at a higher price, and makes a profit from the price difference at which he bought and sold. Compare bear.

bulldog bond A loan raised by a foreign bank in sterling.

bullion Uncoined gold and silver, usually in bar form, which is regarded as a commercial commodity at recognized degrees of purity.

bullion market A market in which deals relating to gold and silver are transacted. The London Bullion Market comprises firms of brokers who meet daily to set an official price for bullion.

bull market A period when share prices rise on the Stock Exchange, because optimism about the economy encourages people to buy shares.

burden A general term for company overheads.

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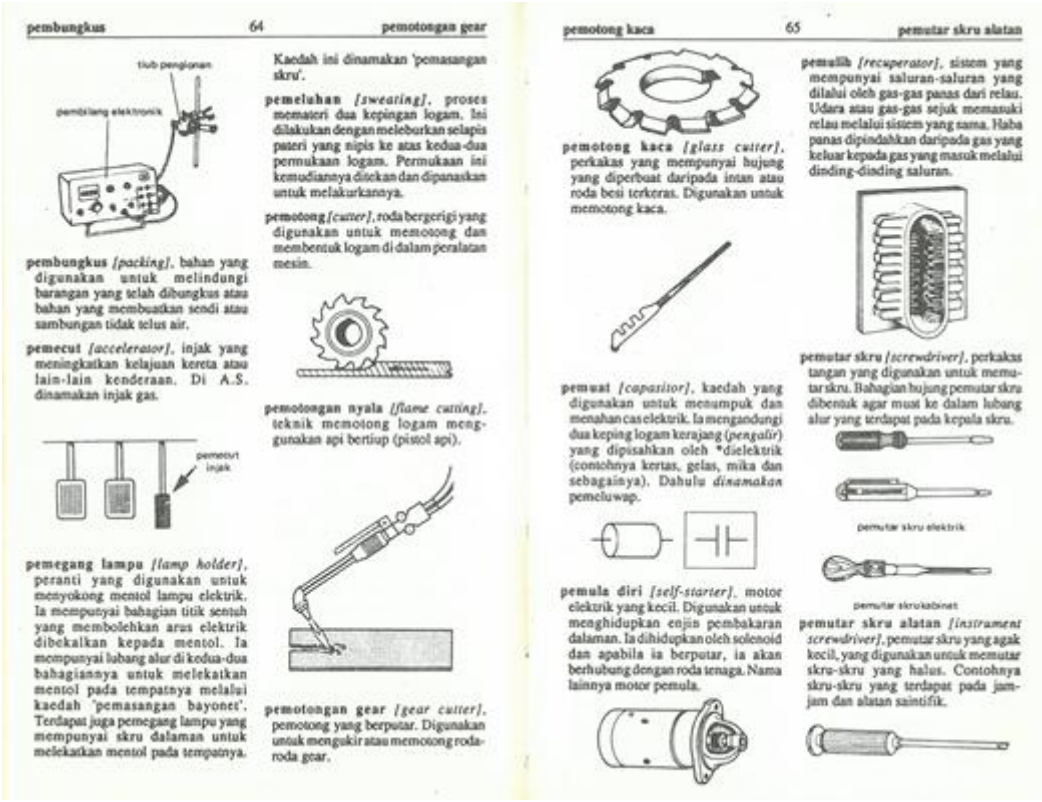
The Hamlyn Dictionary of Business Terms (Liebster &Horner, 1989, pp.36-37)

entries may also include additional relevant information such as pronunciation, part of speech, usage examples, and occasionally etymology or cross-references to related terms.

This structured presentation within the microstructure ensures clarity, consistency, and usability, enabling users to efficiently find and understand technical or specialised terminology in the dictionary.

It is worth noting that in the *Kamus Teknikal dan Kejuruteraan,* a Malay technical and engineering dictionary, equivalent English terms are provided in square brackets following the Malay term. However, the explanations and definitions of the terms are given entirely in Malay. This format supports bilingual understanding by making the English counterparts accessible while maintaining the primary focus on Malay language usage, thereby catering to users who seek technical terminology in their native language with reference to international terms.



pembungkus 64 pemotongan gear

tiub penglonan

pembalang elektronik

pembungkus *[packing]*, bahan yang digunakan untuk melindungi barangan yang telah dibungkus atau bahan yang membuatkan sendi atau sambungan tidak telus air.

pemecut *[accelerator]*, injak yang meningkatkan kelajuan kereta atau lain-lain kenderaan. Di A.S. dinamakan injak gas.

pemecut injak

pemegang lampu *[lamp holder]*, peranti yang digunakan untuk menyokong mentol lampu elektrik. Ia mempunyai bahagian titik sentuh yang membolehkan arus elektrik dibekalkan kepada mentol. Ia mempunyai lubang alur di kedua-dua bahagiannya untuk melekatkan mentol pada tempatnya melalui kaedah 'pemasangan bayonet'. Terdapat juga pemegang lampu yang mempunyai skru dalaman untuk melekatkan mentol pada tempatnya.

Kaedah ini dinamakan 'pemasangan skru'.

pemeluhan *[sweating]*, proses memateri dua kepingan logam. Ini dilakukan dengan meleburkan selapis pateri yang nipis ke atas kedua-dua permukaan logam. Permukaan ini kemudiannya ditekan dan dipanaskan untuk melekurkannya.

pemotong *[cutter]*, roda bergerigi yang digunakan untuk memotong dan membentuk logam di dalam peralatan mesin.

pemotongan nyala *[flame cutting]*, teknik memotong logam menggunakan api bertiup (pistol api).

pemotongan gear *[gear cutter]*, pemotong yang berputar. Digunakan untuk mengukir atau memotong roda-roda gear.

pemotong kaca 65 pemutar skru alatan

pemotong kaca *[glass cutter]*, perkakas yang mempunyai hujung yang diperbuat daripada intan atau roda besi terkeras. Digunakan untuk memotong kaca.

pemuat *[capasitor]*, kaedah yang digunakan untuk menumpuk dan menahan cas elektrik. Ia mengandungi dua keping logam kerajang (*pengalir*) yang dipisahkan oleh *dielektrik (contohnya kertas, gelas, mika dan sebagainya). Dahulu *dinamakan* pemeluwap.

pemula diri *[self-starter]*, motor elektrik yang kecil. Digunakan untuk menghidupkan enjin pembakaran dalaman. Ia dihidupkan oleh solenoid dan apabila ia berputar, ia akan berhubung dengan roda tenaga. Nama lainnya motor pemula.

pemulih *[recuperator]*, sistem yang mempunyai saluran-saluran yang dilalui oleh gas-gas panas dari relau. Udara atau gas-gas sejuk memasuki relau melalui sistem yang sama. Haba panas dipindahkan daripada gas yang keluar kepada gas yang masuk melalui dinding-dinding saluran.

pemutar skru *[screwdriver]*, perkakas tangan yang digunakan untuk memutar skru. Bahagian hujung pemutar skru dibentuk agar muat ke dalam lubang alur yang terdapat pada kepala skru.

pemutar skru elektrik

pemutar skru kabinet

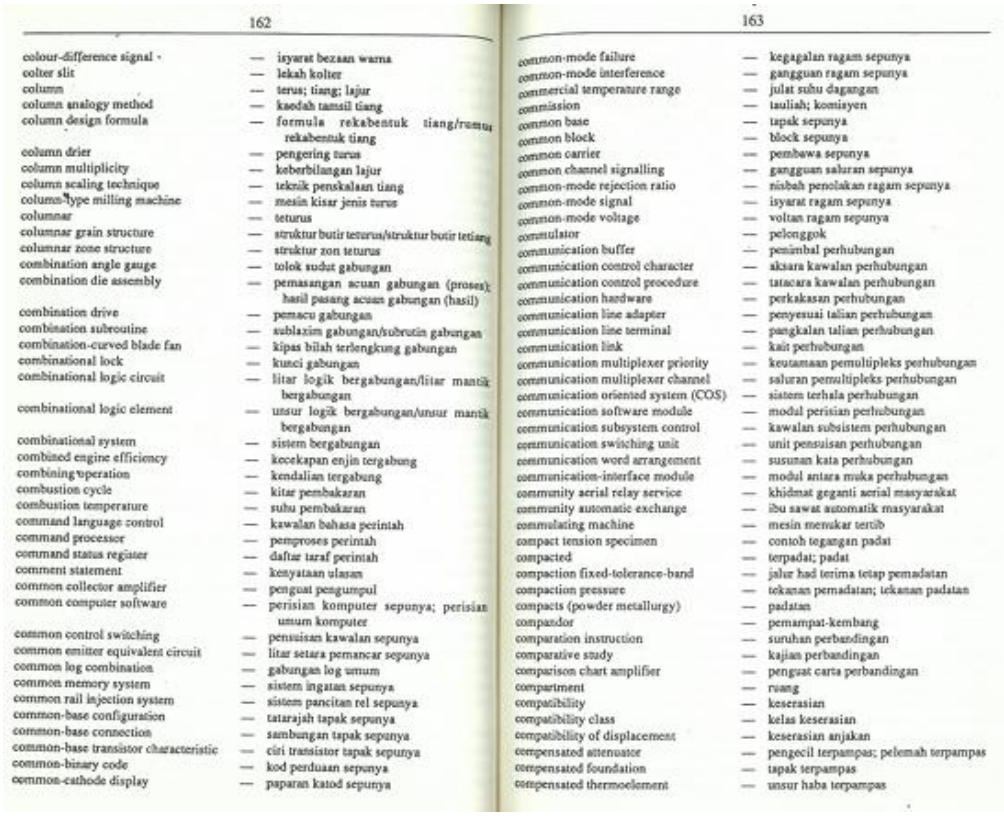
pemutar skru alatan *[instrument screwdriver]*, pemutar skru yang agak kecil, yang digunakan untuk memutar skru-skru yang halus. Contohnya skru-skru yang terdapat pada jam-jam dan alatan saintifik.

Kamus Teknikal dan Kejuteraan – Technical and Engineering Dictionary (1990, pp. 64 -65)

b) Front matters and back matters

The front matter in the selected specialised dictionaries varies depending on the publication, but generally provides essential contextual information to guide the user. For example, the Dictionary of Statistics includes detailed front matter such as author information, a list of related publications by the publisher, descriptive content about the dictionary, and a preface that explains its scope and purpose. In contrast, the *Kamus Teknikal dan Kejuruteraan* or Technical and Engineering Dictionary (2010) has a more concise front matter, featuring a single introduction page describing the dictionary's usage and a special note on how to use the terms effectively. Similarly, the Hamlyn Dictionary of Business Terms offers a brief front matter with basic publication details and a short introduction. These variations illustrate how front matter functions to orient the reader, delivering key background information ranging from comprehensive explanatory remarks to succinct usage notes, all contributing to better usability and understanding of the dictionary content.

The back matter of the *Kamus Teknikal* dan *Kejuruteraan* is notably comprehensive as it divides the dictionary into two main sections. While the first section contains technical terms explained primarily in Malay, the second section presents a bilingual list of technical and engineering terms arranged alphabetically, providing English terms alongside their Bahasa Melayu equivalents. This bilingual terminology section serves as a valuable reference for users who need to cross-reference terms between English and Malay, enhancing the dictionary's practicality for professionals and students working across both languages in technical fields. This structured approach in the back matter offers extended functionality beyond simple definitions, making the dictionary a more versatile tool for technical language use. he pages span from 117 to 384, covering a total of 268 pages.



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colour-difference signal — isyarat bezaan warna
colter slit — lekah kolter
column — terus; tiang; lajur
column analogy method — kaedah tamsil tiang
column design formula — formula rekabentuk tiang/rumus rekabentuk tiang
column drier — pengering turus
column multiplicity — keberbilangan lajur
column scaling technique — teknik penskalaan tiang
column-type milling machine — mesin kisar jenis turus
columnar — teturus
columnar grain structure — struktur butir teturus/struktur butir tetiang
columnar zone structure — struktur zon teturus
combination angle gauge — tolok sudut gabungan
combination die assembly — pemasangan acuan gabungan (proses); hasil pasang acuan gabungan (hasil)
combination drive — pemacu gabungan
combination subroutine — sublazim gabungan/subrutin gabungan
combination-curved blade fan — kipas bilah terlengkung gabungan
combinational lock — kunci gabungan
combinational logic circuit — litar logik bergabungan/litar mantik bergabungan
combinational logic element — unsur logik bergabungan/unsur mantik bergabungan
combinational system — sistem bergabungan
combined engine efficiency — kecekapan enjin tergabung
combining operation — kendalian tergabung
combustion cycle — kitar pembakaran
combustion temperature — suhu pembakaran
command language control — kawalan bahasa perintah
command processor — pemproses perintah
command status register — daftar taraf perintah
comment statement — kenyataan ulasan
common collector amplifier — penguat pengumpul
common computer software — perisian komputer sepunya; perisian umum komputer
common control switching — pensuisan kawalan sepunya
common emitter equivalent circuit — litar setara pemancar sepunya
common log combination — gabungan log umum
common memory system — sistem ingatan sepunya
common rail injection system — sistem pancitan rel sepunya
common-base configuration — tatarajah tapak sepunya
common-base connection — sambungan tapak sepunya
common-base transistor characteristic — ciri transistor tapak sepunya
common-binary code — kod perduaan sepunya
common-cathode display — paparan katod sepunya

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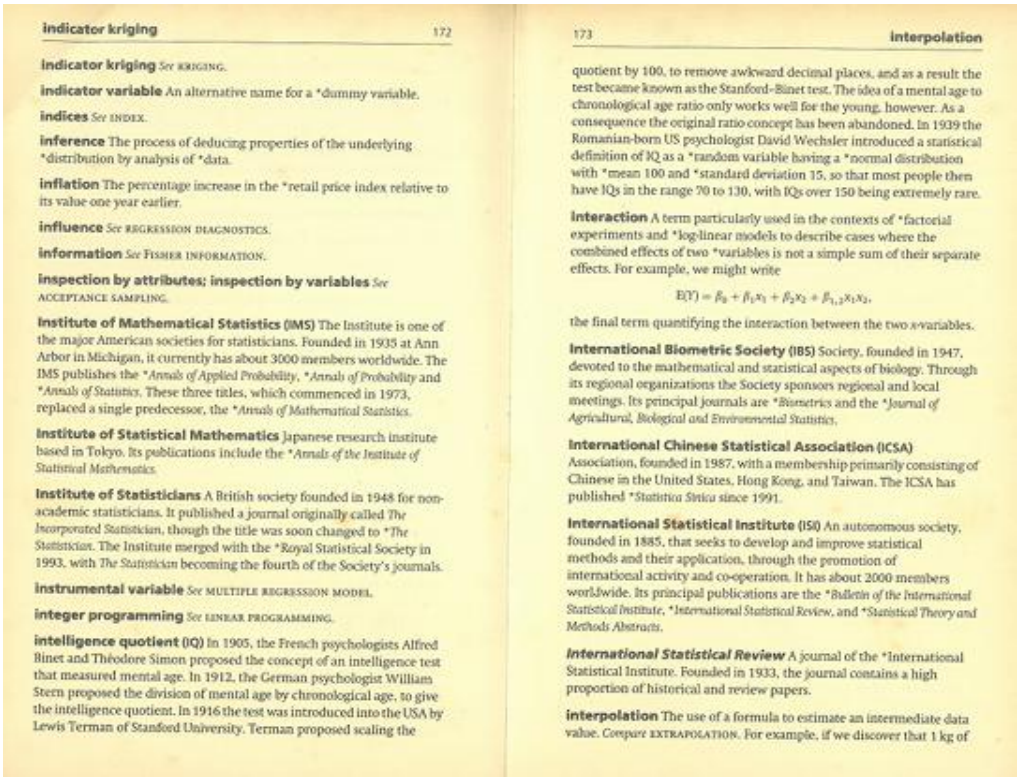
common-mode failure — kegagalan ragam sepunya
common-mode interference — gangguan ragam sepunya
commercial temperature range — julat suhu dagangan
commission — tauliah; komisyen
common base — tapak sepunya
common block — block sepunya
common carrier — pembawa sepunya
common channel signalling — gangguan saluran sepunya
common-mode rejection ratio — nisbah penolakan ragam sepunya
common-mode signal — isyarat ragam sepunya
common-mode voltage — voltan ragam sepunya
commulator — pelonggok
communication buffer — penimbal perhubungan
communication control character — aksara kawalan perhubungan
communication control procedure — tatacara kawalan perhubungan
communication hardware — perkakasan perhubungan
communication line adapter — penyesuai talian perhubungan
communication line terminal — pangkalan talian perhubungan
communication link — kait perhubungan
communication multiplexer priority — keutamaan pemultipleks perhubungan
communication multiplexer channel — saluran pemultipleks perhubungan
communication oriented system (COS) — sistem terhala perhubungan
communication software module — modul peristian perhubungan
communication subsystem control — kawalan subsistem perhubungan
communication switching unit — unit pensuisan perhubungan
communication word arrangement — susunan kata perhubungan
communication-interface module — modul antara muka perhubungan
community aerial relay service — khidmat gegantí aerial masyarakat
community automatic exchange — ibu sawat automatik masyarakat
commutating machine — mesin menukar tertib
compact tension specimen — contoh tegangan padat
compacted — terpadat; padat
compaction fixed-tolerance-band — jalur had terima tetap pemadatan
compaction pressure — tekanan pemadatan; tekanan padatan
compacts (powder metallurgy) — padatan
compandor — pemampat-kembang
comparation instruction — suruhan perbandingan
comparative study — kajian perbandingan
comparison chart amplifier — penguat carta perbandingan
compartment — ruang
compatibility — keserasian
compatibility class — kelas keserasian
compatibility of displacement — keserasian anjakan
compensated attenuator — pengecil terpampas; pelemah terpampas
compensated foundation — tapak terpampas
compensated thermoelement — unsur haba terpampas

Kamus Teknikal dan Kejuteraan – Technical and Engineering Dictionary (1995, pp. 162-163)

c) Other Special Features

A noticeable feature in the Dictionary of Statistics and the Hamlyn Dictionary of Business Terms is the inclusion of clear explanations of acronyms used by professional bodies, which helps users quickly understand the organizational context behind statistical and business terms.



indicator kriging 172

indicator kriging *See* KRIGING.

indicator variable An alternative name for a *dummy variable.

indices *See* INDEX.

inference The process of deducing properties of the underlying *distribution by analysis of *data.

inflation The percentage increase in the *retail price index relative to its value one year earlier.

influence *See* REGRESSION DIAGNOSTICS.

information *See* FISHER INFORMATION.

inspection by attributes; inspection by variables *See* ACCEPTANCE SAMPLING.

Institute of Mathematical Statistics (IMS) The Institute is one of the major American societies for statisticians. Founded in 1935 at Ann Arbor in Michigan, it currently has about 3000 members worldwide. The IMS publishes the *Annals of Applied Probability*, *Annals of Probability* and *Annals of Statistics*. These three titles, which commenced in 1973, replaced a single predecessor, the *Annals of Mathematical Statistics*.

Institute of Statistical Mathematics Japanese research institute based in Tokyo. Its publications include the *Annals of the Institute of Statistical Mathematics*.

Institute of Statisticians A British society founded in 1948 for non-academic statisticians. It published a journal originally called *The Incorporated Statistician*, though the title was soon changed to *The Statistician*. The Institute merged with the *Royal Statistical Society in 1993, with *The Statistician* becoming the fourth of the Society's journals.

instrumental variable *See* MULTIPLE REGRESSION MODEL.

integer programming *See* LINEAR PROGRAMMING.

intelligence quotient (IQ) In 1905, the French psychologists Alfred Binet and Théodore Simon proposed the concept of an intelligence test that measured mental age. In 1912, the German psychologist William Stern proposed the division of mental age by chronological age, to give the intelligence quotient. In 1916 the test was introduced into the USA by Lewis Terman of Stanford University. Terman proposed scaling the

173 interpolation

quotient by 100, to remove awkward decimal places, and as a result the test became known as the Stanford–Binet test. The idea of a mental age to chronological age ratio only works well for the young, however. As a consequence the original ratio concept has been abandoned. In 1939 the Romanian-born US psychologist David Wechsler introduced a statistical definition of IQ as a *random variable having a *normal distribution with *mean 100 and *standard deviation 15, so that most people then have IQs in the range 70 to 130, with IQs over 150 being extremely rare.

interaction A term particularly used in the contexts of *factorial experiments and *log-linear models to describe cases where the combined effects of two *variables is not a simple sum of their separate effects. For example, we might write

$$E(Y) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_{1,2} x_1 x_2,$$

the final term quantifying the interaction between the two *x*-variables.

International Biometric Society (IBS) Society, founded in 1947, devoted to the mathematical and statistical aspects of biology. Through its regional organizations the Society sponsors regional and local meetings. Its principal journals are *Biometrics* and the *Journal of Agricultural, Biological and Environmental Statistics*.

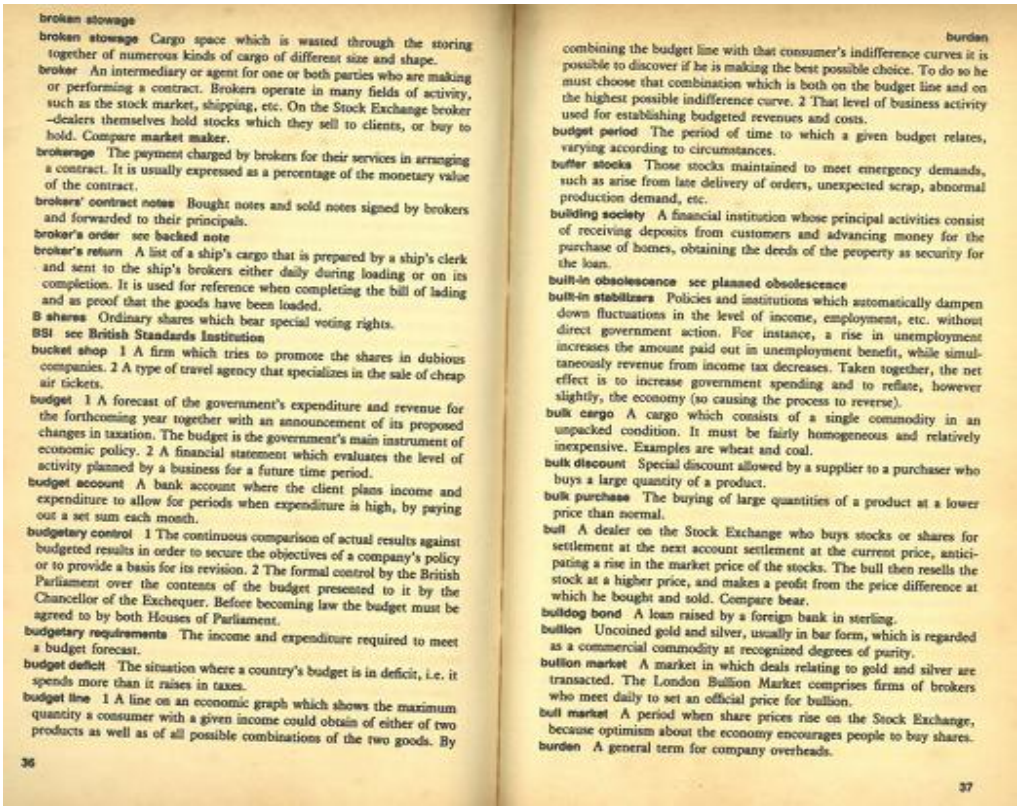
International Chinese Statistical Association (ICSA) Association, founded in 1987, with a membership primarily consisting of Chinese in the United States, Hong Kong, and Taiwan. The ICSA has published *Statistica Sinica* since 1991.

International Statistical Institute (ISI) An autonomous society, founded in 1885, that seeks to develop and improve statistical methods and their application, through the promotion of international activity and co-operation. It has about 2000 members worldwide. Its principal publications are the *Bulletin of the International Statistical Institute*, *International Statistical Review*, and *Statistical Theory and Methods Abstracts*.

International Statistical Review A journal of the *International Statistical Institute. Founded in 1933, the journal contains a high proportion of historical and review papers.

interpolation The use of a formula to estimate an intermediate data value. *Compare* EXTRAPOLATION. For example, if we discover that 1 kg of

Dictionary of Statistics (Upton & Cook, 2004, pp.172-173)



broken stowage

broken stowage Cargo space which is wasted through the storing together of numerous kinds of cargo of different size and shape.

broker An intermediary or agent for one or both parties who are making or performing a contract. Brokers operate in many fields of activity, such as the stock market, shipping, etc. On the Stock Exchange broker–dealers themselves hold stocks which they sell to clients, or buy to hold. *Compare* **market maker**.

brokerage The payment charged by brokers for their services in arranging a contract. It is usually expressed as a percentage of the monetary value of the contract.

brokers' contract notes Bought notes and sold notes signed by brokers and forwarded to their principals.

broker's order *see* **backed note**

broker's return A list of a ship's cargo that is prepared by a ship's clerk and sent to the ship's brokers either daily during loading or on its completion. It is used for reference when completing the bill of lading and as proof that the goods have been loaded.

B shares Ordinary shares which bear special voting rights.

BSI *see* **British Standards Institution**

bucket shop 1 A firm which tries to promote the shares in dubious companies. 2 A type of travel agency that specializes in the sale of cheap air tickets.

budget 1 A forecast of the government's expenditure and revenue for the forthcoming year together with an announcement of its proposed changes in taxation. The budget is the government's main instrument of economic policy. 2 A financial statement which evaluates the level of activity planned by a business for a future time period.

budget account A bank account where the client plans income and expenditure to allow for periods when expenditure is high, by paying out a set sum each month.

budgetary control 1 The continuous comparison of actual results against budgeted results in order to secure the objectives of a company's policy or to provide a basis for its revision. 2 The formal control by the British Parliament over the contents of the budget presented to it by the Chancellor of the Exchequer. Before becoming law the budget must be agreed to by both Houses of Parliament.

budgetary requirements The income and expenditure required to meet a budget forecast.

budget deficit The situation where a country's budget is in deficit, i.e. it spends more than it raises in taxes.

budget line 1 A line on an economic graph which shows the maximum quantity a consumer with a given income could obtain of either of two products as well as of all possible combinations of the two goods. By

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burden

combining the budget line with that consumer's indifference curves it is possible to discover if he is making the best possible choice. To do so he must choose that combination which is both on the budget line and on the highest possible indifference curve. 2 That level of business activity used for establishing budgeted revenues and costs.

budget period The period of time to which a given budget relates, varying according to circumstances.

buffer stocks Those stocks maintained to meet emergency demands, such as arise from late delivery of orders, unexpected scrap, abnormal production demand, etc.

building society A financial institution whose principal activities consist of receiving deposits from customers and advancing money for the purchase of homes, obtaining the deeds of the property as security for the loan.

built-in obsolescence *see* **planned obsolescence**

built-in stabilizers Policies and institutions which automatically dampen down fluctuations in the level of income, employment, etc. without direct government action. For instance, a rise in unemployment increases the amount paid out in unemployment benefit, while simultaneously revenue from income tax decreases. Taken together, the net effect is to increase government spending and to reflate, however slightly, the economy (so causing the process to reverse).

bulk cargo A cargo which consists of a single commodity in an unpacked condition. It must be fairly homogeneous and relatively inexpensive. Examples are wheat and coal.

bulk discount Special discount allowed by a supplier to a purchaser who buys a large quantity of a product.

bulk purchase The buying of large quantities of a product at a lower price than normal.

bull A dealer on the Stock Exchange who buys stocks or shares for settlement at the next account settlement at the current price, anticipating a rise in the market price of the stocks. The bull then resells the stock at a higher price, and makes a profit from the price difference at which he bought and sold. *Compare* **bear**.

bulldog bond A loan raised by a foreign bank in sterling.

bullion Uncoined gold and silver, usually in bar form, which is regarded as a commercial commodity at recognized degrees of purity.

bullion market A market in which deals relating to gold and silver are transacted. The London Bullion Market comprises firms of brokers who meet daily to set an official price for bullion.

bull market A period when share prices rise on the Stock Exchange, because optimism about the economy encourages people to buy shares.

burden A general term for company overheads.

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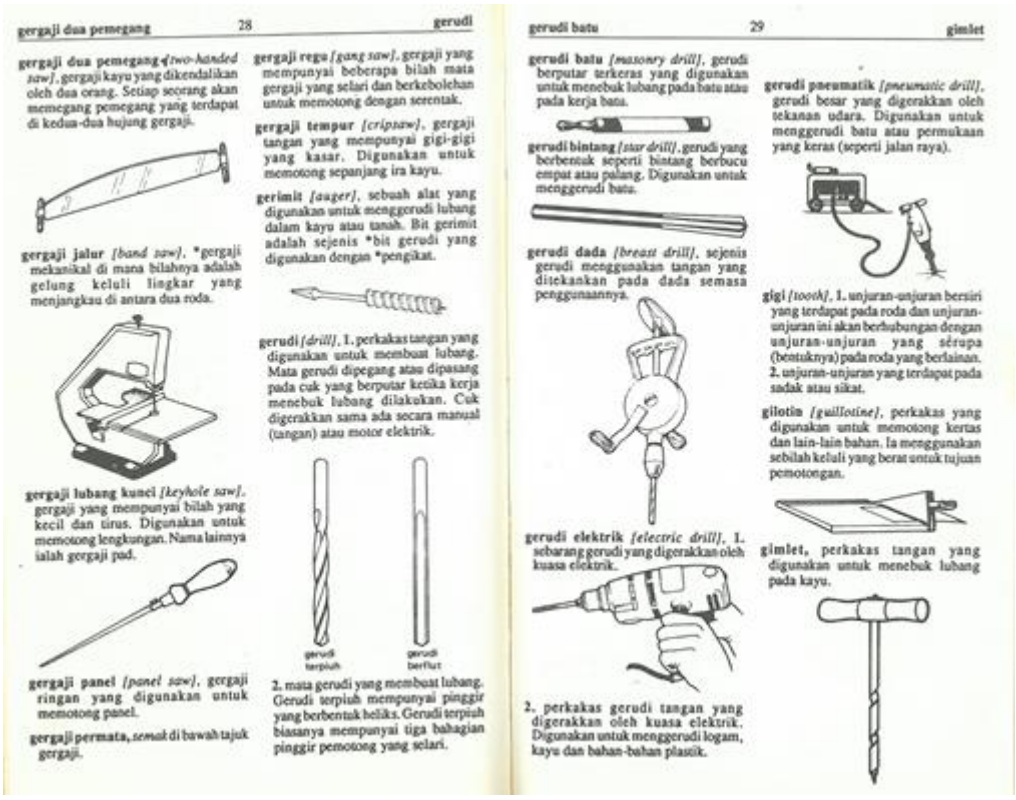
The Hamlyn Dictionary of Business Terms (Liebster & Horner, 19890, pp.36-37)

In specialised dictionaries, explanations of professional bodies' acronyms play a crucial role in providing clear and precise understanding for users within specific fields. These dictionaries typically include concise definitions or full forms of acronyms representing various professional organizations, ensuring that readers can quickly identify the authority, scope, or affiliation related to a term or concept. This practice not only aids comprehension but also supports accurate communication in professional and academic contexts, where such acronyms are frequently used.

However, in another dictionary of engineering terms (*Kamus Teknikal dan Kejuteraan* –Technical and Engineering Dictionary), there is no mention or list of professional bodies related, which contrasts with the approach seen in dictionaries like DIS and HDBS where acronyms of professional organizations are clearly explained. This absence may be due to the engineering dictionary's focus primarily on technical terms and concepts rather than institutional or organizational context. This can be seen from the organisation of the presentation of definitions given in the dictionary:



gergaji dua pemegang 28 gerudi

gergaji dua pemegang *(two-handed saw)*, gergaji kayu yang dikendalikan oleh dua orang. Setiap secorang akan memegang pemegang yang terdapat di kedua-dua hujung gergaji.

gergaji jalur *(band saw)*, *gergaji mekanikal di mana bilahnya adalah gelung keluli lingkar yang menjangkau di antara dua roda.

gergaji lubang kunci *(keyhole saw)*, gergaji yang mempunyai bilah yang kecil dan tirus. Digunakan untuk memotong lengkungan. Nama lainnya ialah gergaji pad.

gergaji panel *(panel saw)*, gergaji ringan yang digunakan untuk memotong panel.

gergaji permata, *semak* di bawah tajuk gergaji.

gergaji rega *(gang saw)*, gergaji yang mempunyai beberapa bilah mata gergaji yang selari dan berkebolehan untuk memotong dengan serentak.

gergaji tempur *(cripsaw)*, gergaji tangan yang mempunyai gigi-gigi yang kasar. Digunakan untuk memotong sepanjang ira kayu.

gerimit *(auger)*, sebuah alat yang digunakan untuk menggerudi lubang dalam kayu atau tanah. Bit gerimit adalah sejenis *bit gerudi yang digunakan dengan *pengikat.

gerudi *(drill)*, 1. perkakas tangan yang digunakan untuk membuat lubang. Mata gerudi dipegang atau dipasang pada cuk yang berputar ketika kerja menebuk lubang dilakukan. Cuk digerakkan sama ada secara manual (tangan) atau motor elektrik.

gerudi terpuih gerudi berflut

2. mata gerudi yang membuat lubang. Gerudi terpuih mempunyai pinggir yang berbentuk heliks. Gerudi terpuih biasanya mempunyai tiga bahagian pinggir pemotong yang selari.

gerudi batu 29 gimlet

gerudi batu *(masonry drill)*, gerudi berputar terkeras yang digunakan untuk menebuk lubang pada batu atau pada kerja batu.

gerudi bintang *(star drill)*, gerudi yang berbentuk seperti bintang berbucu empat atau palang. Digunakan untuk menggerudi batu.

gerudi dada *(breast drill)*, sejenis gerudi menggunakan tangan yang ditekankan pada dada semasa penggunaannya.

gerudi elektrik *(electric drill)*, 1. sebarang gerudi yang digerakkan oleh kuasa elektrik.

2. perkakas gerudi tangan yang digerakkan oleh kuasa elektrik. Digunakan untuk menggerudi logam, kayu dan bahan-bahan plastik.

gerudi pneumatik *(pneumatic drill)*, gerudi besar yang digerakkan oleh tekanan udara. Digunakan untuk menggerudi batu atau permukaan yang keras (seperti jalan raya).

gigi *(tooth)*, 1. unjuran-unjuran bersiri yang terdapat pada roda dan unjuran-unjuran ini akan berhubungan dengan unjuran-unjuran yang serupa (bentuknya) pada roda yang berlainan. 2. unjuran-unjuran yang terdapat pada sadak atau sikat.

gilotin *(guillotine)*, perkakas yang digunakan untuk memotong kertas dan lain-lain bahan. Ia menggunakan sebilah keluli yang berat untuk tujuan pemotongan.

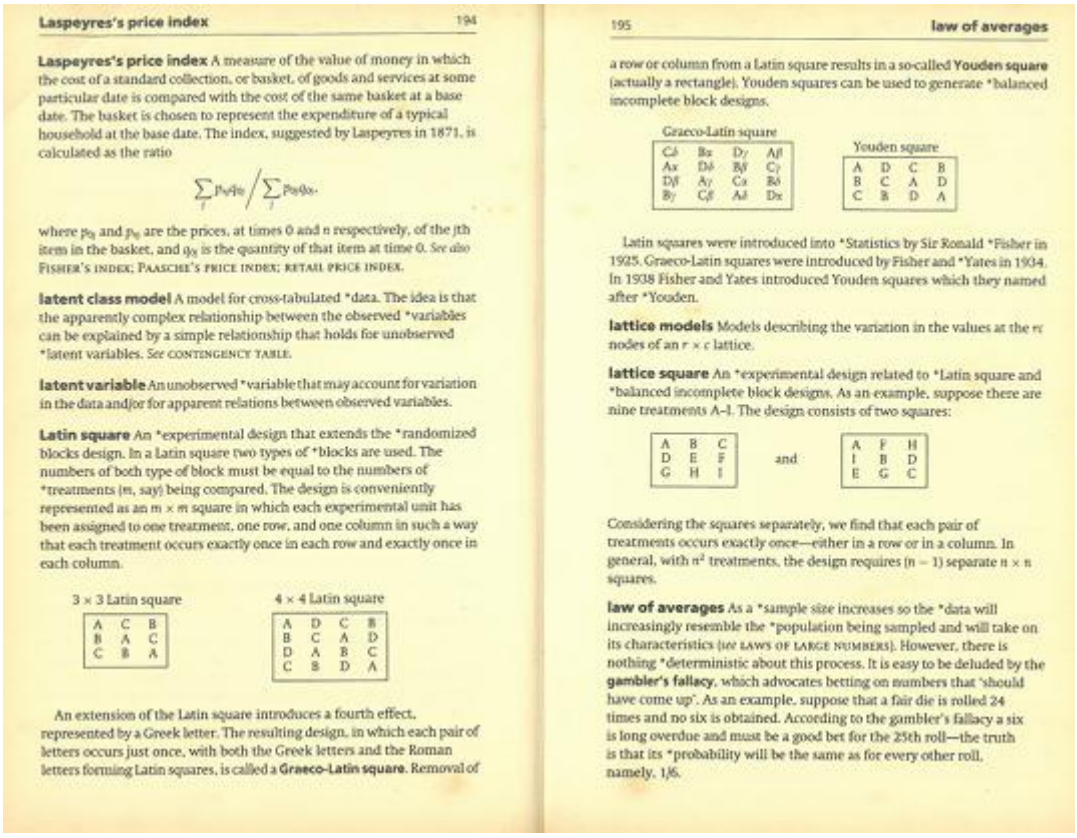
gimlet, perkakas tangan yang digunakan untuk menebuk lubang pada kayu.

Kamus Teknikal dan Kejuteraan – Technical and Engineering Dictionary (1995, pp.28-29)

The presentation of technical and engineering terms in specialised dictionaries often incorporates supporting graphics and diagrams to enhance user comprehension. Such visual aids serve to clarify complex concepts and illustrate the structure, function, or relationships of technical components, making the entries more accessible especially for professionals like technical writers and translators. This integrated approach facilitates

precise understanding of terms by linking linguistic explanations with graphical representations, thereby improving usability and accuracy in specialised communication contexts.

Nonetheless, the Dictionary of Statistics also includes diagrams such as the Graeco-Latin square and Youden square, which serve to visually illustrate complex experimental designs and statistical arrangements. These graphical elements enhance understanding by providing clear, practical representations of abstract concepts, allowing users to quickly grasp the layout and application of statistical methods in research. Such visual support complements the detailed textual explanations, making the dictionary particularly effective for students and professionals who benefit from both verbal and visual learning aids in comprehending statistical terminology and practices.



Laspeyres's price index 194

Laspeyres's price index A measure of the value of money in which the cost of a standard collection, or basket, of goods and services at some particular date is compared with the cost of the same basket at a base date. The basket is chosen to represent the expenditure of a typical household at the base date. The index, suggested by Laspeyres in 1871, is calculated as the ratio

$$\sum_j p_{jn}q_{j0} \Big/ \sum_j p_{j0}q_{j0}.$$

where p_{j0} and p_{jn} are the prices, at times 0 and n respectively, of the jth item in the basket, and q_{j0} is the quantity of that item at time 0. *See also* FISHER'S INDEX; PAASCHE'S PRICE INDEX; RETAIL PRICE INDEX.

latent class model A model for cross-tabulated *data. The idea is that the apparently complex relationship between the observed *variables can be explained by a simple relationship that holds for unobserved *latent variables. *See* CONTINGENCY TABLE.

latent variable An unobserved *variable that may account for variation in the data and/or for apparent relations between observed variables.

Latin square An *experimental design that extends the *randomized blocks design. In a Latin square two types of *blocks are used. The numbers of both type of block must be equal to the numbers of *treatments (*m*, say) being compared. The design is conveniently represented as an $m \times m$ square in which each experimental unit has been assigned to one treatment, one row, and one column in such a way that each treatment occurs exactly once in each row and exactly once in each column.

3 × 3 Latin square

A	C	B
B	A	C
C	B	A

4 × 4 Latin square

A	D	C	B
B	C	A	D
D	A	B	C
C	B	D	A

An extension of the Latin square introduces a fourth effect, represented by a Greek letter. The resulting design, in which each pair of letters occurs just once, with both the Greek letters and the Roman letters forming Latin squares, is called a **Graeco-Latin square**. Removal of

195 **law of averages**

a row or column from a Latin square results in a so-called **Youden square** (actually a rectangle). Youden squares can be used to generate *balanced incomplete block designs.

Graeco-Latin square

Cδ	Bα	Dγ	Aβ
Aα	Dδ	Bβ	Cγ
Dβ	Aγ	Cα	Bδ
Bγ	Cβ	Aδ	Dα

Youden square

A	D	C	B
B	C	A	D
C	B	D	A

Latin squares were introduced into *Statistics by Sir Ronald *Fisher in 1925. Graeco-Latin squares were introduced by Fisher and *Yates in 1934. In 1938 Fisher and Yates introduced Youden squares which they named after *Youden.

lattice models Models describing the variation in the values at the rc nodes of an $r \times c$ lattice.

lattice square An *experimental design related to *Latin square and *balanced incomplete block designs. As an example, suppose there are nine treatments A–I. The design consists of two squares:

A	B	C
D	E	F
G	H	I

and

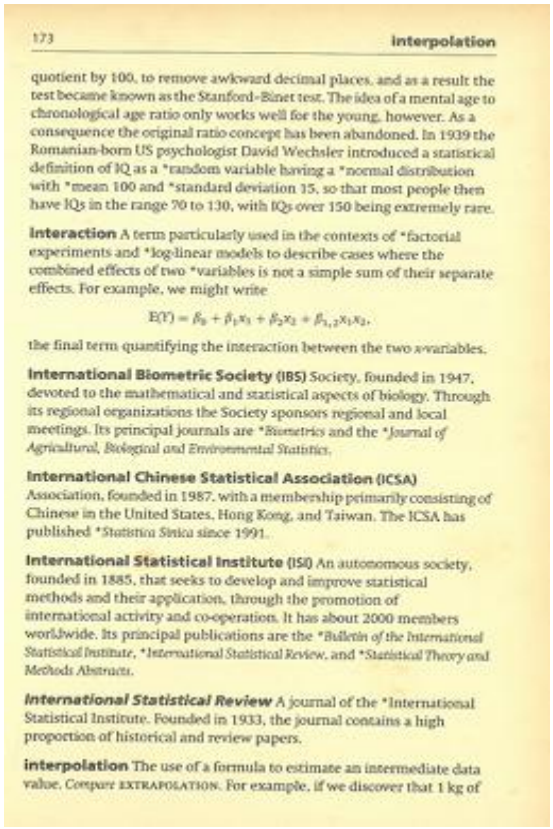
A	F	H
I	B	D
E	G	C

Considering the squares separately, we find that each pair of treatments occurs exactly once—either in a row or in a column. In general, with n^2 treatments, the design requires $(n - 1)$ separate $n \times n$ squares.

law of averages As a *sample size increases so the *data will increasingly resemble the *population being sampled and will take on its characteristics (*see* LAWS OF LARGE NUMBERS). However, there is nothing *deterministic about this process. It is easy to be deluded by the **gambler's fallacy**, which advocates betting on numbers that 'should have come up'. As an example, suppose that a fair die is rolled 24 times and no six is obtained. According to the gambler's fallacy a six is long overdue and must be a good bet for the 25th roll—the truth is that its *probability will be the same as for every other roll, namely, 1/6.

Dictionary of Statistics (Upton & Cook, 2004, pp. 194-195)

In DIS, the asterisk symbol (*) is used as a device to relate one entry to another within the dictionary, functioning as a cross-reference marker. This symbol appears in definitions or explanations to signal that additional or related information can be found under another entry, guiding users efficiently to relevant content without redundancy. For example, in the case of the International Biometric Society (IBS), an asterisk next to an entry indicates that more details about that journal or its associated terms are provided elsewhere in the dictionary. This convention not only enhances navigability but also helps maintain concise entries by linking interconnected terms or concepts, making the dictionary more user-friendly and coherent as a reference tool.



173 **interpolation**

quotient by 100, to remove awkward decimal places, and as a result the test became known as the Stanford–Binet test. The idea of a mental age to chronological age ratio only works well for the young, however. As a consequence the original ratio concept has been abandoned. In 1939 the Romanian-born US psychologist David Wechsler introduced a statistical definition of IQ as a *random variable having a *normal distribution with *mean 100 and *standard deviation 15, so that most people then have IQs in the range 70 to 130, with IQs over 150 being extremely rare.

interaction A term particularly used in the contexts of *factorial experiments and *log-linear models to describe cases where the combined effects of two *variables is not a simple sum of their separate effects. For example, we might write

$$\mathrm{E}(Y) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_{1,2} x_1 x_2,$$

the final term quantifying the interaction between the two x-variables.

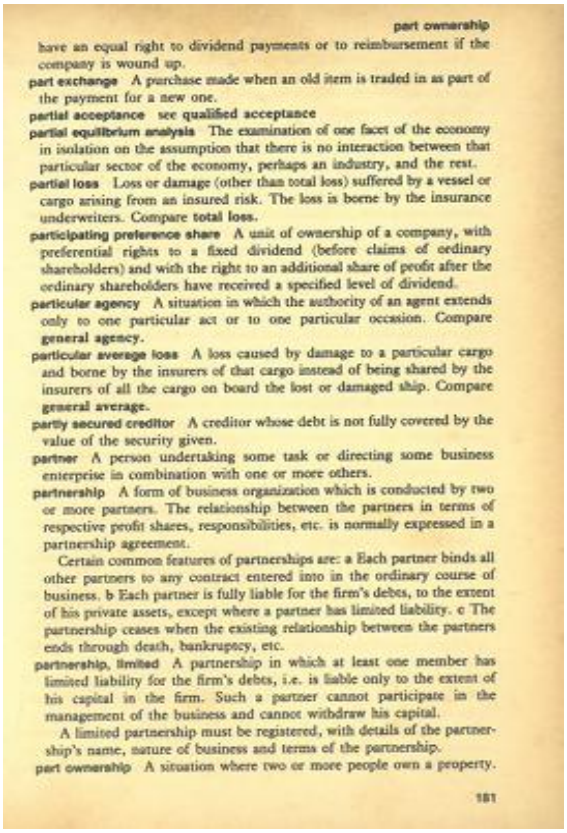
International Biometric Society (IBS) Society, founded in 1947, devoted to the mathematical and statistical aspects of biology. Through its regional organizations the Society sponsors regional and local meetings. Its principal journals are *Biometrics and the *Journal of Agricultural, Biological and Environmental Statistics.

International Chinese Statistical Association (ICSA) Association, founded in 1987, with a membership primarily consisting of Chinese in the United States, Hong Kong, and Taiwan. The ICSA has published *Statistica Sinica since 1991.

International Statistical Institute (ISI) An autonomous society, founded in 1885, that seeks to develop and improve statistical methods and their application, through the promotion of international activity and co-operation. It has about 2000 members worldwide. Its principal publications are the *Bulletin of the International Statistical Institute, *International Statistical Review, and *Statistical Theory and Methods Abstracts.

International Statistical Review A journal of the *International Statistical Institute. Founded in 1933, the journal contains a high proportion of historical and review papers.

interpolation The use of a formula to estimate an intermediate data value. *Compare* EXTRAPOLATION. For example, if we discover that 1 kg of



part ownership

have an equal right to dividend payments or to reimbursement if the company is wound up.

part exchange A purchase made when an old item is traded in as part of the payment for a new one.

partial acceptance see **qualified acceptance**

partial equilibrium analysis The examination of one facet of the economy in isolation on the assumption that there is no interaction between that particular sector of the economy, perhaps an industry, and the rest.

partial loss Loss or damage (other than total loss) suffered by a vessel or cargo arising from an insured risk. The loss is borne by the insurance underwriters. Compare **total loss.**

participating preference share A unit of ownership of a company, with preferential rights to a fixed dividend (before claims of ordinary shareholders) and with the right to an additional share of profit after the ordinary shareholders have received a specified level of dividend.

particular agency A situation in which the authority of an agent extends only to one particular act or to one particular occasion. Compare **general agency.**

particular average loss A loss caused by damage to a particular cargo and borne by the insurers of that cargo instead of being shared by the insurers of all the cargo on board the lost or damaged ship. Compare **general average.**

partly secured creditor A creditor whose debt is not fully covered by the value of the security given.

partner A person undertaking some task or directing some business enterprise in combination with one or more others.

partnership A form of business organization which is conducted by two or more partners. The relationship between the partners in terms of respective profit shares, responsibilities, etc. is normally expressed in a partnership agreement.

Certain common features of partnerships are: a Each partner binds all other partners to any contract entered into in the ordinary course of business. b Each partner is fully liable for the firm's debts, to the extent of his private assets, except where a partner has limited liability. c The partnership ceases when the existing relationship between the partners ends through death, bankruptcy, etc.

partnership, limited A partnership in which at least one member has limited liability for the firm's debts, i.e. is liable only to the extent of his capital in the firm. Such a partner cannot participate in the management of the business and cannot withdraw his capital.

A limited partnership must be registered, with details of the partnership's name, nature of business and terms of the partnership.

part ownership A situation where two or more people own a property.

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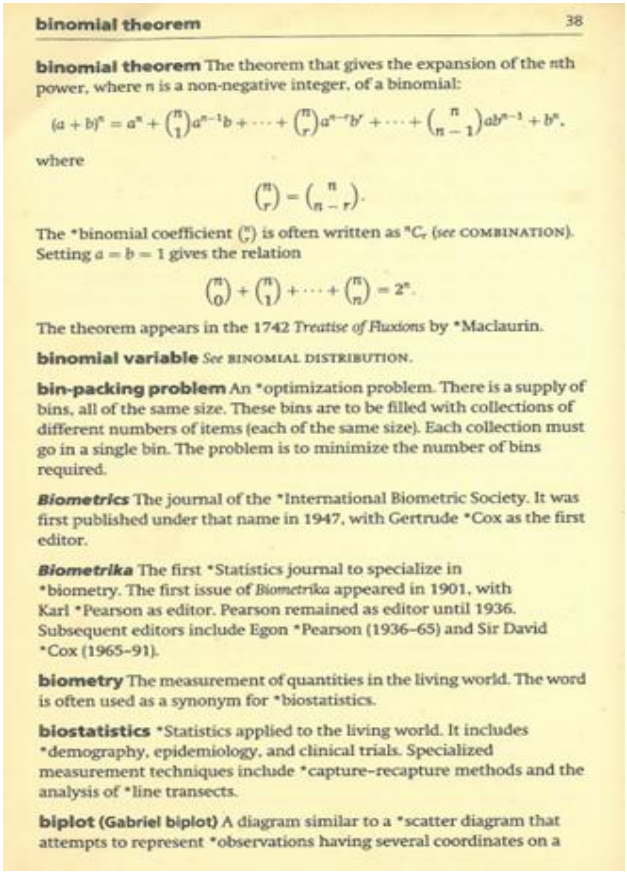


binomial theorem 38

binomial theorem The theorem that gives the expansion of the nth power, where n is a non-negative integer, of a binomial:

$$(a+b)^n = a^n + \binom{n}{1}a^{n-1}b + \cdots + \binom{n}{r}a^{n-r}b^r + \cdots + \binom{n}{n-1}ab^{n-1} + b^n.$$

where

$$\binom{n}{r} = \binom{n}{n-r}.$$

The *binomial coefficient $\binom{n}{r}$ is often written as ${}^nC_r$ (*see* COMBINATION). Setting $a = b = 1$ gives the relation

$$\binom{n}{0} + \binom{n}{1} + \cdots + \binom{n}{n} = 2^n.$$

The theorem appears in the 1742 *Treatise of Fluxions* by *Maclaurin.

binomial variable *See* BINOMIAL DISTRIBUTION.

bin-packing problem An *optimization problem. There is a supply of bins, all of the same size. These bins are to be filled with collections of different numbers of items (each of the same size). Each collection must go in a single bin. The problem is to minimize the number of bins required.

Biometrics The journal of the *International Biometric Society. It was first published under that name in 1947, with Gertrude *Cox as the first editor.

Biometrika The first *Statistics journal to specialize in *biometry. The first issue of *Biometrika* appeared in 1901, with Karl *Pearson as editor. Pearson remained as editor until 1936. Subsequent editors include Egon *Pearson (1936–65) and Sir David *Cox (1965–91).

biometry The measurement of quantities in the living world. The word is often used as a synonym for *biostatistics.

biostatistics *Statistics applied to the living world. It includes *demography, epidemiology, and clinical trials. Specialized measurement techniques include *capture–recapture methods and the analysis of *line transects.

biplot (Gabriel biplot) A diagram similar to a *scatter diagram that attempts to represent *observations having several coordinates on a

Dictionary of Statistics (Upton & Cook, 2004, pp..173,181,38)

The asterisk (*) symbol is also found in the *Kamus Teknikal dan Kejuruteraan*. According to the authors, besides the usual cross-references, some words in a definition are preceded by an asterisk (*). This indicates that further explanation related to the term marked with the asterisk can be found in the entry for that specific word.


pemotong kaca 65 pemutar skru alatan

pemotong kaca *[glass cutter]*, perkakas yang mempunyai hujung yang diperbuat daripada intan atau roda besi terkeras. Digunakan untuk memotong kaca.

pemuat *[capasitor]*, kaedah yang digunakan untuk menumpuk dan menahan cas elektrik. Ia mengandungi dua keping logam kerajang (*pengalir*) yang dipisahkan oleh *dielektrik (contohnya kertas, gelas, mika dan sebagainya). Dahulu *dinamakan* pemeluwap.

pemula diri *[self-starter]*, motor elektrik yang kecil. Digunakan untuk menghidupkan enjin pembakaran dalaman. Ia dihidupkan oleh solenoid dan apabila ia berputar, ia akan berhubung dengan roda tenaga. Nama lainnya motor pemula.

pemulih *[recuperator]*, sistem yang mempunyai saluran-saluran yang dilalui oleh gas-gas panas dari relau. Udara atau gas-gas sejuk memasuki relau melalui sistem yang sama. Haba panas dipindahkan daripada gas yang keluar kepada gas yang masuk melalui dinding-dinding saluran.

pemutar skru *[screwdriver]*, perkakas tangan yang digunakan untuk memutar skru. Bahagian hujung pemutar skru dibentuk agar muat ke dalam lubang alur yang terdapat pada kepala skru.

pemutar skru elektrik

pemutar skru kabinet

pemutar skru alatan *[instrument screwdriver]*, pemutar skru yang agak kecil, yang digunakan untuk memutar skru-skru yang halus. Contohnya skru-skru yang terdapat pada jam-jam dan alatan saintifik.

Kamus Teknikal dan Kejuteraan – Technical and Engineering Dictionary (1995, pp.65)

The translation of the Malay text is:

> "Capacitor, a method used to store and hold electric charge. It contains two sheets of metal foil (conductors) separated by a *dielectric (for example, paper, glass, mica, and so on). Previously, it was called a condenser.

In order to further understand *dieletrik* or dielectric, the user needs to refer to page 15 of the dictionary. The translation of the Malay text is:

> Dielectric, a material that poorly conducts electricity but is capable of storing or sustaining an electric field.

Regarding the asterisk (*) in front of the word "dielectric," it serves as a cross-reference marker within the dictionary. This indicates that a more detailed explanation or related information about "dielectric" can be found under the separate entry for that term. The asterisk guides users to consult the relevant entry for further clarification, thus enhancing the interconnectedness and usability of the dictionary.

This opens another discussion about terms that are often borrowed from their source language, typically English, into Bahasa Melayu in technical and scientific contexts. Many technical terms maintain their original English roots but undergo spelling modifications to suit the phonological and orthographic rules of Bahasa Melayu. A clear example is the term "dielectric," which is borrowed and adapted as "*dielektrik*". While the root of the word remains recognizable to those familiar with English technical vocabulary, the adaptation allows the term to fit more naturally within the Malay language system. This process reflects both the translatability and untranslatability of technical terms. On one hand, the core concept can be translated or explained; on the other hand, the specialised nature and international usage of such terms often necessitate borrowing with minimal alteration. Understanding this balance helps clarify why some technical terms are directly borrowed with minor spelling changes, facilitating communication across languages but also highlighting the challenges of fully translating specialised vocabulary without losing precision or widespread recognition.

In the Dictionary of Statistics (DIS), it is observed that the inclusion of statisticians such as Thomas Bayes is accompanied by brief descriptions that highlight their contributions to the field. For example, Thomas Bayes is recognized for formulating Bayes' theorem, which is foundational in Bayesian statistics. Including such biographical entries not only acknowledges the historical and intellectual roots of key statistical concepts but also provides users with contextual understanding that enriches their grasp of the terminology. This approach helps learners and practitioners connect theoretical principles with influential figures, making the dictionary a more comprehensive and informative resource.

base-weighted index *See* INDEX.

BASIC (Beginner's All-purpose Symbolic Instruction Code) An elementary computer programming language.

basic feasible solution *See* LINEAR PROGRAMMING.

Basu, Debrabrata (1924–2001; b. Dhaka, Bangladesh; d. Calcutta, India) A Bangladeshi statistician whose career was divided between India and the United States. He was a faculty member at Florida State University and the *Indian Statistical Institute.

Basu theorems These theorems, due to *Basu, are concerned with the notions of sufficient statistics, *conditional independence, and *ancillary statistics.

batch A collection of items forming part of the output from some production process.

bathtub curve *See* HAZARD RATE.

Bayes, Reverend Thomas (1701–61; b. London, England; d. Tunbridge Wells, England) A Nonconformist minister in Tunbridge Wells, England. He was elected a Fellow of the Royal Society in 1742. The eponymous theorem has led to the development of an approach to *Statistics that runs parallel to the methods of *hypothesis testing. This approach is referred to as *Bayesian inference and its advocates are referred to as Bayesians. The theorem was contained in an essay not published until after Bayes's death and was largely ignored at the time.

Bayes factor (Bayes ratio) A measure of the evidence provided by the data, D, in favour of model M_1 as opposed to model M_2. The Bayes factor is B, given by

$$B = \frac{P(D|M_1)}{P(D|M_2)}.$$

The value of B may be assessed with the following table, derived from that suggested by *Jeffreys.

$2\ln(B)$	EVIDENCE IN FAVOUR OF M_1
< 0	Negative
0–2.2	Not worth more than a bare mention
2.2–6	Positive
6–10	Strong
> 10	Very strong

Bayesian A statistician who analyses data using the methods of *Bayesian inference. The term was used by Sir Ronald *Fisher in 1950.

Bayesian inference An approach concerned with the consequences of modifying our previous beliefs as a result of receiving new *data. By contrast with the 'classical' approach, which begins with a *hypothesis test that proposes a specific value for an unknown *parameter, θ, Bayesian inference proposes a **prior distribution**, $p(\theta)$, for this parameter. Data, $x_1, x_2, \ldots, x_n$, are collected and the *likelihood, $f(x_1, x_2, \ldots, x_n|\theta)$, is calculated. *Bayes's theorem is now used to calculate the **posterior distribution**, $g(\theta|x_1, x_2, \ldots, x_n)$. The change from the prior to the posterior distribution reflects the information provided by the data about the parameter value.

If nothing is known about the value of a parameter, then a **non-informative prior** is used—typically, this is a *rectangular distribution over the feasible set of values of the parameter. Another approach, the **empirical Bayes method**, utilizes the data to inform the prior distribution.

A useful choice for the form of a prior distribution is a member of a family of distributions which is such that the posterior distribution is another member of that family, so that the effect of the data can be interpreted in terms of changes in parameter values. Such a prior is called a **conjugate prior**.

Bayesian information criterion *See* AIC.

Bayes net; Bayes network *See* GRAPHICAL MODELS.

Bayes ratio *See* BAYES FACTOR.

Bayes's theorem A simple form of Bayes's theorem is

$$P(A|B) = \frac{P(A)P(B|A)}{P(A)P(B|A) + P(A')P(B|A')},$$

where A' denotes the complementary event (*see* SAMPLE SPACE) to the *event A. For example, suppose a man has two coins in his pocket. One is

Dictionary of Statistics (Upton & Cook, 2004, pp. 26-27)

Jitter. The axes in the diagrams represent the numbers of tips reported by two tipping-bucket rain-gauges in September 2000. The main diagram illustrates the amounts of rain for the 813 2-minute periods for which at least one gauge reported a tip. The inner diagram shows the corresponding 34-point scatter diagram.

Johnson, Norman Lloyd (1917–; b. Ilford, England) An English statistician who spent most of his career in the United States. Johnson is a graduate of University College, London, gaining his MSc just before the Second World War and his PhD just afterwards. He joined the staff of University College in 1938 and remained there till 1962, except during the war, when he was seconded to the London Ordnance Board. In 1962 he moved to the University of North Carolina, Chapel Hill, where he is now Alumni Distinguished Professor Emeritus. He was awarded the *Wilks Medal of the *American Statistical Association in 1993.

Johnson distributions *Probability distributions, of widely differing shapes, that can be obtained by simple transformations of the *standard normal distribution. The relationship to the normal distribution makes it easy to calculate, for example, a *tail probability. The entire family is defined by

$$Y = g\left(\frac{Z - \alpha}{\beta}\right),$$

where α and β are constants, g is a function, Z is a standard normal *random variable and Y is a Johnson random variable.

There are three classes of Johnson distributions, referred to as the S_U, S_B, and S_L classes, which result from different choices for the function $g(x)$. In the order given, for a variable x, the functions are

$$\sinh x, \quad \frac{1}{2}(1 + \tanh x), \quad \text{and} \quad e^x.$$

The last case gives a type of *lognormal distribution.

joint distribution *See* BIVARIATE DISTRIBUTION.

joint independence The *random variables A and B are jointly independent of C if their *joint probability distribution is unaffected by the value of C. For *categorical variables, with p_{ijk} denoting the probability of an outcome in *cell (i, j, k), the condition for A and B to be jointly independent of the category of C, is that

$$p_{ijk} = p_{i\bullet k}p_{\bullet jk}$$

for all i, j, and k, where

$$p_{i\bullet k} = \sum_j p_{ijk} \quad \text{and} \quad p_{\bullet jk} = \sum_i \sum_k p_{ijk}.$$

joint probability The joint probability of a set of *events is the *probability that all occur simultaneously.

joint probability density function *See* BIVARIATE DISTRIBUTION.

Journal de la SFdS The journal of the *Société Française de Statistique; first published (under a different title) in 1859.

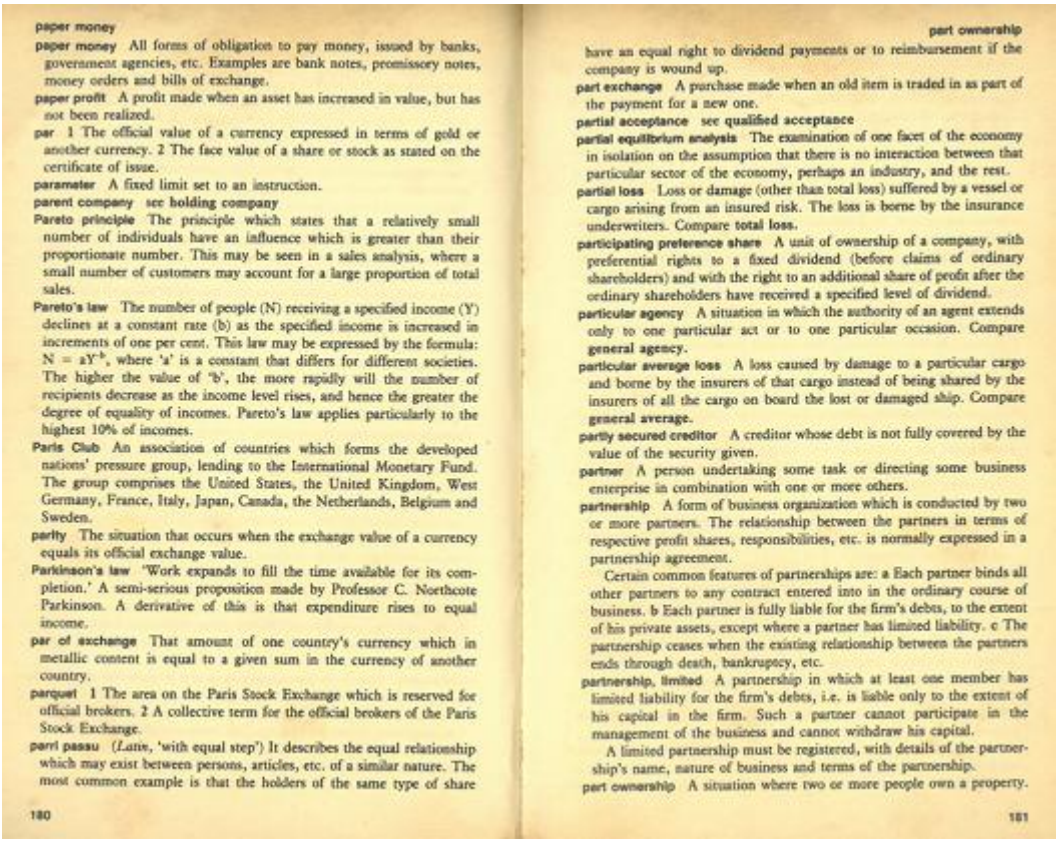
***Journal of Agricultural, Biological and Environmental Statistics* (*JABES*)** A publication of the *International Biometric Society.

***Journal of the American Statistical Association* (*JASA*)** The principal journal published by the *American Statistical Association. It was first published under a slightly different name in 1888 and under its current name since 1922. Its emphasis is on developments in statistical theory.

Journal of the Italian Statistical Society An English language journal of the *Società Italiana di Statistica which was first published in 1994.

Dictionary of Statistics (Upton & Cook, 2004, 180 -181)

Just as many statistical terms are named after prominent statisticians such as Thomas Bayes or Karl Pearson to honour their contributions and provide historical context, business terminology often follows a similar pattern. For instance, terms like Parkinson's Law are named after individuals whose work has significantly influenced management and organizational studies.



paper money

paper money All forms of obligation to pay money, issued by banks, government agencies, etc. Examples are bank notes, promissory notes, money orders and bills of exchange.

paper profit A profit made when an asset has increased in value, but has not been realized.

par 1 The official value of a currency expressed in terms of gold or another currency. 2 The face value of a share or stock as stated on the certificate of issue.

parameter A fixed limit set to an instruction.

parent company see **holding company**

Pareto principle The principle which states that a relatively small number of individuals have an influence which is greater than their proportionate number. This may be seen in a sales analysis, where a small number of customers may account for a large proportion of total sales.

Pareto's law The number of people (N) receiving a specified income (Y) declines at a constant rate (b) as the specified income is increased in increments of one per cent. This law may be expressed by the formula: $N = aY^{-b}$, where 'a' is a constant that differs for different societies. The higher the value of 'b', the more rapidly will the number of recipients decrease as the income level rises, and hence the greater the degree of equality of incomes. Pareto's law applies particularly to the highest 10% of incomes.

Paris Club An association of countries which forms the developed nations' pressure group, lending to the International Monetary Fund. The group comprises the United States, the United Kingdom, West Germany, France, Italy, Japan, Canada, the Netherlands, Belgium and Sweden.

parity The situation that occurs when the exchange value of a currency equals its official exchange value.

Parkinson's law 'Work expands to fill the time available for its completion.' A semi-serious proposition made by Professor C. Northcote Parkinson. A derivative of this is that expenditure rises to equal income.

par of exchange That amount of one country's currency which in metallic content is equal to a given sum in the currency of another country.

parquet 1 The area on the Paris Stock Exchange which is reserved for official brokers. 2 A collective term for the official brokers of the Paris Stock Exchange.

parri passu (*Latin*, 'with equal step') It describes the equal relationship which may exist between persons, articles, etc. of a similar nature. The most common example is that the holders of the same type of share

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part ownership

have an equal right to dividend payments or to reimbursement if the company is wound up.

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Certain common features of partnerships are: a Each partner binds all other partners to any contract entered into in the ordinary course of business. b Each partner is fully liable for the firm's debts, to the extent of his private assets, except where a partner has limited liability. c The partnership ceases when the existing relationship between the partners ends through death, bankruptcy, etc.

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part ownership A situation where two or more people own a property.

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The Hamlyn Dictionary of Business Terms (Liebster & Horner, 1989, pp.180 - 181)

Parkinson's Law is a principle formulated by Cyril Northcote Parkinson in the 1950s, which states that "work expands to fill the time available for its completion." This means that the amount of work one has tends to grow in complexity and duration based on the time allotted, regardless of whether the task actually requires that much time. Parkinson originally described this observation satirically in an article for The Economist and later in his book, highlighting inefficiencies in bureaucracies. The law applies broadly in business and personal productivity, illustrating how tasks often become more complicated or are unnecessarily prolonged when more time is given, leading to procrastination and reduced efficiency. This practice of naming concepts after key figures helps users understand the origins and importance of terms across different fields, whether in statistics or business.

The analysis shows that specialised dictionaries differ in their structural presentation, depth of information, and user orientation. The Dictionary of Statistics features extensive front matter including author information and related publications, catering to a scholarly audience. The Hamlyn Dictionary of Business Terms offers a briefer introduction, focusing on accessibility for business practitioners. The *Kamus Teknikal dan Kejuruteraan*

stands out with its bilingual approach in the back matter, providing English terms alongside Malay equivalents, thereby enhancing cross-linguistic understanding. All dictionaries employ systematic alphabetical arrangements and utilize cross-references, sometimes marked by symbols like the asterisk, to guide users efficiently through related entries. Visual aids and acronyms explanations vary, with some dictionaries offering rich graphical support while others emphasize linguistic clarity. Additionally, lexical borrowing evident in terms such as "*dielektrik*" illustrates the tension between translatability and the necessity to preserve internationally recognized technical terms. Overall, these findings highlight the importance of tailored dictionary design to meet the diverse needs of users in specialised fields.

CONCLUSIONS

Specialised dictionaries play a crucial role in facilitating understanding and communication within technical domains. This study confirms the need for a balanced dictionary structure that considers both linguistic precision and user-friendliness. It underscores the benefits of incorporating bilingual terms, comprehensive front and back matter, and strategic cross-referencing to improve accessibility and comprehension. Future lexicographic efforts should prioritize thorough user needs analysis and incorporate multimedia elements to aid learning. Moreover, the challenge of lexical borrowing and the limited translatability of some technical terms warrant continued scholarly attention to develop adaptive yet standardized dictionaries. Enhanced collaboration between lexicographers, domain experts, and end-users is recommended to refine dictionary design, ensuring these resources remain relevant and effective tools for specialists and learners alike.

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