IT Passport

STRATEGY

Chapter

1

Corporate and legal affairs

Chapter 1 explains the basic knowledge of corporate activities and business management that business workers should possess, as well as legal compliance and corporate ethics.

1-1 Corporate activities

1-1-1 Management and organization

It is important to have an overall understanding of a corporation in terms of business activities, objectives, and relevant laws in order to recognize and resolve issues in responsible business areas, and facilitate the execution of operations.

1 Corporate activities

In conducting corporate activities, it is important to clearly understand the importance of existence of the corporation and its values. If these are not clearly defined, the course of corporate activities becomes uncertain. No matter how hard each employee in their responsible business area works, such efforts will lack efficiency if they are not properly guided.
Understanding the goals and responsibilities that a corporation should designate will lead to well-balanced corporate activities.

(1)Corporate philosophy and corporate objective

The purpose of corporate activities is to earn profits and contribute to society. Accordingly, corporations adopt a **"corporate philosophy"** and **"corporate objective"** in which to conduct its activities. Corporate philosophy and corporate objective are universal ideals that essentially do not change.
However, the environment surrounding a corporation is undergoing significant changes in terms of social climate, technology, and other factors. In order to fulfill its corporate philosophy and objective, a corporation must – from a long-term perspective – develop the capability to adapt to such changes.

(2)Corporate social responsibility

"CSR (Corporate Social Responsibility)" refers to the responsibilities that a corporation should fulfill to society. Many corporations promote their CSR approach through their websites, or publish a CSR report in order to earn public interest and stakeholder trust.
Corporations must endeavor to create business from the perspective of all stakeholders, and not solely for the pursuit of profit. As evidenced by the existence of the term "corporate citizen," corporations are expected to act as productive members of society. Doing so leads to earning public confidence and creating new corporate values.

Reference

CSR

Abbreviation for "Corporate Social Responsibility."

Reference

SRI

Abbreviation for "Socially Responsible Investment."

Reference

Disclosure of financial results

A corporation should endeavor to disclose financial results and other useful information in a timely and appropriate manner to stakeholders, including shareholders and investors. Improving management transparency by such disclosures makes it possible to build trust and enhance corporate value.

The most basic responsibilities of a corporation are conducting corporate activities in a law-abiding manner, achieving regulatory compliance, and providing products and services that combine functionality with safety. Moreover, CSR is increasingly expected to encompass such aspects as environmental initiatives, social welfare activities, and local community cooperation as corporations explore their approach to social contribution.

2 Management resources

The three major elements that are essential to the management of a corporation and serve as corporate resources are "people, materials, and money." More recently, "information" has been cited as a fourth element.

●People

From a corporate perspective, the term "people" refers to employees (human resources). People are the most important resource for all corporate activities. Enhancing human resources by imparting each employee with the corporate philosophy and objective, and training them in a manner that is consistent with these values can lead to increased profits.

●Materials

From a corporate perspective, the term "materials" refers to products and merchandise. In the manufacturing industry, it also refers to production facilities. Although seemingly unrelated, the services industry is also dependent on a variety of materials such as computers, printers, and copy machines to facilitate corporate activities.
Some materials are essential and others are non-essential. It is important to clearly identify those materials that are essential and non-essential to the corporate activities of a corporation.

●Money

From a corporate perspective, the term "money" refers to funds. Money is required to purchase and make materials, and secure people. Money is an essential resource to fund the execution of corporate activities.

●Information

From a corporate perspective, the term "information" refers to documents and data that enable a corporation to make correct decisions and remain competitive. The effective use of information can lead to improved productivity, added value, innovative ideas for activities planning, and other positive results.

Reference

Business objective

A "business objective" is a medium- or long-term goal that is set in order to fulfill the corporate philosophy or corporate objective.

Reference

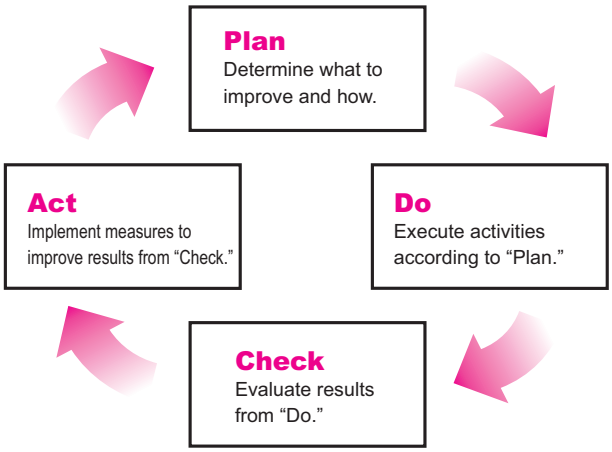
Management resources for business management

Management resources within the context of business management refer to people (human resources), materials (assets), money (finances) and information (information management).

3 Business management

"Business management" involves coordinating and integrating management resources (people, materials, money, and information) in order to fulfill the objectives of the corporation. It is important to maximize the use of resources that are available to the corporation and produce results. To achieve this, corporations set business objectives and manage them using a **"PDCA (Plan, Do, Check, Act)"** cycle.

"PDCA" is a fundamental approach for business management that involves the execution of a four-step cycle of "Plan, Do, Check, Act" to continuously improve product quality and work. Repeated execution of PDCA refines and enhances business management.



4 Organizational structure of a corporation

Reference

Formal organization

A "formal organization" is a collective entity that is clearly defined by an organizational purpose or company rules. Formal organizations include companies and institutions.

A **"corporation"** is an organizational entity that engages in economic activities such as production, sales, and provision of services typically for the purpose of making profit. In the narrow sense, it refers to a private corporation such as a **"stock company"** or **"limited liability company."** In the wider sense, it also includes public corporations in which the government has a stake.

An **"organization"** is a collective entity that has been assembled and integrated into a system to achieve a common purpose.

(1)Structure of a corporation

Reference

Informal organization

An "informal organization" is a collective entity that is not clearly defined by organizational rules or regulations, although it has an overall purpose.

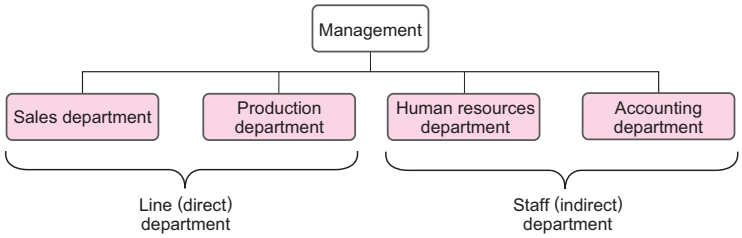
A corporation is an organization that is structured according to task in order to conduct operations efficiently.

There are various forms of organizations including functional organizations, divisional system organizations, matrix organizations, and project organizations.

●Functional organization

A **"functional organization"** is structured by job function such as manufacturing, sales, marketing, accounting, and human resources. This type of organization's key characteristic is that it enables the pursuit of specialization and efficiency in each job function, which in turn allows each organization to produce high quality results. At the same time, there is a tendency for boundaries to develop between each functional organization, and issues can arise from departments acting in their best interest.

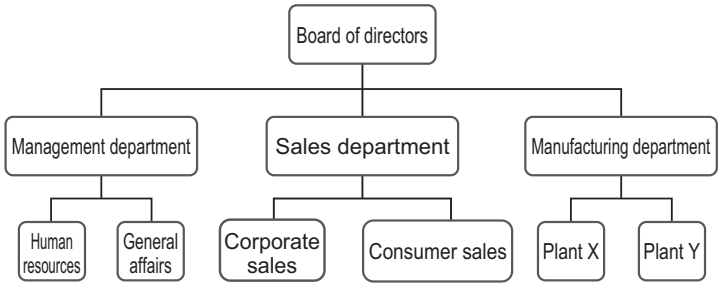
A functional organization is comprised of a **"line (direct) department"** and a **"staff (indirect) department."** A line department is directly involved in the areas of earning profit such as sales, production, and materials. A staff department supports the line department in areas such as human resources, accounting, and general affairs.



●Hierarchical organization

A **"hierarchical organization"** is an organization form with a hierarchical structure so that there is typically one chain of command. For example, in a hierarchical organization, there are a number of departments below the president. Below these departments are sections that are responsible for different business segments.

This organization's key characteristic is that it facilitates the spread of corporate policies throughout the organization.



●Divisional system organization

A **"divisional system organization"** is separated along the lines of product, region, or market with each business division having its own staff department, either partially or in entirety.

This organization's key characteristic is that since each business division is capable of performing a broad base of functions, it is possible to issue unified directions so as to rapidly accommodate shifting market needs.

Reference

Staff department and line department

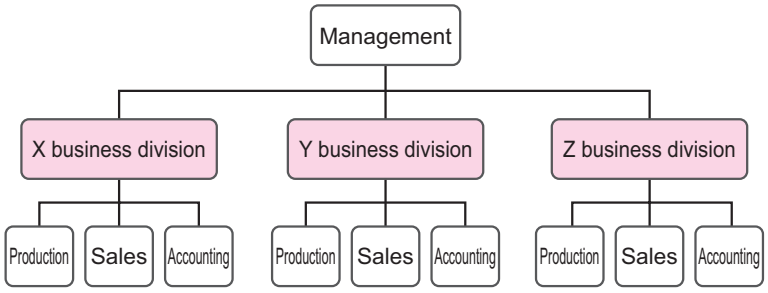
The staff department includes the following departments:

- Human resources, accounting, general affairs, and information systems.

The line department includes the following departments:

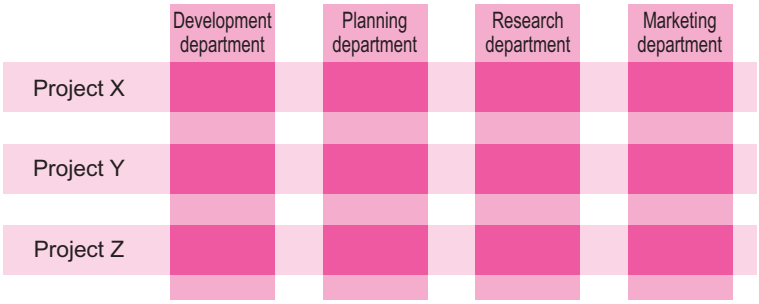
- Sales, production, and materials.

In principle, each business division conducts its own accounting, and is responsible for operating business and generating profits independently.



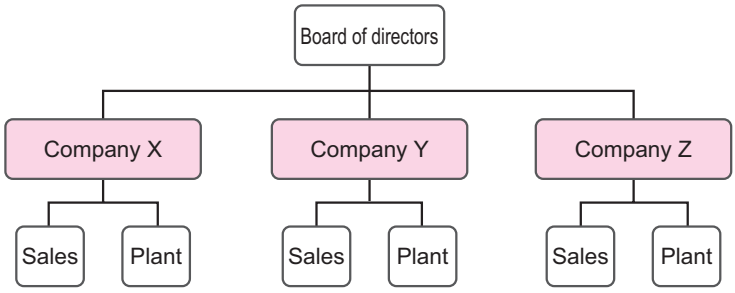
●Matrix organization

A **"matrix organization"** is an organization form often employed by major enterprises and global corporations, and is structured along multiple chains of command such as function and region or function and product. Since this organization takes the form of multiple managers overseeing the persons that do the work, there is potential for confusion in the chain of command. At the same time, departmental boundaries are eliminated due to the sharing of work.



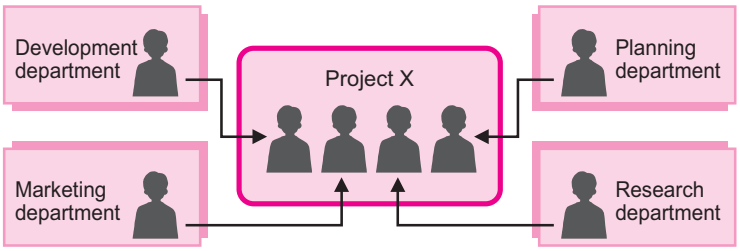
●Company system organization

A **"company system organization"** refers to a structure that separates business divisions, and administrates the departments as independent companies. This increases the autonomy of the organization and enhances its ability to adapt to its environment. The organizational structure is similar to the divisional system organization, but under the company system organization, there is greater freedom and discretion to make human resources decisions.



●Project organization

A **"project organization"** is temporarily structured along the lines of personnel who have various specialized capabilities, and is separate from a standing organization. It is only intended as a temporary organization and is disbanded once the purpose is achieved.



(2)Departmental structure

The corporate organization is comprised of **"departments"** that are separated by the content of work they are responsible for. To facilitate computerization, it is necessary to have a precise grasp of where a department is positioned within the corporation.

The departmental structure and content of work are summarized below.

Department	Content of work
Human resources (Labor)	Hire and train personnel, and assign them to departments. Engage in various types of work that is employee-related.
Accounting (Finances)	Manage the funds that support the business infrastructure of the corporation. In addition to procuring and administrating funds, in some corporations the accounting department also manages corporate assets and evaluates the business results.
General affairs	Coordinate between the departments and perform administrative management.
Information systems	Develop and manage information systems within the corporation. Staffed with specialists such as system engineers, programmers, and systems operation engineers.
Marketing	Perform market research.
Research and development	Provide technical development and research for new products.
Sales (Marketing)	Sell the products or services supplied by the corporation directly to the customer. Typically includes payment collection.
Production (Manufacturing)	Manufacture products. In some corporations, production also incorporates the function of the materials department.
Materials (Purchasing)	Procures materials required for product manufacturing and business operations.

Reference

OR

"OR" is a set of scientific techniques for determining and implementing business plans in a corporation, which has emerged as a field of applied mathematics and computing.
Drawing widely from techniques and tools of science, it is a method for analyzing the problems involved in a given task and discovering the optimal solution.
Abbreviation for "Operations Research."

Reference

IE

"IE" is a method for streamlining the processes involved in "manufacturing", "construction", etc. More specifically, it uses a variety of methods to study the time involved in a task, to plan and manage daily schedules, to manage costs, etc. It is widely used on the production field as a technique for improving operations.
Abbreviation for "Industrial Engineering."

1-1-2 OR (Operations Research) and IE (Industrial Engineering)

"OR (Operations Research)" is a method for analyzing and solving problems that arise in business administration. **"IE (Industrial Engineering),"** Meanwhile, is a method for improving problems that arise in the production field or services.
Because of the great impact that people, materials, money, and information have on the conduct of business activities, it is important to analyze, solve, and improve problems that arise at both the managerial level and the field level.

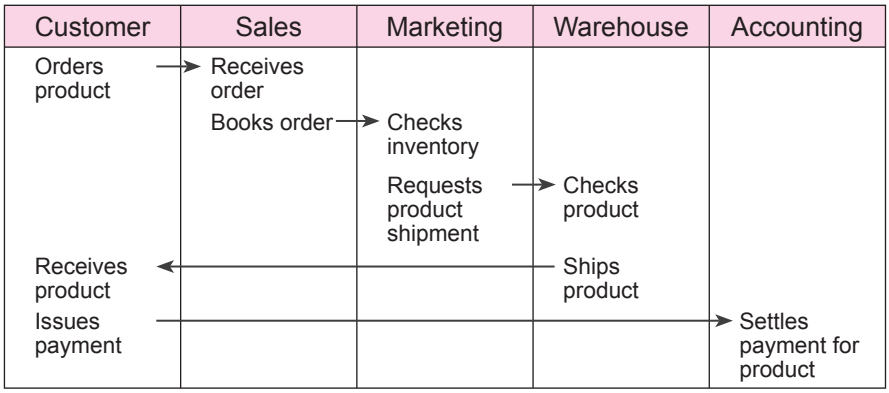
1 Understanding operations

Various kinds of charts and diagrams are used in OR and IE to analyze, solve, and improve work issues.
The followings are used to understand operations.

Illustrating the flow of work	Workflow
Explicating the structure of problems	Association diagram, tree diagram, affinity map
Expressing relationships	Matrix diagram, matrix data analysis
Expressing trends over time	Z graph
Expressing distributions	Distribution diagram, portfolio
Used in planning and management	Gantt chart

●Workflow

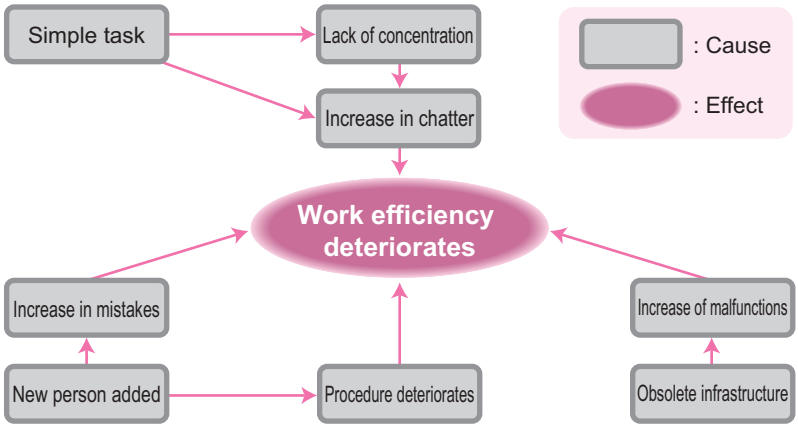
A **"workflow"** shows tasks as linked chains of actions. Using a workflow makes it possible to recognize which department is carrying out what task, and what relationships there are between which departments.



●Association diagram

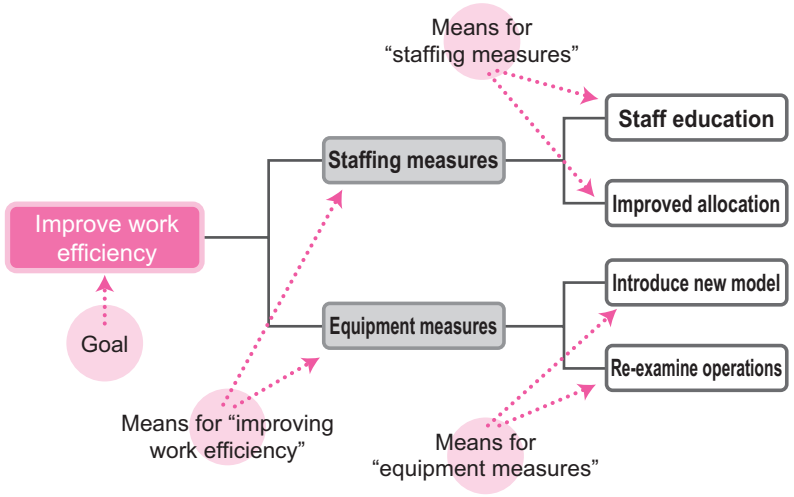
An **"association diagram"** indicates by arrows relationships between "causes and effects" or "goals and methods" to explicate the structure of a problem. This is useful when a problem that needs solving is well-established, but the causes behind it are convoluted.

This method may go through several rounds of revisions by multiple team members who will approach the problem from different angles, effectively getting at the root of the problem, and helping to find a solution.



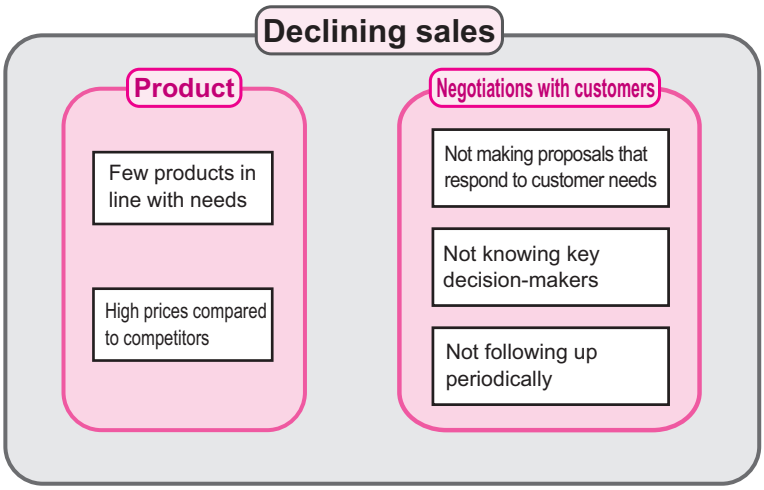
●Tree diagram

A **"tree diagram"** is a method for hierarchically expressing a chain of "goals and means" in order to discover ways to solve a problem. The process of creating a tree diagram and the completed results can provide specific policies and actions for resolving the problem.



●Affinity diagram

An **"affinity diagram"** is a way of summarizing mutual affinities between data, organizing data into named groups, and analyzing data. It can elucidate vague problems and clarify trouble-spots.



●Matrix diagram

A **"matrix diagram"** organizes elements to be analyzed into rows and columns, marks their relationships at their intersections to define the existence and form of a problem, and sparks ideas that lead to solutions. Viewing these intersections as starting points for ideas is an effective way to solve problems.

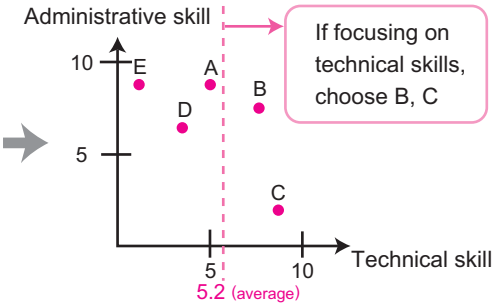
Company name	Skill	Service	Delivery date	Cost
Company A	Excellent	OK	Good	Bad
Company B	OK	Good	Good	OK
Company C	Bad	OK	Bad	Excellent
Company D	Excellent	OK	Bad	Good
Company E	Good	Excellent	OK	Good

●Matrix data analysis

"Matrix data analysis" is a method for organizing data properties when it is possible to express the interrelationships among multiple data matrices as numerical data. It makes it possible to grasp the characteristics of each element when a large volume of data makes the overall picture difficult to understand.

Skill table

Trainee	Technical skill	Administrative skill
A	5	9
B	7	8
C	9	2
D	4	7
E	1	9
Average	5.2	7.0



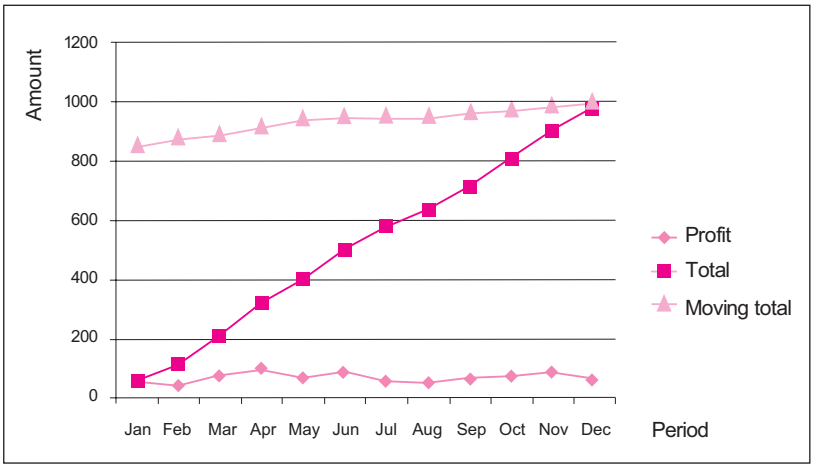
●Z graph

A **"Z graph"** expresses trends over time, and is named after the "Z" shape that the lines assume.

For example, this graph shows revenues, cumulative revenues, and moving totals (cumulative over past year). If the moving-total trend line is rising, then sales results are solid; if the line is dropping, then results are poor.

Sales results table

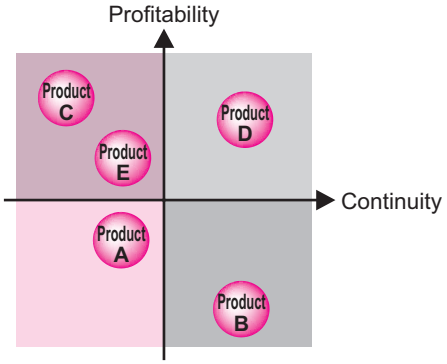
			This year											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sales	90	70	70	50	90	110	80	100	70	60	80	90	100	80
Total	790	840	70	120	210	320	400	500	570	630	710	800	900	980
Moving total	820	840	860	880	890	910	930	940	940	940	950	960	970	980



●Distribution diagram

A **"distribution diagram"** represents the number of elements that fall into each quadrant to show their distribution.

For example, this graph charts the profitability of products against their sales continuity.



Reference

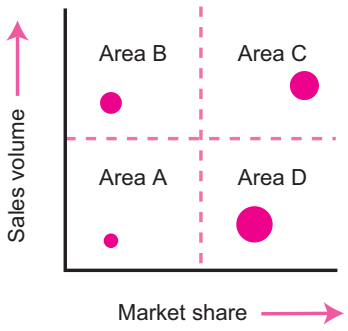
Management science method

"Management science method" is the use of arithmetic methods to solve problems as they apply to business. Time-series analysis can be used to predict future sales by analyzing past product sales trends, while portfolio analysis and investment-calculation models can be used to make decisions.

●Portfolio

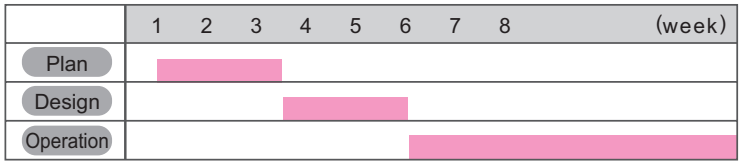
A **"portfolio"** is a graph that represents distributions.

For example, in the graph shown here, each area visually represents sales volume and market share.



●Gantt chart

A **"Gantt chart"** indicates by horizontal bars to represent work schedules and results. The horizontal axis is marked to indicate hours, days, months, etc., and individual tasks or projects are stacked vertically.



2 Job analysis and operational planning

Tables and charts are used to analyze data, and making graphs can help to improve business processes.

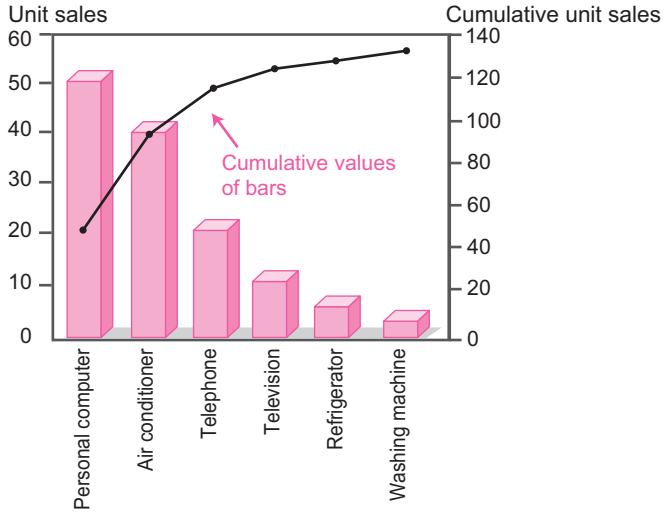
The methods used for job analysis and operational planning are summarized below.

Expressing the impact of a job	Pareto chart, ABC analysis
Expressing the order of tasks and number of days	Arrow diagram
Expressing distributions	Scatter diagram, histogram
Comparing and balancing multiple elements	Radar chart
Expressing the status of a process	Control chart
Expressing big/small relationships	Bar chart
Expressing proportions of a whole	Pie chart
Expressing trends over time	Line chart
Expressing predictions	Regression analysis

●Pareto chart

A **"Pareto chart"** shows total values for multiple elements arranged in decreasing order as a bar chart, overlaid with a line chart showing cumulative values for all elements.

For example, in the chart shown here, household appliances are arranged by sales volumes, running from personal computers down to washing machines.

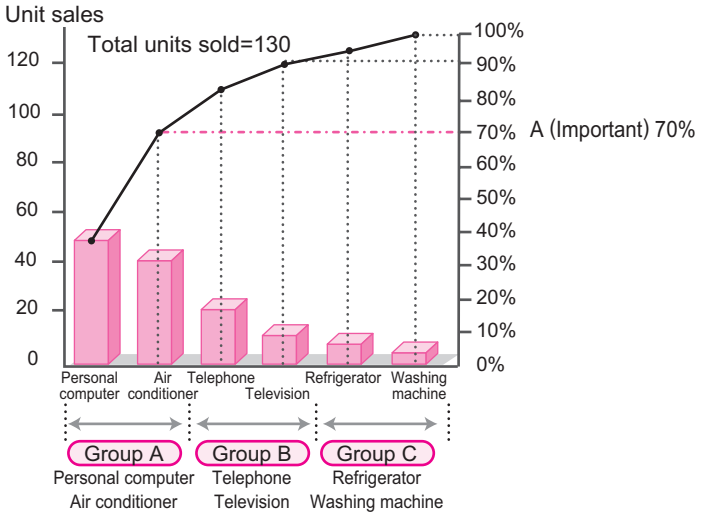


●ABC analysis

An **"ABC analysis"** is a method for clarifying the importance or priority of multiple elements (products, etc). This is useful in numerous aspects of business administration, including sales strategy and management, inventory control, etc. It uses the Pareto chart, with elements arranged in decreasing order of priority, and divided into three categories: A, B, C.

In general, the top 70% group is group A, the 70–90% group is group B, and the remainder is group C.

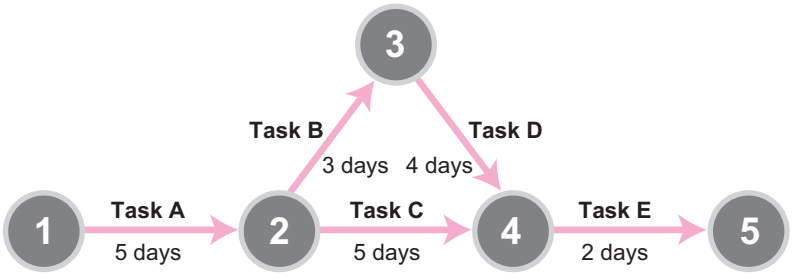
For example, in the example chart, personal computers and air conditioners combined make up 70% of sales, so those two products compose Group A, suggesting that product management should give greater weight to them.



●Arrow diagram

An **"arrow diagram"** is a method for preparing better activity plans. It organizes the sequential relationships between tasks and the days required indicated by arrows. It is also used as a PERT chart.

For example, the diagram here shows that task E can begin once both tasks C and D are complete.



Reference

Critical path

A "critical path" in schedule planning, is the path down the middle of the schedule that takes the greatest number of days. Because any critical-path activity falling behind will cause the entire schedule to fall behind as well, those activities demand special management attention.

Reference

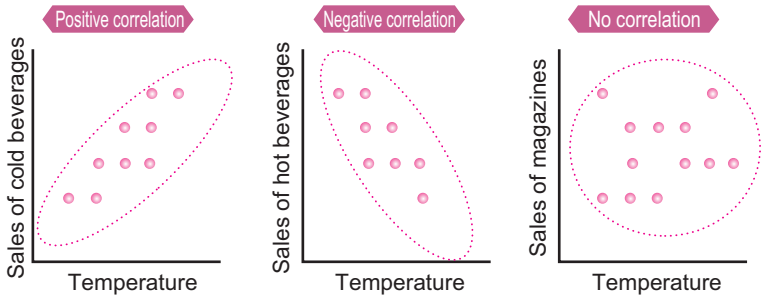
PERT

Abbreviation for "Program Evaluation and Review Technique."

●Scatter diagram

A **"scatter diagram"** plots two property values on the X- and Y-axes to show the correlation between two kinds of data.

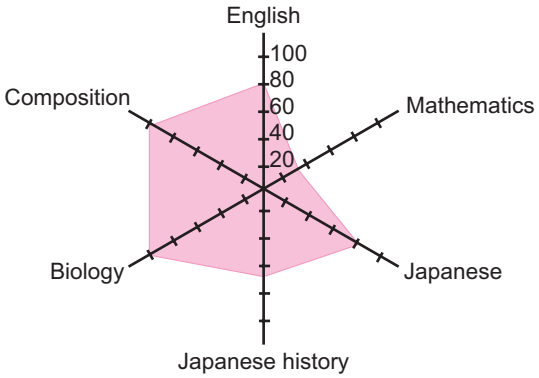
For example, the positive correlation graph plots volume of cold beverage sales against temperature, showing that as temperature increases, sales of cold beverages increases. The negative correlation graph plots hot beverage sales against temperature, showing that as temperature increases, sales of hot beverages decrease. The no correlation graph plots magazine sales against temperature, showing that the two are not related.



●Radar chart

A **"radar chart"** is used to compare and balance multiple elements.

For example, this chart shows the balance between scores a student received on tests in various subjects.



Reference

Correlation

"Correlation" refers to a relationship between two properties such that as the value for one increases, the other decreases. When the relationship between these two is nearly linear, the two properties are said to be correlated.

Reference

Control chart scheme

Plotting the measured data will reveal process irregularities when points fall outside the bounds or are clustered on one side of the centerline.

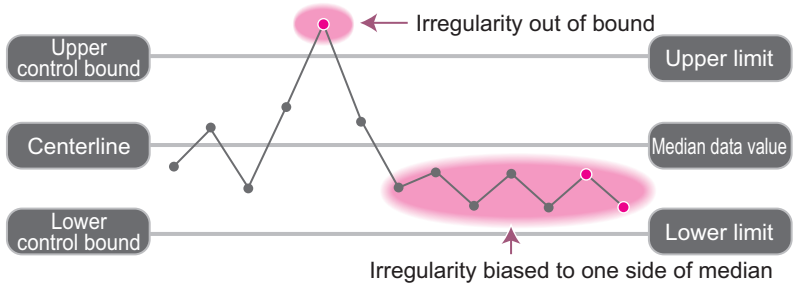
●Control chart

A **"control chart"** expresses the status of work processes using a line chart.

For example, the chart here shows irregular points based on the following criteria:

- Any points outside the control bounds, either high or low
- If there are six or more points in a row above or below the centerline, the sixth point and beyond.

Based on these criteria, there are three points judged to be irregular in the example chart.

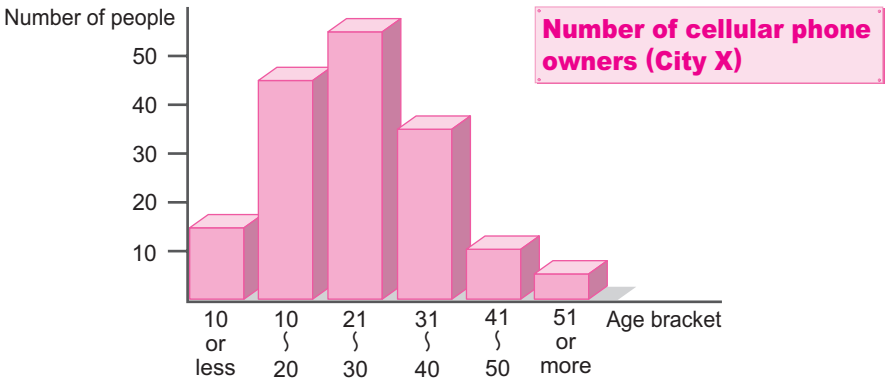


●Histogram

A **"histogram"** is a method for representing the number of elements in each group as a bar graph, dividing totaled data into some number of groups.

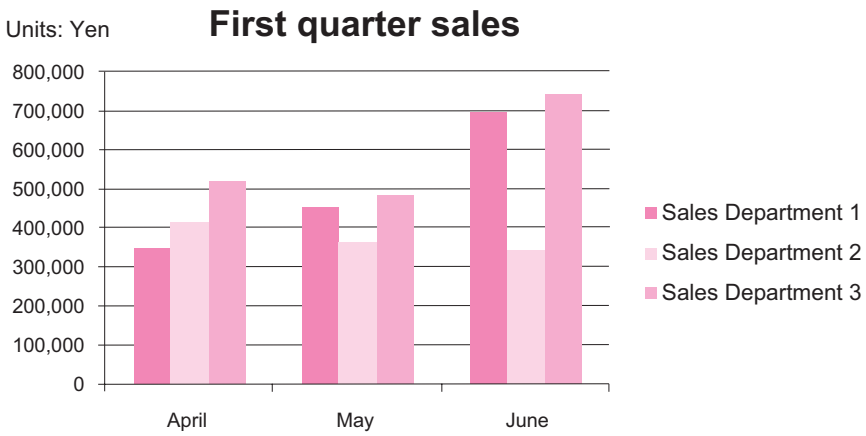
A histogram can reveal an overall picture of the data, the central position, range of variation, etc.

For example, this chart shows the results of a survey of cellular phone owners in a certain city broken down by age group, revealing that cellular phones are most common among people aged 21-30, followed by people aged 10-20, then 31-40, and that they were least common among people aged 51 and over.



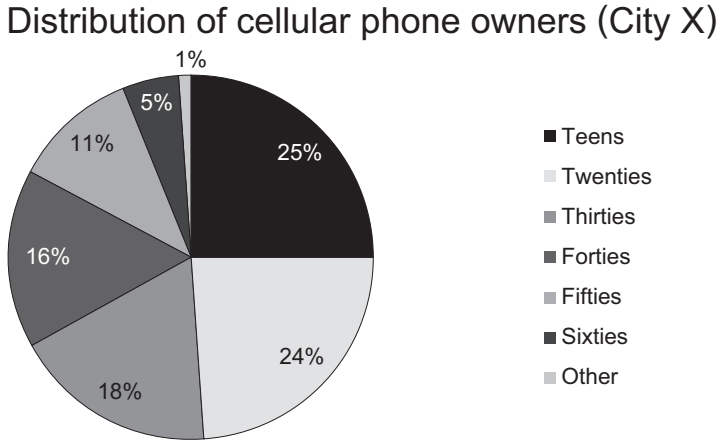
●Bar graph

A **"bar graph"** is a graph to compare multiple elements each other.
For example, sales results for each sales executive, or proceeds of sales for several months can be compared.



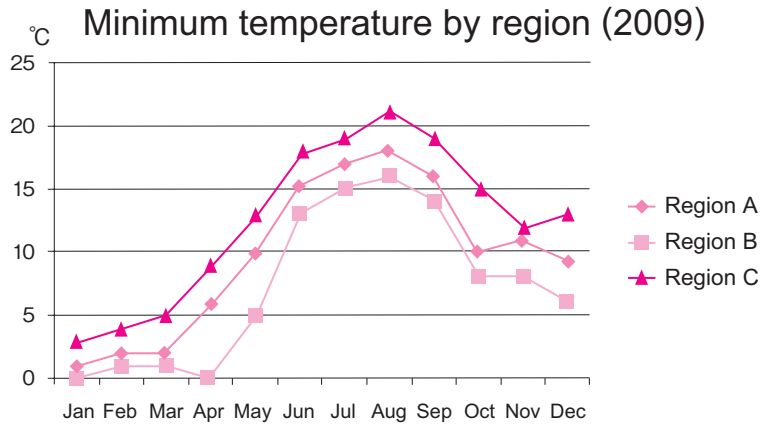
●Pie chart

A **"pie chart"** represents the proportion or share of each element that makes up a whole.
For example, pie charts might be used to show the relative shares of sales of various products, or the age-group breakdowns to a survey.



●Line chart

A **"line chart"** typically shows a numerical value along one axis an elapsed time along the other, with a line connecting points plotted at each time marker, giving this graph its name. It is used to represent trends over time, as with changes during the course of a year.



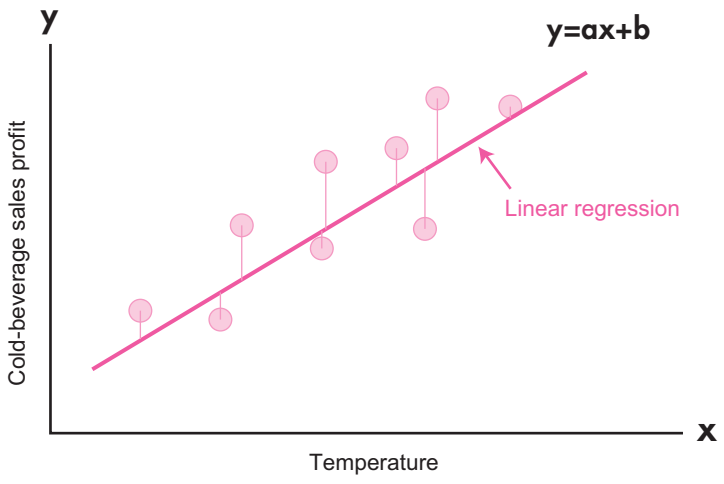
●Regression analysis

"Regression analysis" expresses a correlation between two kinds of data that are plotted on a scatter diagram, using a straight line to show the relationship.

If the two kinds of data are "x" and "y," then the linear regression can be expressed as "y=ax+b." In this case, "a" is the **"slope"** of the linear regression, and "b" is the **"y-intercept."**

For example, in this graph, if the annual average temperatures can be predicted, beverage sales can also be predicted, which would help determine quantities of products to order.

A linear regression is a straight line with the shortest distance to each point, which is calculated using the **"least-squares method."**



Reference

Least-squares method

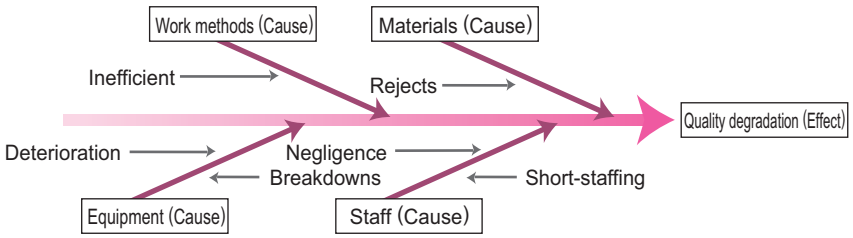
The "least-squares method" draws a straight line that has the smallest total value for the squares of the distances between plotted points and the regressed line.

❸ Decision-making

In order for a company to turn a profit, it needs to operate efficiently and contain costs.
The following methods can be used to efficiently make decisions that solve problems.

(1)Cause and effect diagram

A **"cause and effect diagram"** maps the effects (results) that are creating work problems along with the apparent causes (factors) that relate to them in a diagram that resembles a fish's skeleton. It is also referred to as a **"fishbone diagram."** It is useful for laying out and summarizing multiple causes.
For example, in the diagram here, the causes that have led to a degradation in quality have been laid out as a system of four factors (work methods, materials, machinery, and staff), and this makes the relationship among factors evident.



(2)Simulation

A **"simulation"** is an experiment that mimics actual circumstances based on a realistic prediction of conditions.
The methods for conducting simulations are summarized below.

●Linear programming

"LP (Linear Programming)" is a model used for a particular kind of problem-solving, finding the most effective way to allocate resources under a certain set of constraints.

Reference

LP

Abbreviation for "Linear Programming."

●Queueing theory

"Queueing theory" is a model for analyzing customer waiting-time and line length in service situations such as bank-teller windows, based on customer arrival time, the number of windows, and average service duration. Waiting period and the number of people in line can be expressed as an expectation value.

Reference

Expectation value

An "expectation value" is the average value that is obtained after multiple trials. For example, rolling dice some number of times can be expected to produce an average value.

(3)Inventory control

Inventory control is the foundation of business management for a company. If inventory is excessive or inadequate, supply and demand go out of balance, and too much inventory puts pressure on all the company's resources, increasing costs. This makes it especially important to maintain appropriate inventory levels as part of inventory control.
The methods for inventory control are summarized below.

●Kanban system

The **"Kanban system,"** also referred to as the **"JIT (Just-In-Time) system"** is a manufacturing system popularized by Toyota as a method to procure the item that is needed in the quantity needed at the time it is needed. It keeps intermediate warehousing to a minimum by matching the current production step to the production status of later steps (which use the part), and procuring the parts needed from previous steps (parts makers and suppliers).

"Kanban" refers to the statement of work that details the delivery times and quantities of components, which is carried from the end of later steps to the beginning of former steps in order to manage production.

Reference

MRP

Abbreviation for "Material Requirements Planning."

●MRP (Materials Requirement Planning)

"MRP (Materials Requirement Planning)" is a method in manufacturing planning for calculating the net required quantity of a part that needs to be procured.

In MRP, the total quantity of parts that will be required under the manufacturing plan is calculated, and the net required volume is obtained by subtracting the amount that can be placed in inventory.

Reference

Net required quantity

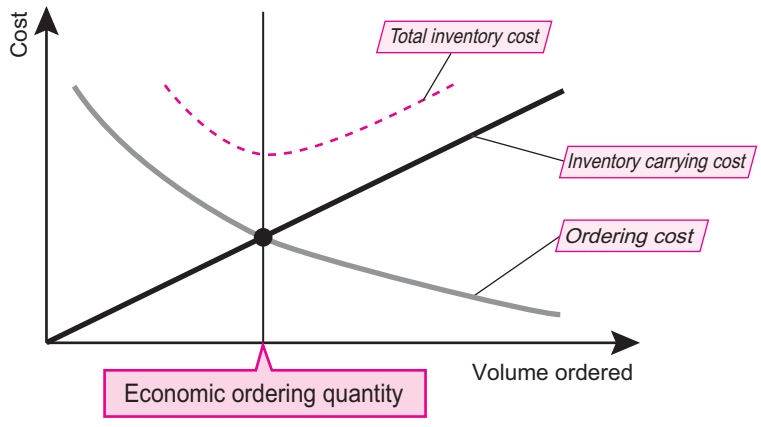
"Net required quantity" is the quantity of new parts needed in an order.

●Economic ordering quantity

"Economic ordering quantity" is a method for calculating the optimal quantity to order when stocking inventory.

Minimizing the **"ordering cost"** and **"inventory carrying cost**" associated with stocking inventory is an important part of running a business to maintain profitability. Appropriate ordering quantities help maintain an inventory that incurs the lowest cost possible.

Ordering cost	Expenses associated with a single order. Individual orders for large quantities lower ordering cost, and therefore, overall cost.
Inventory carrying cost	The expenses required to maintain an inventory including inventory management. This cost rises with large inventory volumes or long periods in inventory.
Total inventory cost	Total of inventory carrying cost and ordering cost.



Example

Obtain the ordering quantity that minimizes total inventory costs under the following conditions

[Conditions]

(1) Orders are by lots, where one lot consists of 500 pieces.

(2) Inventory carrying costs are proportionate to volume per order, where one lot costs ¥15,000.

(3) Ordering costs are 6,000 yen per order.

(4) The volume that will be used during the period is 20,000 pieces.

The procedure for calculating the order volume (number of lots) that will minimize total inventory costs is summarized below.

① Figure the number of orders

Quantity used ÷ (quantity ordered × pieces per lot) — round up fractions

② Figure the total ordering cost

Number of orders placed × ordering cost

③ Figure the inventory carrying cost

Order size × carrying cost per lot

④ Figure total inventory cost

Total ordering cost + inventory carrying cost

Order size	Number of orders	Ordering cost	Inventory carrying cost	Total inventory cost
2	20,000÷(2×500) =20	20×6,000 =120,000	2×15,000 =30,000	120,000+30,000 =150,000
3	20,000÷(3×500) =14	14×6,000 =84,000	3×15,000 =45,000	84,000+45,000 =129,000
4	20,000÷(4×500) =10	10×6,000 =60,000	4×15,000 =60,000	60,000+60,000 =120,000
5	20,000÷(5×500) =8	8×6,000 =48,000	5×15,000 =75,000	48,000+75,000 =123,000

Therefore, the order size that results in the lowest overall costs is 4 lots.

●Inventory valuing method

An **"inventory valuing method"** is a method for valuing inventory—resources on hand—as assets by replacing them with their cash equivalent. The typical valuation methods are summarized below.

Category	Description
First-in first-out method	Considers oldest products to be sold and calculates inventory value of products in stock at end of period (new products in inventory).
Last-in first-out method	Considers newest products to be sold and calculates inventory value of products in stock at end of period (old products in inventory).
Average cost method	Calculates inventory value at end of period based on average cost of goods on hand.
Specific identification method	Calculates inventory value at end of period based on actual costs for each particular item.

Reference

Lot

A "lot" is a unit of quantity used in production and shipping.

It refers to a grouping of the same product.

Example

Figure out the inventory valuation the end-of-period using first-in first-out or last-in first-out methods.

Assumes items stocked first have been shipped

Assumes items stocked last have been shipped

			First-in first-out method			Last-in first-out method		
Purchase	Units	Unit price	Shipped	Inventory	Inventory valuation	Shipped	Inventory	Inventory valuation
Beginning inventory	3 units	10 yen	3 units	0 units			3 units	3 units × 10 yen = 30 yen
April	1 unit	11 yen	1 unit	0 units			1 unit	1 unit ×11 yen = 11 yen
June	2 units	12 yen	1 unit	1 unit	1 unit × 12 yen = 12 yen		2 units	2 units ×12 yen = 24 yen
July	3 units	13 yen		3 units	3 units × 13 yen = 39 yen	1 unit	2 units	2 units × 13 yen = 26 yen
September	4 units	14 yen		4 units	4 units × 14 yen = 56 yen	4 units	0 units	
Ending inventory	8 units				107 yen			91 yen

Therefore, inventory valuation is 107 yen using the first-in first-out method, and 91 yen using the last-in first-out method.

(4)Depreciation

Machinery, buildings, and other fixed assets reduce asset value over time. This is called **"depletion."** The tax code stipulates that this depletion be calculated in a certain way, and spread out over accounting periods.

This is called **"depreciation."** Two methods for figuring depreciation are the **"straight-line method"** and the **"declining-balance method."**

Revisions to the Japanese tax code in 2008 changed depreciation methods so that for equipment acquired after April 1, 2008, a new depreciation method could be applied that allows for depreciation down to a residual value of 1 yen.

Methods of depreciation	Description	Formula for calculating depreciation
Straight-line method	The purchase price is depreciated by a fixed amount every accounting period.	■ Equipment acquired March 31, 2008 or before: **(acquisition cost – residual value) ÷ Useful life** ■ Equipment acquired April 1, 2008 or after: **acquisition cost × depreciation rate corresponding to useful life (revised)**
Declining-balance method	In this method of depreciation, the original acquisition cost minus the full depreciation expenses up to that point are taken as the Undepreciated balance, and the asset is depreciated by a fixed percentage rate every period.	■ Equipment acquired March 31, 2008 and before: **Undepreciated balance × depreciation rate corresponding to useful life** ■ Equipment acquired April 1, 2008 and after: **Undepreciated balance × depreciation rate corresponding to useful life (revised)** * In Japan, the limit on the amount depreciated = acquisition cost × useful life corresponding to a guaranteed rate. * However, if the calculation of the depreciation expense is smaller than the limit on the amount depreciated, then the depreciation expense for that period is recomputed as follows. Undepreciated balance × useful life corresponding to revised depreciation rate – 1 yen

Reference

Statutory useful life

"Statutory useful life" refers to the years of service established by the Finance Ministry of Japan based on its "Years of Service for Fixed Assets Including Machinery, Buildings, and Equipment." In the tax code and other regulations, years of service are also established for different categories of assets.

Reference

Acquisition cost

"Acquisition cost" is the price required to purchase the equipment. This is the total amount, which may include handling fees, etc.

Reference

Residual value

"Residual value" is the expected value of an asset after the statutory useful life have passed. It is typically 10% of the acquisition cost.

Reference

Undepreciated balance

"Undepreciated balance" is the acquisition cost less the depreciation expense.

Reference

Depreciation rate

"Depreciation rate" is a fixed rate corresponding to the statutory useful life, given in the tax code.

Reference

Guaranteed rate

"Guaranteed rate" is a fixed rate corresponding to the statutory useful life; used to calculate the guaranteed depreciation amount.

4 Problem-solving methods

The basic methods for solving problems are summarized below.

●Brainstorming

"Brainstorming" is a method for a group of people to generate new ideas by exchanging opinions according to certain rules, and produce a solution. The rules for brainstorming are as follows.

Rule	Description
No criticizing	Do not criticize or find fault with the opinions of other people. Criticizing and fault-finding inhibit the free flow of ideas, which is to be avoided.
Quantity over quality	Try to produce as many different opinions as possible in a short period of time. The greater the quantity, the more likely a good solution will be found.
No constraints	Speak freely without being bound by existing ideas or fixed ideas. A tangent off of a major or minor theme may be hiding a breakthrough idea.
Combine and piggyback	Join together two ideas or improve upon someone else's idea. These can be expected to produce new ideas.

Points to consider for making brainstorming sessions run smoothly are summarized below.

- **The group should include 5–8 participants.**
- **All members should be at the same level in the hierarchy, with no subordinate/superior relationships to promote free expression of opinions.**
- **The location should be a conference room that members can relax in.**
- **The leader should create an atmosphere that elevates the enthusiasm of all members to draw out ideas and opinions.**
- **If it runs for more than one hour, take a break.**

Reference

Brainstorming

"Brainstorming" is a combination of the words "brain" and "storm." It refers to the spontaneous thinking of ideas.

Reference

Gordon method

The "Gordon method" is a method for generating ideas through brainstorming. This differs from brainstorming in that participants are not actually aware of the issues. Since there are no preconceptions, there is more freedom to explore new ideas and concepts than in a conventional brainstorming session.

Reference

KJ method

"KJ method" is a method for expressing group membership and clarifying problem areas. Using brainstorming techniques, a variety of different ideas are generated, each noted on its own card, and similar cards are grouped together.

Reference

Buzz session

"Buzz" refers to enthusiastic chatter.

●Buzz session

A **"buzz session"** is a method for holding unstructured discussions and collecting ideas in a small group of people. In a buzz session, a discussion proceeds as follows.

Break into groups	Participants are broken into small groups of 5–8 people.
↓	
Assign roles	Each group decides on a leader and note-taker.
↓	
Discussion within group	Each group has a discussion on a theme, lasting about 10 minutes.
↓	
Decide on a position	Each group takes a position on its theme.
↓	
Presentation of positions	The leader of each group presents the group's position.

1-1-3 Accounting and financial affairs

"Accounting" refers to recording, calculating, and organizing profit and loss events. This process is referred to as a **"financial affair,"** and the results are managed using several types of **"financial statements."**

1 Sales and profit

Managers of a corporation always need to be aware of **"sales"** and **"volume of sales"** in the course of their business activities. Towards that end, they aim to manage **"profit"** and **"loss,"** adjust inventories, and achieve maximum profit for little cost.

(1)Expense

"Expense" refers to the money that a corporation must pay in order to carry out business activities. The major categories of cost are summarized below.

Cost	The original cost of purchasing materials and manufacturing products.
Variable cost	Expenses that vary with profit including the cost of goods sold, product shipping, etc.
Fixed cost	Expenses that do not vary with profit including cost of equipment, labor, etc.
Selling, general and administrative expense	All expenses involved in manufacturing products and sales including the cost of operating sales, general administration, etc. Also referred to as "operating expenses."

(2)Profit

"Profit" is the amount of money left after subtracting expenses from sales. There are several ways to calculate profit in accountancy.
The typical methods of calculating profit are summarized below.

Gross profit	Profit calculated by subtracting cost of goods sold from sales. **Gross profit = sales – cost of goods sold**
Operating income	Profit calculated by subtracting Selling, general and administrative expense from gross profit. **Operating income = gross profit – Selling, general and administrative**
Ordinary income	Operating income plus non-operating income, less non-operating expenses. **Ordinary income = operating income + non-operating income – non-operating expenses**

These forms of profit are calculated in an **"income statement**."

(3)Break-even point

The **"break-even point"** is where sales and expenses are equal, resulting in zero profit or loss. This is referred to as **"break-even revenues**."
The break-even point is calculated so that it is possible to identify a **"profitable line**," where any revenues above the break-even point can turn in a profit.
Break-even revenues can be calculated as follows.

Break-even revenues = fixed cost ÷ (1 – (variable cost ÷ revenues))

Unit contribution margin

Unit variable cost

Unit variable cost	The proportion of revenues accounted for by variable cost. **variable cost ÷ revenues**
Unit contribution margin	The proportion of revenues accounted for by profit. **1 – unit variable cost**

Reference

Non-operating income

"Non-operating income" is interest received, dividends, and other income received apart from the operation of the business.

Reference

Non-operating expenses

"Non-operating expenses" are interest paid and other expenses incurred apart from the operation of the business.

Reference

Income statement

Refer to "1-1-3 2 (2) Income statements."

Reference

Marginal profit

"Marginal profit" is the profit remaining after subtracting variable cost from revenues.

Reference

Target income

"Target income" is the amount of profit sought from the manufacture and sale of a product. Setting a target income is useful for break-even point calculations, including how many units need to be sold.

For example, to calculate the break-even point based on a target income, calculate the marginal profit + target income. In other words, fixed cost + target income = (unit revenue – unit variable cost) × units sold. From that, units sold = (fixed cost + target income) ÷ (unit revenue – unit variable cost).

Example

With revenues of 1 million yen, variable cost of 800,000 yen, and fixed cost of 100,000 yen, calculate the unit variable cost, the unit contribution margin, and break-even revenues.

●Unit variable cost

800,000 ÷ 1,000,000 = 0.8

Expresses that 1 yen of sales incurs 0.8 yen of variable cost.

●Unit contribution margin

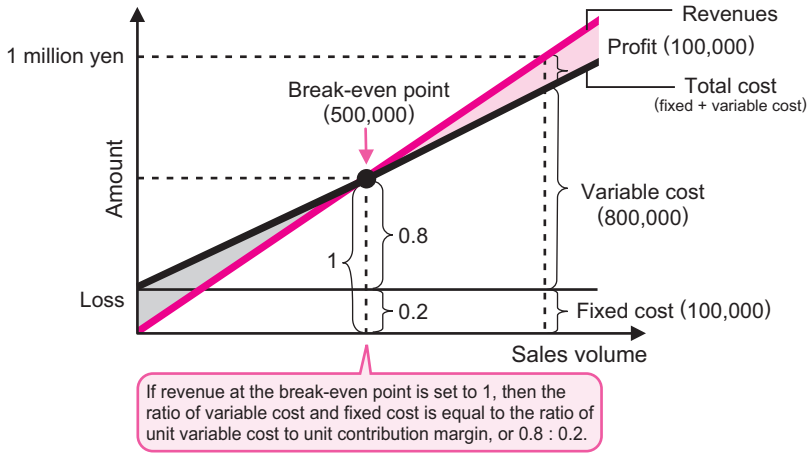
1 – 0.8 = 0.2

Expresses that 1 yen of sales contributes 0.2 yen of profit.
(0.2 yen includes profit and fixed costs.)

●Break-even revenues

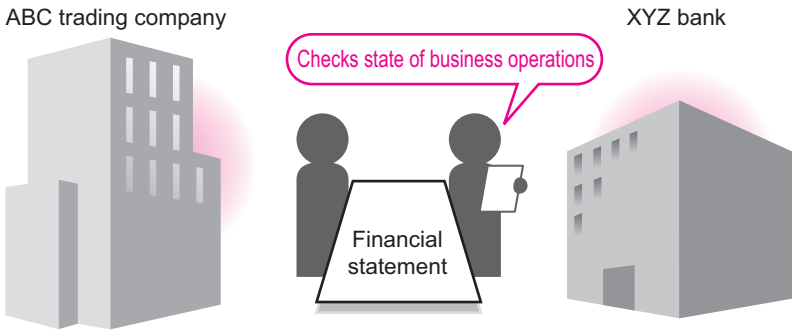
100,000 ÷ 0.2 = 500,000

The break-even point is where profit is zero, which makes all contributing profits fixed costs. To calculate break-even revenues from fixed cost, divide fixed cost by the unit contribution margin. In this case, with revenues of 500,000 yen being the break-even point, exceeding that value results in a profit, and failing to meet it results in a loss.



❷ Types of financial statements and their purposes

In financial accounting, a corporation prepares a **"financial statement"** to report its financial status to interested parties, including shareholders, banks, vendors, and public institutions.
The following are examples of financial statements.



(1)Balance sheet

A **"balance sheet"** shows a corporation's financial status at a certain point in time. On a balance sheet, debits or **"assets"** appear on the left, and credits or **"liabilities"** appear on the right. The process of checking whether the final totals of assets and liabilities agree is called a **"balance check."** A balance sheet has the following tabular format.

Titles	Amount	Titles	Amount
(Assets)		(Liabilities)	
Cash:	1,000,000 yen	Debt:	70,000 yen
Accounts receivable:	50,000 yen	Accounts payable:	40,000 yen
Inventory:	60,000 yen		
		Total liabilities:	110,000 yen
		(Owner's Equity)	
		Capital stock:	800,000 yen
		Retained earnings:	200,000 yen
		Total owner's equity:	1,000,000 yen
Total assets:	1,110,000 yen	Total liabilities & owner's equity:	1,110,000 yen

A balance sheet treats everything, including products as if transacted in terms of monetary value. Even if a rental agreement is pending, it is not subject to recording since no money has changed hands at this point.

Reference

B/S

Abbreviation for "Balance sheet."

Reference

Assets

"Assets" are items such as cash or property. They include buildings such as shops and offices, automobiles, products, and other "debits" that can be cashed in.

Major accounting titles of asset

●Current assets

Example: Cash, securities, accounts receivables, etc.

●Fixed assets

• Tangible assets
Example: Land, buildings, fixtures, etc.
• Intangible assets
Example: Patent rights, leasehold rights, goodwill

●Deferred assets

Example: Franchise fees, development costs, corporate bond issuance fees, etc.

Reference

Liabilities

"Liabilities" are items such as debt. They refer to any "credits" that need to be paid.

Major accounting titles of liability

●Current liabilities

Example: Notes payable, accounts payable, short-term debt, etc.

●Fixed liabilities

Example: Corporate bonds, long-term debt, accrued employee retirement benefit, etc.

Reference

Net assets

"Net assets" is total assets less total liabilities.

Reference

P/L

Abbreviation for "Profit & Loss statement."

Reference

ROE (Return On Equity)

"ROE (Return On Equity)" is the rate of profitability per unit of assets or shareholder equity. It shows a ratio of net income (the return) against capital (shareholder's equity) for the number of shares of stock issued. In short, it answers the question of how much profit is being returned for the money entrusted to the company by shareholders, as an index of managerial efficiency.

ROE = Net income ÷ shareholder's equity × 100

Reference

Current ratio

"Current ratio" is an index that shows to what extent current assets exceed current liabilities. The current ratio, as a percentage is given by the formula (current assets ÷ current liabilities) × 100. Higher values are indicative of stable corporate management.

Reference

Profitability

"Profitability" is an index expressing how much capital is used and how much profit is produced. Profitability = gross profit margin × total asset turnover, where gross profit margin = profit ÷ revenues and total asset turnover = revenues ÷ assets.

The higher the value, the greater the profitability.

(2)Income statement (P/L)

An **"income statement"** or **"P/L (Profit & Loss statement)"** shows a corporation's profits and losses for a fixed period. Disclosing expenses (losses) and income (profits) makes it possible to ascertain the state of the corporation's finances.

Income statement

From: 1 April 200X
To: 31 March 200X

(units: million yen)

Sales	1,000
Cost of goods sold	650
Gross profit	**350**
Selling, general and administrative expense	200
Operating income	**150**
Non-operating income	30
Non-operating loss	50
Ordinary income	**130**
Extraordinary profit	10
Extraordinary loss	20
Pre-tax profit	**120**
Corporate taxes, etc.	50
Net income	**70**

(3)Cash-flow statement

A **"cash-flow statement"** represents the flow of cash over a fixed period, by how much cash was on hand at the start of the period, and how much is left at the end. Preparing a cash-flow statement clarifies where money is going, and by looking at it alongside a P/L and B/S, it should be possible to manage funds predictably and formulate a fund-management plan for more efficient business management.

❸ Other forms of bookkeeping

Apart from required financial statements, the following are forms of bookkeeping used for corporate financial management.

(1)Journal book

A **"journal book"** is where all transactions are ordered and entered by date, and every journal page is tabulated on a single statement. For example, 1,000 yen worth of office supplies purchased with cash would be recorded as follows.

Titles	Amount	Titles	Amount
Supplies Expense	1,000	Cash	1,000

(2)General ledger

A **"general ledger"** in corporate accounting plays a fundamental role, as it is necessary for settling accounts. It is a place to organize transactions into accounting title. For example, 1,000 yen worth of office supplies purchased with cash would be recorded as follows.

Cash

Titles	Amount	Titles	Amount
		Supplies Expense	1,000

Supplies expense

Titles	Amount	Titles	Amount
Cash	1,000		

(3)Trial balance sheet

A **"trial balance sheet"** is a table showing the credits and debits for each title of account, showing balance totals, without P/L or B/S sections. These figures are used as a check when preparing financial statements.
Also referred to as **"total trial balance sheet."**

Balance	Debit	Accounting title	Credit	Balance
700,000	1,300,000	Cash	600,000	
150,000	500,000	Accounts payable	350,000	
	200,000	Accounts receivable	600,000	400,000
		Capital stock	1,000,000	1,000,000
800,000	800,000	Retained earning		
		Sales	850,000	850,000
600,000	600,000	Purchase		
2,250,000	3,400,000		3,400,000	2,250,000

Reference

Accounting title

An "accounting title" is a journal item that appears in a financial statement as a title. These include cash, expenses, product, accounts payable, accounts receivable, etc.
"Accounts payable" is a term used for purchases by the company, where payment is to be paid in the future; "accounts receivable" are purchases from the company where payment is to be received in the future.

1-2 Legal affairs

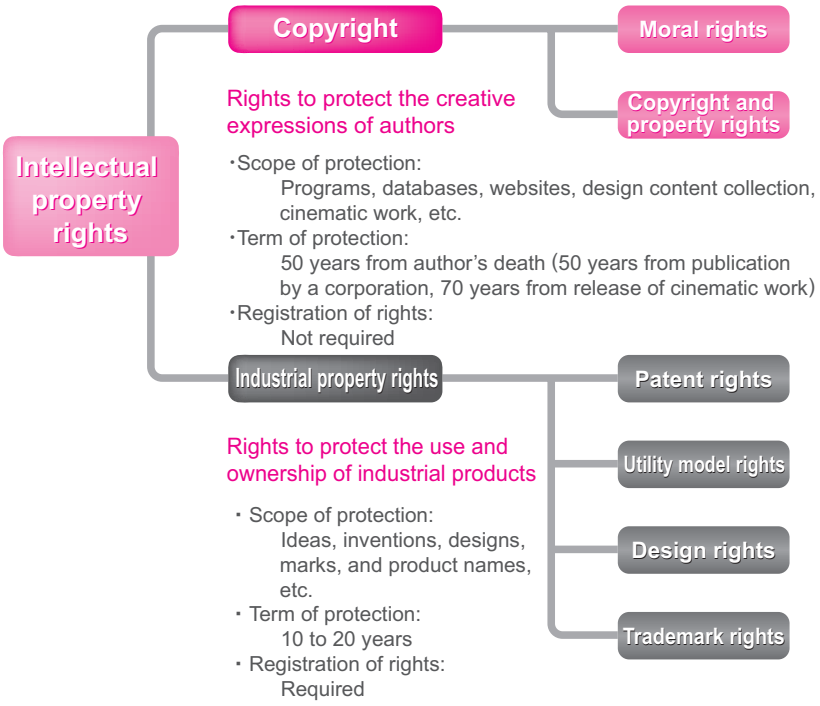
Reference

Business model patent

A "business model patent" refers to a patent for a model or method of business. Advancements in IT in particular have led to the adaption of IT into business methods, enabling corporations to substantiate what they do as a business and where they make profit. A new business method is first recognized when it is submitted for a patent application and is successfully approved. The Japan Patent Office calls these patents "business method patents."

1-2-1 Intellectual property rights

"Intellectual property rights" are rights that are afforded to protect creations that arise from the intellectual and creative activities of persons. Intellectual property rights can be organized into the categories summarized below.



1 Copyright

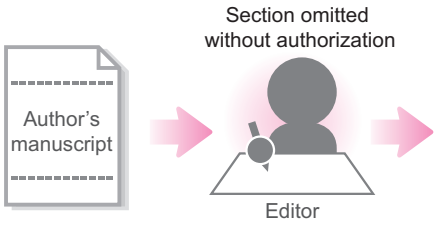
A **"copyright"** is a right that protects the creative expressions of authors. Copyrights were originally established to protect the rights of authors who created works such as paintings and stories. Following the widespread use of computers, the scope of copyrights was expanded to include programs and data. Copyrights are distinct from intellectual property rights in that copyrights protect the creative expressions of authors, while industrial property rights protect ideas. In addition, a copyright becomes effective immediately upon creation of any work. An application or registration is unnecessary to obtain the rights.

Copyrights are broadly categorized into **"moral rights"** and **"copyright and property rights."**

(1)Moral rights

"Moral rights" are rights that are exclusively held by the author in order to protect their feelings, sentiments, and conscience. Moral rights belong solely to the author, and generally cannot be transferred or inherited. In addition, the term of protection is considered to continue in perpetuity.
The most common examples of moral rights are summarized below.

Moral rights	Description
Right of publication	Right to decide timing and method of publication.
Right of real name announcement	Right to decide use of real name and its display at time of publication.
Right of avoidance of modification	Right to prevent unauthorized alteration of work.



If changes are made unilaterally without obtaining the consent of the author, it is an infringement of the right of avoidance of modification.

(2)Copyright and property rights

"Copyright and property rights" are rights that protect any property related to the author's work. Copyright and property rights are commonly referred to as simply **"copyrights."** As a rule, the term of protection is 50 years from the death of the author, or 50 years from publication by the corporation. From the perspective of property, copyright and property rights can be transferred or inherited either partially or in entirety.
The most common examples of copyright and property rights are summarized below.

Copyright and property rights	Description
Right of reproduction	Right to reproduce work in the form of copies, photographs, and audio and visual recordings.
Right of translation	Right to translate or rearrange work.
Right of public rental	Right to provide reproductions of work (excluding cinematic work).
Right of public transmission	Right to broadcast work, or engage in automatic transmission of information from a server based on requests from the public.
Right of screening	Right to screen cinematic work.
Right of recitation	Right to communicate the work such as through recitation.

Reference

Neighboring rights

"Neighboring rights" are rights that are held by those who play a vital role in the communication of work, such as performers and broadcasters. Unauthorized acts such as making an audio recording of a live concert performance, is an infringement of neighboring rights. The term of protection for neighboring rights is 50 years from the live performance.

Reference

Reproduction of white papers

White papers are reports that are published by organizations such as federal and local government institutions, and independent administrative agencies. For this reason, reproduction of white papers is permitted for items such as explanatory documents unless explicitly prohibited.

(3)Intellectual property rights for websites

Article 10-1 of the Copyright Act does not contain any reference to websites in giving concrete examples of works. However, Article 2-1-1 of the Copyright Act defines work as **"a production in which thoughts or sentiments are expressed in a creative way and which falls within the literary, scientific, artistic, or musical domain."** Accordingly, if a website is expressed in a creative way, it is thought to be protected as a work. When requesting an outside party to prepare a website, it is important to clearly state who the copyright belongs to. Care must also be taken to ensure that information contained in websites does not infringe on the copyrights of others.

❷ Legislation concerning industrial property rights

"Industrial property rights" are afforded for the monopolized use of ideas, inventions, designs, and logo marks for industrial products, and to protect against imitations. These rights fall under the jurisdiction of the Japan Patent Office.

The types of industrial property rights are summarized below.

Industrial property right	Scope of protection	Related legislation	Term of protection
Patent rights	Ideas and inventions	Patent Act	20 years from application
Utility model rights	Idea or contrivance relating to the shape or structure of an article	Utility Model Act	10 years from application
Design rights	Design or decoration of an article	Design Act	20 years from registration
Trademark rights	Trademarks including marks and product names that denote a product	Trademark Act	10 years from registration (Extendable)

❸ Unfair Competition Prevention Act

The **"Unfair Competition Prevention Act"** prescribes the regulations for acts of unfair competition. Specifically, it deals with areas such as theft of trade secrets and ideas, imitation of goods, and circulation of rumors in a way that is disadvantageous to a competitor. When competition through such unfair acts is neglected and permitted to exist, it erodes the principle of fair competition in the market, which may cause confusion in the marketplace and result in significant damages to the consumers. Whereas intellectual property rights exist to protect proprietary rights, the Unfair Competition Prevention Act was enacted from the standpoint that such rights only exist if a fair market has been secured. Accordingly, the purpose of the Unfair Competition Prevention Act is to control illegal acts that are detrimental to fair competition.

Reference

Trade secrets

"Trade secrets" under the Unfair Competition Prevention Act include know-how, customer lists, marketing manuals, terms of business, and systems design documents that have not been disclosed to the public. The term refers to trade or technical information that is managed within a corporation as a secret.

Major acts of unfair competition are summarized below.

- **Using a famous brand belonging to another party for advertising purposes.**
- **Marketing an imitation product that is identical to the real product within three years from the day it was marketed.**
- **Acquiring and using confidential information of another company such as technical manufacturing information and customer information through unfair means such as fraud or theft.**
- **Providing false information about the origin, quality, contents, manufacturing method, application, and quantity of goods.**
- **Circulating falsified facts or rumors that damage the business reputation of another competitor.**
- **Acquiring and abusing the domain name of a famous corporation before it is officially created.**

The Unfair Competition Prevention Act allows for injunctions to be made against infringing persons, and provides measures for restoring the reputation of the business. It also facilitates the seeking of damages based on the estimated amount of damages, and the filing of a criminal case in the event of infringement.

4 Software license

A **"software license"** refers to the right to use software, and is granted by the software maker to the purchaser.

(1)Software and copyright

Software is protected under the Copyright Act. Any illegal copying of software is a clear copyright infringement and considered a criminal act. The scope of protection under the Copyright Act is summarized below.

Area	Scope of protection	Not protected
Programs and related	• Programs (Source programs, object programs, application program, operating systems)	• Solutions for programs • Algorithms • Languages for creating programs • Rules
Data and related	• Databases	• Data
Multimedia and related	• Websites • Still images from design content collection • Moving images from design content collection • Audio clips from design content collection	

Reference

Public domain software

"Public domain software" refers to software in which the copyrights have been disclaimed.
Since the creator disclaims all rights, those who obtain the software may use it free of charge or alter the software at will.

Reference

Digital watermarking

"Digital watermarking" is the process of embedding digital information such as images and audio with special information to the extent that it does not affect the integrity of the quality. Digital watermarking is used to protect copyrights by guarding against unauthorized copying and alteration.

(2)Prohibition of copying software

Reproducing software without the permission of the copyright holder is strictly prohibited. Commercial software usually contains an agreement when purchased. The right (license) to use the software is granted only if the purchaser consents to the contents of the agreement such as the scope of use.

In general, copying software is permitted only for backup purposes.

(3)License agreement

A **"license agreement"** refers to an agreement to purchase a software license. The contents of the license may vary depending on the number of computers involved. When a corporation or school installs software in volume, it is sometimes called a **"volume license agreement."** The right of use for a software agreement is usually restricted to a single computer or a single user, but in the case of a license agreement, a single software package can be used for a designated number of computers (or users). In effect, this makes the price lower than purchasing a software package for every computer, and it also eliminates waste in the form of packaging and manuals. The contents of the agreement may vary depending on the software maker.

Reference

Free software and shareware

"Free software" is software that is distributed free of charge.

"Shareware" is software that can be purchased for a low fee if the user likes the software after trying it. Copyrights for free software, shareware, and programs created through outsourcing belong to the creator. Reproduction, redistribution, or alteration is prohibited unless there is a special agreement in place.

5 Other rights

Certain rights are recognized in practical application based on legal precedence, even if the rights do not exist as written legislation. These rights are summarized in the following sections.

(1)Privacy rights

"Privacy rights" are rights that afford persons the ability to withhold details about their personal life in order to protect their character. Actions such as eavesdropping on personal conversations, surveillance of personal behavior, and disclosure of details about personal life are considered an infringement of privacy. Privacy rights are based on **"respect for the individual"** under the Japanese Constitution. Protection of personal data is specifically covered under the **"Act on the Protection of Personal Information."**

(2)Portrait rights

"Portrait rights" are rights that protect the likeness of persons captured through media such as photographs, video tape recordings, and portraits.

Copyrights for photographs, video tape recordings, and drawings belong to the person who originally took or drew the image. However, privacy rights for the likeness of persons belong to the individual who is the subject of the likeness. Any publication without the consent of the subject is an infringement of portrait rights. Portrait rights are recognized for all individuals, and not just famous persons.

(3)Publicity rights

"Publicity rights" protect the right to secure (economic) profits from a name or portrait, and are recognized for persons such as entertainers, celebrities, and athletes. Consequently, use of the name or portrait of a famous person without consent is an infringement of publicity rights.

1-2-2 Laws on security

The increasing prevalence of computer-related crime has led to increased emphasis on legislation concerning security.
The **"Act on the Prohibition of Unauthorized Computer Access"** is a typical example of legislation that concerns security.

●Act on the Prohibition of Unauthorized Computer Access

The **"Act on the Prohibition of Unauthorized Computer Access"** was enacted in 1999. The purpose of this legislation is to prohibit unauthorized computer access. Under the legislation, unauthorized computer access of the kind described below is defined as a crime and subject to regulation.

①Act of inputting an identification code for another person without permission

Use of the user ID or password of another person without permission for the purpose of impersonating an authorized user and removing restrictions on use, in order to enable the use of a computer.

②Act of inputting information or a command other than an identification code

Use of an open port or security hole, and use of an unauthorized method for the purpose of intruding on a system and removing restrictions on use, in order to enable the use of a computer.

Penal provisions for actions ① and ②: Penal servitude of not more than one year or fine of not more than 500,000 yen

③Act of facilitating unauthorized computer access

Supplying a user ID or password of another person to a person other than the authorized user or administrator for the purpose of facilitating unauthorized computer access.

Penal provisions for action ③: Fine of not more than 300,000 yen

Reference

Security

Refer to "Chapter 9-5-3 Information security measures and information security implementation technology."

Reference

Identification code

An "identification code" is used to identify a person, such as a user ID and password, fingerprint, voiceprint, and iris pattern.

Reference

Port

A "port" refers to an interface that a computer uses as a gateway for network communications.

Reference

Protective measures against unauthorized computer access

Article 5 of the Unauthorized Computer Access Law recommends that access administrators take measures to protect against unauthorized computer access. Specifically, access administrators should take the following measures.

- Comprehensively manage user IDs and passwords
- Close security holes (security oversights)
- Use encryption and digital signatures
- Set access privileges

1-2-3 Laws on labor and transaction

Legislation concerning labor and transactions exist for the purpose of providing conditions for labor and transactions.

❶ Laws on Labor

The following sections describe examples of legislation that concern labor.

(1)Labor Standards Act

The **"Labor Standards Act"** is the basic piece of legislation that concerns labor. In accordance with Article 27-2 (Working Conditions) of the Constitution of Japan, the Labor Standards Act prescribes the minimum standards for working conditions that are needed. Working conditions for everyday work must meet the standards prescribed in the Labor Standards Act such as eight hours work per day, working overtime, payment of compensation, and annual paid leave.

●Background of Labor Standards Act

Issues such as shorter working hours, adoption of two full days off per week, full use of annual paid leave, and reduction of overtime labor are major issues in Japan. For various reasons including competition with other companies in the same sector, transaction practices, and excessive service, it is difficult for individual companies to improve the situation through their efforts alone. A legal system was therefore created in order to provide an environment that facilitates further progress in shortening labor hours.

●Purpose of Labor Standards Act

The purpose of the Labor Standards Act is to protect workers, who are in a socially and economically disadvantaged position compared with employers.

●Scope of application for Labor Standards Act

The Labor Standards Act applies to all nationalities and industries, and is applicable when employing even a single worker who is not a relative. The legislation protects workers but not employers (business operators).

●Prohibited actions and penal provisions

The Labor Standards Act provides the following penal provisions if an employer uses a worker under standards below what is prescribed in the Labor Standards Act.

Prohibited Act	Penal Provisions
Forced labor	Imprisonment of not less than one year and not more than 10 years, or a fine of not less than 200,000 yen and not more than 3,000,000 yen
Intermediate exploitation or violation of minimum age	Imprisonment of not more than one year, or a fine of not more than 500,000 yen
Violation of equal treatment or equal wages for men and women	Imprisonment of not more than six months, or a fine of not more than 300,000 yen
Violation of contract period or clear indication of working conditions	Fine of not more than 300,000 yen

(2)Dispatched Workers Act (Act for Securing the Proper Operation of Worker Dispatching Undertakings and Improved Working Conditions for Dispatched Workers.)

The **"Dispatched Workers Act"** is officially known as the **"Act for Securing the Proper Operation of Worker Dispatching Undertakings and Improved Working Conditions for Dispatched Workers."**

The purpose of this legislation is to set forth the rules to observe for dispatching companies and client companies in order to protect the working rights of dispatched staff. The Dispatched Workers Act was revised in June 2003.

The content of the revisions are summarized below.

- **Re-examination of limitation for dispatching period**
- **Re-examination of employment system for dispatched workers by client company**
- **Expansion of dispatch work**
- **Re-examination of the work of the person responsible from the dispatching company**
- **Re-examination of the duties of the person responsible from the client**

The Labor Standards Act is a piece of legislation whose purpose is to protect the rights of all employed working persons, including full-time employees, dispatched staff, and part-time workers. The Dispatched Workers Act is distinguished from the Labor Standards Act in that it focuses on the **"rights of dispatched workers"** who are not entirely covered by existing legislation.

(3)Confidentiality agreement

A **"confidentiality agreement"** is an agreement in which a party who may be exposed to confidential information agrees not to use information obtained through the course of duties for other than the specified purposes, and agrees not to leak the information to a third party. This type of agreement is also called an **"NDA (Non-Disclosure Agreement)."**

It is common to exchange a confidentiality agreement when dispatching a worker or outsourcing work.

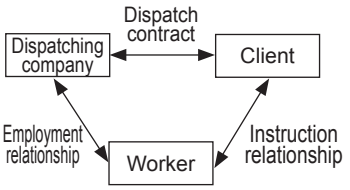
The main elements of a confidentiality agreement are summarized below.

- **Specific information covered**
- **Method of management**
- **Terms for disclosure to third parties when outsourcing**
- **Permissibility or prohibition of reproduction**
- **Purpose of use**
- **Obligation to return or destroy materials**

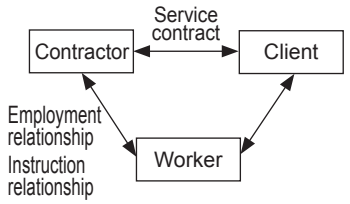
Reference

Dispatching and Contracting

"Dispatching" refers to engaging a worker who is employed by the dispatching company to perform labor for the client under the instructions of the client.



"Contracting" refers to engaging a worker who is employed by the contractor to perform labor for the client under the instructions of the contractor.



Reference

Temporary Transfer

A "temporary transfer" occurs when a person is temporarily transferred to a subsidiary or other affiliated company, or a business partner while remaining a registered employee of the original company. There are two types of temporary transfers. One is a "retention of employment" method in which the person has an employment contract with both the transferring company and the company being transferred to. The other is a "transfer of employment" method in which the person only has an employment contract with the company being transferred to.

Reference

NDA

Abbreviation for "Non-Disclosure Agreement."

(4)Types of agreements

There are various types of agreements concerning work aside from confidentiality agreements.

●Mandate contract

A **"mandate contract"** is an agreement that is established when the delegated party consents to undertaking the work entrusted to it by the delegating party. The completion of work is not always the purpose of the mandate contract. Accordingly, the agreement provides for compensation if certain processes are executed.

A mandate contract is an agreement that is based on a relationship of mutual trust and as such, the delegated party may not entrust the work to a third party without the consent of the delegating party.

●Service contract

A **"Service contract"** is an agreement in which the ordering party requests the contractor to undertake work, and pays compensation when the work is completed. The purpose of a service contract is to complete the work and as such, compensation is not paid if the contractor is unable to produce results (deliverables).

As a rule, the contractor may use subcontractors to perform the work.

●Employment agreement

An **"employment agreement"** is a promise made by a corporation or other entity to pay compensation in exchange for an individual to supply labor to the company. The employer has a duty to clearly state the wages, working hours, and other working conditions when entering into the agreement.

There are a number of employment patterns such as a **"full-time employee," "contract employee,"** and **"part-time employee."** The patterns of employment have become increasingly diversified, and more individuals are working for various companies by entering into employment contracts as a dispatch employee.

❷ Laws on Transactions

The following sections are examples of legislation that concern transactions.

(1)Subcontract Act

Under a situation in which work is contracted to a subcontractor, the contracting company is in a stronger position relative to the subcontractor. As a result, it is not uncommon for subcontractors to be treated unfairly such as by delaying payment of proceeds or providing only partial payment, which serves only the interests of the contracting company.

The **"Subcontract Act,"** officially known as the **"Act against Delay in Payment of Subcontract Proceeds, Etc. to Subcontractors,"** was enacted in order to protect the interests of subcontractors by improving such circumstances and regulating fair transactions for subcontracting. The Subcontract Act was revised in April 2004 to expand the scope of the legislation to cover contracting for the creation of information-based products such as software, programs, databases, and Web content. The revised legislation also strengthens the penal provisions for violations.

(2)Product Liability Act

The **"PL (Product Liability Act)"** is a piece of legislation that sets forth the liability for damages of manufacturers if there is injury or loss to the life, body, or property of the consumer of a product due to a defect in the product.

Prior to the introduction of the Product Liability Act, liability for damages to victims required proof that the accident was caused by the negligence of the manufacturer. However, with the introduction of the Product Liability Act, it is only necessary to show proof that the accident was caused by a defect in the product in order for the liability for damages to exist.

Reference

PL

Abbreviation for "Product Liability."

1-2-4 Other legislation, guidelines, and engineer ethics

In addition to complying with legislation prescribed under civil and criminal law, it is necessary to act in compliance with codes, guidelines, and criteria for engagement set forth within organizations.

1 Compliance

"Compliance" refers to achieving compliance with all rules including legislative systems, corporate ethics, and codes of conduct. Corporate activities are expected to comply with relevant legislation and regulations, but there is seemingly no end to scandals that arise due to a lack of moral judgment or inadequate sense of crisis. Scandals also occur because of response that places the interests of the corporation first, and due to insufficient recognition of criminal activity or social responsibility.

The preponderance of scandals has accelerated the introduction of legislative systems for internal controls in Japan, reflecting the trend in other countries. Corporations must implement internal controls and compliance management in order to engage in healthy corporate activities that do not work against the interests of stakeholders such as investors, business partners, and customers.

Internal controls and compliance are often confused with each other, but compliance is one of the purposes of internal controls.

Reference

Compliance

In Japan, compliance refers to "regulatory compliance."

Reference

Internal control

Refer to "Chapter 6-2-2. Internal control."

(1)Act on the Protection of Personal Information

The **"Act on the Protection of Personal Information"** is a piece of legislation that sets forth the duties to be observed by business operators handling personal information in order to protect the rights and interests of individuals, while taking into consideration the practicality of personal information. The legislation was brought into effect in April 2005, and imposes penal provisions against regulatory violations by business operators that handle personal information.

Reference

Personal information

"Personal information" refers to information that can be used to identify a specific individual such as a name, date of birth, or address. Information about occupation, personal income, family, and health condition are also forms of personal information.

Reference

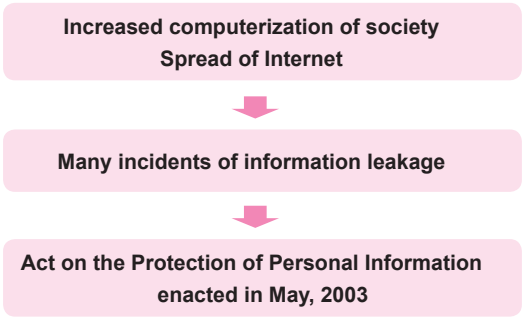
A business operator handling personal information

"A business operator handling personal information" is defined as a business operator using a database with personal information on more than 5,000 individuals. Business operators that handle personal information on 5,000 individuals or less, and civilians with personal information on more than 5,000 individuals are not covered.

●Background of Act on the Protection of Personal Information

Computers and the Internet continue to play an ever-increasing role in daily life and work. Meanwhile, there are increased opportunities for the handling of personal information, such as through the use of online shopping and auction sites by individuals, and management of customer information and human resources information collected by organizations.

Under the circumstances, incidents involving the leakage of personal information are occurring with great frequency. Individuals whose personal information is leaked must deal with the threat of having to cope with various issues such as nuisance telemarketing calls, large amounts of direct mail, and misleading payment notices. In response to these threats, the Japanese government passed and enacted the **"Act on the Protection of Personal Information"** in May 2003.



●Prohibited acts and penal provisions

The acts outlined below are prohibited under the Act on the Protection of Personal Information.

- **Handling of personal information beyond its intended purpose of use.**
- **Acquisition of personal information by unauthorized means.**
- **Failure to notify or publish the purpose of use at the time of acquiring personal information.**
- **Management that exposes personal information to the risk of leakage, loss, or damage.**
- **Failure to supervise the employees of the organization handling personal information or trustees (wherein employees engage in acts such as freely removing personal information to the outside).**
- **Provision of personal information to a third party without the consent of the person.**
- **Failure to act on a request from the person to disclose, correct or stop using personal information.**
- **Failure to disclose personal information to the person.**
- **Failure to act on a request from the person to revise the personal information, where the request is based on factual inaccuracies in the personal information.**
- **Failure to cease the use of personal information or provision to a third party, despite a request from the person.**
- **Collection of charges that are not within the scope considered reasonable for the disclosure of personal information.**

If a business operator engages in prohibited actions, the competent ministers, which comprise ministers of authorities having jurisdiction over the business of the organization may demand improvement.

If the violations continue even after an order is issued, the business operator is subject to imprisonment of not more than six months, or a fine of not more than 300,000 yen.

In addition, if a business operator is asked by a competent minister to file a report concerning the handling of personal information, and either fails to file the report of files a false report, the business operator incurs a fine of not more than 300,000 yen.

These penal provisions are imposed against the representative of the organization or the individual that committed the violation.

(2)Nuisance e-mail law

The **"Nuisance E-mail Law,"** officially called the **"Act on Regulation of Transmission of Specified Electronic Mail,"** was enacted in order to prevent problems surrounding the mass sending of e-mails to many and unspecified persons, such as of direct mail and advertising.

(3)Service Providers Law

The **"Service Providers Law"** is officially called the **"Act on the Limitation of Liability for Damages of Specified Telecommunications Service Providers and the Right to Demand Disclosure of Identification Information of the Senders."** The purpose of this legislation is to set forth the limitation of liability for damages (immunity) of service providers, in the event of the release of personal information, or publication of slander through a website existing on a rental server operated by a specified telecommunications service provider. The legislation also gives infringed persons the right to demand disclosure of the name and other identification information for the sender.

(4)Standards

Various codes and standards exist concerning information security at corporations, including those summarized in the following sections.

●Standards for Measures against Computer Viruses

The **"Standards for Measures against Computer Viruses"** outline measures to prevent infection from computer viruses, and measures for identification, deletion and recovery in case of infection.

●Standards for Measures against Unauthorized Access to Computers

The **"Standards for Measures against Unauthorized Access to Computers"** outline measures for protection, identification, prevention, recovery, and recurrence prevention against unauthorized access to information systems.

The standard addresses protection against unauthorized access from the perspective of follow-up response, education, and auditing, in addition to management.

●System Management Standards

The **"System Management Standards"** outline the measures that should be taken by corporations with information systems. The standard includes more than 280 items of criteria for checking, and sets forth a broad range of guidelines concerning all aspects of information systems from IT strategy to planning, development, operation, maintenance, and common processes of information systems.

Reference

Provider

Refer to "Chapter 9-4-3 Network Application."

Reference

Netiquette

"Netiquette" is a compound word formed from "net" and "etiquette."

Reference

Encryption

Refer to "Chapter 9-5-3 Information security measures and information security implementation technology."

Reference

Compression

Refer to "Chapter 9-2-1 Multimedia technology."

Reference

Chain e-mail

"Chain e-mail" is an e-mail form of a chain letter. Chain e-mail is widely and repeatedly sent in a chain with instructions to send the content of the e-mail to many and unspecified persons.

(5)Information ethics

"Information ethics" are information morals and manners that should be observed in an information society.

In modern society, where information is obtainable through many means, there is a need to be aware of rights such as intellectual property rights, copyrights, and privacy rights. The Internet occupies an important position today as a place for handling information, and provides a level of anonymity that tends to give rise to ethical issues, which makes it necessary to observe **"netiquette"** in particular.

●Netiquette

"Netiquette" is a form of etiquette that is used on networks. The following are some rules of netiquette.

- **Use encryption to send e-mail that is to be kept confidential.**
- **Indicate your name or other personal identification in public e-mails.**
- **Refrain from sending large volumes of data. Send compressed data.**
- **Do not send multiple unspecified e-mails such as advertisements.**
- **Do not send chain e-mails.**
- **Do not use characters that are specific to a computer such as single-byte katakana characters and special symbols.**
- **Do not handle images that are morally indecent.**
- **Do not slander other persons.**

❷ Corporate governance

In recent years, corporate and government scandals are surfacing one after another, and scandals similar to those in the past are recurring. Despite the considerable fallout that can result such as loss of customers and profit, sharp decline in share prices, and bankruptcy, there is no indication of scandals decreasing.

These scandals not only damage the image of corporations, but they also damage the interests of stakeholders including investors, business partners, and customers.

Under these circumstances, there is a growing need for corporations to achieve transparency and clarify their responsibilities, as well as promote them to internal and external persons. **"Corporate governance"** sets forth principles for continually monitoring corporate activities, and checking the transparency and health of management to provide a framework that prevents scandals within management and organization.

Corporate governance is attained through a number of methods including the appointment of appropriate external directors, enhancement of the framework for information disclosure, and strengthening of the auditing department.

The main purposes of corporate governance are as follows.

- **Check and stop reckless behavior that is in the self-interest of upper management.**
- **Check and stop illegal acts involving the organization.**
- **Secure the transparency, health and compliance of management.**
- **Secure comprehensive accountability toward stakeholders.**
- **Achieve rapid and appropriate information disclosure.**
- **Clarify the responsibilities of upper management and business managers at each level.**

3 Request for information disclosure by administrative organs

The **"Information Disclosure Act,"** officially called the **"Act on Access to Information Held by Administrative Organs,"** provides all individuals with the right to request disclosure of any administrative document held by administrative organs.

Under the legislation, any individual may file an information disclosure request in order to inspect a document prepared by an administrative organ. However, documents that contain non-disclosure information cannot be inspected, including documents containing personal information that can be used to identify a specific individual, and information that could trespass on property rights if disclosed.

1-2-5 Standardization

Standardization organizations formulate **"standardization"** plans for various purposes such as improving quality, reducing costs, and improving commonality and efficiency.

1 Standardization

"Standardization" is the process of formulating standards for the convenience and unanimity of work, and is effective in preventing diversification and complexity. Standards are formulated by international standardization organizations, the leading example of which is the **"ISO (International Organization for Standardization),"** and national standardization organizations.

Standardization is widely used for applications such as the description method and development method in design documents that are used in the manufacturing industry and software development. Use of standardization raises the skill level of employees and product quality, and facilitates the advancement of work activities. Consequently, standardization is considered to provide major economic advantages and benefits for consumers.

Reference

Crisis communication

"Crisis communication" is a communication method based on making appropriate decisions rapidly when disclosing information to the mass media about developments and response measures in case of a scandal or crisis situation.

Reference

Standardization organizations

Standardization organizations can comprise international standardization organizations and national standardization organizations. These organizations do not have a profit motive. Standardization organizations promote standards such as the common use of data between software through the publication of recommendations and reference information.

2 Standardization organizations and specifications

The following are typical international standardization organizations and national standardization organizations.

(1)International Organization for Standardization

The **"ISO (International Organization for Standardization)"** is a civil non-government organization that sets forth international standards in a broad range of areas for the purpose of facilitating the international circulation of goods and services.

The following are descriptions of some of the typical international standards and specifications set forth by the ISO.

*The ISO number indicates the document number of each respective standard.

●ISO 9000 Series

The **"ISO 9000 Series"** is a set of standards that describe the requirement specifications for quality control management systems.

ISO 9000 is not a standard for the products themselves. Rather, it is a standard for evaluating quality management to determine how corporations engage in quality management for products.

ISO 9000 was said to have been originally developed to secure the success of the Space Shuttle program run by NASA (U.S. National Aeronautics and Space Administration), with the aim of standardizing production to manufacture products of high reliability.

●ISO 14000 Series

The **"ISO 14000 Series"** is a set of standards that describe the specifications for environmental management systems.

ISO 14000 is not a standard for the products themselves. Rather, it is a unified global standard for determining the extent to which corporations engage in environmentally friendly management. Under ISO 14000, organizations implement PDCA (Plan, Do, Check, Act) cycles in order to continuously engage in environmental conservation initiatives. ISO 14000 was formulated in response to the adoption of the **"Rio Declaration on Environment and Development"** and **"Agenda 21"** comprehensive action plan for the environment, at the United Nations Conference on Environment and Development (Earth Summit) in 1992. The intention was to provide a framework for continuous improvement of the environmental impact of corporate activities.

●ISO 15408

The **"ISO 15408"** is a standard for objectively evaluating the security quality of IT products and systems that are subject to security evaluation.

ISO 15408 certifies that there are no issues with security quality by checking and testing the security functions and quality of individual information processing products and information processing systems. Checking and testing covers content such as design documents, program source code, test results, and manuals. The JIS version of ISO 15408 is called **"JIS X 5070."**

Reference

ISO

Abbreviation for "International Organization for Standardization."

Reference

NGO

Abbreviation for "Non-Governmental Organization."

Reference

JIS Q 9001

"JIS Q 9001" is the JIS version of the ISO 9001 standard used in Japan. "JIS Q 9001" specifies the requirements for quality management systems. As a document for quality management systems, JIS Q 9001 includes requirements for quality policies and quality targets of organizations, and quality manuals. Under JIS Q 9001, documentation is executed appropriately based on the size of organization, type of activities, and complexity of processes.

Reference

JIS

Abbreviation for "Japan Industrial Standards." JIS sets forth the standards for the classification, shape, dimensions, and construction of all industrial products. The JIS symbol is applied to JIS-certified products.

Networking and distribution of computer systems has led to an increasing emphasis on security for information systems. This has created the need to evaluate and certify the level of security built into individual information processing products for database management, firewalls, and IC cards, and for information processing systems such as Internet banking and authentication services.

●ISO/IEC 17799

"ISO/IEC 17799" provides standards for implementing security management, comprising both a standard (international standardization specification) for implementing IT security management, and a system for IT security management.

The British Standards Institute (BSI) developed the BS 7799 standard in 1999, and in response, ISO developed the **"ISO/IEC 17799"** standard as an international standard. BS 7799 is a standard specification for information security management systems (ISMS). In Japan, the **"JIS X 5080"** standard was developed in 2002 based on guidelines from the ISO specifications.

The Japan Information Processing Development Corporation (JIPDEC) defines ISMS as **"a system for information security (by which) the organization can determine the necessary security level, make up plans and distribute its assets based on its own risk assessment in addition to technical countermeasures against each individual issue."** JIPDEC also operates an **"ISMS Conformity Assessment System"** in which third party organizations certify the ISMS of corporations for conformity with ISO/IEC 17799.

An **"ISMS"** is a comprehensive framework for corporations and organizations to manage information appropriately, and maintain and improve security through the setting of controls based on a security policy. The ISMS framework also provides for implementing risk management and engaging in continuous and regular review of the framework.

(2)IEC (International Electrotecnical Commission)

The **"IEC (International Electrotechnical Commission)"** is a body that develops international standards in the electrical and electronic fields.

(3)IEEE (Institute of Electrical and Electronics Engineers)

The **"IEEE (Institute of Electrical and Electronics Engineers)"** is a body that engages in research and development of standards for electronic components and communications schemes. The **"IEEE 802 Committee"** is a subcommittee that develops LAN standards. The **"IEEE 802.3 Committee"** and **"IEEE 802.11 Committee"** are subcommittees that develop standards for Ethernet LANs and wireless LANs respectively.

Reference

Security policy and risk management

Refer to "Chapter 9-5-2 Information security management."

Reference

IEC

Abbreviation for "International Electrotechnical Commission."

Reference

IEEE

Abbreviation for "Institute of Electrical and Electronics Engineers."

Reference

W3C

Abbreviation for "World Wide Web Consortium," which is an international organization that develops many Web standards.

Reference

LAN

Refer to "Chapter 9-4-1 Network systems."

❸ Examples of IT standardization

The following are examples of standardization in IT.

●JAN (Japan Article Numbering) code

The **"JAN (Japan Article Numbering) code"** is a JIS standard barcode comprising 13 digits. From left to right, the JAN code comprises a 2-digit country code, 5-digit manufacturer code, 5-digit product code, and single digit check code. JAN code is commonly used today at the cash registers of retail stores such as supermarkets and convenience stores, and is printed on all kinds of product packages.

The JAN code is simply passed over a barcode reader to input the product name and price at the cash register.

Below the barcode is a numbered code. If the barcode cannot be read, the numbered code can be manually entered using a keyboard.

Sample of JAN code

Reference

Barcode

A "barcode" is an identifier that uses bars and spaces of varying widths to represent numbers and characters. A barcode is a one-dimensional code in which data is only read in a horizontal direction.

Reference

JAN (Japan Article Number) code

Abbreviation for "Japan Article Number" code. There is a standard 13-digit version and a shortened 8-digit version.

●QR (Quick Response) code

A **"QR (Quick Response) code"** is a JIS standard two-dimensional code. While a barcode can only read information in the horizontal direction, the QR code contains information in both the horizontal and vertical directions, enabling the code to hold more information than a barcode. A QR code is also referred to as a **"two-dimensional barcode symbology."**

The QR code contains a cutout symbol on three corners to enable quick and accurate reading in any 360 degree direction.

Sample of QR code

Reference

QR (Quick Response) code

Abbreviation for "Quick Response code."

1-3 Chapter quiz

*See page 2 in the "Answers and Explanations" booklet for the correct answers.

1-1

Which of the following is the organization that is established by selecting personnel from related departments, who have the required skills and experiences, to perform system development?

a) Divisional organization
b) Functional organization
c) Project organization
d) Matrix organization

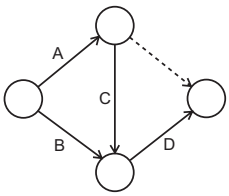
1-2

A list of activities for a project plan is shown below. Which of the following represents it as an arrow diagram?

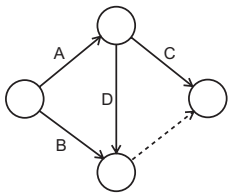
[List of activities]

Activity	Preceding activities
A	None
B	None
C	A
D	A, B

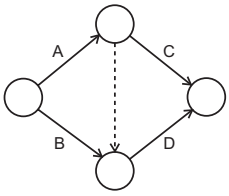
a)



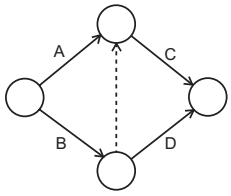
b)



c)

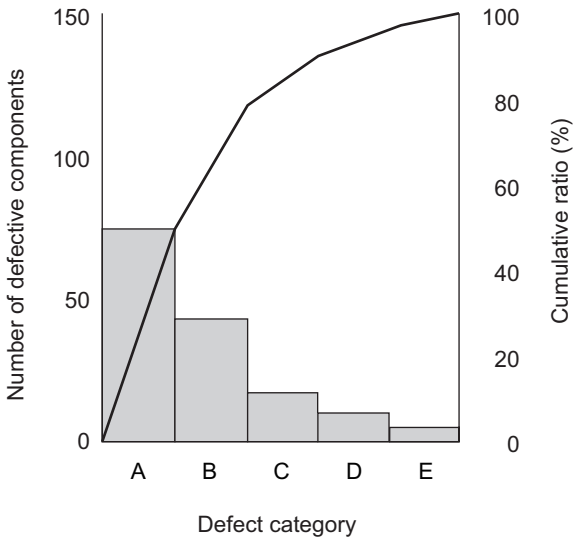


d)



1-3

In the figure illustrated below, categories of defective electronic components are arranged in a bar graph in descending order of the number of defective components, and the cumulative ratio of the number of defective components is shown in a line graph. What is this type of figure called?



a) Cause-and-effect diagram
b) Matrix diagram
c) Pareto chart
d) Venn diagram

1-4

Which of the following should be inserted in the blank box *A* of the income statement shown below? Here, the shaded boxes are intentionally left blank.

Income Statement

Unit: 100 billion yen

Sales	100
Cost of goods sold	75
	25
Selling, general and administrative expense	15
	10
Non-operating income	2
Non-operating expense	5
A	7
Extraordinary profit	0
Extraordinary loss	1
Net profit before tax	6
Corporate income tax, etc.	2
	4

a) Gross profit
b) Operating profit
c) Ordinary profit
d) Current term net profit

1-5

Among the actions involving a commercially available book of landscape pictures without obtaining the author's permission, which of the following is illegal under the Copyright Act?

a) Taking a photograph of the same object as a photograph you like
b) Cutting out a photograph from the book and putting it on the wall of your room
c) Placing and publishing a photograph from the book on your Web page
d) Describing comments about the photograph book in your blog

1-6

When you create a webpage, which of the following uses of published work is legal to do without asking the copyright holder?

a) Modifying an illustration appeared in a magazine and using it for your own corporate advertising on the webpage
b) Scanning a pattern created by a famous designer in a curtain catalog, changing the color, and using it on the webpage because it is a fitting background graphic
c) Scanning a photo released in a newspaper and using it on the webpage to provide up-to-date information
d) Using statistical data published in a white paper on trade as the basis for creating a chart on the webpage to illustrate vehicle sales volume

1-7

Which of the following is considered unauthorized access under the Act on the Prohibition of Unauthorized Computer Access?

a) Having access to a shared server and copying a software package illegally without permission
b) Having access to a computer via the Internet by using other people's passwords
c) Posting accessible information that libels others on the Internet
d) Having access to a website with obscene pictures

1-8

Which of the following explains the Labor Standards Act?

a) A law that guarantees minimum wages for the stability of lives and the improvement in manpower quality
b) A law enacted to improve the welfare of part-time workers
c) A law about businesses that dispatches workers with the required skills to companies
d) A law that regulates minimum standards for labor conditions, such as working hours, breaks, and vacations

1-9

Company *X*, which is "a business operator handling personal information," held a seminar for individual customers to promote the sales of their products, which included a questionnaire for the participants at the end. The questionnaire sheet stated that the purpose for obtaining personal information was to offer information about future products; the company asked for the customer's name, address, telephone number, and whether or not they wanted the information.
Which of the following actions by Company *X* is illegal in light of the Act on the Protection of Personal Information?

a) A list of customers was created from the collected questionnaires, and direct mails were sent to the customers who wanted information about products.
b) The collected questionnaires and the customer list created after the seminar were stored in a locker with a key, except when they were necessary.
c) For sales promotion of the product by Company *Y*, which is an associated company of Company *X*, Company *X* handed the customer list created from the collected questionnaires over to Company *Y* based on the judgment of Company *X*.
d) A customer who had wanted information about products contacted Company *X* to change the address, so Company *X* changed the customer list after verifying the identity of the customer and the desire to receive further information.

1-10

Which of the following describes the characteristics of the QR code in the figure shown below?

a) It compresses and symbolizes an image and is used for communication of information.
b) It contains only about 10 bytes of information and is used for encryption of commercial product codes.
c) It is a kind of two-dimensional bar code and can record much information, including alphanumeric characters, Kanji characters, etc.
d) It is the code developed for use in IC tags and can be used for noncontact-based merchandise management.

Chapter

2

Business strategy

Chapter 2 explains typical systems in each field including typical information analysis techniques and marketing techniques, business management systems, and technological strategies.

2-1 Business strategy management

2-1-1 Business strategy techniques

A **"business strategy"** is a plan with a long-term perspective for the business development of the corporation. Its goal is to develop a competitive edge over other companies and enable it to adapt to any changes occurring around it.
Corporations formulate their business strategies using the steps summarized below.

Manifestation of corporate philosophy	Specify the corporation's raison d'etre and action guidelines, etc.
↓	
Manifestation of corporate goals	Specify the final destination of the corporation.
↓	
Definition of corporate domain	Define the corporation's position in the market.
↓	
Determination of business strategy	Set a course for the future that will enable the corporation to adapt to changes and survive.

❶ Business information analysis techniques

In order to determine a business strategy, it is necessary to understand the full capabilities of the corporation, and analyze its current situation and position.
Data analysis techniques for determining business strategy are summarized below.

(1)SWOT analysis

A **"SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis"** is an evaluation method that analyzes the strengths, weaknesses, opportunities, and threats of a corporation.
Strengths to capitalize on and weaknesses to overcome are further clarified by analyzing the **"internal environment"** of the corporation.

Reference

Internal environment

"Internal environment" refers to various aspects of a corporation including human resources, business strength, product appeal, selling power, technological strength, brand, competitiveness, financial standing, etc.

Opportunities to take advantage of and threats to address are identified by analyzing the **"external environment"** surrounding the corporation.
A SWOT analysis is also used to determine marketing plans and crisis management policies. It is considered an ideal analysis technique when formulating a business strategy.

	Opportunities	Threats
Strengths	What societal opportunities bring out the strengths of our corporation?	Can societal threats be overcome using the strengths of our corporation?
Weaknesses	What societal opportunities do the weaknesses of our corporation present?	Can any threats be overcome using the weaknesses of our corporation?

(2)PPM (Product Portfolio Management)

"PPM (Product Portfolio Management)" is a technique for business analysis that divides the businesses and products the corporation handles into four categories: **"star," "cash cow," "question mark,"** and **"dog."** They are plotted on a graph with market share and market growth on the axes. By allocating management resources to each of the four categories, the most effective and efficient combinations of businesses and products can be analyzed.

Category	Description
Star	Businesses and products that are profitable but require investment. Businesses and products that have a high rate of return and have matured, but need funds to maintain their place in the market.
Cash cow	Businesses and products that generate profit with little investment. Mature businesses and products that have a high rate of return with minimal investment (funding) due to large market share. Over-investment should be avoided.
Question mark	Businesses and products that are not profitable, but can be expected to grow in the future with additional investment. The growth rate is high but significant investment (funding) is needed due to small market share. For businesses and products that can be expected to grow in the future, a strategy to turn them into a "star" is required.
Dog	Businesses and products with low potential that should generally be withdrawn. Businesses and products that have declined, and have both low outflow of investment and low inflow of funds. Unless income greater than the investment can be expected, it may be necessary to withdraw or scale down the businesses and products.

High ← Market growth → Low		
	Star Growth expected → Maintain	Question mark, problem child Intensifying competition → Nurture
	Cash cow Mature field/stable profit → Harvest	Dog Stagnant/declining → Withdraw
	Large ← Market share → Small	

Reference

External environment

"External environment" refers to government, economy, social conditions, law, marketability, price changes, customer trends, rival companies, etc.

Reference

PPM

Abbreviation for "Product Portfolio Management."

Reference

Product life cycle

A "product life cycle" refers to the four stages a product goes through from the time of its release as it appears on the market until sales end and it disappears from the market. The four stages are summarized below.

Introduction stage:
A period during which much investment goes into sales promotion strategies in order to increase sales.

Growth stage:
The sales peak is reached and rival products increase. A period during which plans to differentiate the product from its rivals are implemented.

Maturity stage:
The sales peak has passed and growth in de-mand has slowed down. A period of investment to maintain the product's place in the market.

Decline stage:
Sales have become stag-nant. A period during which the product is either withdrawn from the market or reinvested in according to the needs of the market.

Reference

Core competence

"Core competence" in terms of business, refers to "capability (competence) in areas such as technology or capital that comprise a company's core, which no other company can imitate." A core competence is therefore a strength of a corporation, and also a valuable management resource for differentiating enterprises or products. For rival companies, core competencies are key to the competitiveness of their business strategy. When a tie-up with another company is formed, it gives the alliance more influence and leverage.

Reference

Niche strategy

A strategy that aims to secure and maintain profitability in a specific market or "niche," rather than in a market in which major companies are active.

Reference

CS

Abbreviation for "Customer Satisfaction."

Reference

Alliance

In general, alliances with capital ties are described as strong alliances and those without capital ties are described as weak alliances.

❷ Terms related to business strategy

The typical terms used in business strategy are summarized below.

(1)Competitive superiority

"Competitive superiority" is the relative position of a company according to its superiority over rival companies. In modern society where it is possible to acquire information by all kinds of means, many differentiation strategies may be imitated by other companies. In order to provide the customer with better value than the competition, it is necessary to develop a business strategy for competitive superiority through a combination of multiple factors. These include not only isolated factors such as low prices, but design, quality, production system, and brand.

(2)Customer satisfaction

"Customer satisfaction," which is also referred to as **"CS,"** is the level of satisfaction a customer experiences after using a product or service and it meets their expectations. **"CS management"** is a management technique that focuses on customer satisfaction.

CS management is based on the idea that creating corporate value from the perspective of the customer and giving the customer a sense of satisfaction contributes to corporate management.

In CS management, the demands and opinions of customers are collected to analyze their needs and behavior. As a result, service that will satisfy the customers is determined. This information is utilized to expand services that should be provided and eliminate services that should be scaled down.

CS management starts when a customer selects a product. It aims to raise corporate value by having the customer choose the corporation's product over numerous rival products and make repeat purchases when replacement is necessary. It promotes awareness of customer satisfaction and providing not only product quality, but also follow-up service after sales.

(3)Alliance

An **"alliance"** is a collaboration or tie-up between corporations. There are different forms of alliances including those without any capital ties that come together only in specific fields, and those with capital ties that unite as **"mergers."** In recent years, these collaborations and tie-ups have become popular in many corporations.

The objectives behind this increase in alliances are to eliminate unnecessary corporate competition, and reduce costs such as those in research and development by sharing the burden between several companies.

Alliances can take the following forms.

●M&A (Mergers and Acquisitions)

"M&A" is a general term for corporate **"mergers and acquisitions."** A **"merger"** is the formation of one corporation from multiple corporations, while an **"acquisition"** is the purchase of an entire corporation or part of a corporation.

This form of alliance also includes **"absorption-type mergers"** in which one of the corporations continues while the other ceases to exist.

The objectives of M&A include entering new industries or markets, business tie-ups, corporate reorganizations, business bailouts, etc.

●Integration through a holding company

A **"holding company"** is a company whose purpose is to hold large quantities of shares in other stock companies and exercise control over those companies. Some of the advantages of integration through a holding company are that it allows for business strategies that always seek profit for the entire group, and it can also speed up decision-making processes.

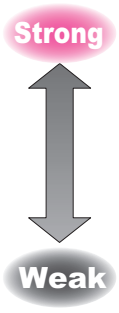
●Capital participation

"Capital participation" refers to strengthening collaboration with another corporation by acquiring shares in that corporation and becoming a shareholder. Capital participation promotes a cooperative relationship as capital is held by the other corporation, but it does not grant that corporation the authority to make decisions concerning management.

●Tie-up

A **"tie-up"** refers to cooperation between corporations in executing business activities. Tie-ups are expanding from those confined to specific fields such as sales tie-ups and production tie-ups (OEM production, etc.) to those of sharing technology and cooperative recycling of waste, etc.

Forms of alliances

Form	Capital ties	Degree of alliance
M&A	Yes	
Integration through a holding company		
Capital participation		
Tie-up	No	

Reference

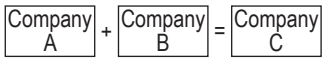
M&A

Abbreviation for "Mergers and Acquisitions."

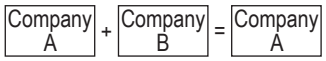
Reference

Difference between a merger, an acquisition, and a merger through a holding company

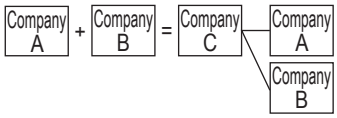
• Merger



•Acquisition



•Integration through a holding company



Reference

OEM

An "OEM" is a manufacturer who makes products which are sold under the brand name of another corporation.
Abbreviation for "Original Equipment Manufacturer."

Reference

Outsourcing

"Outsourcing" refers to procuring management resources required by the corporation from external sources.

(4)Business execution organization

In Japanese stock companies, the highest decision-making body is the **"stockholders' meeting"** and the person in charge of business execution is the **"representative director,"** who as well as representing the company in the outside world, is the person with the highest managerial responsibility.
In America, the business execution organization is categorized as follows.

●CEO (Chief Executive Officer)

The **"CEO"** is responsible for management as the company's representative.

●COO (Chief Operating Officer)

Under the CEO, the **"COO"** is responsible for business operation.

●CIO (Chief Information Officer)

The **"CIO"** has the highest responsibility concerning information.

●CFO (Chief Financial Officer)

The **"CFO"** is responsible for financial affairs such as procurement of funds and financial administration.

3 Use of office tools

Instead of using full-scale business systems, commercial office tools (software packages) can be utilized in business strategies.
Office tools include spreadsheet software and database software. Using these software, it is possible to analyze large quantities of data efficiently by creating tables and graphs, and sampling and sorting the data.
Recently, systems such as data warehouses and data marts are also being used in order to apply data stored in databases to business strategies.

●Word processing software

"Word processing software" has a variety of functions, such as document creation, editing, and printing, which allow easy-to-read documents to be composed and printed.

●Spreadsheet software

"Spreadsheet software" has a variety of functions such as table creation, graph creation, and data analysis, etc.

Reference

Data Warehouse

A "data warehouse" is a large amount of data from a database used for day-to-day operations that has been organized, retrieved, and stored. The stored data is analyzed and used in decision-making.

Reference

Data Mart

A "data mart" is data that has been retrieved from a data warehouse for a specific purpose.

Reference

Data Mining

"Data mining" refers to obtaining new information by analyzing large amounts of data stored in data warehouses. It is used to find correlations between multiple items such as "men who buy Product A on Sunday also buy B at the same time."

●Presentation software

"Presentation software" has a variety of functions for creating and executing presentation materials, and inserting illustrations, graphs, tables, photographs, etc. into presentation materials.

●Database software

"Database software" arranges various data (information) into units with specific purposes and stores them together in one place. This allows the data to be managed and operated efficiently.

2-1-2 Marketing

"Marketing" involves activities to create structures for the manufacture and sale of products that accurately reflect the needs of customers. One area of marketing activities includes **"market research"**, **"sales/product/purchase planning"**, **"sales promotions"**, **"customer satisfaction surveys,"** etc.

1 Market Research

"Market research" is the collecting of various information concerning the market that the corporation can use to advance marketing activities effectively. There are various methods used in market research, such as surveys using the Internet, surveys that gather consumers together and hold discussions, surveys in which questionnaires are distributed and collected by mail, etc. Compared to other survey methods, market research using the Internet makes it possible to quickly collect vast amounts of data at low cost. Utilizing the Internet allows market research to be performed in a shorter time than methods such as mail, giving it the advantage of commercializing consumer needs without delay.

Whichever method is used, the question of how to analyze and utilize the data obtained through market research is the key to subsequent strategy.

Reference

Marketing mix

The "marketing mix" is a combination of marketing tools used to achieve marketing objectives.

The four Ps (product, price, promotion, place) are typical tools from the perspective of the seller. The four Cs (customer value, customer cost, communication, convenience) correspond to the four Ps seen from the perspective of the customer.

❷ Sales/product/purchase planning

In **"sales/product/purchase planning**," strategic activities are implemented based on the results of market research analysis and predictions for supply and demand.

●Sales Planning

"Sales planning" is planning how to sell what kind of product or service to whom. After a sales plan is determined, subsequent product and purchase plans are formulated.

The following **"4W2H"** are used as a base when creating a sales plan.

What	Determine specifically the product or service to be sold.
How Much	Determine the price by assuming the volume of sales.
Where	Determine which region to target.
Whom	Envisage what kind of customer the product or service could be sold to.
How	Determine what kind of sales method to use.
Who	Determine who will sell the product or service.

●Product Planning

"Product planning" is planning a product or service that can secure profit in the market by acquiring a precise understanding of consumer needs. The number and composition of products already circulating on the market and new products are taken into account when determining a product plan.

●Purchase Planning

"Purchase planning" is planning what to purchase from where and under what terms in order to achieve the objectives of the sales plan. Purchasing has a large influence on sales, and profit and must be considered carefully to allow normal financing.

If inventories are too small, there is a danger of shortages occurring. If inventories are too large, there is a danger of having excess stock. It is important to plan purchasing so that inventories are rotated as efficiently as possible in order to reduce the capital burden and prevent stock from deteriorating or becoming obsolete.

❸ Sales Promotions

"Sales promotions" are initiatives that utilize advertisements and campaigns to encourage the eagerness of consumers to buy and the eagerness of vendors to sell products or services.

In sales promotions, it is important to tailor initiatives towards individual target groups such as consumers, vendors, staff inside the company (sales department), etc.

4 Customer satisfaction surveys

A **"customer satisfaction survey"** is a quantitative investigation into the degree to which customers are satisfied with a product or service.
Customer satisfaction surveys can be used in strategies for subsequent business deployment and product development.
Survey methods may involve filling out questionnaire survey forms or interviews and discussions, etc.

Survey methods	Features
Questionnaire survey	This method makes it possible to collect many replies, and analyze the trends and needs of the entire market.
Interview/discussion	This method makes it possible to obtain specific and honest replies, and analyze the values and needs of individuals.

Customer satisfaction is generally surveyed using the following procedure.

Determine the product or service to be surveyed

↓

Determine the survey method

↓

Create questionnaire survey forms or interview items

↓

Conduct survey

↓

Tally and analyze survey results

Reference

One-to-One Marketing

"One-to-one marketing" is an approach that addresses individual customer needs separately, rather than targeting the market as a group.

Reference

Target Marketing

"Target marketing" is an approach that involves conducting strategic marketing activities by narrowing down the target to a particular small customer segment. Activities are carried out after narrowing the customer segment down to a certain degree. For example, conducting marketing activities aimed at a wealthy segment living in luxury apartments.

Reference

Customer Loyalty

"Customer loyalty" is a customer's trust in or affinity towards a product or service. In other words, it is the state of mind in which a customer who has shopped at a certain store feels compelled to shop at the same store again the next time. When a customer has strong loyalty toward a product, it tends to lead to behavior that is favorable for the corporation such as repeat purchases and spreading praise about the product through word-of-mouth.

2-1-3 Business strategy and goal/evaluation

When planning a business strategy, it is important to analyze information and utilize it to establish goals and conduct evaluations. The typical techniques for analyzing information are summarized below.

1 BSC (Balanced Score Card)

"BSC" is a technique for evaluating performance in a balanced way by clarifying a corporation's goals and strategies and evaluating not only performance expressed numerically, but also operations from various viewpoints. BSC is used as a method for planning, executing, and managing business strategies.

Reference

BSC

"BSC" is a performance evaluation system developed by Harvard Business School professor, Robert S. Kaplan, and strategy consulting company president, David P. Norton.
Abbreviation for "Balanced Score Card."

Reference

Strategy map and scorecard

Upon introduction of a specific BSC, a "strategy map" and "scorecard" are created.
A "strategy map" is a communication tool used in BSC, which presents the business strategy of the corporation in a visual context in order to help propagate it into the workplace.
A "scorecard" helps to manage execution of the strategy and allows PDCA to be conducted properly.

In BSC, business strategy is broken down into specific measures for daily business and evaluated from the four perspectives of **"financial"**, **"customer"**, **"business process"**, and **"learning and growth."**

Perspective	Description
Financial	Aims to achieve goals from a financial perspective such as sales amount, profitability, closing account, ordinary profit, etc.
Customer	Aims to achieve goals from the perspective of consumers and customers in terms of customer satisfaction, needs, quality, etc. in order to realize the financial perspective.
Business process	Aims to achieve goals from the financial and customer perspectives by analyzing what kind of processes are important and what kind of improvements are necessary in order to achieve the financial goals and improve customer satisfaction.
Learning and growth	Aims to achieve goals in capability development and human resource development that deal with how to raise the capability of employees, and maintain the work environment so that the corporation provides business processes surpassing those of rival companies, strives for customer satisfaction, and achieves its financial goals.

Reference

CSF

Abbreviation for "Critical Success Factor."

❷ CSF

"CSF (Critical Success Factor)," which is a factor required for differentiation from rival companies and competitive superiority. A **"CSF analysis"** is a technique for defining the most important success factor from among many, and it is used as a foundation for business strategy.

Reference

KGI

Abbreviation for "Key Goal Indicator."

Numerical targets in questions such as **"How much and by when?"** are called **"KGI."**

Reference

KPI

Abbreviation for "Key Performance Indicator."

In addition, more concrete targets for achieving the KGI are called **"KPI"**, and these derive from the results of CSF analyses. A process of step-by-step consideration of goals is followed in order to capitalize on the CSF and realize the business strategy.

❸ Value Engineering (VE)

"Value engineering" is a technique for reducing costs without losing product quality. It involves analyzing the functions of the product in question, improving raw materials and services, and reviewing the development process.

Implementing value engineering can result in not only reduced costs, but also in creativity flourishing in new fields and motivation to constantly achieve goals taking root. In order to conduct a comprehensive analysis with diverse viewpoints, experts from different fields may be gathered or a group with a different set of knowledge may be formed.

2-1-4 Business management systems

In order to implement efficient business management, it is necessary to create systems that are tailored to the business management strategy.
The techniques for managing data from a business perspective are summarized below.

❶ SFA

"SFA" refers to the concept of using computers to support sales activities, or a system that implements this approach. Optimization and standardization of sales activities is devised by managing the history of negotiations (contact) with customers, and sharing customer information and sales techniques, etc.

❷ CRM (Customer Relationship Management)

"CRM" is an approach that expands on SFA in order to strengthen not only sales activities but the relationship with customers on a company-wide scale, or a system that implements this approach. In general, electronic commerce or a CTI system that links telephones or faxes and computers is used.

❸ SCM (Supply Chain Management)

"SCM" is integrated management using computers and the Internet to manage everything from client orders and procurement of materials (raw materials and parts) to inventory control and product delivery. Raw material companies, parts factories, manufacturing plants, wholesalers, distributors, retailers, service companies, etc. participate in and form the supply chain. By consolidating the information traded between these parties and managing the supply chain as a system, SCM has the effect of reducing excess stock and lowering distribution costs.

❹ Value chain management

"Value chain management" is a method for meeting the needs of consumers by optimizing circulation as a whole. Corporate activities that provide products or services to consumers follow a series of steps: procurement, development, manufacturing, sales, and servicing. Personnel in charge of each respective step work together as a unit to provide added value. Value chain management also seeks to improve the business strategy and make it more effective by grouping tasks according to function. Components in each function are analyzed to determine whether they generate added value, and if they can be considered strengths or weaknesses relative to rival companies.

Reference

SFA

Abbreviation for "Sales Force Automation."

Reference

CRM

Abbreviation for "Customer Relationship Management."

Reference

CTI

"CTI" is technology that makes use of computers linked to telephones or faxes. This technology automatically answers telephone calls and faxes, or assigns telephone calls to the appropriate recipient depending on the caller.
Abbreviation for "Computer Telephony Integration."

Reference

Electronic Commerce

Refer to "Chapter 2-3-3 E-business."

Reference

SCM

Abbreviation for "Supply Chain Management."

2-2 Technological strategy management

2-2-1 Technological strategy planning and technology development planning

Development of new technologies and improvement of existing technologies can be considered the most important issues as far as the operation and survival of corporations are concerned. Increasingly, the market and environment surrounding corporations changing from moment to moment, developing technological strength is critical for survival. It is necessary to conduct research and development (R&D) with a long-term perspective, and avoid engaging in passing fads or consumer needs.

Reference

R&D

"R&D" is research and development, or the department where research and development is engaged.
Abbreviation for "Research and Development."

1 Technology development strategy and technology development planning

A **"technological strategy"** clarifies the fields in which research and development should be intensified and those in which it should be scaled down, and determines the course of research and development by a corporation as well as the key investment fields. The objective is to secure future competitiveness in the market.

When determining a technological strategy, cooperation between management departments and research and development departments is essential. The management departments focus on the future of the corporation, while the research and development departments focus on the future of the technology. Policies are established based on the input of both departments.

Once the fields in which research and development should be intensified have been determined through the technological strategy, a **"technology development strategy"** is determined in order to develop the technologies.

The technology development strategy examines how to procure the necessary technology. Specifically, it addresses whether the technology will be researched and developed by the corporation or brought in from outside, what degree of investment will be made, and what kind of results the investment will produce. This is necessary to predict the profits that research and development will generate. Furthermore, the decisions and predictions that were made are laid out a road map before proceeding with the development of the specific technology.

Sometimes a single technology development strategy can save corporate management that is ailing. A corporation must invest in research and development to increase corporate value, and implement the right technology development strategy to boost the motivation of the employees.

Reference

Road map

A "road map" displays transitions and changes in decisions and predictions for achieving a technological strategy along a time axis.

❷ Delphi method

The **"Delphi method"** is a technique for making predictions about events that may occur in the future. It is used in activities such as planning technology development strategies. In this method, independent opinions from multiple experts are collected and reviewed. The feedback is returned and the experts make adjustments as necessary for further review. This process is repeated over and over until the opinions of the experts can be statistically aggregated to produce a consensus. As a result, highly accurate forecasts regarding unknown issues can be obtained.

❸ Production systems

The question of how to design a production process is an important element of business strategy management.
Production processes are designed by considering requirements such as the characteristics of the product being produced, cost, quality, and delivery date. The production system must be able to be redesigned to suit requirements such as high-mix low-volume production, production with quick delivery time, inventory reduction, etc.
The main production systems are summarized below.

●Cell production system

A **"cell production system"** is a production system used in assembly processes in which between one and several workers are in charge of the entire process from component installation to assembly, processing, and inspection. Its name was derived from work that arranges components and equipment into cells.
The advantage of the cell production system is that it is possible to change the product being assembled simply by changing the workers, components, or work sequence, which affords flexibility in the production of a large variety of products.

●Line production system

A **"line production system"** is a production system in which dedicated lines are established using conveyor belts or similar contraptions. Numerous workers assemble the respective components that they are in charge of and perform the same work repeatedly.
The advantage of the line production system is high productivity as it allows a specific product to be mass-produced.

●BTO (Build To Order)

"BTO" is a production system that manufactures products after receiving an order from the customer. Components are assembled and shipped according to customer orders, which reduces the risk of having surplus stock. This production system is used by many major computer manufacturers as well as other manufacturers that mass-produce products such as automobiles.

Reference

BTO

Abbreviation for "Build To Order."

2-3 Business industry

2-3-1 Business system

With the development of information systems, businesses using them have spread rapidly, and Internet and information systems are now in use in diverse business fields.

1 Typical systems in business fields

The following are some typical business systems.

(1)POS system

A **"POS system"** is a system that collects sales information (what was sold to whom, when, where, and how much?) when products are sold.

POS systems make use of barcodes as the basis for merchandise management and are used in **"distribution information systems"** in places such as convenience stores, supermarkets, department stores, shopping centers, and restaurants.

One advantage of POS systems is that market research and sales forecasts can be carried out based on the sales data that they collect. The collected information is used in strategies for product development and store expansion and is also useful for adjusting order quantities and inventory quantities depending on the season, region, or time period. Recently, the use of POS systems has expanded to product development of private brands in the retail industry, and POS systems are ranked as important information systems that are essential in retail business strategies.

(2)IC Card

An **"IC card"** is a plastic card embedded with an **"IC (Integrated Circuit) chip."** Since IC cards can encrypt information, they are attracting attention for being difficult to counterfeit. Also, they can record a large amount of information from several dozen to several hundred times that of conventional magnetic cards.

Reference

POS

Abbreviation for "Point Of Sales."

Reference

Private Brand

A "private brand" or "PB," is an exclusive product developed and sold independently by a retailer. Also referred to as a "store brand."

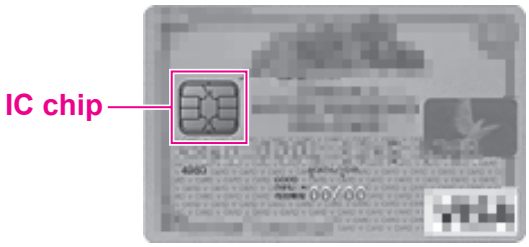
Reference

EOS

"EOS" is a system for online ordering between corporations. Orders originating from retail stores as well as procurement and invoicing are managed centrally by computer, with orders being made online from the retailer's computer terminal to the headquarters or wholesalers.

Abbreviation for "Electronic Ordering System."

In general, contact-type cards that read and write data are categorized as IC cards. Typical examples include cash cards and credit cards from financial institutions. They are widely used in **"financial information systems."**



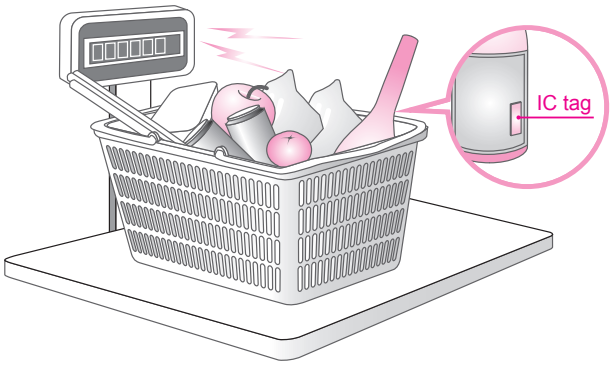
(3)RFID

"RFID" is the use of tiny **"wireless chips"** for identifying and managing people and things.

Wireless chips are easily attached to people or materials because they can be incorporated into items such as self-adhesive labels, envelopes, key holders, or wristbands. Furthermore, an important feature is that they can simultaneously identify multiple people or materials. Therefore, wireless chips are used in a variety of situations such as management of comings and goings of people using wireless chips in key holders, or **"traceability systems"** that manage distribution histories for vegetables or meat using wireless chips in the form of self-adhesive labels. A wireless chips may also be called an **"IC tag"** or **"wireless IC."**

The communication range between a wireless chip and a reader is from several centimeters to approximately two meters, and an antenna provides power to the wireless chip.

Also, building an antenna into an IC card makes wireless reading and writing possible. Therefore, contactless IC cards are categorized as technology based on RFID. Typical examples are electronic money, tickets for public transportation, driver's licenses, and citizen identification cards.



Reference

Credit card

A "credit card" is a card issued on the basis of an agreement between a consumer and a credit card company. The consumer can buy products or receive services by using the card within the limitations of its terms (such as expiration date and credit limit).
Payment of charges incurred by using the card is deferred, and the user pays after receiving a bill from the credit card company.

Reference

Contact type

"Contact type" is a method for reading/writing data to or from an IC card by inserting the card into a device.

Reference

RFID

Abbreviation for "Radio Frequency Identification."

Reference

Wireless chip

A "wireless chip" is an IC chip with an antenna that can read/write data wirelessly.

Reference

Contactless type

"Contactless type" is a method for reading/writing data wirelessly using radio wave communication.

Reference

Traceability system

A "traceability system" is a system for ensuring food safety, which clarifies production and distribution processes by tracing them back from the point of consumption to the point of production.

Reference

Debit card

A "debit card" is a cash card from a financial organization that can be used to buy products. When buying a product, the cash card is presented, a personal identification number is entered into a computer terminal, and the money is withdrawn in real-time from the user's bank account.
Also referred to as "J-Debit" in Japan.

(4)Electronic money

"Electronic money" means paying for products using a contactless IC card that has been charged with cash in advance so that it has equal value to cash. It can also refer to the system. Recently, electronic money in the form of cellular phones embedded with IC tags has also become widespread. Electronic money is used in a similar way to prepaid cards or gift certificates, but it is attracting attention as an environmentally-friendly payment method because the same IC card can be charged repeatedly.
Another advantage is that electronic money is easy for elderly and disabled people to handle as there is no need to deal with small change.
Typical forms of electronic money in Japan include **"Edy"**, **"iD"**, **"nanaco"**, **"PASMO"**, **"Suica"**, **"WAON"**, and **"Osaifu-Keitai."**

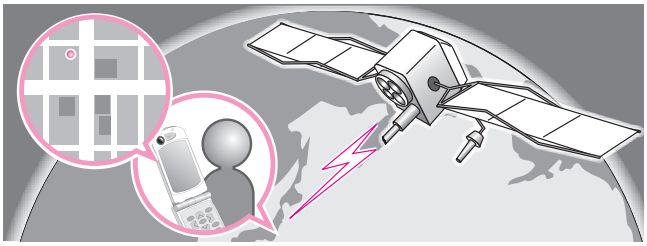
Reference

GPS

Abbreviation for "Global Positioning System."

(5)GPS application system

A **"GPS application system"** is a system that precisely calculates positions on the earth by receiving electromagnetic waves from artificial satellites. Also referred to as the **"Global Positioning System"** or a **"global navigation satellite system."**
Developed as a military technology of the US Armed Forces, these systems are capable of calculating a receiver's latitude, longitude, and altitude with a margin of error of between several centimeters and several dozen meters.
As well as being used alone, GPS application systems are widely used in car navigation systems and cellular phones.



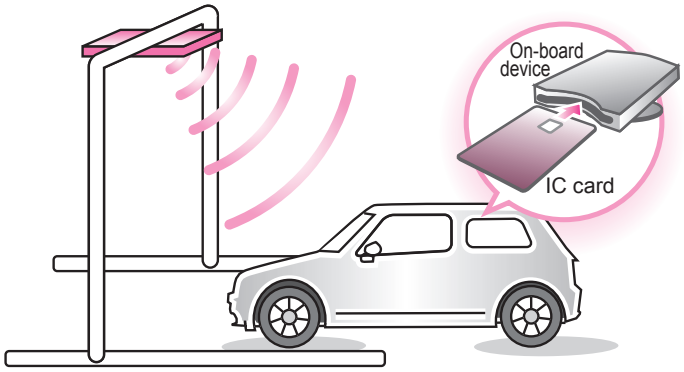
(6)ETC system

Reference

ETC

Abbreviation for "Electronic Toll Collection."

An **"ETC system"** is a system for automating payment of charges on toll roads.
Toll roads across Japan generate chronic traffic congestion, and the increase in costs due to traffic congestion and environmental pollution caused by exhaust fumes is becoming serious. ETC systems were developed with the aim of reducing these kinds of economic losses and preventing the traffic congestion that frequently occurs at tollgates.
A contact-type IC card issued by a credit card company is used when using an ETC system. By inserting this IC card into an ETC on-board device, the user can pass through tollgates without stopping. Charges are billed later via the credit card company.



❷ Typical software packages for business systems

The following are some typical software packages for business systems.

(1)ERP package

"ERP packages" are software packages developed with the aim of increasing business efficiency through integrated management of corporate management resources (people, materials, money, and information).

By integrating systems managed by each department and making the information mutually available for reference or use, information can be managed in real-time, which results in benefits such as increased speed of business.

Also, some ERP packages can be expanded by adding on software components with special functions at a later date, allowing them to be tailored to the corporation.

(2)Software packages for each job role (Accounting, marketing support, sales management software)

"Software packages for each job role" are general purpose software used in areas such as accounting services, inventory control, and sales management. The packages compile functions required for tasks that are common to all corporations, such as accounting and marketing management tasks, employee payroll calculation tasks, and customer information management tasks.

For example, an accounting software package allows trial balances, administrative data such as statements of accounts, and financial statements to be created automatically simply by entering journal vouchers, and it allows various analysis data for understanding business conditions to be created easily.

Using software packages for each job role can drastically reduce the amount of time and effort spent on tasks.

Reference

ERP

ERP is a technique for improving management of entire corporations by making effective use of all management resources (human resources, assets, funds, information) within the corporation, from manufacturing to sales, accounting, and human resources. It is a management technique that manages all of the management resources of the entire corporation in an integrative way, and enables efficient business activities to be carried out through optimal arrangement and allocation of these resources.

Abbreviation for "Enterprise Resource Planning."

(3)Software packages for each industry (Software packages for finance, medical services, production, transportation)

"Software packages for each industry" are software packages that are specific to a type of industry, such as financial or medical institutions, or production or transportation industries.

For example, there are many tasks at medical institutions that cannot be handled by software packages for each job role, such as management of medical facilities/equipment, differences in costs according to treatment methods, and management of National Health Insurance points. Software packages for each industry are formed so that they can be used in their respective industries to enable tasks corresponding to that particular industry to be performed.

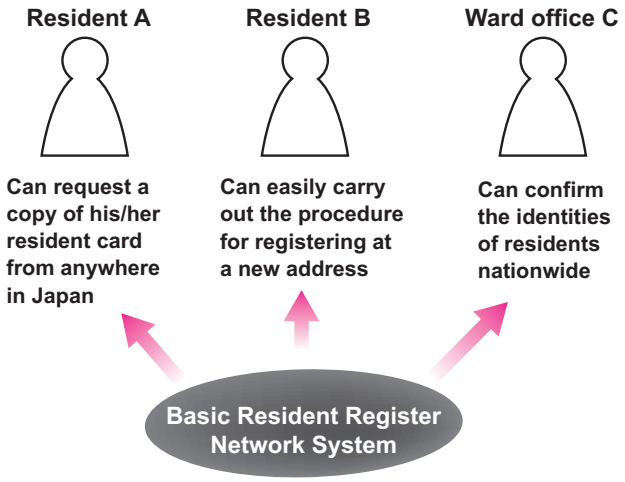
3 Systems in other fields

Apart from business fields, a variety of systems are used in our daily lives. Some typical systems are as follows.

(1)Basic Resident Register Network System

The **"Basic Resident Register Network System"** is a system that links administrative bodies of the national government and local authorities nationwide via a network and allows the **"Basic Resident Register**," which contains information on residents such as full name, date of birth, gender, address, and resident card code to be shared throughout Japan. Also referred to as the **"Juki Net**."

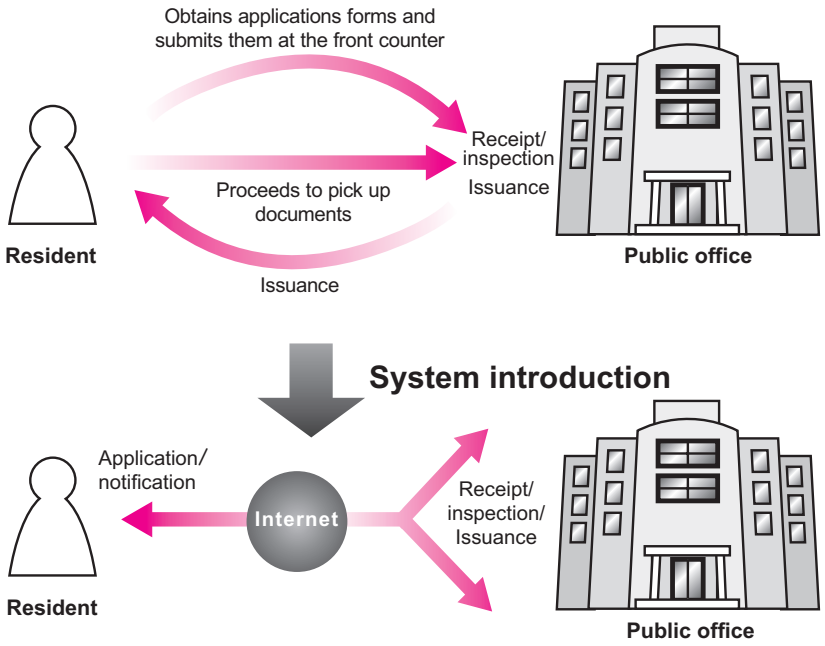
By making it possible to confirm the identities of residents nationwide, this system allows copies of resident cards to be made anywhere in Japan, and makes it unnecessary for residents to submit copies of their resident card when making applications or notifications to an administrative body. This means that work related to notifications can be made more efficient, and the amount of time and effort spent can be reduced.



(2)Electronic application/notification system

An **"electronic application/notification system"** is a system that receives applications and notifications made to administrative bodies of national or local governments from home or office computers via the Internet. Since this system makes it possible to obtain the application forms required for certain procedures via the Internet, these procedures can be carried out at the user's convenience at any time of day or night and without making a special trip to the office of the administrative body.

The system can be used by individuals mainly to request the issue of documents such as copies of resident cards, copies of attachments to family registers, and seal registration certificates. However, the services available vary depending on the municipality.



2-3-2 Engineering system

A variety of IT systems are also used in engineering fields for purposes such as supporting design/manufacturing through automation, and optimizing production management and inventory control.

The typical systems are summarized below.

(1)CAD

"CAD" is a system used when designing things such as machinery, buildings, and electronic circuits.

CAD makes it possible to represent design drawings in 3D and to edit designs easily.

Reference

CAD

Abbreviation for "Computer Aided Design."

Reference

CAM

Abbreviation for "Computer Aided Manufacturing."

(2)CAM

"CAM" is a system used to control production lines in factories and plants. Moreover, a system for manufacturing using CAM that also makes use of CAD is called a **"CAD/CAM system."** This kind of system is used to import drawing data created using CAD into CAM, and then send the information to the machine tools that actually carry out the manufacturing.

Reference

FA

Abbreviation for "Factory Automation."

(3)FA (Factory Automation)

"FA" is a system for automation of production lines in factories and plants. Using this kind of system, it is possible to achieve cost reduction and full automation of factories.

FA has the following advantages.

Improved working efficiency	By managing various information collectively using an FA system, it is possible to reduce the occurrence of worker errors and defective products.
Reduced labor costs	Because an FA system allows work performed by multiple workers to be done by fewer or no workers, labor costs can be reduced.
Improved safety	Full automation of factories can improve safety by preventing accidents, particularly those that frequently occur during nighttime operation.

Reference

CIM

Abbreviation for "Computer Integrated Manufacturing."

(4)CIM

"CIM" is a system that comprehensively manages a series of manufacturing processes. Using CIM, it is possible to optimize production and promote coordination between departments by managing all of the information generated by the manufacturing processes using computers, and sharing that information throughout the entire corporation.

2-3-3 E-business

Reference

EC

Abbreviation for "Electronic Commerce."

Reference

Commerce

"Commerce" involves the commercial transfer of goods between economic entities, and is an exchange of articles, services, information, or money between parties placing orders and parties receiving orders.

"EC (Electronic commerce)" refers to commercial activities using networks. Electronic commerce makes it possible to go into business with only a small amount of investment by cutting the costs associated with stores and sales assistants. Therefore, it is becoming representative of businesses using the Internet.

Electronic commerce is defined by the Ministry of Economy, Trade and Industry (Japan) as **"the conduct of commercial transactions via electronic media using Internet technology."** In general, it can be described as **"business systems for receiving/placing orders and making payments over the Internet."**

Electronic commerce is categorized according to the transaction relationship, as shown below.

BtoB (Business to Business)	Transactions between corporations. Includes "EDI" and "CALS."
BtoC (Business to Consumer)	Transactions between corporations and individuals. Includes electronic marketplaces (virtual markets) and online malls (virtual shopping centers). Also widely used in Internet advertising, Internet banking, and Internet trading (electronic stock trading).
BtoE (Business to Employee)	Exchange of information between corporations and employees. Includes information communication systems such as schedule management systems and electronic bulletin boards.
CtoC (Consumer to Consumer)	Transactions between individuals. Includes electronic auctions.
GtoC (Government to Consumer)	Transactions between governments and individuals. Includes electronic application/notification systems to public offices.

1 Precautions in electronic commerce

In recent years, all kinds of work involved in the lives of individuals and corporate business has been computerized. Consequently, strict security measures are required so that users do not disclose their personal information recklessly, and corporations manage the information they collect safely. When conducting electronic commerce, the following matters must be kept in mind.

(1)Precautions for buyers

●Consideration of security

Confirm that the website is trustworthy so that important personal information is not leaked by mistake. Also, do not disclose more information than required.

●Consideration of Internet fraud

Confirm information such as the vendor's business performance, history, and contact address in order to avoid damages such as non-arrival of goods after transferring payment.

●Consideration of transaction method

Confirm the transaction method, including the method of payment and the method for delivering the product before ordering.

(2)Precautions for sellers

●Consideration of security

Manage the collected personal information safely, and ensure that leaks do not occur.

●Consideration of reputation

Confirm information with the person placing the order so that mistakes such as failing to send products, shipping address errors, or sending the wrong products do not occur. Also, for products that can easily cause misunderstandings, display them clearly using pictures and double-check with the person who placed the order before sending.

Reference

EDI

"EDI" is the exchange of electronic data for the purpose of commercial transactions between corporations via communication lines. The format of the electronic data exchanged and the network connection method vary depending on the type of industry. In recent years, use of the Internet and HTML or XML formats has started to become the standard.
Abbreviation for "Electronic Data Interchange."

Reference

CALS

"CALS" is an approach that attempts to reduce costs by sharing all kinds of information between departments or corporations, from design to manufacturing, distribution, and maintenance. It also refers to acceleration of electronic commerce by using this approach.
Since the main contents are standardization and unification of formats, SGML or XML are used.
Abbreviation for "Commerce At Light Speed."

Reference

Reverse auction

A "reverse auction" is a type of auction in which the buyer indicates the amount of money that they wish to pay, and the sellers present the price that their corporation can offer. The buyer then conducts a transaction with the seller offering the lowest price. This method is widely used in bidding for public works or services.

2-3-4 Consumer appliances and industrial devices

An **"embedded system"** is a computer system that is embedded in order to achieve a specific function. An **"embedded OS"** is used to control devices, comprised of a minimum amount of memory, a CPU, and ROM. Recently, since the costs involved in embedded systems have come down, they are being used to control various **"consumer appliances"** and **"industrial devices."**

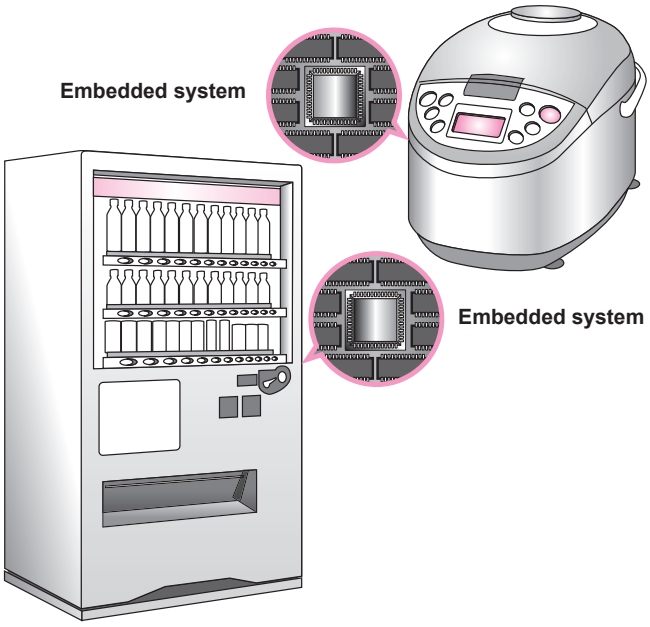
(1)Consumer appliances

"Consumer appliances" are electronics used in ordinary households such as rice cookers, washing machines, air conditioners, cellular phones, and PDAs. In recent years, consumer appliances have come to include **"intelligent home appliances"** equipped with communication functions allowing them to connect to networks such as the Internet.

(2)Industrial devices

"Industrial devices" are devices that are used to put various industries into practice, such as robots for industrial use, industrial equipment, signals, and elevators.

Also categorized as industrial devices are vending machines for drinks and other goods, automatic service machines providing services such as games or teller services, and automated warehouses supporting distribution by ship, truck, and other means.



Reference

PDA

A "PDA" is a palm-sized handheld terminal for personal use.
PDAs were originally for managing personal information such as address books, schedules, and notepads. More recently, however, they are equipped with functions on par with computers, and can perform tasks such as sending/receiving e-mail, browsing websites, and executing application software. PDAs are characterized by the ability to exchange data with computers.
Abbreviation for "Personal Digital Assistant."

Reference

Intelligent home appliances

"Intelligent home appliances" are electronics for household use that are equipped with communication functions allowing them to connect to networks such as the Internet. They make it possible to answer television program surveys using a digital television's remote control, or to turn on the power to an air conditioner from outside the home using a cellular phone, or to search for and download recipes from a microwave oven.

2-4 Chapter quiz

*See page 3 in the "Answers and Explanations" booklet for the correct answers.

2-1

A SWOT analysis is an analysis method that examines opportunities and threats, and strong and weak points in planning strategy. Which of the following is included in the scope of subjects to evaluate strong and weak points?

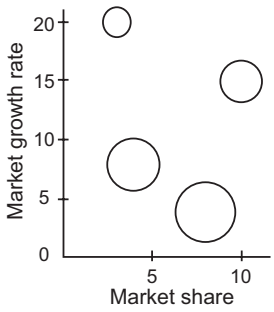
a) The number of competitive companies
b) Prices of its own products
c) Growth of the targeted market
d) Trends in Japanese economy

2-2

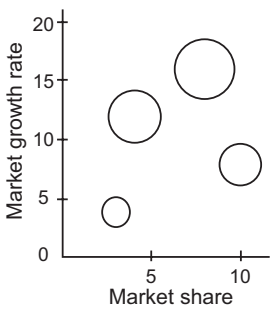
A company has product lines including four items. The table shown below summarizes the survey results of the sales, market share, and market growth rate for each item that year. Which of the following represents the corresponding product portfolio matrix (PPM)? Here, the size (area) of each circle represents sales.

Product	A	B	C	D
Sales (in million dollars)	8	12	4	16
Market share (%)	10	4	3	8
Market growth rate (%)	15	8	20	4

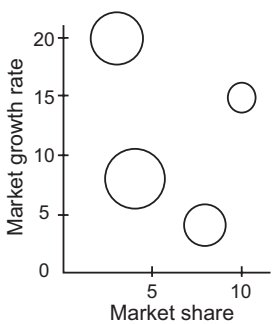
a)



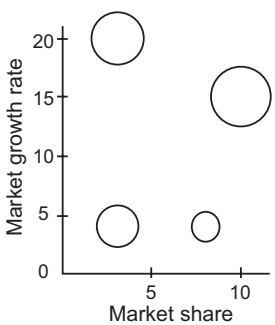
b)



c)



d)



2-3

Which of the following explains one-to-one marketing?

a) It assumes the status of the company from its market share and performs activities suitable for the status.
b) It satisfies each customer's need rather than targeting a group called a market.
c) It develops the products and marketing mix suitable for the needs of the segment.
d) It produces and distributes a single product in large volumes, targeting all customers.

2-4

Which of the following is the perspective of a balanced scorecard other than three perspectives: financial, customer, and business processes?

a) Learning and growth
b) Communication
c) Product
d) Advantage

2-5

Which of the following explains SCM?

a) This is a technique that strengthens relations with customers and connects them to improvement in corporate earnings by managing the exchanges with customers consistently while sharing information between the departments related to customers.
b) This is a technique of sharing the objective knowledge, experiences, and know-how, which each employee obtained from business activities, as the knowledge of the whole company with a network.
c) This is a technique for centrally managing the data generated at business tasks, such as sales, production, accounting, and personnel affairs, with an integrated database, and understanding the situation of each operation department in real time.
d) This is a technique of optimizing the whole business process by sharing and managing information between the companies and the departments that participate in a series of processes from procurement of components to production, distribution, and sales.

2-6

This is a technique used for the prediction of future technology trends that are needed for planning technical development strategies. Collection of opinions from multiple experts, statistical analysis of collected opinions, and feedback of the analyzed opinions are repeated to form an opinion. Which of the following is this technique?

a) Scenario writing
b) Delphi method
c) Brainstorming
d) Role-playing

2-7

This is a card that the card companies issue to members in cooperation with banks and stores. The member has only to present a card when shopping, without paying cash. Accounts will be settled later based on the contract between the card companies and consumer members. Which of the following is the card?

a) ID card
b) Credit card
c) Debit card
d) Prepaid card

2-8

Which of the following describes the characteristics of a traceability system?

a) This uses computers for solutions by compiling a database or creating a program with expertise in the fields that need professional knowledge, such as medical diagnosis.
b) This delivers ordering information to business partners from a handy terminal successively so that a shortage of goods may not take place in retail stores.
c) This makes it possible to track history information about production and distribution of food from the consumption location back to the production location.
d) This supports unprogrammed decision-making for solving management problems interactively.

2-9

Which of the following explains a service that makes use of GPS?

a) Automating payment to enable vehicles to pass through toll gates efficiently on toll roads such as expressways.
b) Broadcasting by means of an artificial satellite; installing receiving facilities such as antennas for individual households or residential complexes to enable individuals or groups of users to receive satellite broadcast.
c) Connecting PCs to a network without any cables, by means of radio waves or infrared rays, in locations such as stores where laying cable is difficult or offices where furniture is often rearranged.
d) Indicating the user's position on a map displayed on a mobile device by means of information from satellites.

2-10

What are the products, such as television sets, refrigerators, and air conditioners equipped with a communication facility connectable to networks, such as the Internet, called collectively?

a) AV household appliances
b) PC household appliances
c) Intelligent home appliances
d) Multifunctional home appliances

2-11

Which of the following forms of EC (Electronic Commerce) is BtoC?

a) A company places an order with an external vendor for materials using Web-EDI.
b) An employee applies for service with a discount privilege on the sales site for employees in a company.
c) A company submits an electronic bid for construction work for which the country or the local governments place an order.
d) A customer purchases books at an online shop in a virtual mall.

2-12

When profit per month that can be calculated from the table is the largest, how many pieces of Product *B* are produced in one month? Here, the person-days per month are 280.

	Profit per product (yen)	Workload per product (person-days)	Production capacity per month (pieces)
Product *A*	200,000	4	25
Product *B*	160,000	4	30
Product *C*	90,000	3	40

a) 15
b) 20
c) 25
d) 30

Chapter

3

System strategy

Chapter 3 details business processes, methods to improve business operations, the flow of information system construction, the composition of a requirements definition aimed at computerization, and other items based on information systems strategy.

3-1 System strategy

3-1-1 Concept of information systems strategy

An **"information systems strategy"** aims to increase the medium- to long-term efficiency of operations by implementing a business strategy that focuses on the computerization of business activities. This requires ascertaining the current business activities, analyzing the effectiveness of system installation and its investment effect, and formulating plans for installation.

❶ Significance of information systems strategy

When planning for computerization, it is important to have a proper understanding of the current contents and flow of operations. Blindly computerizing everything will not automatically produce benefits. The goal is not just to achieve computerization, but to construct an information system that is consistent with the company's business and enterprise strategies based on an understanding of the current business activities.
Two benefits of computerization are summarized below.

Benefit	Description
Streamlining of operations	Work hours can be reduced and calculation errors can be avoided through the computerization of routine, manual work such as filling in slips and managing inventory figures.
Support for operations	Once sales strategies and business strategies are determined, searches and tabulation can be performed efficiently by computerizing the analysis of large volumes of accumulated data.

Reference

Sales support system

A "sales support system" is a system used to support sales activities. It aims to make sales activities more efficient by managing the history of negotiations with customers, and sharing resources such as customer information and sales technique know-how. It is also referred to as "SFA (Sales Force Automation)."

❷ Objectives of information systems strategy

In order to implement business and enterprise strategies, it is necessary to set specific objectives through SWOT and business environment analyses. To clarify the objectives, target operations require modeling.
Modeling techniques are summarized below.

Reference

SWOT analysis

Refer to "Chapter 2-1-1 Business strategy techniques."

●Business model

A **"business model"** is a framework for what the company will do as a business and how it will generate profits. It is important to differentiate the business model in order to gain an advantage over the competition and achieve success.

●Business process model

A **"business process model"** is the product of modeling the flow of goods and services operations: order acceptance, production, sales. Establishing a business process model is essential for the implementation of a business model.

●Information system model

An **"information system model"** is designed to promote smooth interaction between different systems such as Internet ordering systems and inventory management systems.
It is important to design the system so that coordination between different operations and the flow of information is smooth.

3-1-2 Concept of business process

Computerization of the applicable operations is reviewed according to the business and enterprise strategies. For effective computerization, modeling the business processes (flow of work) of the applicable operations, and identifying points of improvement are necessary.

❶ Understanding business processes

When implementing an information systems strategy, it is important to break down the business framework and related processes, and formulate the best way to promote effective and efficient operations.
In order to analyze the current business activities and express them in an easy-to-understand manner, **"modeling"** is used for the applicable activities. Modeling is a process designed to promote proper understanding of the business activities by presenting the current activities in an easy-to-understand manner. Visual aids such as tables and diagrams are used.

Reference

Relationship notation

There are also E-R diagrams that use "rhomboids" to represent "relationships" and show "one-to-many" relationships as "1-to-*," "1-to-n," or "1-to-m."

<E-R-R model (n:*)>

Symbol	Name
	Entity
	Relationship
	Attribute

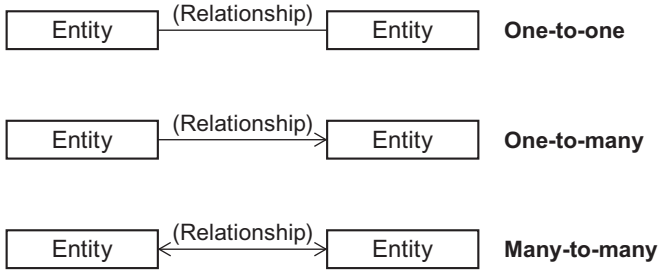
❷ Typical modeling techniques

The typical modeling techniques are summarized below.

(1)E-R diagram

An **"E-R diagram"** expresses the relationship between data using **"entities"** and **"relationships."** Entities and relationships have several characteristics called **"attributes."**

There are three types of relationships, namely one-to-one, one-to-many and many-to-many.



① Entities are represented by rectangles.

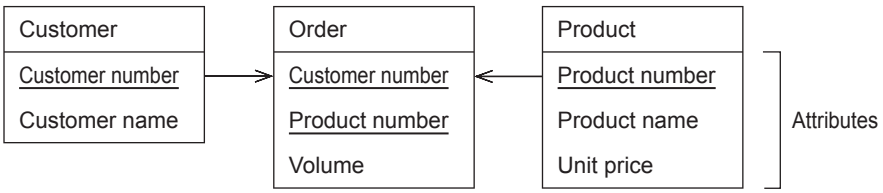
② The name of the entity is written inside the rectangle.

③ The relationships between entities are represented by straight lines or arrows. The name of the relationship is written beside the line in parenthesis.

④ **"One-to-one"** relationships are represented by straight lines.
"One-to-many" relationships are represented by single-headed arrows pointing to multiple entities.
"Many-to-many" relationships are represented by double-headed arrows.

Example

E-R diagram of the relationship between customers, orders, and products



There is a one-to-many relationship between "customer" and "orders," which implies that a single customer has placed several orders.

There is also a one-to-many relationship between "product" and "orders," which implies that multiple orders have been placed for a single type of product.

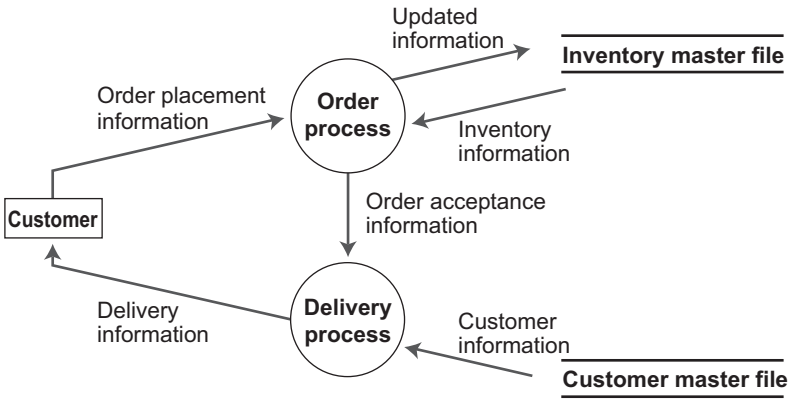
(2)DFD

A **"DFD"** uses the four elements of **"data flow," "process," "file,"** and **"external,"** and applies modeling to various operations and systems to express the flow of operations as a flow of data.

Symbol	Name	Meaning
→	Data flow	Represents the flow of data and information.
○	Process (Function)	Represents the processing of data.
═══	File (Data store)	Represents data storage.
□	External (Data source/ data sink)	Represents the source or destination of data.

Example

DFD of the product delivery process from order placement by customer to delivery



(3)UML

"UML" is a visual language for modeling that standardizes the conceptual components used in the development and specification decision stage. By using standardized notations, the desired program can be recognized regardless of differences in language and development methods.

UML expresses the model using diagrams consisting of boxes and lines. The typical examples of UML are summarized below.

Reference

DFD

Abbreviation for "Data Flow Diagram."

Reference

UML

Abbreviation for "Unified Modeling Language."

Reference

Data-driven

"Data-driven" refers to a technique that focuses on data relationships and flow to understand the business process. Modeling techniques such as "E-R diagrams," DFD", and "UML" are considered data-driven techniques.

Reference

Requirements definition

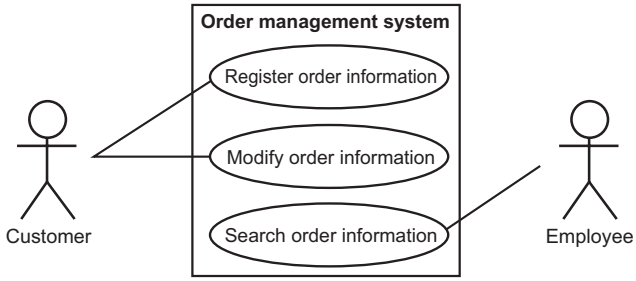
Refer to "Chapter 4-1-1 System development process."

●Use case diagram

A **"use case diagram"** is a figure that shows the relationship between system users, functions the system provides, and external systems. An easy-to-understand diagram that shows what functions the system possesses, how they respond when operated, and what role they play from a perspective outside the system can provide a general understanding of the overall system. Use case diagrams are normally used in the requirements definition stage at the beginning of system development.

Use case diagrams express the functions of a system using the following symbols:

Symbol	Name	Function
Person	Actor	Represents an entity that plays a role in accessing the system.
Ellipse	Use case	Represents a functionality in the system.
Straight line	Relationship	Represents the relationship between the actor and the use case.
Rectangle	System boundary	Indicates the scope of the system.



① Actors are drawn outside the system boundary.
② Use cases are drawn within the system boundary.
③ Actors and use cases are connected with lines indicating relationships.

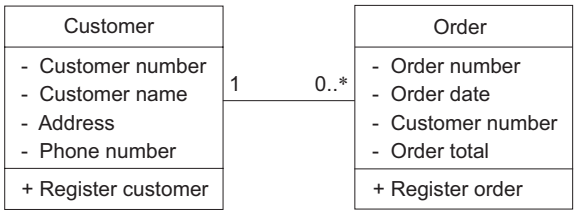
Reference

Class

A "class" defines the object template that contains the data and methods (operating procedures).

●Class diagram

A **"class diagram"** shows the structure of the system. It consists of three parts with the class name on top, attributes in the middle, and operations on the bottom.

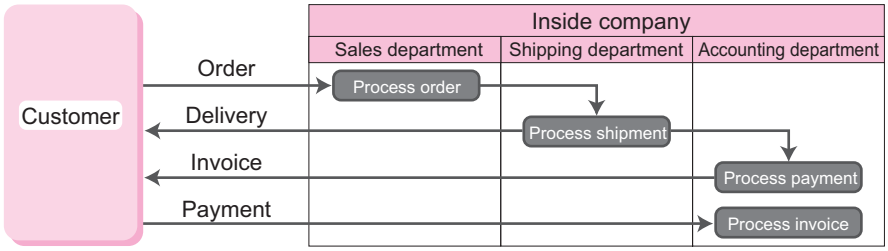


① **"One-to-many"** relationships are expressed as **"1-to-*."**
② **"More than zero"** is expressed as **"0..*."**
③ A **"+"** sign is placed in front of attributes that can be directly accessed from all classes.
④ A **"–"** sign is placed in front of attributes that can only be accessed from certain classes.

(4)Workflow analysis

A **"workflow analysis"** is a diagram that shows the flow of all related work in an operation.

A workflow analysis can be used to clarify the responsibilities of each department and the flow of the business process. Specifically, computerizing the flow of documents and sharing information smoothens the flow of the process.



3 Business process analysis and improvement techniques

The typical techniques for analyzing and improving business processes are summarized below.

(1)BPR

"BPR" is a business approach that is designed to dramatically improve corporate performance on an ongoing basis by rebuilding the business process or corporate structure from the ground up, reducing costs, and improving the quality of products and services.

(2)BPM

"BPM" is a management technique that promotes ongoing improvements to the business process in order to implement business and enterprise strategies. The business process is analyzed and designed according to the business or enterprise strategy. The design is then applied to actual operations to make improvements and the performance is evaluated.

(3)Workflow system

A **"workflow system"** is a framework for streamlining the flow of operations on the network by establishing flow diagrams or rules. Instances of input errors and approval errors can be reduced, allowing more applications to be made and approved from anywhere at any time.

Reference

Function-driven

"Function-driven" refers to a technique that focuses on procedures to understand a business process. "Workflow analysis" is an example of a modeling technique that is considered to be function-driven.

Reference

BPR

Abbreviation for "Business Process Reengineering."

Reference

BPM

Abbreviation for "Business Process Management."

4 Business process improvements and problem-solving

Computerizing operations and effectively utilizing computers and networks can make business activities more efficient.
However, simply computerizing the current operations will not make them more efficient if they are not adapted appropriately. Problems and points of improvement need to be identified beforehand by conducting the activities outlined in the business or enterprise strategy to better understand and organize the business process.
When doing so, it is important to analyze the problematic results within the business process and their causes, find techniques to resolve any problems, and think about how the process can be improved to make it more efficient.

5 Effective use of IT

Many companies are currently promoting IT as a means of improving and streamlining operations. The computer and information literacy of the individual users is vital to the integration of IT. Smooth communication within the company achieved through effective use of IT and related tools, can help improve and streamline operations.

(1)Streamlining of operations through computerization

There are several methods for computerization and they will vary depending on the business process content to be computerized and the environment. It is important to determine how the computerization process will be implemented based on the business or enterprise strategy.
The methods of computerization and their characteristics and benefits are summarized below.

●Installation of office tools

In order to carry out the operations efficiently, it is necessary to select the optimal tools for a particular purpose. For example, when preparing presentation materials or a product pamphlet, a better-looking, higher quality product can be created more efficiently by using graphics software that is equipped with DTP functions. Another example would be managing the company's customers. If the number is small, word processing or spreadsheet software could be used to manage them. If the number of customers or items to manage becomes larger, database or special customer management software would be more effective. It could also be used to send direct mail advertisements and perform customer analyses.
It is important to select the right software according to the purpose and cost when looking to streamline operations.

Reference

Computer literacy

"Computer literacy" refers to the possession of knowledge and skills necessary to perform assigned work or desired task using a computer.
Specifically, it is the know-how of basic computer processes, features, systems, and operations that affords the ability to use the most appropriate hardware or software for a given situation. By acquiring computer literacy, it is possible to determine what operations would benefit from building a full-fledged system and what operations could be sufficiently handled with commercially available office tools.

Reference

Information Literacy

"Information literacy" refers to the ability to fully utilize information. For example, using information technology such as computers and application software to search through large volumes of data and identify necessary information, sorting out the necessary information, sending out information summaries, compiling and analyzing information, and identifying trends in the information compiled.
By acquiring information literacy, it is possible to utilize information to solve problems, make decisions, and propose solutions. Training and educational activities are necessary to facilitate the acquisition of information literacy.

●Construction of network

Software resources such as programs and data, and hardware resources such as storage devices and printers can be shared. Work can be streamlined through the sharing of hardware and data, and costs can be reduced through the sharing of software. This is not limited to text but also includes multimedia information such as static images, sound recordings, and video. A network can be used as a means of communication, enabling various forms of expression even over long distances.

●Installation of groupware

The effective utilization of e-mail, bulletin boards, libraries, and workflow functions substantially reduces paper consumption, and enables the sharing of operational know-how and basic data on corporate activities. Information resources can then be standardized and maintained over. This, in turn, enables communication without time or distance constraints, which improves the speed and accuracy of information transmission.

●Installation of software packages

Software packages come equipped with various pre-installed functions that can be used right away. User manuals are also provided and the software developer can be asked to perform the maintenance, making installation relatively inexpensive.

●Development of individual information systems

Individual systems are developed from scratch based on the company's own operations, making it possible to equip them with only the necessary functions.

(2)System utilization for communication purposes

Effective use of groupware and office tools enables a wide range of communication.
The tools that facilitate smooth communication are summarized below.

●E-mail

"E-mail" is a mechanism for exchanging messages with people all over the world via the Internet. Even if the recipient is busy, the message can still be sent, making it possible to contact someone without interrupting their work. Also, the messages can be kept as records of the communication and prevent misunderstandings.

Reference

Network

A "network" is a computer configuration that uses multiple computers interconnected by cables.

Reference

Groupware

"Groupware" is software designed to support operations within a company or organization. Its purpose is to facilitate operations by enabling the sharing of information between several individuals and allowing efficient collaboration. It includes functions such as "schedule management", "libraries (file sharing)", "bulletin boards", and "electronic conference rooms."

Reference

BBS

Abbreviation for "Bulletin Board System."

●Electronic bulletin board

An **"electronic bulletin board"** is a tool that allows an unspecified number of people to share opinions and information on a variety of topics or send reports and messages over the Internet. They are also referred to as a **"BBS."** Files can be uploaded for sharing, allowing information to be communicated quickly and accurately within the company. Paper consumption can be reduced through the elimination of memos and other paper-based communications.

●Video Conferencing

"Video conferencing" is a tool that enables electronic conferences over a network. They include sound and video, which makes it possible for multiple people in distant locations to participate in a virtual conference. By setting a specific time, the conference can be held without any participants having to make a trip.

●Chat

"Chat" is a tool that enables multiple participants to engage in real-time text-based conversations over the Internet. Text entered by participants is displayed in sequence on the computer screen. Users can enter their opinions on the spot to be seen by all other participants. It is a convenient tool for multiple people to engage in conversation simultaneously.

●Blog

"Blog" is a contraction of **"weblog,"** which in turn is a combination of two words, "web" and "log." Articles can easily be created and published like a diary on the Internet. Readers can leave comments on published articles or link to them on their own blogs, facilitating communication between large numbers of people.

●SNS

Reference

SNS

Abbreviation for "Social Networking Service."

An **"SNS"** is a community-oriented membership website that provides a place for friends and acquaintances to communicate with each other. In general, it is an invitation-based service where new participants are invited by those who are already members. These websites can be utilized as a place to meet friends of friends, other people in the area, and people from a user's alma mater.

3-1-3 Solution business

Finding clues to solve problems is an important aspect of improving operations. Correctly identifying these clues determines whether or not computerization will be successful.

A **"solution business"** is one that identifies problems within operations, and provides assistance in finding clues to solve them.

1 Solutions

A **"solution"** is a means of solving problems utilizing information technology. When looking to improve operations, computerization will not be successful if the problems and solution requirements are not properly identified. To prevent unsatisfactory results, it is necessary to talk with the customer, establish a relationship of trust, and get a proper grasp of the problems and issues that need to be addressed. Solutions should be proposed to meet the customer's requests, and assistance should be provided to solve the problems.

2 Types of solutions

System development is one aspect of a solution business designed to solve problems.

System development is generally engaged on a company-wide scale. When approaching development, it is necessary get a comprehensive perspective that includes the contents and scale of the desired system, the internal structure and environment of the company, and the costs related to development to determine whether to develop the system in-house or outsource the task to a third party.

If the system is not developed in-house, the Information Systems Department or relevant organization puts together a summary of the information and outsources the task to a system vendor or other company, or installs a software package.

The solutions for computerization are summarized below.

(1)SOA

"SOA (Service Oriented Architecture)" is a framework that involves separating software functions and parts into distinct services, and constructing a system that puts them all together. A service refers to a bundle of application software packages made accessible to other computers. The services must be standardized so that they can be used on any system. The services can be used individually or in combination to produce a flexible system.

(2)ASP

An **"ASP"** provides an online software distribution service. Service fees are based on things like the length of time the software is used and paid to the ASP. Software installation and version control does not need to be handled internally, which makes it possible to reduce operational costs and manage the software efficiently. ASPs employ a **"single-tenant scheme"** in which exclusive servers are provided for each company.

Reference

Software package installation

Management efficiency can be increased and operations improved by installing business system software packages that include a bundle of generic business functions such as accounting and sales management software.

Reference

SOA

Abbreviation for "Service Oriented Architecture."

Reference

ASP

Abbreviation for "Application Service Provider."

Reference

SaaS

Abbreviation for "Software as a Service."

Reference

System Integration

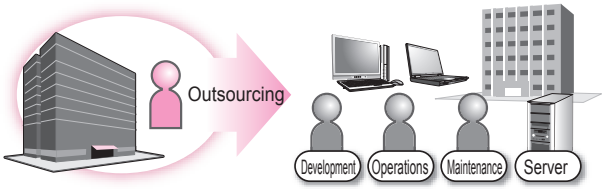
"System integration" refers to a form of service that integrates various tasks such as information system design, development, testing, and operations and maintenance. With this service, even a company with no experience in system development can develop an optimal system that integrates products from multiple vendors.

(3)SaaS

"SaaS" is a service that provides necessary software functions via the Internet. Only the necessary functions are used and fees are paid accordingly. The service is similar to the service provided by ASPs, but SaaS uses a **"multi-tenant scheme"** where multiple companies share a single server.

(4)Outsourcing

"Outsourcing" is where a third party specialist is hired to perform everything or almost everything related to development, operation, and maintenance of the information system.

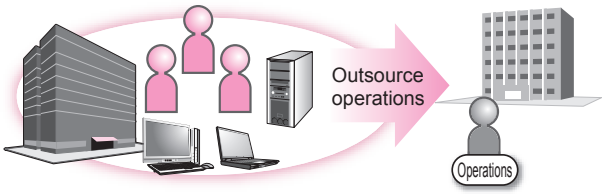


(5)Hosting service

A **"hosting service"** is a type of outsourcing in which a third party specialist handles operations related to servers and other equipment. The hosting company provides the servers and other equipment which are managed at advanced facilities by professional technicians, so a higher level of reliability can be expected. There are also cost benefits as the facilities and technicians are shared among several user companies.

(6)Housing service

A **"housing service"** is a service in which the user provides the servers and other equipment, while a third-party specialist is requested to provide the space and connectivity, carry out operations. Compared to hosting services, there is more freedom to configure settings such as server type, OS, and security measures.



3-2 System planning

3-2-1 Computerization planning

"Computerization planning" is the act of developing and planning an information system designed to streamline operations by putting together a computerization initiative and a basic policy for computerization based on the business or enterprise strategy. A **"computerization initiative"** is an introductory step which involves analyzing operations prior to defining the system requirements to produce the big picture for computerization that will serve as the basic requirements for the system, the scope, the schedule, the budget, etc. Development related to computerization is carried out in accordance with the company's system strategy and business model. If the computerization initiative is flawed, operations may become more complicated than before or produce unexpected results.

The **"basic policy for computerization"** is the basic development policy set forth when computerizing operations. Computerization is implemented based on elements of the basic policy such as the purpose of development and the issues to be addressed. The computerization plan is put together in the final stage of laying out the system.

During the planning stage for computerization, it is necessary to put together a solid computerization plan based on the big picture that includes the schedule, structure, scope of operations, and cost effectiveness.

The procedure for planning computerization is summarized below.

Review of schedule	Review the overall development schedule set forth in the computerization plan.
↓	
Review of development structure	Review the structure in place for system development.
↓	
Risk analysis	Analyze the possible risks pertaining to system development.

❶ Review of schedule

The overall development schedule set forth in the computerization plan is reviewed.

First, an overall development schedule that seeks full computerization by the time the system becomes necessary is planned. It is based on the business strategy and takes into account factors such as order of construction, transition from current operations, and education and training.

If too much priority is placed on meeting deadlines and the system development period is cut short, the quality of the system may suffer. Management must make a decision whether to give priority to finishing the system by the time it becomes necessary, or making sure the system is fully developed even if it results in a delay.

Reference

Scope of computerization

When introducing computerization, it is necessary to review the scope to determine how much of the operations to include in the system. If the scope is too small, it may be ineffective. If it is too large, it may be unmanageable.

Reference

Cost effectiveness

Reviewing whether the system to be developed is cost effective is very important as it can result in the success or failure of the business strategy.

When introducing a system, it is necessary to determine the costs related to development and operation, and review whether the benefits will exceed the costs and whether an effect corresponding to the costs can be achieved. If there is no prospect for achieving the desired effect, then computerization itself needs to be reconsidered. Computerization requires regular evaluations that look into how much efficiency can be achieved, and how much profits will increase in order to determine whether the desired level of cost effectiveness has been achieved.

❷ Review of development structure

After determining an overall development schedule, the structure in place for system development is reviewed.

The development structure should be considered not only by the System Development Department, but also the business operations departments that will actually use the system.

If only one side is involved, the system could end up different than the actual operations or incompatible with the company-wide system. By having both sides involved in computerization, the system can be developed in line with the business strategy.

When doing this, it is necessary to ensure proper assignment of personnel, including the person responsible for overall development, the person responsible for system development, and the person in charge of operations.

❸ Risk analysis

"Risk analysis" is the act of determining what kinds of risks are involved in the construction and operation of the system, where they exist and what level of loss would result from their occurrence, and measuring the degree of their impact. The possible risks based on the estimated probability of occurrence and size of the potential loss are prioritized, and addressed according to their priority.

The possible risks involved in computerization and their causes are summarized below.

Risk	Cause	
Hardware failure	•Forgetting to turn on the power •Incorrect device settings	•Device connection error •Device failure, etc.
Software failure	•Incorrect operation by user •Incorrect OS or software settings	•Software bug •Computer virus, etc.
Network failure	•Disconnected cable •Incorrect network device settings •Network device failure	•Incorrect IP address setting •Constraint violation, etc.
Data failure	•Data corruption •Wrong data type	•Improper format •Insufficient storage space, etc.
Performance failure	•Insufficient memory •Insufficient disk space	•File fragmentation, etc. •Increased volume of data
Disaster-related failure	•Fire, flood, earthquake, etc.	

3-2-2 Requirements definition

The **"requirements definition"** is the definition of requirements related to computerization such as the operational summary and flow. The requirements are defined after making plans for computerization. In order to define the requirements, it is necessary to survey and analyze user (system user department) requests, and consider whether the system to be developed is feasible in terms of cost and technology.

❶ Definition of operational requirements

When putting together operational requirements, the requirements for the computerization of the operations are defined specifically.
After ascertaining user (system user department) requests based on the business or system strategy, the functions and requirements of the system are defined by sorting out data related to the current operational activities, and analyzing it from various different perspectives.
The definition of requirements should take into account the following.

●Survey and analysis of user requests

Surveys are taken for the functions necessary to implement the operations, requests for improvements to the flow of operations, and requests related to the design of the human interface. Requests from the users (system user department) who are actually engaged in the operational activities can prove to be useful in streamlining the operations. It is important to take ample time to meet with the users and gather as many opinions as possible.
An analysis/review of the user (system user department) requests will also need to be carried out in order to determine whether they are technically feasible.

●Analysis of current operations

The operational activities to be computerized are analyzed. The results of the user (system user department) survey are compared with the business strategy, and look into whether they are necessary for computerization.

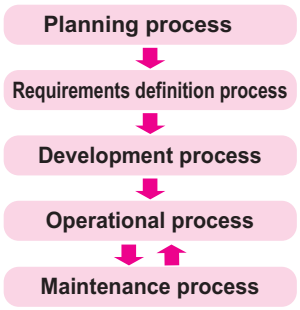
❷ Definition of functional requirements

"Functional requirements" are the operations to be computerized themselves. When putting together functional requirements, the system operations and processing details are defined based on requests discussed with the users (system user department).
The requests and the current operations are analyzed, and the specific content to be implemented as functions is sorted.

Reference

Software life cycle

When planning computerization, it is important to consider the "software life cycle", which is the flow of the overall process.
Specifically, the following cycle needs to be considered.



3-2-3 Procurement planning and implementation

A company must improve operations and solve problems in order to implement a business strategy.
Operational activities come in many forms depending on the field and purpose. When performing them, it is necessary to make decisions on a case-by-case basis, but the basic procurement plan is fixed and does not change. It is important to procure products and services that meet the requirements in order to promote computerization.

1 Flow of procurement

The basic flow of procurement is summarized below.

Creation of RFI (Request For Information)	Request information from the prospective suppliers on the necessary products and services for computerization.
Creation and distribution of RFP (Request For Proposal)	Put together a summary of the computerization tasks along with a request for proposal and the basic policy of the system including procurement conditions, and distribute the materials to the prospective suppliers.
Obtaining of proposals	Obtain proposals from the prospective suppliers and compare the details.
Obtaining of quotations	Obtain quotations from the prospective suppliers and compare the details.
Selection of supplier	Select a supplier.
Signing of contract	Sign a contract with the supplier.

(1)Creation of RFI (Request For Information)

A **"request for information"** is a document used to request information concerning computerization from prospective suppliers such as system vendors, and is created before the **"RFP (Request For Proposal)."**
This document allows the company to collect a wide range of information including technical information on the necessary hardware and software, case studies involving competitors, and information on operation and maintenance.

Reference

RFI

Abbreviation for "Request For Information."

Reference

SOW (Statement Of Work)

A "statement of work" is a document that lays out details such as the purpose of the project, scope of the work, and deadline for delivery. In general, these documents are often created as appendices to outsourcing contracts. They also serve as a reference for checking on the work to make sure it conforms to the request, and determining whether the performance matches the contract after the work is complete. They are important documents for ensuring things go smoothly between the parties concerned.

(2)Creation and distribution of RFP (Request For Proposal)

A **"request for proposal"** is a document used by companies looking to implement computerization to request specific system proposals from prospective suppliers such as system vendors.

It contains the basic policy for the system including a summary of the system, the purpose, the necessary functions, the system requirements, and contract matters.

A system vendor that receives the request will create a proposal containing a system overview based on the request for proposal, and present it to the company making the request.

The request for proposal also serves to prevent confusion from arising in the actual development stage.

(3)Obtaining of proposals

A **"proposal"** is a document containing the necessary items from the request for proposal.

The prospective supplier reviews items such as the system configuration and the development techniques based on the request for proposal, and creates a proposal to submit to the requesting company.

The requesting company evaluates the submitted proposals and uses them to select a supplier.

(4)Obtaining of quotations

A **"quotation"** is a document containing information such as the costs related to system development, operation, maintenance, and the delivery date.

The prospective supplier submits a quotation to the requesting company outlining the costs, delivery date, and payment method.

(5)Selection of supplier

A supplier is selected. The final decision is based not only on a careful examination of the proposals and quotations, but also the selection criteria.

(6)Signing of contract

A contract is signed with the supplier. By clarifying the details of the agreement beforehand, the parties can avoid confusion on the part of the developers, disputes, delayed delivery, system failure, and other problems that result from verbal agreements and ambiguous orders.

Reference

RFP

Abbreviation for "Request For Proposal."

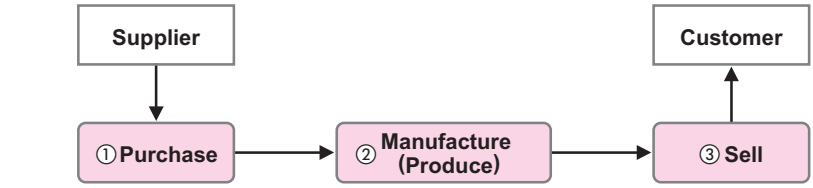
Reference

Creation of selection criteria

Before selecting a supplier, it is necessary to consider what criteria to use. Selection criteria such as RFP details, budget, and service, must be identified and prioritized to make a comprehensive decision.

❷ Flow of manufacturing operations

The flow of manufacturing operations is summarized below.



① Purchase

Purchase the raw materials and equipment necessary to manufacture (produce) the product.

② Manufacture (Produce)

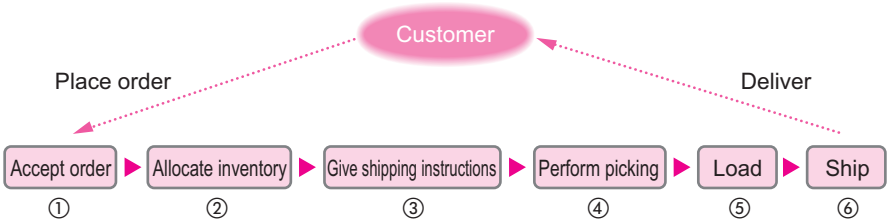
Manufacture the product from the raw materials.

③ Sell

Sell the manufactured product to the customer.

❸ Flow of sales operations

The flow of sales operations is summarized below.



① Accept order

Process the order from the customer.

② Allocate inventory

Check the product inventory.

③ Give shipping instructions

Give instructions for shipping if there is sufficient inventory.

④ Perform picking

Remove the products from the warehouse according to the shipping instructions.

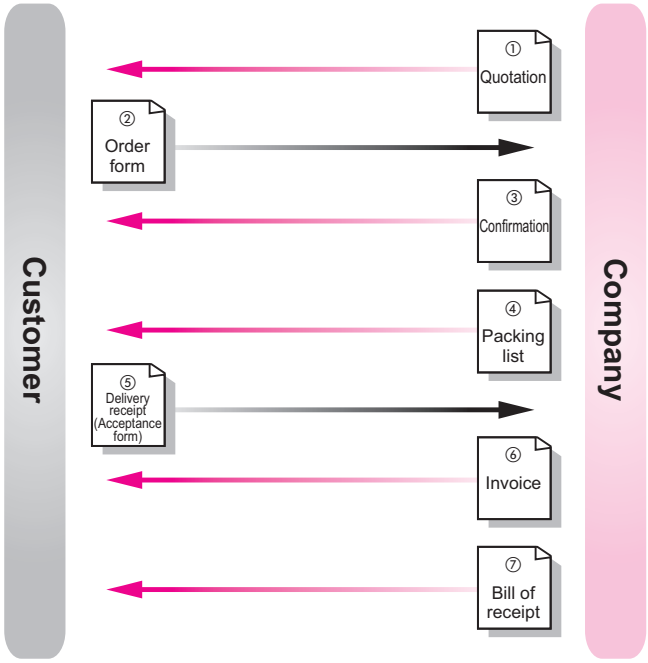
⑤ Load

Load the products onto the truck or delivery vehicle.

⑥ Ship

Ship the products to the customer.

The flow of documents related to sales operations is summarized below.



① Quotation

Lays out the product price, delivery date, payment method, etc. for the customer's purchase request.

② Order form

The customer places an order for a product with the company.

③ Confirmation

The company acknowledges receipt of the order.

④ Packing list

The customer confirms that the product received is what was ordered.

⑤ Delivery receipt (Acceptance form)

The customer acknowledges receipt of the product.

⑥ Invoice

The company invoices the customer for the product.

⑦ Bill of receipt

The company acknowledges receipt of payment.

3-3 Chapter quiz

*See page 6 in the "Answers and Explanations" booklet for the correct answers.

3-1

Which of the following is the model that can be used for representing the target business tasks in planning of an information systems strategy to clarify what the information system should be?

a) Waterfall model
b) Spiral model
c) Business process model
d) Prototyping model

3-2

Which of the following explains BPR?

a) Accelerating business expansion by incorporating other company's functions, which are insufficient in one's own company, through a corporate acquisition
b) Analyzing the workflows and value chains that enterprises use to produce value in the form of products and services
c) Promoting quality control activities which aim at delivering zero-defect products, not only in manufacturing departments but throughout the enterprise
d) Reengineering business processes fundamentally to enhance business processing capabilities and cost-effectiveness by taking full advantage of information technologies

3-3

Which of the following is the concept of reviewing an existing organization and business rules radically and redesigning job roles, workflows, administrative functions, and information systems?

a) BPR
b) ERP
c) RFP
d) SLA

3-4

Which of the following is a service that offers application functions via the Internet, characterized by the multi-tenant system, where one system is used by multiple companies?

a) ISP (Internet Service Provider)
b) SaaS (Software as a Service)
c) Housing service
d) Hosting service

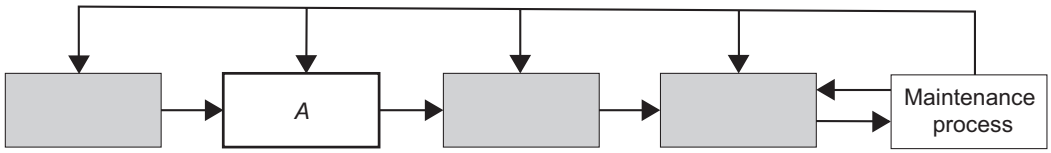
3-5

Which of the following is an activity included in systematization planning?

a) Functional requirements definition
b) System requirements definition
c) Software requirements definition
d) Study of the entire development schedule

3-6

As shown in the figure, when the software life cycle is classified into the operation process, development process, planning process, maintenance process, and requirements definition process, which of the following should be inserted in the box *A*?



a) Operation process
b) Development process
c) Planning process
d) Requirements definition process

3-7

The diagram below shows the workflow in sales and distribution business, from receipt of orders to delivery of goods. In the diagram, which of the following should be inserted in the rectangular box *A*?
Here, shaded portions are intentionally not shown.

a) Delivery instructions
b) Loading
c) Shipping
d) Taking inventory

3-8

Which of the following is the item that the ordering company should describe in a request for proposal to clarify the details of transaction contracts for software or services?

a) Person-days
b) Basic policy of the system
c) Program specifications
d) Estimated cost

3-9

When selecting a system vendor who develops the next mission-critical system, your boss directed you to prepare an RFP as a leader. Which of the following appropriately explains this RFP?

a) A document to ask a system vendor to submit a proposal of the next mission-critical system development
b) A document to make inquiries to in-house users about issues of the current mission-critical system
c) A document to make inquiries to in-house users about requirements for the next mission-critical system
d) A document to submit an order of the next mission-critical system development to a system vendor

3-10

Which of the following is the appropriate description of information literacy?

a) It means the economic disparities between those who have information technology skills and those who do not have them, which arise from computerization such as whether or not one owns a PC.
b) It means the ability to handle information, or equivalently, to organize, store, and analyze information using a PC as well as collect and transmit information through the Internet and other means.
c) It means the organizational ability to guide the business organization in developing and implementing an IT strategy and to lead it in the direction in which it should go for the purpose of establishing competitive leadership.
d) It means the level of availability of information communications devices, software, and information services to all people including handicapped persons and senior citizens.