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Chapter 2 – Engineering Economics

2.40

1. ITU Telecommunication Standardization Sector (ITU-T) is one of the three sectors of the International Telecommunication Union (ITU); it coordinates standards for telecommunications. The ITU-T mission is to ensure the efficient and timely production of standards covering all fields of telecommunications on a worldwide basis, as well as defining tariff and accounting principles for international telecommunication services.

​The Study Groups of ITU’s Telecommunication Standardization Sector (ITU-T) assemble experts from around the world to develop international standards known as ITU-T Recommendations which act as defining elements in the global infrastructure of information and communication technologies (ICTs). Standards are critical to the interoperability of ICTs and whether we exchange voice, video or data messages, standards enable global communications by ensuring that countries’ ICT networks and devices are speaking the same language.

1. International Standardization Organization (ISO) is an international standard-setting body composed of representatives from various national standards organizations. ISO is a voluntary organization whose members are recognized authorities on standards, each one representing one country. The bulk of the work of ISO is done by the 2,700 technical committees, subcommittees, and working groups. ISO's main products are international standards. ISO also publishes technical reports, technical specifications, publicly available specifications, technical corrigenda, and guides.

ISO (International Organization for Standardization) is the world’s largest developer of voluntary International Standards. International Standards give state of the art specifications for products, services and good practice, helping to make industry more efficient and effective. Developed through global consensus, they help to break down barriers to international trade. ISO develops International Standards. We were founded in 1947, and since then have published more than 19 500 International Standards covering almost all aspects of technology and business. From food safety to computers, and agriculture to healthcare, ISO International Standards impact all our lives.

1. The TM Forum (formerly TeleManagement Forum and the Network Management Forum) is a non-profit industry association, for service providers and their suppliers in the telecommunications and entertainment industries. Members include telephone companies, cable operators, network operators, software suppliers, equipment suppliers and systems integrators. TM Forum provides information and support to help its members with creating and delivering profitable services. These include industry research and benchmarks, technology roadmaps, best-practice guidebooks, software standards and interfaces, as well as certified training, conferences and publications.

TM Forum is a global trade association trusted by the world’s largest enterprises, service providers and suppliers to help them continuously transform to succeed in the digital economy. We help our members reduce costs and risks, improve business agility and grow their business through a wealth of knowledge, tools, standards, training and practice advice. We bring together more than 85,000 professionals from 900+ member companies to share experiences, collaborate and rapidly solve critical business challenges including IT transformation, business process optimization, big data analytics, cloud management, customer experience management and cyber security. Our three strategic programs—Agile Business & IT, Customer Engagement and Open Digital —enable us to provide a platform for overcoming the barriers to an open digital world including member benefits that Inform, Innovate, Accelerate and Optimize members' business decisions and operations. By providing a neutral and open platform for collaboration between service providers, enterprises and their suppliers, the Forum helps its members overcome the barriers to an open digital economy.

1. Digital Subscriber Line Forum [DSL Forum] The Broadband Forum is a non-profit industry consortium dedicated to developing broadband network specifications. Members include telecommunications networking and service provider companies, broadband device and equipment vendors, consultants and independent testing labs (ITLs). Service provider members are primarily wire-line service providers (non-mobile) telephone companies. The DSL Forum was founded in 1994 with about 200 member companies in different divisions of the telecommunication and information technology sector. It is used as a platform for companies that operate in the broadband market. Its initial main purpose was the establishment of new standards around Digital Subscriber Line communication products such as provisioning. This cooperation has brought different standardizations for ADSL, SHDSL, VDSL, ADSL2+ and VDSL2.

The Broadband Forum is the central organization driving broadband wireline solutions and empowering converged packet networks worldwide to better meet the needs of vendors, service providers and their customers. We develop multi-service broadband packet networking specifications addressing interoperability, architecture and management. Our work enables home, business and converged broadband services, encompassing customer, access and backbone networks.

1. The Institute for Electrical and Electronic Engineering Forum (IEEE) is a professional association headquartered in New York City that is dedicated to advancing technological innovation and excellence. It has about 425,000 members in about 160 countries, slightly less than half of whom reside in the United States. IEEE's Constitution defines the purposes of the organization as "scientific and educational, directed toward the advancement of the theory and practice of Electrical, Electronics, Communications and Computer Engineering, as well as Computer Science, the allied branches of engineering and the related arts and sciences." In pursuing these goals, the IEEE serves as a major publisher of scientific journals and organizer of conferences, workshops, and symposia. It is also a leading standards development organization for the development of industrial standards (having developed over 900 active industry technical standards) in a broad range of disciplines, including electric power and energy, biomedical technology and healthcare, information technology, information assurance, telecommunications, consumer electronics, transportation, aerospace, and nanotechnology. IEEE develops and participates in educational activities such as accreditation of electrical engineering programs in institutes of higher learning.

IEEE is the world’s largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity. IEEE and its members inspire a global community through its highly cited publications, conferences, technology standards, and professional and educational activities. IEEE's core purpose is to foster technological innovation and excellence for the benefit of humanity. IEEE will be essential to the global technical community and to technical professionals everywhere, and be universally recognized for the contributions of technology and of technical professionals in improving global conditions.

1. Desktop Management Task Force [DMTF] Distributed Management Task Force (DMTF, formerly "Desktop Management Task Force") is an industry organization that develops, maintains and promotes standards for systems management in enterprise IT environments. These standards allow for building systems management infrastructure components in a platform-independent and technology-neutral way. By creating the open industry standards, DMTF helps enable systems management interoperability between IT products from different manufacturers or companies.

DMTF enables effective management of IT environments. The organization is comprised of industry-leading member companies that collaborate on the development, validation and promotion of infrastructure management standards. The group spans the globe with 160 member companies and organizations, and more than 4,000 active participants crossing 43 countries. The DMTF board of directors is led by 17 innovative, industry-leading technology companies. With this deep and broad reach, DMTF creates standards that enable interoperable IT management. These standards specify well-defined interfaces that collectively deliver complete management capabilities. DMTF standard interfaces are critical to enabling interoperability among multi-vendor IT infrastructures, and systems and network management including cloud, virtualization, desktop, network, servers and storage.

1. Internet Engineering Task Force (IETF) develops and promotes Internet standards, cooperating closely with the W3C and ISO/IEC standards bodies and dealing in particular with standards of the Internet protocol suite (TCP/IP).It is an open standards organization, with no formal membership or membership requirements. The details of its operations have changed considerably as it has grown, but the basic mechanism remains publication of draft specifications, review and independent testing by participants, and republication. Interoperability is the chief test for IETF specifications becoming standards. Most of its specifications are focused on single protocols rather than tightly interlocked systems. This has allowed its protocols to be used in many different systems, and its standards are routinely re-used by bodies which create full-fledged architectures (e.g. 3GPP IMS).

The mission of the IETF is to make the Internet work better by producing high quality, relevant technical documents that influence the way people design, use, and manage the Internet. The Internet Engineering Task Force (IETF) is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. It is open to any interested individual. The IETF Mission Statement is documented in RFC 3935. The actual technical work of the IETF is done in its working groups, which are organized by topic into several areas (e.g., routing, transport, security, etc.). Much of the work is handled via mailing lists. The IETF holds meetings three times per year.

2.40) A company is analyzing a make-versus-purchase situation for a component used in several products, and the engineering department has developed these data:

Option A: Purchase 10,000 items per year at a fixed price of $8.50 per item. The cost of placing the order is negligible according to the present cost accounting procedure.

$$Total Cost=10,000×8.50=\$85,000$$

Option B: Manufacture 10,000 items per year, using available capacity in the factory. Cost estimates are direct materials =$5.00 per item and direct labor =$1.50 per item. Manufacturing overhead is allocated at 200% of direct labor (=$3.00 per item).

$$Total Cost=10,000×\left(5+1.5+3\right)=\$95,000$$

Based on these data, should the item be purchased or manufactured? (2.4)

Purchased.