



Chapter I

A Framework for Digital Accounting

Digital Accounting, E-Accounting, and the E-Thing

The term *digital* refers to digits or numbers; however, in the computer science lexicon this term refers to the representation of information in 0s and 1s, which can be read, written and stored using machines. The prefix “e” refers to *electronic*, meaning use of electricity in powering machines such as computers. Digital accounting, or e-accounting, as a corresponding analog, refers to the representation of accounting information in the digital format, which then can be electronically manipulated and transmitted. Digital accounting does not have a standard definition but merely refers to the changes in accounting due to computing and networking technologies.

Accounting, the art and science of measuring business performance, has evolved with business, more so with information technology. Punch cards and mainframes, databases and data warehouses, personal computers and productivity software, specialized accounting software and Enterprise Resource Planning (ERP) systems, Local Area Networks (LANs) and Wide Area Networks (WANs), among other things, have left their mark on accounting theory and practice. For example, data-entry mechanisms, data storage and processing mechanisms, end reports, internal controls, audit trails and skill sets for accountants have been in continual flux for the past several decades.

Roots of Digital Accounting

Accounting is sometimes called a *lagging science*, meaning accounting is reactive — it reacts to developments in business and technology. Interestingly, accounting was initially on the cutting edge of the Information Technology revolution. The roots of digital accounting can be traced to the depression era and World War II. Tax regulation, at the time, was becoming complex, and World War II introduced a variety of logistical and data management problems. The details of financial transactions and physical location of goods could not be reliably handled, even with the armies of clerks. This work was boring, paid poorly and demanded a high degree of accuracy. Welcome the tabulating machines. As many know, Mr. Watson, the CEO of IBM, remarked that world might not need more than five computers. Tabulating machines soon evolved, and the new technology found newer and wider applications, undreamt even by its wildest proponents.

In the late 1950s and early 1960s, the mega corporations of the day began to handle data that rivaled government requirements. This data could not be handled manually, let alone cost effectively. Accounting and financial information, due to its repetitive nature and heavy volume, became a prime candidate for automation. Initial investments in information technology, though the term was not yet invented, were controlled by accounting and finance departments. The mechanization of accounting and finance information expanded the power of Chief Financial Officers (CFOs) and controllers by enabling them to influence operational and strategic decisions. The financial justification of investments was not an issue, since financial executives endorsed the investments. However, as the tabulating installations turned into data processing centers, the technology became too complex to be controlled by accountants. Data processing managers started handling the data processing center and the Data Processing Management Association (DPMA) was born. The automation of accounting and financial data had begun, and soon developed an irreversible momentum.

Accounting and e-commerce also met decades ago. The development of Electronic Data Interchange (EDI) and Electronic Fund Transfer (EFT) can be said to be the beginnings of the digital exchange of accounting information among trading partners. EDI and EFT both involve exchange of data electronically and sound very similar to e-commerce. The conceptual roots of EDI can be traced back to the Berlin Airlift in the late 1940s. During the Berlin Airlift, consignments of various goods and materials arrived with manifests in different languages, different numbers of copies and differing formats, among other things. To overcome problems caused by such documents, a *standard* manifest was designed. This standard manifest could be transmitted via telephone, telex or radio. Thousands of tons of cargo per day were tracked using these manifests. The United States (U.S.) army logistics officers who designed the scheme later implemented it in the corporate world. EDI is based on the idea of this standard manifest. EDI uses a standardized format for documents that can be transmitted, read and processed electronically. The standardized formats of these documents are controlled by various industry standards and trade associations. Initially, EDI was used to transfer purchasing and selling documents. Later on, EDI was used to handle financial transactions such as payment and collection activities.

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