Chapter I
From Ledgers to ERP

Ricardo Salim
Universidad Autónoma de Barcelona, Spain
Cautus Networks Corp., Venezuela

Carlos Ferran
The Pennsylvania State University, USA

ABSTRACT

The chapter narrates the history of the accounting needs of individuals and organizations and explains their successive technological solutions, up to today’s ERPs. The ledger, double-entry accounting, cost accounting, departmental accounting, material requisitions systems for production, human resources systems, and finally the enterprise-wide resource planning or management systems are analyzed in terms of how IT has—and has not—been able to “computerize” and integrate them. The main functionalities of ERPs are explained: the enterprise resource functionality and the planning functionality, as well as to what extent organizations need these functionalities and should pay its high prices. The expectations that have not yet been sufficiently satisfied by current systems, such as the ERP for SMEs, the transfer of “best practices,” the interconnection of supply chains via ERP, and the ERP for global organizations, are discussed.

INTRODUCTION

The ledger records all the commercial and tributary transactions of an entity. Its use started thousands of years ago. Since antiquity, the records of all commercial and tributary transactions of an entity have been filed in ledgers. The recorded monetary value of the items transacted provides very useful summary information: the difference between all that came in minus all that went out for a given entity. This difference represents the wealth or patrimony of that entity and is also known as the fundamental accounting equation. However, frequent errors, omissions, and inconsistencies were generated between ledgers and reality. In the fourteenth century the double-entry
method was developed to minimize them. This method requires that each transaction includes at least two entries: one representing where the money comes from and the other where it goes. The list of transactions of the accounts was called the “general ledger.” In the mid-twentieth century, computers started to be used to record and summarize these transactions; nonetheless, for several decades technical limitations impeded the immediate detailed recording of both entries for individual operations. Therefore, individual operations were managed and recorded by independent and often isolated systems that took care of a specific business function—like production, invoicing, or human resources—and the general ledger gathered the daily summarization that came from those systems. In the early 1990s new technologies allowed the development of systems capable of integrating the general ledger with individual subsystems; thus providing immediate online information regarding the movements and status of all the resources that affected the patrimony. These systems are currently called enterprise resource planning (ERP) systems.

This chapter begins by narrating the history of ledgers from the ancient times when they were recorded on clay tablets to the early twentieth century, when they were recorded on cardboard cards and processed with a mechanical clock technology artifact called the tabulating machine. It continues by relating the rise and evolution of computers with the improvements of ledger recording and accounting, up to the completely computerized accounting information systems of the 1980s and then to the mid-1990’s ERPs. Later it explains the main functionalities of ERPs—that is, the enterprise resource functionality and the planning functionality. Finally, that is followed by a discussion on the extent to which these functionalities—and the current costs—satisfy the expectations that ERPs have aroused to present.

ACCOUNTING: FROM CLAY TABLETS TO THE TABULATING MACHINE

The representation of exchange transactions using some type of symbols is a very old practice that is still in place, although the physical support in which they are written has changed: clay tablets, papyrus, parchments, holes in cardboard cards (punch cards), electromagnetic tapes and disks, micro-circuits, and semi-conductors. However, the purpose has not changed: to keep the account between what comes in and out of a given patrimony. The difference is in itself what we define in accounting terms as the patrimony: What I have (my patrimony) is equal to what I get or what I own as a creditor (my assets) minus what I hand over or what I owe as a debtor (my liabilities). This is known as the fundamental accounting equation:

\[ \text{Patrimony} = \text{Assets} - \text{Liabilities} \]

The following is a brief account of the practices used to keep this equation balanced and updated before the computer era.

From the Clay Tablets to the Double-Entry

The representation of exchange transactions using symbols is a very old practice. In Mesopotamia there are traces of this practice as early as 3500 B.C. Later, the Hammurabi’s Code (circa 1760 B.C.) ordered the recording of certain commercial records. Hammurabi’s Code ordered the recording of certain commercial records. In “They Wrote on Clay” (Chiera, 1938), it is said that the Mesopotamian scribes recorded dates, the object of transaction, and the stamps of the parties involved in commercial transactions on clay tablets. In other ancient cultures different supports like parchment