

## Chapter 4.3

# Introduction to Modern Banking Technology and Management

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### ABSTRACT

*This chapter introduces Banking Technology as a confluence of several disparate disciplines such as Finance (including risk management), Information technology, Computer Science, Communication technology and marketing science. It presents the evolution of banking, the tremendous influence of information and communication technologies on banking and its products, the quintessential role played by computer science in fulfilling banks' marketing objective of servicing customers better at a less cost and thereby reap more profits. It also highlights the use of advanced statistics and computer science to measure, mitigate and manage various risks associated with banks' business with its customers and other banks. The growing influence of customer relationship management and data mining in tackling various marketing related problems and fraud detection problems in banking industry is well documented. Of particular significance is the set of latest trends this chapter presents in terms of biometric ATMs, RFID enabled bank notes, Antiphishing techniques that make Internet banking secure and the applications of Web 2.0 in banking. The chapter concludes by predicting that the Banking Technology discipline is all set for rapid growth in future.*

### INTRODUCTION

The term "Banking Technology" refers to the use of sophisticated information and communication technologies together with computer science to enable banks to offer better services to its custom-

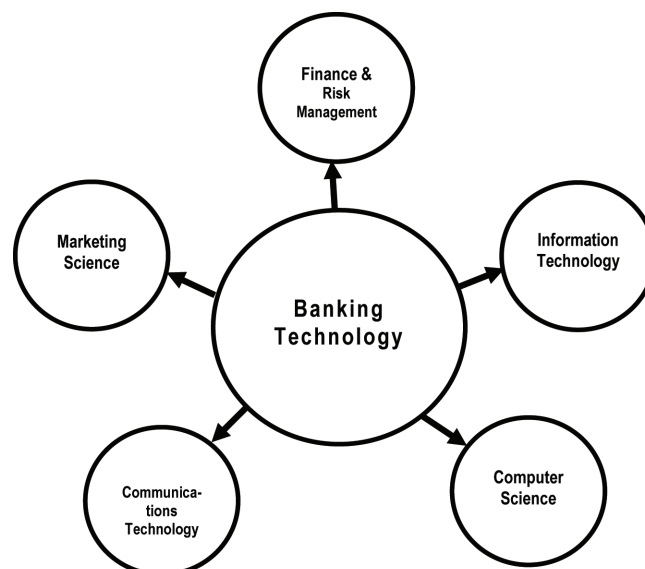
ers in a secure, reliable and affordable manner and sustain competitive advantage over other banks. Banking Technology also subsumes the activity of using advanced computer algorithms in unraveling the patterns of customer behavior by sifting through customer details such as demographic, psychographic and transactional

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data. This activity also known data mining, helps banks achieve their business objectives by solving various marketing problems such as customer segmentation, customer scoring, target marketing, market-basket analysis, cross-sell, up-sell, customer retention by modeling churn etc. Successful use of data mining helps banks achieve significant increase in profits and thereby retain sustainable advantage over their competitors. From theoretical perspective, Banking Technology is not a single, stand-alone discipline, but a confluence of several disparate fields such as finance (subsuming risk management), information technology, communication technology, computer science and marketing science. Figure 1 depicts the constituents of Banking Technology. From the functional perspective, Banking Technology has three important dimensions. They are as follows: (i) The use of appropriate hardware for conducting business and servicing the customers through various delivery channels and payments systems and the associated software constitutes one dimension of Banking Technology. The use of computer networks, security algorithms in its transactions, use of ATM and credit cards, Internet banking, telebanking and mobile banking are all

covered by this dimension. The advances made in information and communication technologies take care of this dimension. (ii) On the other hand, the use of advanced computer science algorithms to solve several interesting marketing related problems such as customer segmentation, customer scoring, target marketing, market-basket analysis, cross-sell, up-sell and customer retention etc. faced by the banks to reap profits and outperform their competitors constitutes the second dimension of Banking Technology. This dimension covers the implementation of a data warehouse for banks and conducting data mining studies on customer data. (iii) Moreover, banks cannot ignore the risks that arise in conducting business with other banks and servicing their customers, for otherwise, their very existence would be at stake. Thus, the quantification, measurement, mitigation and management of all the kinds of risks that banks face constitutes the third important dimension of Banking Technology. This dimension covers the process of measuring and managing credit risk, market risk and operational risk. Thus, in a nutshell, in the word 'Banking Technology', 'banking' refers to the economic, financial, commercial and management aspects of banking

*Figure 1. Different constituents of banking technology*



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