

# Application of the Theory of Constraints in Banks.

Bramorski, T., Madan, M.S., and Motwani, J. The Bankers Magazine, Jan-Feb 1997 pp 53-59.

High economic growth, intensified competition, and increased customer sophistication have forced the banking industry to reevaluate techniques to improve operational efficiency and profitability.

In recent years, service industries have faced significant competitive pressures resulting from globalization, rapid advances in technology, and a high degree of customer sophistication. The strategy factors used by service organizations in today's competitive marketplace include quality, availability, customer service, and time. In order to enhance their competitive position in the global marketplace, world-class service organizations must constantly look for ways to improve their performance on these factors.

Various modern management philosophies and techniques have been developed and successfully applied in the manufacturing sector. Today's service organizations face competitive pressures similar to those faced by the manufacturing industry during the past decade. Well-publicized business turnarounds in the traditional manufacturing sectors, specifically in the automotive industry, have encouraged the service organizations to assess the applicability of solutions successfully applied in the manufacturing sector to address their problems.

## **Developments Within Banking**

The banking industry in the US has changed dramatically in recent years. In addition to the competitive pressures in services, the banking industry in particular has lately undergone an intense wave of mergers and acquisitions. Mergers and acquisitions are typically followed by consolidation of operations with the objective of eliminating operations that are not cost efficient. These circumstances have imposed additional pressures on banks to improve their operational excellence.

US banks have operated and competed primarily at local and regional levels.[1] In recent years, financial institutions (e.g., investment houses, S&Ls, and credit unions) have begun to offer a wide variety of products traditionally available only through banks. These developments have affected competition in the banking industry, even in small local markets. For example, as a result of technological advances, customers in a small rural town can access national and/or international institutions to meet all their banking needs. In response to demands from the marketplace, banks are beginning to broaden their product line to include nontraditional products such as securities, insurance, and financial planning.[2]

Impact of Technology. Advances in computers and telecommunications technology have created the opportunities for the banks to develop aggressive strategies aimed at strengthening their competitive positions. Modern technologies have been used by leading



banks to introduce new products and to improve process efficiencies typically aimed at reducing transaction time, improving transaction accuracy, and reducing paperwork. In recent years, these technologies have become affordable and readily available to all financial institutions, not just the large banks. Financial institutions have often chosen to acquire new technologies without significantly modifying the existing processes.

It is evident that a mere acquisition of new technologies will not be sufficient to enhance the bank's competitive position in the market. Banks must develop formal technology acquisition and management strategies that focus on process improvements that enable them to better satisfy customer needs. These strategies must also identify current and future needs of the customers as well as develop technology plans that effectively support these needs. The banks that best accomplish this task are the ones that will emerge as market leaders. According to a recent survey, 40% of manufacturing executives and 80% of service executives knew that change was necessary in order to be highly competitive? In addition, 50% of the service executives were confident that their firms knew how to manage change.

The adoption of modern management approaches such as total quality management (TQM) and business process reengineering (BPR) by organizations has been suggested by researchers as a tool to achieve competitive advantage.4 The theory of constraints (TOC) has been successfully used by several manufacturing organizations worldwide for improving the competitiveness of their organizations. However, few applications of TOC in the service sector have been reported? Banks regularly face constraints that prevent them from achieving a higher level of performance. These organizations can identify, prioritize, and manage these constraints by applying the TOC principles. This article discusses how banks can apply the principles of constraint management to improve their processes to obtain competitive advantage.

## Analysis of the Banking Industry

Relatively few service firms have succeeded in growing by simultaneously applying multisite and multiservice strategies.6 The choice of US banks to grow either by duplicating their current service offerings at additional sites or by broadening their product offerings at existing sites will increase the chances of success. Expansion by increasing the number of a bank's branches requires building new facilities or acquiring and adapting existing facilities to meet specialized banking needs. Building new facilities may result in significantly shorter lead time compared with building new facilities but may be far more expensive. Recent advances in technology allow banks to reach the target market segment more cheaply and quickly than the multisite strategy, thereby rendering the multisite strategy unattractive.

The products offered by banks typically require the use of similar processes and resources. For example, a credit check is needed in processing applications for automobile loans, mortgages, and credit cards. The information processing requirements and personnel expertise are largely similar for all of these products. The commonality of resource requirements makes it attractive for banks to offer a broader variety of products from existing locations. The multiservice strategy allows for better use of resources so that new products can be offered to the customer quickly and at low cost. Even though the multiservice strategy is superior to the multisite strategy, it does not provide a bank with

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sustainable competitive advantage. This is because competitors that have world-class capabilities can readily and quickly duplicate any product offerings. A sustainable competitive advantage in the banking business can be achieved only by developing and implementing consistent strategies that enhance operational excellence.

Banks compete for customers using such dimensions as cost, flexibility, time, and quality. To effectively compete on price, banks have to offer low prices on transactions. An additional element of monetarily based competition requires banks to offer customers attractive returns on deposits. Flexibility involves the ability of the bank's systems to introduce new products in a cost-effective manner in order to meet and exceed customer expectations. The time dimension addresses how quickly new products can be introduced as well as how promptly products can be delivered. The quality dimension involves aspects related to product design, the processes that deliver the product to the customer, and post-delivery service (relationship banking).

In order to retain customers and to expand customer base, banks have to change their products and processes in order to meet and exceed customer expectations. These changes can be accomplished either through continuous improvement or innovations in all areas that are important to the customers. Technology has been extensively used by banks to improve efficiency, thereby supporting competition based on price. However, sustaining competitive edge based on price has become difficult because the low-price strategy can be easily matched by the competition. Clearly, price has changed from being an order-winning criterion to an order-qualifying criterion. Strategic flexibility and conformance quality are becoming increasingly important competitive weapons of the 1990s.7 Time-based competitiveness and innovation in products and processes are also emerging as competitive factors of increasing importance.

Banks preoccupied with increasing their market share often lose sight of the factors that help them retain existing business. For example, banks try to match the product offerings available from the competition without analyzing the capabilities of underlying processes. According to a 1993 article, customers are turned off more by poor processes than by poor products or services. This indicates that banks typically rush to introduce products offered by the competition and frequently disregard the process capabilities.

The advances in technology have diminished the importance of the physical location of an institution. As a result, banking transactions can now be conducted from remote locations using personal computers and ATMs. As a result of increasing sophistication and for reasons of time and convenience, customers tend to conduct all their banking business (e.g., payroll deposit, mortgages, checking, money market certificates) with one institution. If any of the demanded products is not delivered according to customer expectations, a bank runs the risk of losing that customer to the competition. The advances in technology combined with intense competition in the financial services industry have allowed the customers to easily and quickly switch institutions.

Clearly, customer dissatisfaction and the resulting switch are directly tied to the processes within the bank. In their efforts to improve processes, banks typically use incremental improvement approaches. Researchers have suggested that in addition to applying incremental approaches, banks should pursue breakthroughs in order to improve their

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processes.9 The theory of constraints can be used to identify candidate processes for incremental as well as radical transformations, as discussed in the remaining text.

## Principles of TOC

TOC involves identifying and managing constraints in order to improve organizational performance. These constraints can be classified into the following categories: market, material, capacity, logistical, managerial, and behavioral.[10] Market constraints are typically defined by demographic and socioeconomic factors. For example, a retirement community is highly unlikely to use products involving advanced computer technology. Material constraints typically do not play a major role in service organizations such as banks. However, shortages of materials such as forms reduce the effective "throughput."[11] Capacity constraints in banks are created by inadequate labor and equipment, whereas logistical constraints are created by difficulties related to the movement of material such as checks. Managerial constraints are the strategies and policies that adversely affect system performance. For example, getting supervisor's approval for every check presented for cashing would slow down check processing. Behavioral constraints involve employee actions aimed at pleasing management that may adversely affect the customers.

The concept of TOC rests on the premise that organizations always face constraints that limit the achievement of higher performance levels. The TOC helps in identifying the weakest elements of processes that occur within organizations as constraints. In his Theory of Constraints, E.M. Goldratt has suggested a five-step focusing process for documenting and defining processes.[12] These steps are as follows:

- 1. Identify the system's constraints.
- 2. Decide how to exploit the system's constraints.
- 3. Subordinate everything else to this decision.
- 4. Elevate the system's constraint.
- 5. If any of the system's constraints has been violated, go back to Step 1.

In order to determine the impact of actions on the organization, Goldratt [1990] defines the following measurements: throughput (T), inventory investment (I), and operating expenses (OE). Throughput is the rate at which the system generates money through sales. Inventory is the money the system invests in purchasing items needed to generate throughput, except for labor and overhead. Operating expenses is all the money the system spends generating throughput. These measurements have been used by the manufacturing industries, in which T, I, and OE are easy to quantify. Hence, a meaningful goal for an organization is to increase return on investment (ROI), which is defined as follows:

ROI = (T-OE)/I(1)

According to Goldratt, the goal of every for-profit organization is to make money. This goal can be achieved by increasing ROI, which can be accomplished by increasing T, decreasing OE, or decreasing I.



One major difference between the TOC approach to managing an industrial organization and the conventional approaches is in the relative priority given to these three measurements. While most managers consider all three measurements important, the conventional approaches tend to regard operating expenses (cost) as the most important. The TOC sets different priorities, and suggests that throughput should be at the top of the list, followed by inventory and operating expenses. To improve, an organization should first make an effort to increase throughput, then decrease inventory and decrease operating expenses. A measure of how well the organization's products or services sell in the competitive marketplace is throughput. Since throughput is the only external component influencing ROI, it should be elevated as the most important measure. Once an organization has focused its improvement efforts on increasing throughput, the constraints that adversely affect throughput and profitability can be identified and eliminated.

# The Application of TOC In Banks

In the banking business, the three measures discussed previously are defined as follows:

Throughput is the rate at which a banking system generates revenue for services provided in a way consistent with goal. Throughput in banks can be generated by investing in such markets as customer lending, institutional lending, real estate, and investment firms. Moreover, banks generate money by offering a variety of services such as wire transfers, foreign exchange, and cashier's checks.

Operating expenses include all the money the bank spends in the process of generating throughput. These expenses include all direct and indirect expenses except for the cost of obtaining money in the market.

Inventory investment is the amount of money spent by a bank to raise capital necessary to generate throughput. Inventory investment consists of the principal amount and the interest, if any, paid on deposits. It should be noted that in the banking business, both the primary input --inventory -- and output consist entirely of money. Banks use the money obtained from depositors and invest it ventures varying in the degree of risk. In contrast with manufacturing, banks do not need to convert physical inventory of products into money through sales. Hence, the length of the process of generating throughput in banks is much shorter than in manufacturing. It is intuitive that banks that want to grow should have no difficulty investing unlimited amounts of money obtained from depositors in the market, whereas manufacturers typically face finite demand for their output. Therefore, because of the nature of their markets, banks have a stronger incentive to increase both their input and output compared with manufacturers.

On the input side, banks typically base the rate they offer their customers on the amount of the deposit and the length of time to maturity. They pay no interest for traditional checking accounts that allow instantaneous withdrawals up to the balance in the accounts. Longer-term deposits pay higher interest compared with shorter-term deposits. Similarly, larger deposits pay higher interest compared with smaller deposits. As compared with the manufacturing sector, the banking industry has to pay a higher price for acquiring large deposits (i.e., a quantity premium as opposed to a quantity discount). On the output side, banks have to manage their investment risk. If they invest large amounts in a single

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project (as opposed to small amounts in multiple projects), they expect high returns because of increased exposure.

Customers conduct a variety of transactions, including direct payroll deposits, money transfers, and loans. They typically prefer to conduct their business at one bank. The customers who provide the bank with deposits that contribute to inputs often use the same bank to meet their needs for loans, which directly affect the bank's output. Hence, a strong link exists between banks and their customers, on both the input and the output side. A similar supplier-manufacturer-customer relationship does not exist in the manufacturing sector.

Throughput can be enhanced by increasing the number of borrowers and investment projects. It can also be enhanced by increasing both the number and amount of transactions. Operating expenses can be reduced by making operations more efficient (e.g., through investments in technology). Inventory investment can be reduced by reducing the cost of borrowing. As was established earlier, since banks offer low interest on short-term and small deposits, it is beneficial for banks to attract a large number of small and short-term depositors which, in turn, will increase the number of transactions.

A Specific Example. One example of a service industry that has successfully implemented the principles of TOC is a bank located in the Midwestern region of the US. The bank identified its weakest link as the mortgage department. It took the bank too long to process individual home mortgage applications. The bank wanted to reduce the average processing time to three weeks. In order to achieve this goal, the management of the bank decided to use the five-step TOC focusing process. First, it formed a cross-functional group of eight people, who were selected to form the mortgage improvement team (MIT). People from different functional levels within the branch and other branches made up the team. This team was the bank's maiden voyage regarding continuous quality improvementc (CQI) methodology.

The team decided that there were basically two groups of customers: one that paid 20% or more down toward their home mortgage insurance and the other that paid less than 20% down. In this illustration, the focus is on the process of those customers who paid less than 20% down toward their home mortgage insurance.

The team used flow charting as a tool to analyze processes. An early indication of the complexity of improvement was that it took too long to verify the employment, conduct appraisal, and survey. On further analysis and discussions, it was agreed that since all the foregoing activities were independent of each other, they should be immediately addressed. This was a crucial turning point in the life of the MIT. In addition, the first TOC step of focusing and identifying the weakest links was accomplished.

The next step in the TOC process is to exploit the constraint. In other words, how can the time taken for verification of employment, conduct appraisal, and surveys be reducued? The team learned through data collection that there were several different methods for shortening the processing time for employment verification, appraisal, and surveys.

For example, as far as employment verification was concerned, the team established a best current method for personnel to obtain this information. Furthermore, the team

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learned that in several instances it took a company two weeks to verify employment status. A solution to this problem was for the loan officer to request the applicant to bring in alternative documents. It was agreed that bringing the last two years' W-2 forms and the last month's pay stub would amount to a feasible solution. Similar solutions were also developed for reducing time in conducting surveys and appraisals.

The preceding example not only illustrates how the bank exploited the constraint but also how it had personnel subordinate their actions so that the constraint could perform at a higher level of performance. The subordination is the third step of TOC, meaning that everyone supports the first two steps of identifying and exploiting the constraint. Furthermore, these actions caused OE and I to decrease and T to increase.

The fourth step of TOC is taken when the exploitation and subordination steps as related to the constraint have been exhausted and the demand is so great that additional time for verification can be jus-titled. The fifth step is that once the first four steps have been completed, inertia is not permitted to become the system's constraint. In other words, the bank should look for new constraints and start the process over without becoming complacent regarding its accomplishments. The bank is still discovering new ways to subordinate and exploit its constraints within the mortgage department and has not reached the point at which there is a need for more improvement.

#### Conclusion

The concepts outlined by the TOC can be used effectively to identify the organization's goal, locate the constraints to achieving maximum performance, and develop practical measurement to facilitate process improvements. Constraints in banks are frequently found to be policies and procedures rather than capacity or equipment. Finally, measures of throughput, operating expense, and inventory, all of which are crucial for the application of TOC, have been identified for banks.

## Notes

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