

## **Accounting for Post-Industrial Age**

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Internal memo, IbisSoft, Stockholm, Sweden, 2002

### ***Motivation***

The dotcom crash, and a number of scandals of account manipulation by big corporations like Enron and, lately, Worldcom brought into being a lively discussion on the needs of revising the accounting standards. The main focus of the discussion is placed on the tapping holes in the old accounting system, see for example, article “Company accounts. Badly need of repair” in the Economist from May 2nd, 2002.

There is a public opinion that manipulation of accounts is widely spread, but it is difficult to believe that just improving the old regulation could set stop for account abuses. There always be some companies or individuals that will find holes in a new regulation. Tapping the holes can only temporarily help to restore the trust between the market actors, management of the corporations on one side, and shareholders on the other.

The bigger problem for the economy regulation is, however, the increasing gap between the value of companies as measured by the stock market and the value measured by their accounts (their book value). For the technology companies the average price/book ratio in year 2000 was over seven. In such circumstances, the account information represents only a fraction of a company’s stock value. The rest of the value falls into a gray zone where no accounting standard exists what so ever.

The company value in the gray zone is defined by the fashion, or the flow of unreliable information going through the mass media. The absence of reliable information gives ways for various speculations supported only by reports on the potential size of markets for various products.

**Note.** It is worthwhile to remember that during the dotcom crash no considerable account manipulation had been discovered. The majority of the Internet companies had never showed any sign of profit; their value was set according to some “arbitrary” rules. For example, in Sweden, the price of an Internet consulting company was calculated based on a very simple formula: <the number of Internet consultants> multiplied by \$100000; no other information had been taken into account.

The question arises whether it is possible to evaluate the part of a company’s price that is not represented by its book. Solving this problem will give a sound foundation for decision-making that concerns investments in shares and companies acquisitions. It may also reduce the needs for manipulating traditional accounts in order to show a stable growth or profit. If the company can prove that it has enough value aside of its book, improving the book numbers might not be necessary.

In case the problem can be solved, the winners are:

- Shareholders and share buyers, which include ordinary citizens who are investing through their pension funds. They will get more information on which they can base their investment decisions.
- Market analysts who will get better insights in the companies' state of affairs and can provide better service to their clients.
- National governments will certainly benefit, as more reliable information will result in more realistic stock prices, which in turn would reduce fluctuations of the stock markets.
- Managers and owners of the well-run companies who would be rewarded relatively independent of how things are going on the markets in general, and in their business sector in particular.

### ***Why the old accounting system is not enough***

The traditional accounting information serves two purposes:

- To present the current state of the company.
- To show the company's performance over some period in the past, which helps to extrapolate the development of the company in the future starting from the current point.

The current accounting system was created in the beginning of the 20th century. It has been developed for the "*industrial age*" where the manufacturing and sales of physical goods were the major parts of many businesses. The system was tuned to reflect the state and performance of this kind of businesses.

The manufacturing process is well structured and allows evaluation of the current state even when part of the end-products are only half-ready. This is extremely important for businesses with long manufacturing cycles, like construction, shipbuilding, etc. Summing up the value of the stock of raw materials, finished goods and half-ready products gives a pretty good evaluation of the state of production process at any given moment of time. The information needed for such evaluation can be normally obtained from the regular bookkeeping, and it can be corrected by periodical inventorying.

Well structure of the manufacturing process allows also to plan amortization of manufacturing equipment. This in turn permits to present the non-amortized value of the equipment as assets. The evaluation of performance of the manufacturing process does not present much difficulty either. The produced quantities of goods and production costs can be extracted from the regular bookkeeping.

In the "*post-industrial age*" the manufacturing process and the assets connected to this process are no longer the most important part of many businesses. The so-called "intangible" assets become more important, particularly for the companies in the technological sector. To the intangible assets belong such assets as:

- "Stock" of the trustful customers on which all future sells heavily depend.
- "Stock" of qualified staff, which is most important for consulting businesses, and technology oriented companies.

- “Stock” of qualified managers who have capacity to adjust the company’s business to the ever faster changing business world.

Currently, there is no standard on calculating the value of intangible assets, and what is more important, there is no bookkeeping that will give some basic information to make such calculation.

The intangible assets are associated with business process other than manufacturing, sales and services, recruiting and training, decision-making, to name the most important ones. In many companies, these processes are not well structured, which means that there is no possibility to evaluate “half-ready” products of these processes, for example, an uncompleted sale. The latter, for example, makes it impossible to evaluate the intangible assets in the situation of long sales-cycles. It is also almost impossible to evaluate performance of non-manufacturing processes, as, normally, these processes do not have bookkeeping that attributes the costs to each particular process instance, e.g., a sale.

The absence of standards for evaluation of the intangible assets and non-manufacturing business processes associated with them makes it impossible to predict the results of any investments in improving these processes. As a result, there is no way to design an amortization plan for such investments like internally developed software, training programs, etc. These investments are required to be booked as expenditure; booking them as a form of capitalization constitutes a common error in accounting. Such errors can be due to ignorance, or they might be intentional, as it is suspected in the Worldcom case.

### ***What is needed***

To be able to evaluate companies’ current state of affairs in the post-industrial edge we need:

- (1) Standards for evaluation of intangible assets. These standards should provide a possibility to set a value to half-finished intangible products, like uncompleted sales.
- (2) Standards for measurement of performance of the non-manufacturing business processes associated with intangible assets, e.g. sales, decision-making, recruiting and training. For sales, for example, such measurements could include the number of new trustful customers acquired over the given period, as well as the number of lost customers. These numbers should be accompanied with some value set for each customer reflecting its potential for affairs.
- (3) Rules for bookkeeping that will produce reliable basic information for evaluation of intangible assets and performance of non-manufacturing business processes. This new bookkeeping should also provide a possibility for the auditors to verify new accounting.

Though (1) and (2) are of major importance as far as information from the company to the external world is concerned, such standards will have very little significance if we cannot solve the problem stated in (3), i.e. to introduce a practically feasible new system of bookkeeping. Such system should facilitate gathering information

connected to non-manufacturing business processes in the same way as standard bookkeeping provides information on manufacturing processes.

To introduce bookkeeping rules for such processes as sales, decision-making, recruiting and training is not a trivial task. First, these processes should be structured, which is not the case for majority of companies. Second, information gathering rules should be associated with various steps of these processes.

**Note.** There is an ongoing activity to impose some structure on business processes under ISO-9000. However, the ISO-9000 requires only that a company should have full description of their business processes. There is no control that these descriptions are followed in practice, neither there is any requirements on what information should be produced during various steps of the processes. Thus, the ISO-9000 standardization activity can give us little help in introduction of a new type of accounting.

To make the non-manufacturing business process better structured, it is not enough to just create a set of rules/policies that *should be* followed. Some means should be introduced to insure that they *are* followed. Actually, to introduce order in non-manufacturing part of the business, we need some process control system that will help to steer business processes to their intended goals. Under control system here, we mean not a system that will control the people engaged in the given business process, but a system that will help to combine the efforts of various process participants in achieving the goals set for the process.

A process control system can be designed in a way that it will assist people in completing the majority of activities included in the business processes in which they participate. This will in turn give a possibility to gather all information needed for new accounting with only little extra effort on the part of the people engaged in the processes.

### ***How to approach the problem***

The deliberation from the previous section shows that introduction of a new accounting system hangs on possibility to create and introduce in business practice some means for controlling non-manufacturing business processes. Such means will allow to introduce a new kind of bookkeeping, the one that is needed for evaluation of the intangible assets and performance of non-manufacturing business processes.

One of the main characteristics of a control system we need is that it should provide information on the *state* of any non-manufacturing process at any given moment of time, which includes information on unfinished “products” of the non-manufacturing processes.

The *state-oriented* approach is quite common in the theory and practice of control of physical (manufacturing) processes. The main reason for this is not providing accounting information, but effective steering of the process in case of deviations.

In the theory and practice of business process management, the state-oriented approach is not commonly used. Instead, workflow-based approaches are exploited. The main drawback of these approaches is that they are not adjusted to deal with

deviations. Besides, they cannot provide detailed information on the state of the process, as they lack the concept of “half-finished” non-manufacturing product.

During the past 13, years we have investigated a possibility of using the state-oriented approach for controlling business processes. The investigation included both research and practice. The main goal of our activity has been not creating a new accounting system, but rather increasing productivity of non-manufacturing (administrative) processes. We believe, however, that our approach can help to create a system that will allow to gather bookkeeping information needed for introduction of a new accounting regulation. We would be glad to conduct additional theoretical and experimental work in order to gather more evidence in defense of this hypothesis.

### **Additional reading**

Bider, I. *State-oriented business process modeling: principles, theory and practice*. KTH (Royal Institute of Technology), Stockholm, 2002.  
<http://media.lib.kth.se:8080/dissengrefhit.asp?dissnr=3375>

### **Acknowledgement**

The idea of applying our state-oriented approach to the needs of accounting in the Post Industrial Age was suggested to the author by Professor Victor Sergeev.