

Information Processing at the Period of Tomas Bata and Information System

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ABSTRACT

The article describes historical analysis of work with information in Tomas Bata (TB) Company with comparison to information processing in information system (IS). The shoemaker, entrepreneur, and social innovator were one of the Czech Republic's most famous brands Bata Shoes. His management rules were collected in so called Batism. The chosen processes by TB are described and founded the adequate information processes in IS. The prototype of IS for comparison was suggested QI by DC Concept Company. QI is organized in modules, so that is simple to find useful solution of IS for Bata Company. In selected areas are given functions of the IS. The result is a comparison of the two approaches to work with information, and synthetic part of the paper is the reference of TB to information management.

Keywords: Information processing, Tomas Bata, Information system, QI.

1. INTRODUCTION

The article describes the historical analysis of work with information in Tomas Bata (TB) Company with comparison to information processing in information system (IS). The shoemaker, entrepreneur, and social innovator TB (1876-1932) was one of the Czech Republic's most famous brands Bata Shoes; is among the most famous brands of Czech origin, but the story of the company goes far beyond what people wear on their feet.

The chosen processes by TB are described and founded the adequate information processes in IS. The prototype of IS is the elastic IS QI by DC Concept Company, Czech Republic. QI is organized in modules, so that is simple to find useful comparison to TB solution. The TB historical references are in methodological and managerial aspects of work with information and in strictly effectiveness of sharing and distribution of information.

After an introduction, is in the article short presented Tomas Bata, his Company, and rules of Batism; is explained work with information. It provides an overview of the options IS QI. The result is a comparison of the two approaches to work with

information, and synthetic part of the paper is the reference of TB to information management.

2. TOMAS BATA AND HIS COMPANY

The Bata Company was founded in 1894 by three siblings with a small inheritance in the town of Zlín, Czechoslovakia. The start of the Company was not successful. It is documented, that TB alone calculated work in the workshop; he prepared the skin, and helped in the workshop before the working hours. He went on foot to sell shoes on the market at half past three in the morning and did not return sooner than he sold them all.

Approaching the end of the 19th century was enhancing the production of steam propulsion, and his name will finally appear in the company name to "T. & A. Bata". TB became the second richest man in Zlín. It was one of the world's first shoe "manufacturers"; a team of shoemakers creating footwear not just for neighbors, but for distant retail merchants. Its founder was viewed by many today as a shrewd and innovative businessman, whose legacy is both interesting and complex [1].

The social program of TB accompanied each worker with throughout his life. There is ensured medical care, favorable living and working environment and the opportunity to improve their standard of living. Furthermore, they were offered a cheap and good food in company stores and catering in business establishments. This program included modern housing at reasonable prices.

All the Bata companies in Eastern European countries were nationalized by communist governments in 1945. The company started rebuilding itself from the remaining entities located outside such territories. The company's headquarters were officially relocated in Toronto under the leadership of TJB in 1960. With the fall of Communism, TJB was invited by the president Vaclav Havel to return to the Czech Republic and he received a hero's welcome. A chain of Bata shoe stores was again opened.

2.1 Principles of Batism

The ten principles of management in TB Company are known as Batism [4]; principles are briefly characterized and explained in the following part.

(2) Cooperation: Cooperation is organized inside and outside the enterprise, is created an enterprise network, is built strategic alliances and partnerships. Bata understood that competition must be accompanied by cooperation that prevents the corporate "cannibalism". All employees of the company were "collaborators". Any company is only as good as the network, which is a part.

(3) Autonomy and self-management: The Bata Company was a private, not public sharing. The functions of company owners were transferred to employees were not scattered among thousands of shareholders. The company was not object of the speculation on the stock market; it did not sell its property and was not subject of game with controlling stakes. The corporate strategy was not subject to political machinations. A venture must have its "pride".

(4) Complicity: All employees have a participation in profits and results of the work of self-governing workshops. Without the complicity cannot be demanded accountability for the resources entrusted. Without the personal liability of employees (mainly managers) there are possibly stealing, lying and bribery in a publicly owned enterprise.

(5) Public service: The true purpose of business is to serve. A service, not the government, is a guarantee of cooperation, loyalty of customers, employees and consumers. Unlike politicians who lived from taxes, the Bata people lived from profits and the service was by them considered as the greatest privilege of business.

(6) Competition: Competition must take place within the company, too. Bata publishes results, despises the hiding the information and works with open visor. Who is not competitive, who cannot create added value, is not able to cooperate. Unproductive work with low quality is not carried out in the Bata Company; such work is transferred to those companies that can do the work better. (This is called today "outsourcing").

(7) Co-partnership: Co-partnership means liability resulting not only from a "sense of property ownership" but the ownership of property itself. An appreciation of human capital and human knowledge is the purpose appreciation of capital financial, not vice versa. Each employee had account in in-house bank for additions to the normal salary. Here were stored the profit sharing and possibly chosen the amount for damage. Every worker became a capitalist.

(8) Independent management: The independent management of individual departments and especially the business units were granted worldwide. The business network Bata was not network of hired person, but independent retailers-entrepreneurs that were connected thru motivation of competitiveness and cooperation. Their independence was a condition of their responsibility.

(9) Partnership: Bata's company was a "company of entrepreneurs." Entrepreneurs cannot do business without customers. The customer works as an entrepreneur and the customer must be by the entrepreneur pleased. Money is a good servant but a bad master in business. Each employee had his customer, both inside and outside the company.

(10) Synergy: Synergy is a reaching of common higher level of resulting effect when all dimensions of business

are consistent and coordinated. One dimension cannot be ignored or preferred over another. Like the human body is a balanced system of functions, such must also be a corporate management system. In a functioning enterprise, the individual functions are inseparable and almost invisible; dominates the functioning of the whole.

3. WORK WITH INFORMATION IN TIME OF TB

The management and information policy tools included the careful processing of personal data, with motivation and feedback mechanisms. It is about Total Quality Management today [5], such as careful planning, the frequency of information, unified set of forms, and finally the developing a knowledge base (excerpts printed materials, libraries, patent's information, language skills, etc.).

3.1 The production information

The production program was for TB always the key problem, everything depended on the production. Mentions of IS for production in public documents paradoxically were almost absent. However, information on procedural matters or accounting operations, even about circulation of information is quite a lot. Why? It is offering a quite logical explanation. Information relating to the manufacturing process, specific device descriptions and production know-how were for the Bata company sensitive information. This information is probably the subject of intellectual property Bata Shoe Organization, Successor Empire of TB.

The whole system of production had been consistently developed, dealt with material input, technological processes, eliminating risks in production, maximizing production capacity while maintaining the highest quality. Quite an innovative approach (taken from the USA) was not only material incentives of workers at the factory, but also building a relationship with a particular machine, what you need to know to repair and maintain it. For service interventions was developed a sophisticated system. Information from the production was transmitted by leader of workshop and the whole production was directed by detailed plans.

3.2 The personal information

The personnel department had a task to recruit and dismiss employees. It was controlled by the principle the first workplace "a new employee must be placed at the simple job and let him to obtain itself a better job". It pursued the development of staff, all data was recorded, was led an overview of the availability of staff at all managerial positions. Human resources (HR) professionals had a duty "in five minutes to propose at least two replacements for the head of any department".

Other information that was stored, are already quite well known: tracking earnings, housing, injury prevention, etc. The personal assistants by TB had responsibility for the personnel work with employees. Their knowledge of the employees, knowledge of the family; and the extent of the responsibilities to employees and for employer was admirable [3].

3.3 The period of information

The frequency of information in the TB system was rather strictly determined as immediately, daily, weekly, semi-annually, otherwise.

The information what could be accomplished immediately so-called Bata "working regulations" have been passed immediately after the completion [7].

With the daily frequency was spread production schedule, orders, sales, vouchers for signing, and account settlement for suppliers. Weekly (Wednesday) to be given the information to be included in the production plan, results of the production and sales plans, weekly billing.

In addition to the Saturday conference, bill payment, clearing warehouse, billing period (Thursday to Wednesday). Payment of wages was on Monday, avoiding the expenses of the weekend [6].

The semi-annual plans (presumptions) were processed and were further divided into weeks. The plan was shared in physical units of the detailed kinds of goods and it was followed by assumptions in budgets. The presumptions were drawn from the lowest-management and for reasons of consistency are applied to other workshops and associated production units, though for them to have no logical justification [6].

It is not confirmed, but it is possible that in the system was prepared monthly financial dynamic balance and we know that once a year or even less frequently held periodic training of workers and their annual evaluation, when was an opportunity for employees to get better job. Historians of the Bata period are mentioned that the strict requirements on staff for the frequency of information were extremely demanding. These were permanently "trotting", managers was constantly forced to perform for routine calculations and systematic work and urged them to think about work [6].

3.4 The unified system of templates

The chief accountant was responsible for the unified system of templates used in the enterprise TB. The basic set of forms created gradually by senior management along with a system of internal governance and workshop management was known in detail. Basic system of could be modified only with the consent of the leadership [8].

3.5 The information sources

Data was collected by extracting from professional journals and newspapers, economic analysis, situational reports of public institutions, from correspondence and personal contact, and not least from the delegations coming to Zlín [9].

Corporations TB also owned a well-equipped technical library of the foreign press, which covered the entire spectrum of issues related to footwear production. Corporate labs then use specialized libraries [5].

The findings were sent to individual supervisors discussed at conferences or Saturday resonated in Bata printing and internal newsletter. The distribution was implemented in the form of short commands, information reports or bulk form, the special paragraphs in Bata weeklies or specialized press [9].

The knowledge base TB was also extended by research results. The research was focused mainly to the patent activities. The patent was elaborated firstly professionally and secondly in journalistic form. The head of Research Department on the so called "Study day" assessed once a week the patents and

technical innovations from the scientific literature. There was a professional discussion of their possible use [5].

4. ACTUAL INFORMATION PROCESSING AND USING

For the comparison the work with information in a period TB and in information system (IS) was chosen QI, product of the Czech company DC Concept, <http://www.qi.cz/>.

4.1 Characteristics of information system QI

IS QI is grouped into 7 groups: Economy, Human resources, Sales and marketing, Management of the company, Production, E-modules, and Spec-modules (see Figure 1). User can choose only those modules what really need. According to user requirements, the system can be operated at full range; or may be increased/decreased an individual functionality that will respect the development of the company. The modules of IS QI are used for assembled product that is ready for installation for specific solution for manufacturing, trade and services. System was implemented in nearly 400 companies and organizations.

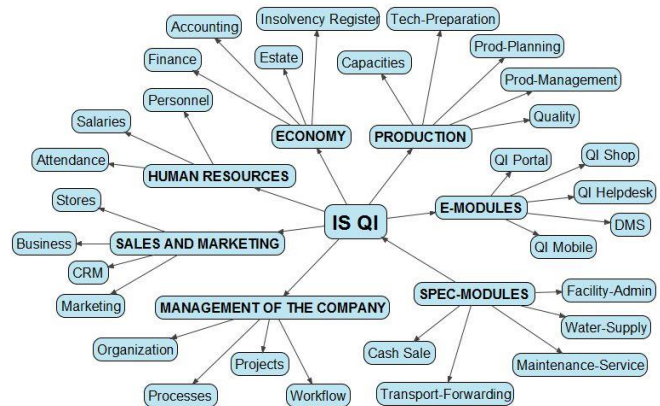


Figure 1 Modules of information system QI

4.2 Information support of production

It can assume that set of QI modules in subsystem PRODUCTION is able to support the production of footwear. Modules for fictive IS implementation should include: *capacity, technical preparation of the production, production planning and control, quality*. The functions of modules are also briefly in the next part mentioned.

Capacity: QI monitors the capacity of the company during all processes, both production and sales and marketing; human resource capacity and the capacity of the means of production and warehouse capacity. With proper planning, there will be no downtime capacity in production. Production capacities are important, because processes need to be well organized within the company's and work efficiency is easily quantifiable in monetary value.

Technical preparation production: The module is designed for those who want to have production of every single component planned to the last detail, with all bills of materials and manufacturing processes. The module enables to create a hierarchical description of the product from bill of materials, view and edit products in a hierarchical format; each node structural bill of materials can be bound with the corresponding technological procedure.

It is possible any number of nesting levels bill of materials, but also creates a simple single-level bill of materials and register requests for changes in the product documentation. In technology steps are used tools to support the division of material consumption for calculation of division plates, fabrics, rods etc.

The created technological processes can be either simple or very detailed descriptions of the various operations carried out on the product, which can be further divided into sub-steps. They are generally attached to the nodes of structural bill of material of the product, and their creation can use the set of types operations.

Production planning: It is easy to prepare a plan of production and to get the detailed overview of needed capacity. It is rewarding for companies that deal with custom manufacturing and solve the urgent customer requirements. It is equally beneficial to all other manufacturing companies that want to economically produce; fully exploit the possibilities of machines and workers, but do not overload them.

Module supports the compilation of long-term plans for the sale, purchase, and the whole production; incorporates the operational changes into the plan; changes that in manufacturing companies commonly occurs. In long-term planning is possible scheduled downtime of machines, projected costs of materials; operational planning then regulates the distribution capacity needed when unexpected equipment failure. The production process are continuously monitored, eliminating uneconomic production processes and responds quickly to changes in production.

Production control: The module supports management of discrete, process, and line production; can control production on the contract, production to warehouse and engineering work on the contract. It contains both push-control methods (MRP II) and pull-control principles (Just-in-Time, KANBAN) and use of the Theory of Constraints (TOC).

Module enables creation of production orders, including technical and design documentation and tracking time in production sheets and actual production of the company and of cooperating partners. For each contract monitors material consumption, total requirement for capacity and other reports, depending on the extent of production documentation.

Quality: Continuously recording disagreements and variations in production and conducts supplier evaluation and monitoring their supply quality. Module draws attention to the non-standard practice of individual processes. There is incorporated the input of measured values by certificate type and also includes measured protocols; provides an overview of complaints of defects and discrepancies in production reports.

4.3 Information support of personnel

The personnel module is designed to work with personal data. Module allows keeping careful records of employees, monitor their attendance, career, analyze and evaluate their performance and plan their development while ensuring all data against unwanted access by unauthorized persons. In the module are modeled career paths of people with which you can create plans for their inclusion in the individual jobs; supported selection procedures and recruitment.

It can be build the conditions for recruitment and evaluated; can be compared the suitability of each candidate, and according to predetermined criteria to assess and select the most suitable candidate. Module automates tracking attendance, utilization of working hours and job performance; creates daily and monthly balance of hours worked and absences. It is possible planning meetings and maintains a register of minutes of meetings and distributes tasks or working tools in relation to jobs and people.

4.4 Period of information in IS

If the data are stored in the IS, can be obtained the requested information immediately. The feature is for management of the company certainly indisputable advantage, but also a potential source of inefficiency work with information due to their continuous viewing. But even in the IS possible to determine the frequency of work with information in the form of a methodology, which must determine the latest date on which data must be inserted into the IS, then rational approach to their distribution.

4.5 Forms in information system

The forms content is mostly determined by the particular IS. The user assumes the know-how of IS supplier; who suggests contents of forms, according to its years of experience. However, the IS an individual adaptation of forms according the needs of users as commonplace.

4.6 Information sources

Corporate information sources are mostly content of the IS. With their help, we can well manage the production and functioning of the company and to suggest a strategy for the future. In addition to the corporate IS employees have a variety of other information sources, of which the most comprehensive are websites on the internet. These are websites of competing firms and cooperating companies; also includes encyclopedias, such as Wikipedia, are useful social networks like Facebook.

5. REFERENCE TB TO WORK WITH INFORMATION

The chapter compares the selected areas work with information by TB and IS QI and derives the historical reference in the TB period on current IS and information management of companies and organizations. Research work is still in progress and some results will not already be included in the text of paper, but it will always be inserted commentary, what and how will be further examined.

5.1 Production business processes

Production in the Bata Company, its management and information support is described in Chapter 3. From the detailed analysis is clear that the footwear production is a continuous process, divided into the sub-processes and production steps. Everything was in the firm TB described in detail, the atomized processes were perfectly controlled; the personal responsibility of executives was obvious. The evaluation of production preparation, the intermediate and overall results was carried out continuously; defective products were always identified with the one who was at fault, was penalized.

The production program was for TB always the key problem, everything depended on the production. Mentions of IS for production in public documents paradoxically were almost absent. However, information on procedural matters or accounting operations, even about circulation of information is

quite a lot. Why? It is offering a logical explanation: "Information relating to the manufacturing process, specific device descriptions and production know-how were for the Bata company sensitive information".

The whole system of production had been consistently developed, dealt with material input, technological processes, eliminating risks in production, maximizing production capacity while maintaining the highest quality. Quite an innovative approach (taken from the USA) was not only material incentives of workers at the factory, but also building a relationship with a particular machine, what you need to know to repair and maintain it. For service interventions was developed a sophisticated system. Information from the production was transmitted by leader of workshop and the whole production was directed by detailed plans.

Information support was standardized; accompanying documentation production includes the production plans and their detailed breakdown, orders of the required material, manufacturing steps, inventory interim and final results, and transfer protocols. The production processes, methods of production management and information support of other business activities were described in detail, so that "fictitious implementation" of the IS QI could be simple finished. The Chapter 3 and Chapter 4 intersection results in an appropriate set of modules from IS QI for IS implementation.

Regarding the information of company production, it can be assumed that it IS IQ is able to provide the information support for a footwear manufacturing as is described in TB memoir literature. The IQ modules will be analyzed in confrontation with the manufacture of footwear. Rationality and efficiency of production information can be supported by the established methods of IS IQ, such as MRP II, Just-in-Time, and Kanban.

5.2 Personal data

There is planned to carry out extensive research in the personnel area: compared IS data items with the information on employees led for Bata. The comparison of the structure and volume of recorded data could be subject to subsequent comparative analysis. In today's IS is the issue of human resources (HR) well managed.

As with Bata a today's company that wants to implement IS, requires HR. Everyone knows what the HR term implies and therefore it is with accounting software always at the first interest when is requested to implement an enterprise IS. In the Company was important role of personal assistant. In terms of the existing law on privacy, personal rights and respect for the Charter of Rights and Freedoms was presumably not alright with activities of personal assistants in Bata Company.

Personnel IS can an organization creates in two ways. The first is the supply of all-in-one ERP system (Enterprise Resource Planning), a system to support the major processes in the company, the second focuses on specialized software, for example, for the government organizations [5].

5.2 Information and knowledge processing and using

The knowledge gaining and processing is one of the great legacies of TB for work with information. It was established a system of gathering, assessing, and discussing of information with the consequently targeted distribution. Such knowledge management system is still the exception rather; many actual

companies and organizations are KMS dedicated only marginally. Research on existing knowledge management systems will also follow after publication of the paper.

Information was collected by extracting from professional journals and newspapers, economic analysis, situational reports of public institutions, from correspondence and personal contact, and not least from the business and academic delegations coming to Zlin [9].

Corporations TB also owned a well-equipped technical library of the foreign press, which covered the entire spectrum of issues related to footwear production. Corporate labs used specialized libraries [5].

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The frequency of information in the TB system was rather strictly determined as immediately, daily, weekly, semi-annually, otherwise. This is again the great methodological legacy for actual working with information, because it could simplify the information management in companies and organizations.

The ability to get information from IS almost immediately is in real life streamlined thru methodological guidelines that explain the frequency of information production. Today's IS are in variability and automatic data processing in considerable advantage.

The corporate computer network, central data storage with automatic backup, complex functions with mobile access to information, and other specialized software superstructure is a standard. The advanced methods of data analysis and report processing (Business Intelligence) are able to quickly reach the quality of the Bata system.

The risk, however, it may be that this sophisticated enterprise system is not followed with the preparation of users' and the maintenance of a system could be more challenging than its benefits.

Exploration the period of information is included in next research among users of IS QI. The aim is to determine whether setting period information is obtained from IS and how the information is further distributed.

If the information in current IS is accessible immediately (online), it means that a user has information available when it is needed. In practice, however, very often we meet with the effect of decreasing the need to use readily available information.

The unified system of templates is an absolute standard in today's IS. Moreover, it is relatively easy to modify any template and this practice is also widely used. In addition, there are rules on the transmission of information in an electronic form, which is clearly step forward.

Similarly, it will be organized research of data forms. There is question how much has been taken from the IS supplier or were personalized to the business environment. The findings will be compared with a periodicity of information and forms for TB.

6. CONCLUSION

The Bata Shoe Company was not far from the only one in the interwar period that achieved the economic boom due the application of the principles of Fordism and Taylorism using the environment of the economic cycles. These companies were able to create any sort of local "bubbles", which were at that time very efficient and modern self-sufficient systems.

TB personality is well-known thru philosophical, psychological and moral aspects of business. There is no historical evidence that the TB any abnormal clung to work with information. The system was built in the shape that can be able "naturally soak" of information about processes, production, trade, expansion and so on. The TB system was precise and timeless in its time.

The historical concept of work with information, as can be seen from the literature, relies mainly on effective acquisition and use of information, because the production of information requires energy and those the produces information must be used. This system puts great demands on employees; they are naturally forces to additional education. The mastering work in TB system can be compared with "learning organization" in the modern sense. The employee was able to get information, process it, store, and search them again. The work with information according TB system was a great school of life.

The today is an IS characterized by automation and user comfort. Data is "pumped" into the system from ongoing business processes and obtained information not cost any extra energy. The managers have "the instant preview of the current situation" thanks to the IS. The IS provides an actual view of the status of the organization anytime, anywhere and to anyone (who is authorized).

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