

Working with information at the period of Tomas Bata and now

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Abstract—The article describes the initial state of research in comparison of work with information at the Tomas Bata (TB) period and now. Acquaints the reader with TB person and his company; it provides basic rules for the management of the company Bata. They are defined areas of work with information, indicating their frequency information and using of forms for processing data. For comparison the current work with information is selected information system (IS) QI. In selected areas are given functions of the IS. Furthermore, it is the proposed method of analysis and comparison of the two approaches.

Keywords—Information, information system, QI, Tomas Bata.

I. INTRODUCTION

In the article, the authors try to compare work with information in the Bata enterprise and at present. The period of greatest expansion of empire TB is dated between the two world wars. Present is described as an information society with the normal use of computers and the Internet.

Seemingly we compare the incomparable. The era of TB is characterized by strict rationalization ("the common sense"); they are collected only the information that will be used in the company and are always addressed to specific recipients.

Today is sometimes collected information, often without regard to their future use. We have a huge potential of information and communication technologies (ICT), but use of information is not nearly so focused, such in TB period.

After an introduction, the article presents person TB and his company, and explains work with information in the Bata Company. It provides an overview of the options information system (IS) QI.

The result is a comparison of the two approaches to work with information and the reference of TB in comparison both. This is the initial phase of the project, and paper informs the reader on the intentions of subsequent research.

II. TOMAS BATA AND HIS COMPANY

The shoemaker, entrepreneur, and social innovator Tomas Bata (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. Its founder is viewed by many today as a shrewd and innovative businessman, whose legacy is both interesting and complex [1].

What is the secret of Tomas Bata success? He was able overnight performed transformation what the rest of the economy lasted almost a year. He has led the company to an unprecedented boom in the coming years. Let's to mention crucial milestones of the Bata company:

- Dominating the market (1922).
- Introduction of the profit participation (1924).
- Implementation of self-government workshops (1924).
- Technology of the movable production lines (1927).

These milestones were supported by four closed-circuits the funding [2]:

- 1) Own capital was reinvested in plant construction and subsequent services (hotel, cinema, department store).
- 2) Bata's Relief Fund, benefiting from wages and local taxes, were exempt from taxes and also served to build schools, roads, and so on.
- 3) Racing Savings Bank with savings of employees who were remunerated at 10 percent. To the company's institutions was added in 1930 own insurance company.
- 4) In 1931, the company finally became independent at banking houses. TB complex acquired significance as an important part of the Czechoslovak economy.

The principles of management in TB Company (so called „Batism“) are mentioned in Table 1. TB business as well as its management system was neither comprehensive nor had clear boundaries; but it can be summarized in several principles.

The Bata factories have taken or imitated the method of management, accounting and controls and the organization of production according to the methods used in the leather enterprises in the US and England around the years 1924 - 1929 [3]. The tragedy strikes in 1932 stopped the TB boom, when he was killed in a plane crash on the way to visiting a factory under construction in Switzerland.

	Principle	And its realization
1	world class	global comparisons
2	cooperation	partnerships and alliances
3	autonomy	private (not public) company
4	complicity	profit and value added sharing
5	public service	business sense
6	competition	internal performance comparisons
7	co-partnership	equity participation
8	independent management	autonomous business units
9	partnership	the business principle
10	synergy	interdependence of business

Tab. 1 Principle of Batism [4]

Under the leadership of TB's uncle, Jan Bata, the company intensified diversification into the production of tires, aircraft, bicycles and machinery. Tomas Jan Bata (TJB), the young son of TB, known as Tomik, convened the first international congress of Bata's young people. In 1939 Bata ran 63 companies in various industries, but footwear remained their core business, with approximately 60 million pairs being sold per year in more than 30 countries.

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 shoe stores was opened, the headquarters of which was based in Zlin, and a small shoemaking factory began operations in Dolni Nemci.

III. WORK WITH INFORMATION IN THE TIME OF TOMAS BATA

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.).

A. 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.

B. 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" [6, p. 53]. Other information that was stored, are already quite well known: tracking earnings, housing, injury prevention, etc.

C. 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" [7] have been passed immediately after the completion. With the daily frequency was spread production schedule, orders, sales, vouchers for signing, and account settlement for suppliers [6].

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 can be said that no other strictly periodic information was used in the system.

It is not confirmed, but it is possible that in the system was prepared monthly financial dynamic balance (operating income + total profit) 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 [6].

Dr. Pokluda (historian of the Bata period) 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. "*It was very challenging, given that documents for wages had to be finished on Thursday, otherwise the responsible person pay a fine.*"

D. 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 templates (as one of the management tools) could be modified only with the consent of the leadership [8].

E. 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 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 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].

IV. ACTUAL INFORMATION PROCESSING AND USING

To the comparison the work with information currently and in a period TB is used information system (IS) QI, which is developed by Czech company DC Concept, <http://www.qi.cz/>.

A. Characteristics of information system QI

Information system (IS) QI is currently distributed to more than 390 business units. IS is thematically grouped into 7 groups (see Figure 1): Economy, Human resources, Sales and marketing, Management of the company, Production, E-modules, and Spec-modules.

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 in the following areas:

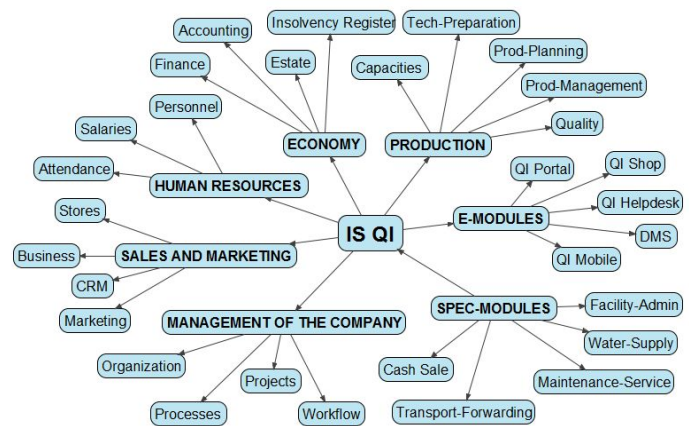


Fig. 1 Modules of information system QI

- 1) Automotive
- 2) The food industry
- 3) Engineering industry
- 4) Construction
- 5) Wholesale and Distribution
- 6) Project management
- 7) Facility management
- 8) Water Supply industry
- 9) Purchase of raw materials
- 10) Healthcare
- 11) Service and maintenance

B. Information support of production

IS QI was not used in the shoe industry, because it do not exist any shoe Company in the Czech Republic. But there are implemented similar solutions for the textile industry.

It can assume that set of QI modules PRODUCTION are able to support the production of footwear. Useful modules for future IS implementation include: CAPACITY, TECHNICAL PREPARATION of the PRODUCTION, PRODUCTION PLANNING and CONTROL, QUALITY. The functions of modules are also briefly 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:

- Process-intensive processes need to be well organized within the company's.
- Work efficiency is easily quantifiable in monetary value.
- Implementation of planning capabilities in the company eliminates collisions.

TECHNICAL PREPARATION of the 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:

- Create a hierarchical description of the product from bill of materials, processes and other connections in QI.
- View and edit products in a hierarchical format; each node structural bill of materials can be bound with the corresponding technological procedure.
- Any number of nesting levels bill of materials, but also creates a simple single-level bill of materials.
- Register requests for changes in the product documentation and their implementation can be addressed in the context of change management in the book of changes.
- Connect generally described the change of its specific effects on the requirements for materials and technological processes
- Use a tool to support the division of material consumption for calculation of division plates, fabrics, rods etc.

The created technological processes:

- They are 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. Their creation can use the set of types operations.

PRODUCTION PLANNING

It is easy to prepare a re-planning of planned 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.

Features overview:

- Helps to address capacity planning staff (rather professions), machinery and technology.
- 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 includes, for example, scheduled downtime of machines, projected costs of materials, etc.; operational planning then regulates the distribution capacity needed when unexpected equipment failure.
- Allows drawing up plans at various levels; plans for people, machines, workshops, centers and the whole organization.
- Prepares calculation capacity needed for particularly contract and evaluates production efficiency.
- Monitors the production process, 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).

Features overview:

- Creation of production orders, including technical and design documentation.
- 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.
- Provides reports to identify less profitable or unprofitable operations.
- The online terminals with bar code scanner are used for reports of production status and eliminate errors and minimize the difference between planned and actual situation of production.
- Tracking of assigned tasks of individual technological workplaces or workers on the basis of statements given work or job tickets.

QUALITY

Continuously recording disagreements and variations in production and conducts supplier evaluation and monitoring their supply quality. In addition:

- 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.
- Exposes statements fault and according to them, find out where disagreements occurred.

C. 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.

Features overview:

- Model career paths of people with which you can create plans for their inclusion in the individual jobs.
- Automates tracking attendance, utilization of working hours and job performance; creates daily and monthly balance of hours worked and absences.
- Supports selection procedures and recruitment; you can build the conditions for recruitment and evaluate them, to compare the suitability of each candidate, and according

to predetermined criteria to assess and select the most suitable candidate.

- Planning meetings and maintains a register of minutes of meetings and distributes tasks or working tools in relation to jobs and people.

D. Period of information in IS

If the data are stored in the IS, you can obtain 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.

E. 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.

F. 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.

V. REFERENCE TB TO WORK WITH INFORMATION

As noted in the introduction of the article, its content is a description of the starting position of subsequent research. One result of the research could be an imaginary essay, "How TB implemented IS". There will be confronted austere and strict requirements of TB in production management and work with people with effective arguments suppliers IS on the suitability of its system to handle these requirements.

Regarding the information of company production, it can be assumed that it IS QI is able to provide the information support for a footwear manufacturing as is described in TB memoir literature. The QI 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 QI, such as MRP II, Just-in-Time, Kanban and TOC.

We try to analyze the difference in Bata system and transaction-oriented database processing. If an IS is working properly (it contains relevant and current data) then it is possible the information from the IS to get immediately if necessary. So we have an instant overview of the actual state

of the managed system, and if appropriate the forecasts of its future, too. At this point the reasoning we suppose that regular period information processing was completely removed.

The ability to get information from IS almost immediately is in real life streamlined thru methodological guidelines that explain the frequency of information production.

There is planned to carry out extensive research in the personnel area: compared IS data items with the information on employees led for Bata. In today's systems is the issue of human resources 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.

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].

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

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.

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 a electronic form, which is clearly step forward.

If the information in current IS is accessible immediately (on-line), it means that an 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.

This topic is more for psychological analysis, but can be an opportunity to formulate a hypothesis for the future research: ***"The production of information in regular period solely increased awareness about business processes, and forces them to think more effectively and be more creative?"***

It cannot be interpreted in a manner: *"Is the button pressing less effective than hard, regular work?"* No, the question is asked so that a regular rhythm gives to the staff (in accordance with natural laws) suitable conditions for the manner of work via business process. It would be useful to verify in practice this assumption? Some of the information could be generate by IS only at predetermined periods and could be compared in the experiment, whether such an approach is more effective than to get on-line information freely in any time.

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.

VI. 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.

This paper presents two ways of approach to work with information - the historical and contemporary; describes the starting phase of the research booth periods working with information; specifies the areas of interests and processes of their confrontation. The results will be continuously published.

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 a actual view of the status of the organization anytime, anywhere and to anyone (who is authorized).

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REFERENCES

- [1] The Thomas Bata Foundation, 2005. [Online]. Available: <http://batovavila.cz/bata-history/>.
- [2] Z. Pokluda, Bata men, Zlin: Viva Publisher a.s., 2012.
- [3] B. Partyk, Characteristics of information systems of the former Bata group, Bratislava: Univezity of Bratislava, 1967.
- [4] M. Zelený, Everything will be different: From the New World Business, Bratislava: Karmelitan Publisher, 2011.
- [5] P. Sodomka ; H. Klcova, Information systems in Business Practice, Brno: Computer Press, a.s., 2010.
- [6] V. Garlik, Bata factories: organization and management to the year 1939), Prague: Svoboda Publisher, 1990.
- [7] T. Bata, Reflections and speeches, Zlin: TBU Zlin Univerzity, 2002.
- [8] S. Krecek, I worked for Bata, Prague: Technical House Publisher, Prague, 1992.
- [9] D. Valusek, Author's personal inquiry, Zlin: Moravian Land Archives in Brno, Zlin office, 2012.

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