AUTOMATION OF BUSINESS PROCESSES AT THE ENTERPRISE DURING A BRAND FORMATION

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Abstract: The modern market economy requires quality products and strong brands from enterprises. Being the basis of the company's capitalization, effective brands help to increase profitability and profitability, both for economic entities in particular, and for economic activities in general, therefore, it can be concluded that today's modern market is a brand market and, in turn, "fate". The company (manufacturer/seller) directly depends on the "fate" of the brand. It should be noted that in these realities, the formation and management of a brand are necessary not only for the consumer market but also for almost all participants in the process of developing, producing and selling an innovative quality product.

Keywords: business process, brand formation, brand value, management.

1 Introduction

All this knowledge should be embodied in products for both production and consumer purposes. At the same time, there will be an increasing need for deepening and expanding scientific knowledge and ideas in the field of effective optimization of business management, which is able to provide solutions to the tasks set. One of the effective ways is the creation and development of a strong brand through the optimization of business processes in the enterprise since this optimization allows to improve the quality of products, which in turn directly affects the formation of the brand in the "minds" of consumers.

Before considering the main approaches to optimizing business processes, it is necessary to clarify the definition of the term "brand", which is practically unknown in Soviet economics, but the root for the entire terminological paradigm of branding. Moreover, this task is not nationally inherent only in post-Soviet economics. So, aptly stated on this issue fifteen years ago, "It's funny, but one of the hottest points of disagreement between experts is the definition of a brand," sounds, oddly, as relevant as if it were said today. (1, p9) Moreover, this task in light of the networking of the globalizing economy can be considered - starting with the period of the emergence of "empathic marketing" - central to a significantly modified marketing theory, where "the emphasis of both practical actions and theoretical generalizations are transferred from "Competitor" to "Buyer"". (2) The buyer's influence on the brand value (statistically subjective indicator), reflected in the form of integrated feedback of the proposed CCVB branding model (Figure 1), increases significantly and rapidly with the development of social networks on the Internet. Social networks have long been considered to be exclusively influential tools that shape the attitudes and behavioral intentions of customers and have an increasing influence on the perception of brand value. (3)

Assessing the essential characteristics of social networks in branding, it is important to note that social networks are a universal platform for informal and official public communication, differing in a complex social structure based on the interaction of groups of nodes, social actors and objects that implement social and economic relations and by them.

Thus, the generalization of a number of concepts, models, and provisions belonging to the modern theory of branding, led to the following definition of the concept of the brand. A brand is a multidimensional coded signal (economic, functional, emotional, culturological) that carries a message (promise) designed to identify goods under this brand and/or the owner/user of this brand, assign ownership of this brand to the owner, also cause a cognitive resonance in the target market, associated with the generation of positive associations generated by previous consumption experiences and/or expectations of a real-virtual community forming a specified market, the result of which is expected, to one degree or another, the following results: (4)

1) the willingness of the target market to pay for this brand (brand product) more than for the products-analogs of competitors or former own goods;
2) preservation/expansion of the target market within the life cycle of this brand (up to the recession phase);
3) the emergence of this brand as brand capital and, accordingly, the transformation of the brand into an object of sale or lease. (5)
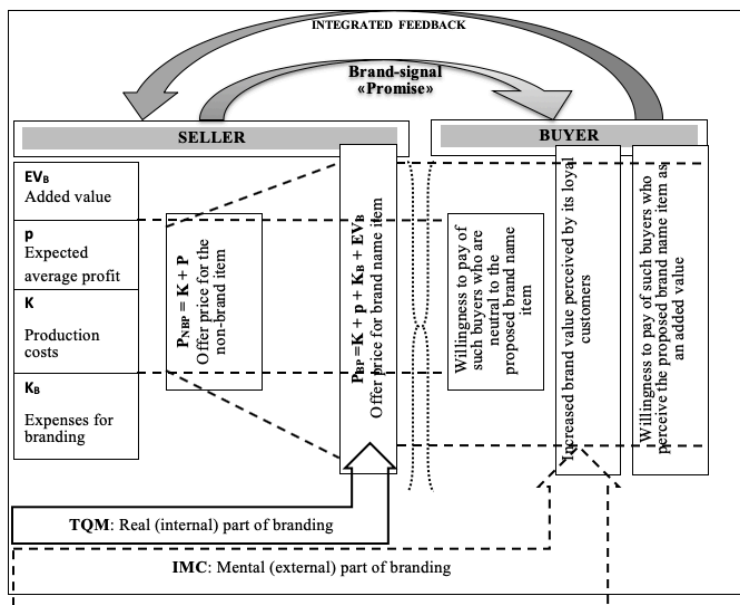
Figure 1. Complex Cost Value Branding Model – CCVB-model

Keyword: TQM – Total Quality Management; IMC – Integrated Marketing Communication.

Source: Cherenkov and Vereteno (6)

So, optimization gives advantages that allow an enterprise to stay afloat such as compliance with the market, optimization of operations, risk reduction, efficient use of resources, quality, end-to-end-visibility. Examples of optimization can be the optimization of the processes of the company's structural divisions, improvement of communication, forecasting of changes.

2 Materials and Methods

Business process optimization is often mixed with other concepts, such as business process improvement or business process automation.

Business process automation is an approach in which organizations assign as many continuous business process tasks to systems as possible to increase efficiency, reduce costs and reduce the volume of documents. Business process management involves managing complex organizational processes through a combination of different methods. An example of a successful business process optimization is Safaricom, which successfully brings together customers, employees, suppliers, and processes to increase profit growth. Safaricom sells telephones, contracts, and airtime through an extensive dealer network. Transformations: a partnership with IBM, Safaricom, replaced existing Oracle E-Business Suite R12 and Oracle Fusion Middleware applications, and automated manual processes, such as payments. Safaricom and IBM decided to re-deploy their existing Oracle environment to provide a clean run and expand it with new applications. Results: accelerated processing of payments, the transition from several days to several minutes. Safaricom decided to implement automation to speed up operations, reduce manual labor, improve business control and improve the quality of its financial information and other critical parts of the business. (7)

The rapid growth has led to the fact that Safaricom manual business processes were under pressure and risked dealer relationships. To increase customer loyalty while improving service delivery, the company attracted IBM® Services to deploy Oracle, an integrated application suite that provides effective automation of processes and increased customer satisfaction.

To solve optimization problems, you can apply the following methods such as dynamic programming, maximum principle, calculus of variations, linear programming, nonlinear programming.

The optimization task is of the form (general formulation of the problem):

$$\text{Max or Min} \quad Z = f(x) \tag{1}$$

subject to the constraints,

$$g_j(X) \geq = \leq 0, \qquad j=1,2,3,\ldots,m \tag{2}$$

where,

$$X = (x_1, x_2, x_3, \ldots, x_n)^T \tag{3}$$

In general, such tasks are called mathematical programming problems. The function in (1), which must be maximized or minimized, is called the objective function. The conditions specified in (2) are called restrictions. Variables are called solution variables, and the conditions in (3) are called the nonnegativity conditions of the variables. (8)

Thus, any mathematical problem consists of three main part:

1) Target function;
2) Restrictions;
3) The condition of nonnegativity of variables. (8)

Classification of optimization tasks by features:

1) Classification by the number of objective functions (one objective function - the problem of single-criterion optimization (programming). Two or more objective functions - multi-criteria optimization (of programming).
2) Classification reflecting constraints is a task with constraints, i.e. conditional optimization problem.
3) Classification by type of objective function and constraints (the objective function and all restrictions of which is a linear function - a linear programming problem). (9)

Optimization of business processes allows you to transform business processes into business processes with predictable business results. Business processes optimization streamlines

support functions to provide economies of scale, optimized global coverage, strong management, continuous improvement, advanced consolidation approaches, and embedded intelligence in operations.

The process approach is an example of one of the methods of effective enterprise management.

The process approach is based on the improvement of business process indicators. Identify such indicators of business processes that are directly related to the quality of the service or product, or indicators as a financial result and the degree of satisfaction of consumers or customers. The duration of the tasks is also one of the important indicators. For example, in a bank, an indicator of the duration of processing a loan application. (9-11)

Therefore, it is very important to define certain standards and indicators that will directly affect the efficiency of the enterprise.

The criterion for the value of products/goods or services is determined by the market price, which must cover the costs of producing products/goods or services. When estimating the costs of business processes, in a separate business process, the added value can be expressed as a specific indicator. A specific indicator is an indicator that is determined by the ratio of a specific parameter (or a combination of several parameters) to another parameter/parameters. Indicators of the effectiveness of business processes include such indicators as temporary indicators, indicators of material costs, indicators of the cost of marriage, cost indicators for the use of resources per unit of production, process cost indicators, sales per employee. It is important to consider business processes in certain categories, such as the development of products and services, demand generation, satisfaction of demand, enterprise planning and management. The processes show what kind of work is done and how, where and when it is done and, therefore, they should be considered in terms of such categories like quality, quantity, time, ease of use and money.

An example of improving the efficiency of business processes. Reducing the time and cost of repair and rehabilitation operations, increasing the interrepair cycle.

The calculation of economic efficiency is carried out on the example of the mine PW-1, by comparing the costs of replacing the existing methods of repair and rehabilitation operations with a hydroimpulse one.

The cost of a portion of the repair and rehabilitation operations of mine PW-1 amounted to:

Wells flushing (1BA-15V) 10455 crew hour 17159800 tenge (98 treatments).

Compressor pumping 438 crew hour 801 540 tenge (150 treatments)

When forecasting the operating costs for repair and rehabilitation operations per well within 20,000 tenge per well, the cost of conducting (98 + 150) = 248 treatments will be 248 x 20 000 = 4 960 000 tenge.

Time costs will amount to 248 x 5 = 1240 crew hour.

Time-saving will be (10455 + 438) – 1240 = 9653 hours or 402 days.

Additional income by obtaining an additional amount of metal will be 402x 1,59x2200= 1406196 tenge.

Table 1. Data Processing Pumping Wells PW-1 by Using Various Methods

Mine PW-1 Precinct	Compressor processing	Average productivity after repair and rehabilitation operations, m^3/hour	Processing BA-15V	Average productivity after repair and rehabilitation operations, m^3/hour	After treatment with a hydrodynamic emitter, the flow rate of the section "North" increased to 8m^3/hour
Centre		5.2		5.8	
№10		5		5	
South		4.2		5.8	
East		4.4		5.7	
North		4.6		5.4	

The estimated economic effect can be:

(17 159 800 +801 540) +1 406 196-5 160 000 = 14 207 536 tenge/year when using GDI on one PV.

Comparative analysis of unit costs for 1 day of repair and rehabilitation operations of various methods of the interrepair cycle.

Indicators of the cost of repair and rehabilitation operations and losses in production per 1 pumping well per year for 1 day of the interrepair cycle. Indicators of the cost of repair and rehabilitation operations and losses in production for 1 injection well per year for 1 day of the interrepair cycle.

To calculate the cost of 1 unit of repair and rehabilitation operations, we take the average interrepair cycle in the range of 50 days.

Costs for one processing are accepted in the amount of 20,000 tenge.

The processing time of one well is taken at a rate of 5 hours, the metal loss will be 1.59 x5 / 24x2200 = 7 28 tg.

The costs will be (20000 + 728) / 50 = 414 tg/day of interrepair cycle.

For comparison, the unit costs for 1 day of the interrepair cycle operations for different types of repair and rehabilitation operations are:

Air impulse - 616 tenge - pumping well, 3189 tenge - injection well

Pumping - 4049 tenge - pumping well, 13714 tenge - injection well

Flushing - 3818 tenge - pumping well, 4066 tenge - injection well

If you take a period of 1 year, on average for the year of unscheduled cleanings of one well is 3 cleanings at a minimum.

One such cleaning costs an average of 2.5-3 million tenge.

Multiply 2.5-3 million tenge by 3 cleanings per year = 7.58-9 million tenge.

We multiply by the current number of wells: 10,000 * 7.58-9 million tg = 75,000-90,000 million tg per year. This number in million tenge shows savings from unscheduled cleanings (since the introduction of a hydraulic radiator avoids unscheduled cleanings). (9)

This example shows an improvement in business process performance.

Business Process Modeling – is a mapping of business processes oriented by objectives, developed according to certain systematics and form of presentation.

The objectives of business process modeling are aimed at ensuring that business processes of the enterprise can be documented in order to receive data in a timely manner; to represent the actual situation in the organizational unit of the enterprise, transfer business processes to other divisions, regulate work processes and methods through external management mechanism in order to fulfill obligations to business partners or the business community (for example, on enterprise certification), meet current legal norms, train or introduce employees, avoid loss of knowledge (for example, when an employee is fired), support quality management and environmental management. (10)

2.1 Business processes modeling

Business modeling methodology is a combination of methods and principles for constructing business modeling models.

Modeling is carried out with the help of graphic elements (a combination of notations) and the rules for their use. Currently, the most common methodologies are IDEF0, ARIS, etc.

The modeling methodology distinguishes such approaches as functional and object-oriented.

In a functional approach to modeling, the main element is a function (operation), and a business process is represented as a sequence of functions that transform process inputs into outputs using certain resources. (11)

In terms of the relevance of the content of the model are divided into:

1. Model "As is" reflects the REAL state of affairs at the time of the description, actually existing, established technology of work.
2. Model "To be" reflects the target state, which is supposed to be implemented in the future. For example, a working model of a newly opened enterprise, or a new (completely new or improved old) procedure for performing any work.
3. Model "Should be" reflects the "idealized" state of affairs (for example, according to regulatory documents, while the actual scheme of work may, in reality, be somewhat different). In practice, the need to build such models is infrequent.

Moreover, these models of the same process can vary quite significantly.

Example. Let's consider an example of improving the business processes of the accounting department based on the introduction of the target model of the mining industry by the example of the implementation of the target model of the accounting process for the fixed assets of the mining industry.

The target model for the accounting of fixed assets of the extractive industry enterprise, which was developed considering the subsequent automation of the process in the accounting system. Detailing the target model is designed to structure and control the completeness of the development and approval of process documentation.

When introducing the above target model for the accounting of fixed assets, the resulting fact is the optimization of the process of the accounting of fixed assets by reducing the processing time of accounting information in the accounting system, reducing the time required to prepare reporting forms for accounting for fixed assets, and also reducing the time for entering accounting information into the data system by a single input information into the accounting system and its mapping in various modules of the system and obtaining operational information from the system by users and the international stakeholders.

Description of the target model for the accounting of fixed assets. Accounting operations and controls for the asset accounting section in the target model while improving the business process are carried out according to the following process maps:

1. Implementation of accounting operations and controls on the site of accounting for fixed assets.
2. Reception of primary documents, their scanning, processing
3. Verification of documents on formal grounds
4. Incorporation of documents into the electronic document management system
5. Preparations for the closure of the fixed asset accounting section.
6. Preparation of information about objects according to accounting data (list, cost)
7. Preparation of information on the technical condition
8. Verification of information
9. Assessment of the amount of impairment of non-current assets
10. Verification of the Fixed Assets Assessment Report
11. Approval of the report on revaluation/impairment of fixed assets
12. Check of completeness and correctness of operations and documents on the site
13. Preliminary depreciation calculation
14. Conducting results of valuation/impairment of long-term assets in accounting
15. Adjusting for proper depreciation
16. Productive depreciation calculation.
17. Analysis of the accounts for the accounting of the unfinished capital investments after the calculation of the cost price
18. The final control of the site for recording non-current assets (fixed assets, intangible assets, construction-in-progress).

3. Results and Discussion

3.1 Business processes optimization

Consider a method of optimizing business processes (department of the control unit of the mining enterprise), which was developed based on the "target model of the enterprise". The methodology consists of the following successive steps:

1. Building a model "As is";
2. Then the analysis is performed;
3. A "Should be" model is being developed, parameters, resources, infrastructure, and workflow of the business process are being rebuilt;

Development of the target model "Should be". A plan for the implementation of an optimized business process is being developed, the transition to the "Should be" state.
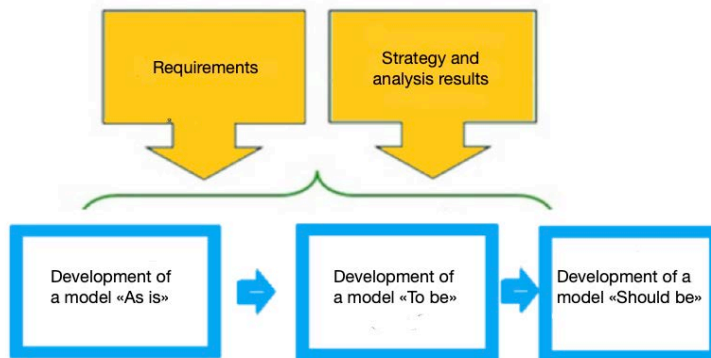
Figure 2. Accounting Processes

As a result of the introduction of the target model, the whole chain of interconnected business processes will be improved:
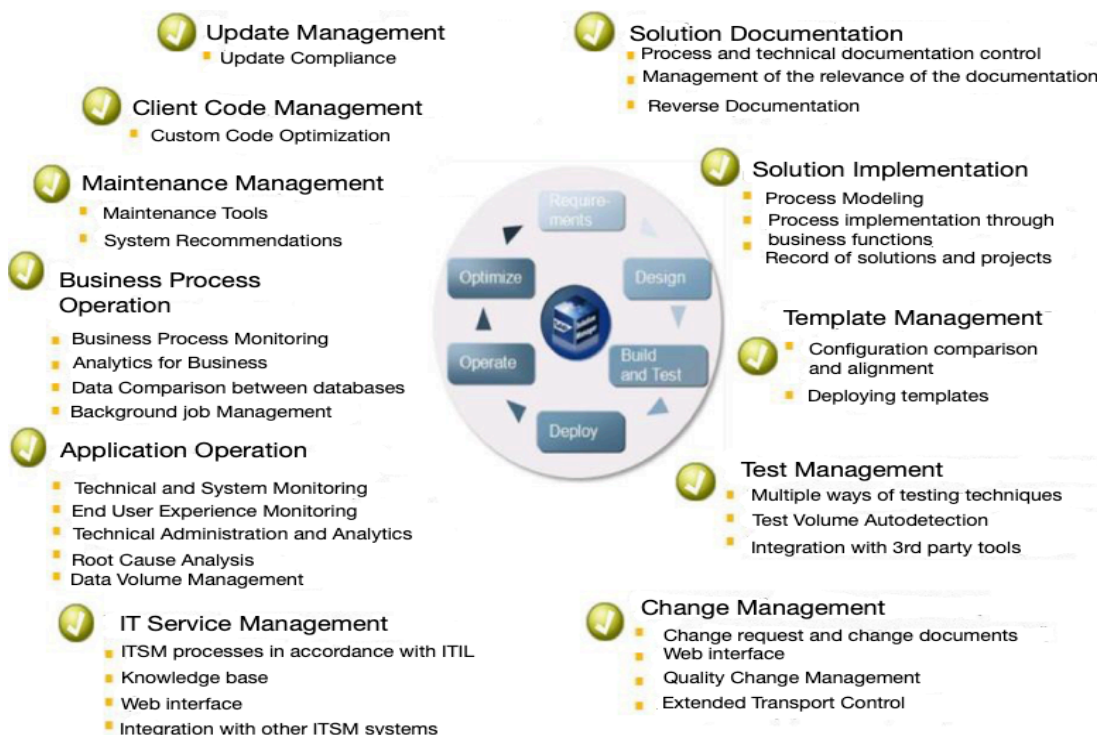

Figure 3. Chain of Interconnected Business Processes

Table 2. Accounting Process. Comparison of the Processes "As is" and "To be" (According to the Target Model)

"As is"	"To be" (according to the target model)
- Existing accounting processes are mostly automated. - When consolidating financial statements, some data is adjusted by manual postings, reclassifications are made at the consolidation level.	- Automation of processes is carried out according to uniform principles, which facilitates the process of consolidation of financial statements, initiators of operations are responsible for the correctness of documentation and the timely receipt of data for the accounting. - When consolidating financial statements, the data is unloaded from the accounting systems of subsidiaries and affiliates, formed according to a single principle, which minimizes the number of manual entries and reporting time.

- When a change is made in the legislation, in IFRS, and in accounting principles, an analysis is made of the need to make the appropriate changes to existing GNIs or to develop new GNI. - When approving a new organizational structure, the Regulations on Accounting and Reporting Department and Job Descriptions of the department employees are developed. With personnel changes, there is a risk of errors in the performance of certain operations.	- When a change is made in the legislation, in IFRS, and in accounting principles, a working group is created to make the appropriate changes in the existing GNI, not only in accounting processes but also in general for all business processes affected by the changes. - The regulation on Accounting and Reporting Department and Job Descriptions is unloaded from ARIS, which contains the roles, powers, and responsibility of employees for each process, which maximally excludes non-execution of processes.
- When accounting for mine preparation work, the data in the system are displayed in a single amount without detailing the terms, accounting for components of the mine preparation work (pumps, flow meters, etc.) is conducted on paper by technical performers.	- When introducing the target model and fully automating the processes while considering the mining and preparatory work, the components are disclosed in detail, which makes it possible to keep detailed records of the repair and operating costs of individual units such as components of the mine preparation work.
Qualitative project benefits and optimization results:	
Quality benefits of the project: 1. Rationalization of simple routine operations, the transfer of individual functions in the business unit. 2. Timely and high-quality preparation of financial statements and accounting information. 3. Elimination of processes that do not add value or duplicate.	Result: – Accounting processes are performed in accordance with the target model – Responsible persons are established by the efficiency factor in accordance with target processes and determined target values – Are entered in documents in accordance with the target model.

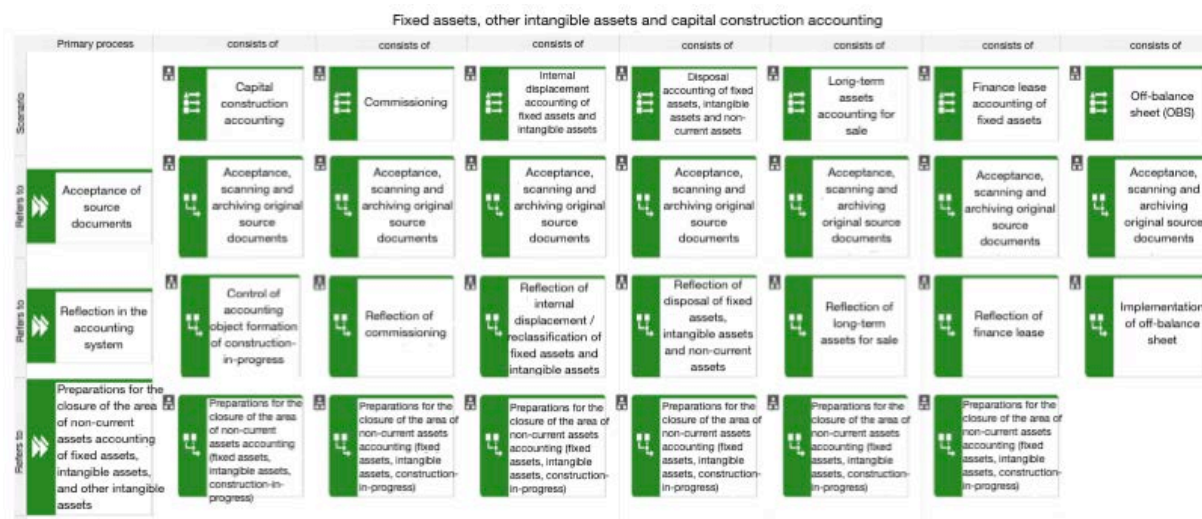Description of target asset accounting processes in ARIS:

Figure 4. Target Asset Accounting Processes in ARIS

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