

Organizational and Economic Opportunities of Reengineering Business-processes as Part of the Effective Functioning for Native Machine-building Branch Recreation

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In conditions of severe changes of environmental business-area regarding geopolitical events of 2014–2016 years influence, in particular Ukraine and Russia relationships politic and economic crisis, one of the most powerful and important Ukrainian economic branch, machine-building, has met with essential and rapid decrease of productive results. Due to the situation conditions article authors advised to study reengineering basic items in details and research the possibility of its application for Ukrainian machine-building branch competitiveness recreation. The main arguments for the application were stated as the following: essentiality of results to reach, fundamentally of changes to implement, radically measure of events to carry out, and also reengineering instruments to suit the severe environmental changes. Article authors analyzed the reasons of machine-building crisis condition and found the most critical processes and events. Thus it was made a conclusion about reengineering events practicability for improving the following basis: final client importance feeling, production segmentation and description, production connections rapidity, information movement ability, nomenclature and standards base flexibility, foundation of perceived corporative culture of production values, effective motivation work with the stuff.

Keywords: client, competition, fundamental changes, reengineering, business-process.

Abbreviations:

JSC – Joint Stock Company;
CIS – Community of Independent States;
NPS – Nuclear Power Station.

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Introduction. Studying native business singularities in its every branch, from social service area till production, including machine-building purpose, it is impossible to avoid mental component influence on native business organization. Traditionally only radical changes of business-environment, with complete impossibility of further following by the old business-line, make native businessman to look for new business-strategies. While old business-line poor efficiency was clear long time ago. Actually such late reaction promotes a level of painfulness for certain transitional processes. Disloyal events of 2014–2016 in Ukraine became the critical point to determine the viability for many native enterprises, including Ukrainian machine-building branch.

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Problem. Some years ago machine-building branch effective functioning was determined with tight business connections with CIS countries. Of course, it is talking about categorical Ukrainian machine-building orientation on Russian Federation and some other post-soviet union countries market. Not only geographic location and of course not an essential feeling was a reason of that; the main reason – advantageous market attendance conditions. Soviet system founded not only a program of standard unified products distribution for production and industrial objects, but also clear nomenclature and standards base.

But the key factor of this market attractiveness is its capacity, which is conditioned by the quantity of industrial objects and supplied industrial products types in the past. Russian Federation is absolutely the biggest consumer of Ukrainian industrial products in Eurasian region. Non effective singularities of this market, in particular corruption component and poor innovative development of basic technological processes, predicted low development rate for products consume characteristics and production processes. Such a harmful coincidence caused fatal dependence. Rapid Russian market closing left Ukrainian manufactures alone with their product and certain cumulative base of systematic reclamations.

These radical changes of activity orientation fundamental basis have determined the character of required measures for enterprises economic development level maintenance. There is no doubt, Ukrainian machine-building hast to be saved as a branch. Furthermore, it has to be among first-priority of government development, as it was earlier. Powerful human staff and scientific-production potential could not be lost. World community evaluated the high price of such mean in global world processes long time ago. If Ukraine would lose it, it could never be recreated.

Looking for effective methods of stated critical position leaving, with no alternative we come to basic principles of “business-process reengineering” concept. Foreign and native scientists, such as: Abdikeev M., Vinogradova O., Deming W., Davenport T., Zinder E., Cameron K., Lepeiko ., Medynskiy V., Mekhovich S., Obolenskiy N., Repin V., Savruk O., Telnov Y., Utkin Y., Cherep A., Chukhrai N., Shchennikov S. determine this concept as transformational events in enterprises activity, aimed for significant improvement of business economic results within cardinal redesigning business-processes.

Scientist of economics Reisberg B. noted «business-process reengineering» concept as companies recreation within lifting technology on a new value and foundation of new business processes, which did not exist earlier in a company organization [1].

Nevertheless reengineering theory founders’ (American scientists Michael Hammer and James Champy) basic principles from the paper [2] have to be a roadmap for Ukrainian manufactures rescue, on our conviction

Mentioned scientists’ definition of business-process reengineering as fundamental rethinking and radical redesigning business-processes to achieve significant improvements in the following key characters of modern business: costs, quality, service level and operability, in absolutely clear way describe the stated situation character and contra-measures degree, which have to be carried out.

Scientific problem, which is not solved for today, is a practical implementation of business-processes reengineering organizational and economic instruments in Ukrainian key national economy enterprises activity, also including machine-building enterprises. Thus among the major tasks of the article research of reengineering events implementation singularities for machine-building enterprises has to be noted.

Research aim is a studying reengineering economic and organizational ability within

machine-building enterprise economic activity.

Research results. Despite clear American origin reengineering concept has been developed in many countries around the world. Thus, in Europe, certainly in Great Britain and Sweden around 60–70 % of enterprises have come to reengineering. It has been also popular in Japan. Many foreign scientists have described in their articles USA economy condition in the first half of 90-s. And to tell the truth, modern Ukrainian machine-building is similar to that condition by the value of organization.

Lack of flexibility, inadaptability, absence of client orientation, possession by the activity, but not by its results, bureaucracy paralysis, lack of innovations, high burden costs [2] – here is the heritage, which is strangely common for nowadays Ukrainian machine-building and 20 years ago USA economy condition.

Mainly such similarity is caused by the fact, that soviet economic model in majority copied American conceptions. For many years enterprises have being founded on the basic of Adam Smith invention: industrial production has to be divided on the simplest operations. While postindustrial companies have to be based and developed on the basis of operations reintegration into single business-processes [2].

On the way to reengineering business has to give up outdated rules, which were accumulated from the previous generations. Just reengineering teaches us to state the question to ourselves, which considers the following: it is not enough to found in what way some operations should be done better, it is much more important to found if certain operation is required to be done in general. It is clear that many operations are done only for company internal needs satisfaction and they have nothing connected with creation of quality ready product with smart price for consumer needs satisfaction. Nowadays, as in times of M. Hammer's and J. Champy's new study invention, we have to state the following key points for modern country machine-building: client, competitiveness, fundamental changes. We doubt them to be named new, but modern singularities of the key points differ greatly in compare with previous ones. It has to be clear, that there is no "mass market" now. But just this mass market is studied and described in details in handbooks for machine-builders. That mass market has been disintegrated to the particles of single customer value. Modern competitiveness has become not only stronger, but also more various; while fundamental changes have got constant character.

On reengineering theory founders' opinion, no one of the effective management concepts has not managed to rescue American business from the "steep dive", among them: target management [3], diversification, «Z» theory [4], zero budgeting, work places monitoring, decentralization, quality circles, matrix management, effective management [5], restructuration [6].

Mentioned principles could not teach the management in major aspects, but just diverted attention from real tasks. M. Hammer and J. Champy were sure, that main company efforts should be directed on effective certain client need satisfaction within operative new product development and quality service. Their main activity was oriented on methodological approach search to create the most quality product in the shortest time with lowest costs.

The way to successful key tasks execution could be find within definition of four basic business-processes reengineering priorities – fundamental, radical, significant, business-processes. We are talking here about fundamental rethinking business organization principles, radical business organization changes for achievement of absolutely significant improvements within certainly defined effective business-processes.

In general, «business-process concept» is one of the major component in understanding the

essence of reengineering. Here are the official definitions: business-process is a whole range of different activity types, within which we use one or more resource types on its entrance, and in result of which we create the valuable for client product on its exit [2].

In a part of consumer not only the final customer could play, but also a following process owner. So the following process entrance is an exit for the previous process. Actually the final product quality characters should be the key point for «process team» members. Staff should satisfy consumer needs, but not management needs. While management should change the role of boss into the role of tutor (coach).

Existing system of major number of machine-building enterprises is based on functional departments; their main task is to move the problem (job is being evaluated in such a way) out the certain department responsibility borders. While by the process principle the key point is a quality product for complete process and for each particular link. By the new principle we have to change mechanical execution with smart creation. This principle needs requirement increase for the staff abilities. It has to be mentioned, that the article authors consider staff selection, corporative conscience building and production values generation to be one of the most determining point in reengineering events success.

While they have another view on the role of information technologies as a total rescuer. Within reengineering information technologies play very important and useful part, but the key one. It is an instrument, but not key point. Key point is in the intelligence applying information technologies for new operational links search. Actually such links, which could improve (in decades times) processes efficiency. In this case information technologies are intended not only as an instrument, but also as creative component.

Nowadays classic Ukrainian machine-building enterprise is a complete opposition to basic M. Hammer and J. Champy reengineering principles. Actually machine-building branch is infected with standard traditions of industrial heritage in such a way, that it needs radical and rapid operational changes. Beginning with marketing strategy definition and up to final consumer service, each link has to be changed by the new priority points. Studying the experience of countries from all over the world, we could not miss the data of reengineering failures. It reaches up to 70 %. But in a case of Ukrainian machine-building branch condition we consider only crisis reengineering type, when there is no any another way to branch survive and development, instead of reengineering applying. Companies' management has to learn to organize and to carry out reengineering, looking on best world experience and applying benchmark methodological principle. They have to do it only for sustainable improvement of Ukrainian machine-builders economic efficiency.

So, machine-building companies' top and middle management has to learn right dialogue format between producer and consumer. The most popular reason of potential Ukrainian product consumer choosing European or another foreign product instead of Ukrainian one is service and customer attention value difference.

So, let's study singularities of Ukrainian machine-building branch enterprises activity for business-processes implementation on their base. One of the leading industrial centrifugal pumps Ukrainian manufacturers JSC «Nasosenergomash Sumy» has met with following problem. In times of Soviet Union product-industrial cooperation with different countries from all over the world supplies of Ukrainian machine-building products were the component of politician strategy. In such a way Sumy pumps appeared on industrial sites of Germany (Eastern), former Yugoslavia, and also Turkey, Greece, Cuba, China, Iran, Iraq, Finland and many other countries. Nevertheless, up to 2014 approximately 90 % of all year sold

production were supplied to Russian Federation. On repeated occasions company's management has been accented on a necessity of increasing product export to faraway countries. Thus, considering stable stock of orders from the operational activity, there were no real efforts to start powerful projects on practice. In result of high dependence of orders stock filling on Russian consumer and regarding last events in relationships between Ukraine and Russian Federation, including politician, this enterprise has met with high risks about ready products order stock filling in further strategic perspective.

While analyzing possible ways of enterprise export activity increase and some problems, which were determined earlier within export expanding efforts, work group of JSC «Nasosenergomash Sumy» separated one representative sample. They discovered thermal power plant «Orhaneli» (Busra, Turkey) to operate feed water boiler pumps manufactured by JSC «Nasosenergomash Sumy». They were supplied more than thirty years ago; they had worked out their stated life term and had to be changed. Operating staff was well accustomed to this production and had no any remarks due to its reliability. Thus effort of taking part in a competition for new pumps supply turned into a failure for Sumy pump producers. Competition was won by the German manufacturer.

It was clear that enterprise had no many chances for successful competitions with well-known world brands on new markets, so occasions of potential supplies to change self-manufactured equipment were evaluated as the most perspective projects to renew the «Nasosenergomash» brand recognize over the CIS countries. Studying the reasons of certain failure company representatives have been visited «Orhaneli» plant for several times and have noticed that successful German company delegation had been carried out training seminars for plant operational staff. Major part of native manufactures consider consumer to be well known and studied user, who knows operational and design equipment singularities in details. Furthermore traditional native manufacturer limits his responsibility range within own product in process of a dialogue with consumer. He puts the question of product operation in a complete operational system to consumer answerability. Traditional answer of long time experienced native manufacturer (especially with experience of work via the post-soviet designing institute) to be out system operation responsibility. And in the same time major part of design companies came through reorganization of both structure and customer cooperation. So, all their projects developments and services are carried out as paid services.

In such conditions, and regarding generations changing, many industrial objects (started in 70–80s) feel a lack of qualified staff. Today a consumer wants to notice not only product supplier, but also a consultant in general questions of equipment choosing, operation and maintenance. In a case, when traditional principles should be changed, and connections should be redesigned there is a strong need of reengineering events applying. At JSC «Nasosenergomash Sumy» business processes reengineering was started from the marketing activity. Singularity of business process realization at this enterprise was connected with existing processes borders displacement, and staff functional commitments and correspondent requirements expanding. From particular marketing activity the enterprise has come to engineering-marketing activity. Specialists with a right to converse with clients have been had to know not only the product characters, but also fundamental principles of industries technological processes, satellite equipment characters and manufactures. In addition, the enterprise has stated the programs of industry sites examination (power-consuming audits), and also programs of industrial sites maintenance staff training. Thus, within next substantial contract realization, notably equipment supply to III-IV power units of Tianwan NPS (China), program and conditions of training were provided by the contract obligations. Chinese

specialists have passed training and examinations at manufacture’s site according with the program, approved by the contract sides [6].

Reengineering events implementation research is described in details table 1. Given table contains detail analysis of the JSC «Nasosenergomash Sumy» main economy activity problems and proposed reengineering implementation ways for certain problem question.

Table 1

Reengineering events implementation at JSC «Nasosenergomash Sumy» enterprise
(developed by article authors)

Problem aspects as initial conditions for reengineering implementation (situation before business-processes reengineering)	Singularities of business-processes reengineering	Reengineering events results (situation after reengineering)
Long-time workup of ready products inquiries, and slow delivery as a result In the end – penalty increase for the producer	Business process boarders expanding, local reengineering of business-process (one penalty increase for the producer)	Engineering-marketing center foundation with providing specialists from both marketing and technical department
Late material logistics for the production, caused by late inquires of the sub-product goods required for the production process. Result – penalty increase for the producer	Business-process coming out the enterprise boarders; business-processes reengineering with total modeling business-processes (redesigning several business-processes)	Applying automatized system of strategic sub-suppliers informing about beforehand materials completing possibility for in-time productive orders execution
Choice of the work orders distributors expensive orders but not important for the final enterprise local target. Result – slow delivery of some important nomenclature items	Local reengineering business-processes of the enterprise staff area (single process redesigning)	Creation of financial stimulating system for the workers, which are dependent on orders execution amount, regarding enterprise local and strategic targets
Dissatisfaction of commissioning engineers activity during industrial equipment commissioning and start-up from the side of end enterprise-user.	Business-processes reengineering with total modeling business-processes (redesigning several business-processes)	Creation of common training system for commissioning engineers and maintenance staff, common visits at sites of both marketing and commissioning specialists

During two years JSC «Nasosenergomash Sumy» has increased export value over CIS countries in seven times. Undoubtedly, changes have touched not only marketing activity, but also major part of basic business-processes.

Conclusions and further research perspective. Carried out research allows to make a conclusion about reengineering instruments’ correspondence and application necessity for organizational and economic structure of machine-building branch enterprises; such changes should be done for the sake of substantial quality and rapid improvement by the major economic values. So, significant changes by the basic reengineering principles should be provided within the following activity factors: rethink of end user weight for all single sub-

processes and complete process; principle of production tasks distribution and definition; efficiency of production links between executors, departments and satellite-enterprises; efficiency of information transfer and its accessibility; flexibility of nomenclature range and standards base; new products development operation ability; creation of corporative conscious values culture; effective motivating work with a staff; matching the staff for key departments regarding wide range of required professional characters. M. Hammer and J. Champy were absolutely true to consider reengineering implementation to be worth both single departments and complete enterprises. Certain mentioned above enterprise, as a complete branch, has made only first steps on renewable way. So, we could predict difficult, interesting and necessary way of changes and challenges ahead.

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Організаційно-економічні можливості реінжинірингу бізнес-процесів як складова ефективного функціонування вітчизняного машинобудування

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В умовах різких змін навколишнього бізнес-простору, які обумовлені впливом геополітичних подій 2014–2016 рр., зокрема кризою політичних і економічних відносин України і Росії, в одній з

найбільш потужних і важливих галузей економіки України, машинобудуванні, відбулося різке погіршення виробничих показників. З урахуванням умов ситуації, що склалася, авторами статті запропоновано детально вивчити базові поняття реінжинірингу і оцінити можливість їх використання для відновлення конкурентоспроможності українського машинобудування. Основними аргументами на користь застосування саме реінжинірингу названо істотність результатів, які повинні бути досягнуті, фундаментальність змін, які повинні бути проведені, радикальність заходів, які повинні бути здійснені, а також відповідність інструментів реінжинірингу саме різких змін навколишнього середовища. У статті виконано аналіз передумов, які привели до кризового стану машинобудування, визначені найбільш критичні процеси і явища. Зокрема, зроблено висновок щодо доцільності застосування реінжинірингових заходів з метою досягнення істотних змін наступних факторів: переосмислення важливості кінцевого клієнта, принцип поділу і описування виробничих завдань, оперативність виробничих зв'язків, оперативність руху інформації, гнучкість номенклатури і нормативної бази, формування корпоративної свідомої культури цінностей у персоналу, ефективна мотиваційна робота з персоналом.

Ключові слова: клієнт, конкуренція, докорінні зміни, реінжиніринг, бізнес-процес.

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Организационно-экономические возможности реинжиниринга бизнес-процессов как составляющая эффективного функционирования отечественного машиностроения

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В условиях резких изменений окружающего бизнес-пространства, которые обусловлены влиянием геополитических событий 2014–2016 гг., в частности кризисом политических и экономических отношений Украины и России, в одной из наиболее мощных и важных отраслей экономики Украины, машиностроения, произошло резкое ухудшение производственных показателей. С учетом условий сложившейся ситуации, авторами статьи предложено детально изучить базовые понятия реинжиниринга и оценить возможность их использования для восстановления конкурентоспособности украинского машиностроения. Основными аргументами

в пользу применения именно реинжиниринга названо существенность результатов, которые должны быть достигнуты, фундаментальность изменений, которые должны быть проведены, радикальность мероприятий, которые должны быть осуществлены, а также соответствие инструментов реинжиниринга именно резким изменениям окружающей среды. В статье выполнен анализ предпосылок, которые привели к кризисному состоянию машиностроения, определены наиболее критические процессы и явления. В частности, сделан вывод касательно целесообразности применения реинжиниринговых мероприятий с целью достижения существенных изменений следующих факторов: переосмысливание важности конечного клиента, принцип деления и описывания производственных задач, оперативность производственных связей, оперативность движения информации, гибкость номенклатуры и нормативной базы, формирование корпоративной сознательной культуры ценностей у персонала, эффективная мотивационная работа с персоналом.

Ключевые слова: клиент, конкуренция, коренные изменения, реинжиниринг, бизнес-процесс.

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