Scientific Journal of Riga Technical University
Computer Science. Information Technology and Management Science
2010
Volume 44

Improvement of Business-Activities in Telecommunication Enterprises by the eTOM Business-Process Structural Model Implementation

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***Abstract* – For now, in front of telecommunication branch enterprises of Ukraine, there is a problem of activity improvement with the purpose of granting high-quality services and maintenance of competitive position, both on internal, and on a foreign market. To solve this problem, telecommunication companies appropriate to use the mechanisms of business-oriented process management and improvement of end-to-end business-processes. The purpose of this article is a choice of effective business-process model that will allow telecommunications companies to provide modern, high quality and cost competitive services. During research, conditions of the telecommunication branch enterprises of Ukraine were investigated and key problems of their activity were revealed. Existing business-process models have been considered and analyzed and the optimal model was chosen, according to the put criteria. By results of the analysis a conclusion was drawn, that to the enterprises for business-process modeling is expedient for using eTOM – high-level system business–oriented model aimed for providing of any technological services, including IT. As advantages from introduction eTOM at the Ukrainian enterprises were analyzed.**

***Keywords* – business-process, business-processes model, eTOM, lean operator, process approach, telecommunication**

I. Introduction

The telecommunication industry is strategic for the economy of any country. It plays a significant role in the balanced development of global and regional economy; operates as link between the industrial sector, service industry and consumers. Telecom influences for conditions of informatisation of the country, on rates of social sphere development. Hence, development of telecommunication industry in general, and in particular the telecommunication enterprises, - is one of priority directions of any country economic-social development, including Ukraine.

Let's analyze the state of the Ukrainian telecommunications industry in a global context. For this purpose it is expedient to use an information and communication technologies development index (IDI). IDI was developed to measure the development and evolution of changes level in time in the telecommunication industry taking into account a situation in developed countries as well as in countries that are developing. IDI combines 11 indicators into a single indicator that can be used as a tool for comparative analysis at the national, regional and global levels.

Having analyzed IDI dynamics for the different countries (in particular European) for last 8 years, it is possible to draw a conclusion, that in comparison with the developed countries, the telecommunication branch in Ukraine considerably lags behind and borrows the 58th place among 159 countries in the world (Table 1).

TABLE 1
INFORMATION AND COMMUNICATION TECHNOLOGIES DEVELOPMENT INDEX FOR SOME COUNTRIES (2008 AND 2007) [8]

Economy	Rank 2008	IDI 2008	Rank 2007	IDI 2007
Sweden	1	7,85	1	7,27
Luxembourg	2	7,71	6	6,98
Korea	3	7,68	2	7,23
Denmark	4	7,53	3	7,18
Netherlands	5	7,37	5	7,06
Iceland	6	7,23	4	7,06
Switzerland	7	7,19	8	6,83
Japan	8	7,12	7	6,89
Norway	9	7,11	9	6,78
United Kingdom	10	7,07	12	6,70
Finland	12	7,02	11	6,70
Germany	13	6,95	13	6,60
France	18	6,55	22	6,09
Estonia	22	6,41	25	5,86
Italy	28	6,15	24	5,91
Lithuania	35	5,55	32	5,22
Croatia	36	5,53	37	4,95
Poland	40	5,29	36	4,95
Latvia	41	5,28	38	4,95
Russia	48	4,54	46	4,13
Turkey	57	3,90	56	3,63
Ukraine	**58**	**3,87**	**58**	**3,56**
Bosnia and Herzegovina	64	3,65	65	3,38
Kazakhstan	69	3,47	70	3,17

Such position of the Ukrainian telecommunication industry appears in lag on those parameters, such as volume and

quality of services, use effective mechanisms of management, creation a competitive environment in the market.

That is, in order to ensure a competitive position in the domestic and in the European telecommunication market, which is especially important with reference to proceeding of Ukraine's accession to the European Union, for Ukrainian enterprises, first of all, necessary to take care of assortment, service quality level and about support of provided services.

Proceeding from above told, at the given stage of social and economic system development in Ukraine, the issues for the improvement of the telecommunication branch enterprises activity are very actually.

For this reason before scientists and experts-practitioners there is a question of the lean operator development, just so, which is easily adaptable to changes in the modern environment and in the same time supplies to consumers a highest degree of providing service and maximal profit for investors and founders [2], [11].

II. The choice of a telecommunication enterprises business-process model

Having analyzed a condition of business at the telecommunication enterprises of Ukraine, we can allocate such features [1]:

- High degree fragmentation of processes and systems have a negative impact on business flexibility and its ability to adapt to change that contributes to the timing of introduction of new services, increasing the cycle order – payment.
- The inefficiency and a low level of end-to-end process automation conduct to increase in operational charges that influences on profitableness.
- Due to absence of a free competition in the Ukrainian telecommunication market, the enterprises develop their business-processes less in order to fill clients' needs than their own needs. In addition many operators, reducing the charges, lead to deterioration in the quality of customer service.
- Use formal implementation of process approach to management and methodologies of business-processes modeling in order to obtain the ISO 9000 certificate (relative to products and services quality).

Consequently, high operational charges, long development of new services, clients' dissatisfaction, chronic and inefficient mechanisms of business dealing, - all of it makes it difficult to Ukrainian enterprises to succeed in a dynamic macro-environment conditions and to compete on the European telecom market.

Manner that ensures the effective operation of telecom companies is such mechanism of economic activity what focused on process management, improvement of end-to-end business-processes, requires a high level of automation and decreasing operating costs and improve customer service quality. It provides a choice of referent model of activity and effective system of business-processes developing.

According to our opinion, the decision of a problem to choose a referent model of the telecommunication enterprises activities should be based on the best international practices.

Use of international standards and methodologies has several indisputable advantages:

- The use of standard blocks of business-processes reduces the building time business of model of each particular company.
- There is an opportunity of comparative analysis with processes of other enterprises.
- Decreases the risks of the dependence from the analysts, who develop a business-process model.
- The alignment of business-processes on the basis of the open international model gives a transparency of structure for all interested parties, including investors.
- Precisely formalized standard blocks of business-processes easier to deduce on outsourcing, bringing to a focus to primary activity of the enterprise.

During research process a number of business-process models has been considered, such as: frameworks enhanced Telecom Operation Map (eTOM), Information Technology Infrastructure Library (ITIL), Control Objectives for Information and related Technology (COBIT), American Productivity and Quality Center (APQC) Model, Porter Model, as well as inner techniques designed by consulting companies – the International Business Language of the PWC, Model Business Technology Optimization (BTO) lifecycle approach HP [12].

The criteria for comparing different models of business-processes were selected as follows:

- Openness (*Opportunity for modeling new, originally not considered parties of Business - system and adding new business- processes or their groups*);
- Systematic (*Business-process model must be as a system, where provides integrity, hierarchy and communication between element, and all enterprise' business-processes should be enveloped*);
- Business or technology orientation;
- Elaboration depth *(An opportunity of detailed elaboration of everyone business-process up to a level of elementary operations)*;
- Appreciation of Information Technology (IT) specificity;
- Appreciation of Telecom industry specificity.

Comparative analysis of different models and frameworks of business processes was conducted with usage of the hierarchy analysis method, based on the data corresponding to the description of standards.

By results of the analysis, shown in Table 2, was drawn a conclusion, revealing that the best for use is eTOM - systematic, high-level, business-focused the model aimed at granting by the enterprise of any technological services, including IT.

TABLE 2

COMPARING ANALYZE OF BUSINESS-PROCESS MODEL

Criteria of business-process model choice Business-process models and frameworks specification		Openness	Systematic	Business (BO) or technology orientation (TO)	Elaboration depth (amount level of detail)	Appreciation of IT specificity	Appreciation of Telecom industry specificity
eTOM v. 8.0 (enhanced Telecom Operation Map)	The eTOM business-process framework is the most widely accepted and adopted standard for business- processes in the telecommunications industry and other relevant management area. It describes and analyzes different levels of enterprise processes according to their significance and priority for the business. The eTOM also provides a neutral reference point for internal process reengineering needs, partnerships, alliances, and general working agreements with other companies. It includes vertical major process area and horizontal process area across an enterprise's internal organization.	Yes	Yes	BO	5 level of detail	Yes / "Resource Management & Operations (application, Computing & Network)", includes IT-management processes	Yes
ITIL v. 3 (Information Technology Infrastructure Library)	ITIL is a library what describes the best practices of engaged in the IT – services provision environment departments and enterprises activity organization. ITIL defines 10 basic processes what supplies support and provision of IT services - IT Service Management: Service Level Management; Capacity Management; Continuity Management; Cost Management; Availability Management; Incident Management; Problem Management; Configuration Management; Software Control & Distribution; Change Management [10].	Yes	No*	TO	2 level of detail	Yes / ITSM business-process	No
CobIT v. 4.1 (Control Objectives for Information and related Technology)	CobIT is a set of standards for audit and IT management, created by Information Systems Audit and Control Association (ISACA) and IT Governance Institute (ITGI). CobIT 4.1 contain a process model for the governance and management of IT. The scope and content of these processes will aim to cover the full end-to-end scope within the business and IT specialist functions of management activities. It represents IT-sphere activities as a process model, which consists of 4 domains: Align, Plan & Organize; Build, Acquire & Implement; Deliver & Support; Monitor & Assess [9].	Yes	No*	TO	2 level of detail	Yes / IT-area business-process	No
Telecommunication Process Classification Framework v. 5.0.0 (PCF) of the APQC	APQC Process Classification Framework serves as a high-level, industry-neutral enterprise process model that allows organizations to see their business-processes from a cross-industry viewpoint. APQC also presents a list of key performance indicators for business-processes and formed as a result of information exchange between the largest and most successful organizations in the world. It considers as business-process description standard and contains the best international practices of business engineering [5]. Model including 13 groups of processes, which incorporated into 2 categories: Operating process; Management and Support processes.	Yes	Yes	BO	4 level of detail	Yes / "Manage IT"	Yes
Porter's model	Porter's model (Value Chain Model) consider the company as a circuit of basic actions (BP), each of which adds value to a product, and these basic actions optimization maximizes profits and minimizes expenses. This model includes group of the basic and auxiliary BP [14].	Yes	No	BO	2 level of detail	No	No
„International Business Language" of the PWC	Price Waterhouse Coopers company adapted the Value Chain Model for its use at classification and structurization of business-processes and developed The International Business Language" on the base of this conception, what allows to analyze and compare processes in various fields of activity on a uniform basis. This model includes the value chain processes and ensuring processes [13].	Yes	No	BO	3 level of detail	Yes/ "Development and support of systems and technologies"	No
"BTO lifecycle approach" of the HP	This methodology is the approach to IT management, that helps optimize the business outcome of IT efforts. Business Technology Optimization lifecycle approach can bridge the gaps between IT strategy, applications and operations teams. It includes the business-process groups such as: Strategy, Application and Operation [6].	Yes	No	TO	1 level of detail	Yes/ IT-area business-process	No

*- give a systematic view only on IT business-process

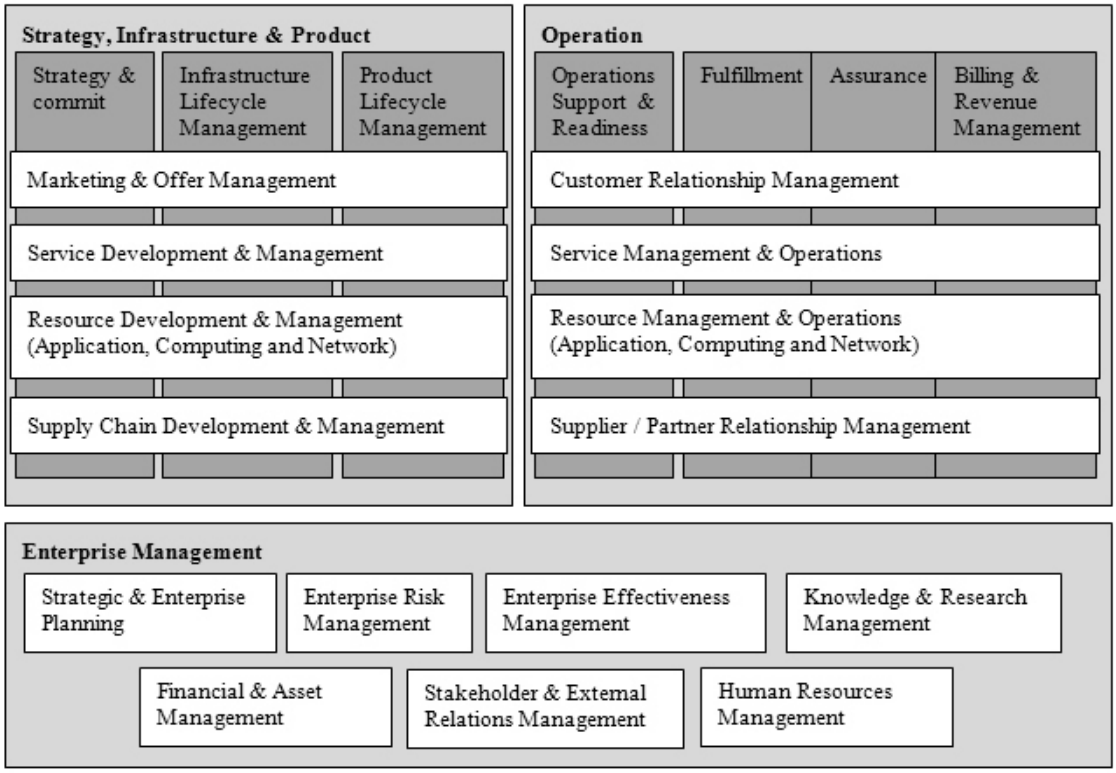

Fig.1. The eTOM level 1 model

III. THE ETOM BUSINESS-PROCESS MODEL

The eTOM is a structural model of business-processes, which covers all aspects of activity service-providers and other enterprises of telecommunication branch [7].

The eTOM framework is a part of New Generation Operation System and Software (NGOSS) program, which is meant for support of the concept of "the effective operator" and provides creation of complete decisions which do the enterprises by more flexible and allow them to transform effectively their activity accordingly to modern conditions of economy.

The eTOM purpose consists in forming an industrywide conception that will allow maintaining a competition due to implementation of business operation principles on the basis of business-processes.

The structural model of eTOM gives opportunities for end-to-end business-processes automatization because it represents activities in the form of combination element processes [4]. The eTOM model provides structural decomposition of process elements, consistently specifying their details in process of specification level increase. Accordingly to the eTOM model in its first level of specification all business-processes of the enterprise are divided into three vertical functional groups (Fig. 1):

- **Strategy, Infrastructure & Product**

In the given group merged business-processes associated with strategy development, building of infrastructure, development and management of products (services), as well as the creation and management of sales channels.

- **Operations**

This group is the central part of all methodology and includes all processes associated with the maintenance and management of customer service: supporting operations, sales management, relationship management with suppliers and partners, quality assurance, billing.

- **Enterprise Management**

This group includes the core business-processes necessary to support the activities of the enterprise: financial management, human resource, risk, etc.

Also in Fig. 1 are shown seven vertical groups of end-to-end processes required for customer support and business management. Within these groups, the processes of vertical map eTOM focuses on the key, customer-oriented, processes that ensure the realization of services, troubleshooting and quality assurance and billing (Fulfillment, Assurance and Billing, FAB). Processes of support of operational activity and supply of its readiness (Operation Support and Readiness, OSR) are separated from proceeding in real time FAB processes, to emphasize importance of support and automation of FAB processes that is importance of direct on-line support of clients; while OSR processes provide an operational environment in which FAB processes are realized. In the process of the Strategy, Infrastructure and Product (Strategy, Infrastructure & Product, SIP) area is a vertical group of processes and strategies for its development (Strategy & Commit) and two vertical groups of processes Lifecycle Management (Lifecycle Management) [2], [3]. These groups

are separated from the others, because in contrast to the main operational processes they do not take direct part in the work with the client.

It should be noted that in the structural model of business-processes identified also horizontal processes, functional groups (Fig. 1).

The eTOM structural business-processes model has the following advantages:

1) It covers all processes of telecom companies.
2) Clearly identifies the processes of marketing, emphasizing their importance in the information business.
3) Clearly identifies the processes of enterprise management.
4) Emphasizes that the company pays the highest priority processes, the priority in terms of customers, namely the sale of services, troubleshooting and quality assurance and billing (FAB).
5) Clearly identifies the vertical and horizontal process group.
6) Allows passing to the concept of customer relationship management that will provide services to consumers and self-control, increase the efficiency of information that is tailored to the needs of customers (Customer Relationship Management, CRM).
7) Highlights the need to manage resources (applications, by means of computer processing and network resources), on top of technology and integrates functional processes of network and systems management in processes of systems and resources management (Resource Management and Operation).
8) Allows interacting with the chains of processes from external partners.
9) Provides a common vocabulary of terminology, processes, management and coordination, thereby achieving the consistency and understanding between operators.

The eTOM business-processes model implementation at the Ukrainian enterprises of telecommunication branch will enable:

- Create a common vision processes for all telecommunications companies: telecom operators, equipment vendors, application developers and integrators;
- Use the industrywide conception of processes and information in order to facilitate interaction "operator - operator" "operator - customer", "operator - supplier", which will facilitate the rapid provision of services;
- Conduct a comprehensive analysis, design and optimization of business processes by identifying and eliminating duplication of processes with the same functionality;
- Undertake assessment of cost performance, efficiency and other parameters;
- Manage and develop the IT infrastructure of company based on the business-process model in accordance with the needs and business objectives;
- Convert business-processes as a result of mergers or takeovers;
- To improve effectiveness within structure departments and project teams through a clear definition of responsibilities between the various business-processes;
- Integrate eTOM with other methodologies such as Balanced Scorecard, ITIL and others;
- Repeatedly to save resources in the development of architecture business-processes, as well as minimize the risks of depending on the errors of analysts who are building the model.

A particular advantage of the eTOM framework is that the implementation of a conceptual model effectively in enterprises with different levels of process maturity (immaturity of processes, clarity of processes and the rule of processes). This is a great importance for the Ukrainian enterprises of communication, most of whom have no real process management.

Using eTOM as a business-processes model will provide structural support for such enterprises; will help distribute responsibility within the organizational structure and form chains of end-to-end business-processes.

Today in Ukraine eTOM as the structural model of business-processes use only 3 from 1187 of economic entities, included in the State register of telecommunication operators and providers on 05.10.2009 [16].

In their activity eTOM use CJSC “Kyivstar GSM”, JSC “MTS Ukraine” and OJSC “VympelCom” (Beeline Ukraine). It allows operators systematize their business-processes, make transparent process chains, decrease operational expenses and significantly improve quality and a range of offered services, what cause a significant increase of subscribers’ base. To 09.2010, the share of these operators subscriber base was respectively 39.88%, 32.05% and 4.35% [15].

Also necessary to note, that eTOM usage for telecommunication enterprises business-processes modeling, acts as an original basis of operators merge and absorption, and as well as at coming on the international stock market.

As example of it, is the merge of CJSC “Kyivstar GSM” and OJSC “VympelCom” (Beeline Ukraine). As a result of networks association, subscribers will receive higher quality services. So, up to the end 2010, the new enterprise will own 44.2 % of the Ukrainian telecommunication services market.

IV. Conclusions

Today, in front of Ukrainian telecommunication enterprises is the task of their activity efficiency improving. For this purpose it is necessary to reconsider principles of business dealing and to organize uniform structure of business-processes.

To select the best model of business-processes of telecom enterprises were analyzed such models as: APQC, CobIT, ITIL, eTOM, and internal developments of consulting companies. As criteria of a model choice, were offered such as: systemic, openness, subject to IT–specificities, etc.

By results of the analysis there was made a conclusion that for business-processes modeling is expedient to enterprises to use eTOM – systemic high-level business-oriented model, aimed for providing of any technological services, including IT. The eTOM implementation at the Ukrainian telecom enterprises has a number of advantages and will enable to render high-quality services and to improve a position of Ukraine in rating IDI among the countries in the world.

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Olga Korzačenko. Telekomunikācijas uzņēmumu darbības uzlabošana ar eTOM strukturālo biznesa procesu modeļa ieviešanu

Mūsdienās Ukrainas telekomunikācijas nozares uzņēmumiem ir uzdevums veikt to darbības uzlabošanu augstākas kvalitātes pakalpojumu sniegšanas nolūkā, nodrošināt konkurētspējīgu stāvokli kā iekšējā, tā arī ārējā tirgū. Lai risinātu šo problēmu, telekomunikācijas uzņēmumiem ir mērķtiecīgi izmantot uz procesa vadīšanu un *end-to-end* biznesa procesu uzlabošanu orientētusbiznesa vadīšanas mehānismus. Šis raksta mērķis ir efektīva biznesa procesu modeļa izvēle, kurš atļauj telekomunikācijas uzņēmumiem sniegt modernus, kvalitatīvus un konkurētspējīgus pakalpojumus.

Pētīšanas laikā izmeklēts Ukrainas telekomunikācijas nozares uzņēmumu stāvoklis un noteikti to darbības galvenās problēmas. Ir izskatīti un analizēti eksistējošie biznesa procesu modeļi un izvēlēts optimālais uzstādīto kritēriju kopums. Analīzes rezultātā izdarīts secinājums, ka uzņēmumiem mērķtiecīgi izmantot biznesa procesu modelēšanai eTOM – kā sistēmisko augstākā līmeņu biznesa orientējošo modeli, paredzētu jebkādas tehnoloģijas (IT t. sk.) pakalpojumus sniegšanai. Ir analizētas arī eTOM ieviešanas priekšrocības Ukrainas uzņēmumos.

Ольга Корзаченко. Усовершенствование деятельности телекоммуникационных предприятий посредством внедрения структурной модели бизнес-процессов eTOM

На сегодняшний день перед предприятиями телекоммуникационной отрасли Украины стоит задача усовершенствования деятельности с целью предоставления высококачественных услуг и обеспечения конкурентного положения, как на внутреннем, так и на внешнем рынке. Для решения этой проблемы телекоммуникационным предприятиям целесообразно использовать механизмы ведения бизнеса, ориентированные на процессное управление и усовершенствование сквозных бизнес-процессов. Целью данной статьи является выбор эффективной модели бизнес-процессов, которая позволит телекоммуникационным предприятиям предоставлять современные, качественные и конкурентоспособные по стоимости услуги.

Во время исследования было изучено состояния предприятий телекоммуникационной отрасли Украины, определены ключевые проблемы их деятельности. Были рассмотрены и проанализированы существующие модели бизнес-процессов и выбрана оптимальная с точки зрения поставленных критериев. По результатам анализа сделан вывод, что предприятиям для моделирования бизнес-процессов целесообразно использовать eTOM – системную высокоуровневую бизнес - ориентированную модель, нацеленную на предоставление любых технологический услуг, в т. ч. и ИТ. Так же проанализированы преимущества от внедрения eTOM на украинских предприятия.