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## DESIGN OF PURCHASING PROCESS IN TELECOMMUNICATION COMPANY

**Abstract:** One of the key characteristic of telecommunication industry is numerous suppliers organized in classical way or in supply chains. In this paper is analysed purchasing process as base for transition from classical purchasing to supply chain management (SCM).

Supply chain is a very complex business process with purchasing capability, costly and timely benefits than classical purchasing and mutual research and development.

Purchasing process in telecommunication company has strategic role because purchased products/services are part of final service to customers. Because of that it is necessary to review of existing purchasing process, as end tier in supply chain, with respect of new and more competitive pressure of needs and requests of all stakeholders, including quality standards.

Based on state analysis, analysis of strategic request on purchasing process, analysis of interfaces is performed modeling and process mapping, desired process concepting and quality metrics introduced. In this paper are presented one part of research results for one telecommunication company.

**Keywords:** directives of new approach, CE mark, competitiveness, quality of product, safety of products, price, simulation

### 1. INTRODUCTION

Purchasing process has great contribution in new value generation. Because that it is analysed very frequently from aspects of concept, organization, costs, communications, vulnerability etc. In the paper [1] authors analysed problem of risk and uncertainty of global supply chains and emphasize dynamic aspect of process and relation to multicriteria decision making. Authors of paper [2] emphasize purchasing performance evaluation using DEA (Data Envelopment Analysis).

Between time and cost of purchasing

process is very complex relationship [3] which needs process mapping and time-based analysis, cost collection, cost-time integration and cost-time analysis.

In paper [4] authors discover analytical tools for dynamic supply chain, as SCOR (Supply Chain Operation Reference) and discrete event simulation.

In Purchasing process is necessary to construct linkages between service sourcing decisions and competitive advantage [5] with appropriate strategy and tactics.

Effects of integration purchasing in supply chain on firm performance are very high [6]. Author proved hypothesis:

- H1 – The level of SCM practice will have a significant association with competitive capability,  
H2 – The level of SC integration have a significant influence on competitive capability and SCM practice,  
H3 – competitive capability will have a significant influence on firm performance.

For effective supply chain management can be used different new technologies [7]. Adoption of its depends on size of organization, structure of organization, existing performance, supply chain strategy integration, interorganizational factors, and environmental uncertainty.

In supply chain network (SCN) modelling significant role has quality approach [8] with: (1) supplier affiliation process, (2) incoming inspection, (3) definition of supplier affiliation, (4) definition and execution of supply chain network optimization model.

One of effectivity measure of SCM is cost of quality [9]. Using Paf (Prevention-Appraisal-Failure) model and DMAIC (Define-Measure-Analyse-Improve-Check) is possible to find drivers purchasing in SCM.

In [10] authors discover impact of quality standard ISO 9000 on supply chain efficiency and indicators conclude higher performance related to inventory days, operating cycle etc.

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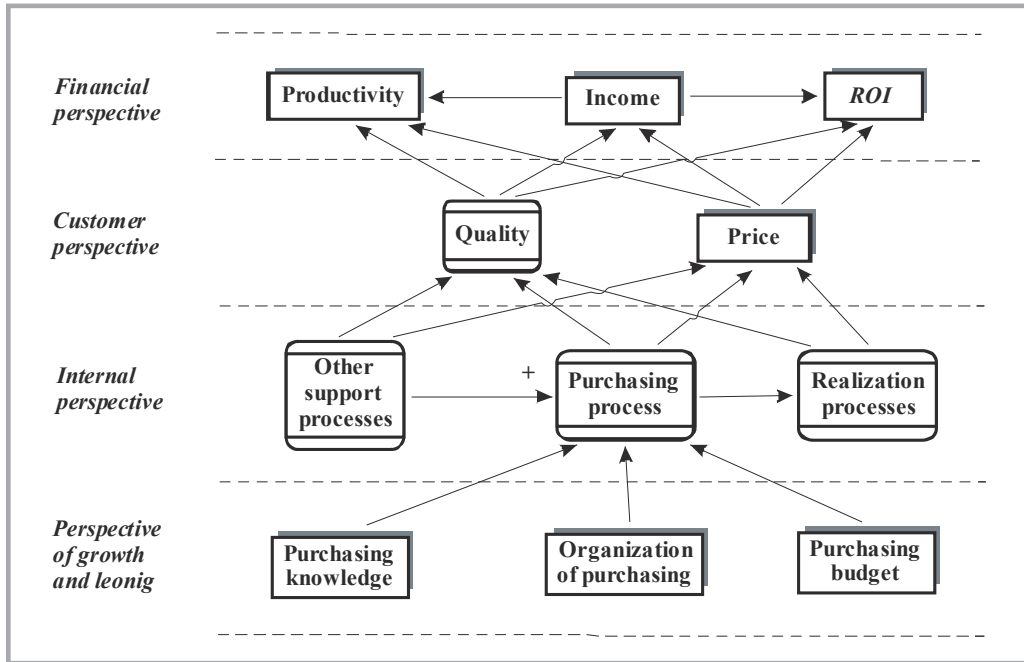
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## 2. TRADITIONAL APPROACH TO PURCHASING

Purchasing or resource acquisition has dominantly supporting process [11,12]. Primarily analysis in previos period is targeted to cost reduction, profit generation, etc. In this concept, purchasing becomes "accountants purchasing" with emphasis on buying a cheaper resources (focusing on value engineering, value analysis and standardisation of materials and services), or attempt to supply "cheaply" with focusing on alternative sources, negatiation, purchasing methods and inventory management. In this context quality becomes new role. In globalization era traditional approach needs to make trade – off analysis among varios related achivities for achieving lowest total acquisition cost and highest quality.

In this business environment is necesery to analysis the purchasing process in view of its contribution to costs and quality of products / services and find the sources and methods for improving the purchasing process. Using *Kaplan* and *Norton* strategy map [13,14,15,16], purchasing process become the part of internal perspectal with adequate

performances (figure 1).



**Figure 1 - Purchasing process in strategic map**

In this model, purchasing process has inputs from perspective of growth and learning, as in one organization is presented in figure 1. Arrows presents relationship and sign plus means that with

increased input increase output. For purchasing process has to develop metrix, as in table 1, for one telecommunication organization.

**Table 1 - Purchasing process metrix**

Waiting because purchasing delays (hours)	Stocks/ stock minimum [%]	Budget for purchasing/ planed budget	Quality of purchasing	Purchased price/ planed price	Score
0	≤100	≤100	10	≤100	10
0-1	100-109	100-109	9	100-102	9
1-4	110-119	110-119	8	103-105	8
5-8	120-129	120-129	7	106-108	7
8-16	130-139	130-139	6	109-111	6
16-36	140-149	140-149	5	112-114	5
36-80	150-159	150-159	4	115-117	4
80-160	160-169	160-169	3	118-120	3
160-400	170-179	170-179	2	121-123	2
>400	>180	>180	1	>124	1
0.25	0.25	0.15	0.20	0.15	ponder

In this example performance of purchasing process is weighted average value:

$$P_p = 0.25P_1 + 0.25P_2 + 0.15P_3 + 0.20P_4 + 0.15P_5$$

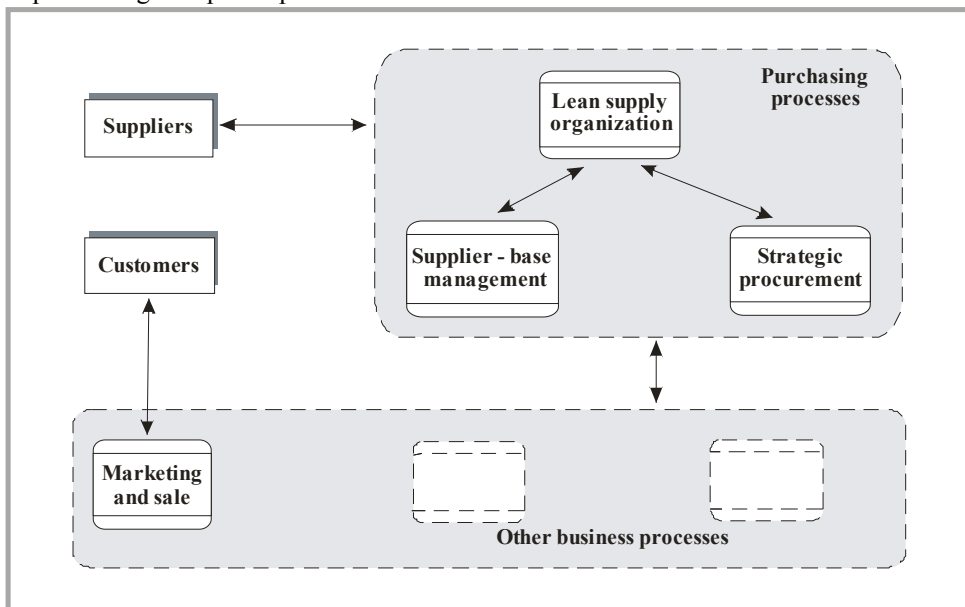
Scales are designed according to experience for each organization and priorities in realization of processes.

In the same way we can define and measure performance of other support processes and realization process. Relations among those processes depend on many factors and vary in organizations and during time. They are very influential on quality and price on market, as performance in customer perspective, and performance in financial perspective. Using benchmarking techniques for performance in each perspective we could find potential for improvement. According to previous investigation [17,18] is dominantly quality of purchasing process. One of the key influential factors for that is treatment of purchasing as a separate process.

### 3. PURCHASING PROCESS AS AN INTEGRATION OF INTERNAL AND EXTERNAL CHANGES

In this new concept [11] purchasing is also sale (because it contributes to marketing and organization goals) and more than buying (because of external exchange relationships with suppliers in markets). Instead, purchasing function in contemporary organizations needs to organize the supply chain with three basic functions:

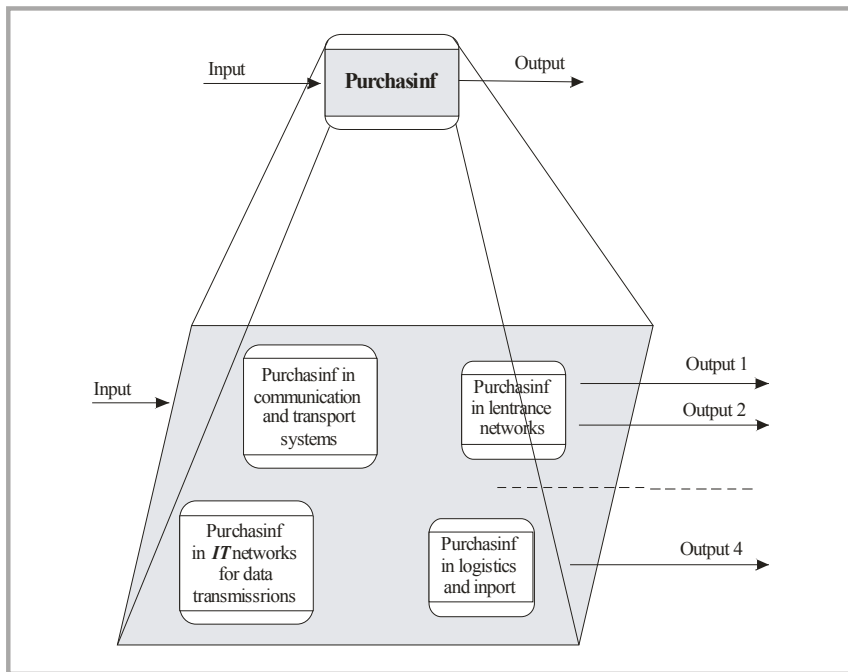
- strategic procurement,
- supplier – base management, and
- lean supply organization (figure 2).



**Fig. 2.** Purchasing in supply chain management (SCM) context

High complexity and frequencies of relations between processes, as a great amount of [19,20,21,22] information need to develop and use *ICT* support of

purchasing process. Figure 3 presents decomposition diagrams of purchasing process.



**Fig. 3. Purchasing as part of e-supply chain solution**

Information Technology (*ICT*) can use for this purpose in different levels:

- **level 1:** single purchasing information system,
- **level 2:** purchasing system as part of integrated (*SAP* or other) solution,
- **level 3:** purchasing as part of e-supply chain solution.

For each of these possible *ICT* solutions, for designing appropriate information system, is necessary to start with analysis of purchasing process [23,24,25,26,27,28].

#### **4. MODELING OF PURCHASING PROCESS IN TELECOMMUNICATION ORGANIZATIONS**

For telecommunication organizations is defined e *TOM* process model, in which

purchasing activities are performed in following subprocesses:

- supply chain development & management,
- supply chain development & change management,
- resource management & operations,
- *S/PRM* support & readiness.

For purpose of modeling the purchasing process in one telecommunication organization is developed project with following phases:

1. definition of state of existing purchasing process,
2. analysis of strategic requests related to purchasing process,
3. identification and decomposition of processes,
4. analysis of stakeholders needs and requests,
5. analysis of interfaces,
6. modeling and mapping of processes,

7. conceptualization of desired process,
8. defining of process metrix,
9. generation of procedure for purchasing process management.

Autcomes from this project are:

- procedure (s),
- purchasing process model,
- decomposition of this model in purpose of Decision Support System (*DSS*) supported by *ICT*,
- higher transparency of processes,
- improving purchasing process goals [29,30,31,32].

Realization of project activities is performed using appropriate standards and specifications for project management (*ISO 10006*, *ISO 10007*, *PMBOK*, *ISO 21500* etc.).

Because purchasing process has strategic impact on each telecommunication organization, during analysis have to discover requests from different standards on purchasing activities, as:

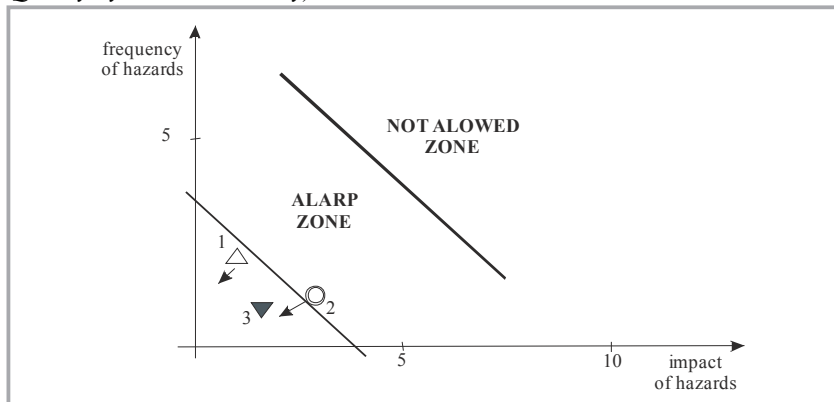
- *QMS* (*Quality Management System*),
- *TL 9000* (*Telecommunication Quality Systems in Industry*),

- *RM* (*Risk Management System – ISO 31000*),
- *CM* (*Continuity Management – BS 25999*),
- *CRM* (*Computer Relationship Management*),
- *SR* (*Social Responsibility – ISO 22000*),
- *ISM* (*Information Security Management – ISO 27000*),
- *SCM* (*Supply Chain Management – ISO 28000*),
- *SM* (*Service Management – ISO 20000*).

Risk of this project is related to:

1. gathering the relevant information about state of process in planed period,
2. information gathering from other sources,
3. selection team members from aspects of competency, authority, motivation and availability.

Team for purchasing process has to produce plan for mitigation of risk, as is presented in figure 4.



**Figure 4.** Risk project of purchasing process modeling

In this mitigation plan:

- first risk will be decreased or eliminated through effective work of Project Council,
- second risk will be decreased through gathering the benchmarking studies from other services, using knowledge of external experts, etc.,

- third risk will be decreased through good selection process, with eventually added external experts in purpose adding new knowledge or increasing of capacity of team to realize project goals in planed terms.

## 5. CONCLUSION

Purchasing process is very influential on value creation in telecommunication services. Because that, each telecommunication organization have to:

- review existing purchasing process from quality and costs aspects,

- prepare new project for creating the new model for improvement of purchasing process,
- define basic elements for effective *ICT* support in *e-SCM* environment,
- incorporate requests of different *ISO* and other standards and specifications into purchasing process model,
- through purchasing improvement increase overall business performance, shareholders benefits and value of telecommunication organization.

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