

# THE INNOVATIVE PROCESS OF INITIATING NEW PRODUCT IN ASPECT PROBLEMS OF MANAGEMENT

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**Summary:** The article describes process of initiating product in interesting firm himself with the production of elements braking systems. One characterized and analysed innovative approach the problem of organization and cooperation with partners, targeting improvement system cooperation, improvement job performance and qualities products.

**Keywords:** innovativeness, process, product, management.

## 1. Introduction

Now increasing requirements in face quality, persistences and reliabilities of products, more and more wider meaning gathers the fact of initiating and usings innovative organization methods and cooperation partners in sphere of production responsible elements machines and devices.

## 2. Quality and innovativeness of product

The quality of product qualified is as the degree of realizing by him requirements customer.

In the chance of industrial goods can be perceived as product resultant of quality project, executings and exploitive. Innovations should appear in all phases economic activity. To begin from projectings, across products, marketing operations, service of customer, management, settlements price, on inspection finishing. Innovations appearing in firm closely connected are with an appearance new knowledge about market, competitors, customers, successes learning and technicises, whether solutions financially legal [1].

Under the notion of quality project (the quality example, type, construction, dispensings) one ought to understand model of article about the definite guild according to which has to be produced, filling bill with placed by receiver, but also other participants process of realization article (demanded placed by producer, service, etc.).

Quality of executing (quality of production, abilities, quality of obtaining) we can instead define as the degree agreement of each individuals produced article with accepted for the base with pattern (with project, specification of requirements).

Agreement service in postthe productive sphere in article with requirements of project qualified is as exploitive quality [2].

The level quality of article one qualifies taking into account economic, technical and social aspects of estimation given product or services. The economic (usefulness article) aspect embraces useful persistence of article, the reliability his workings, and with also productive and extraproductive efficiency using.

Technical (functionality of article) connected aspect is with a technical efficiency, a modernity of the article and with the agreement of the product with obligatory norms.



The first group definition qualifies the quality as vector of value qualitative guilds bearing upon specific object [2]. An example second group is the understanding quality as gathering guild whose value they describe relatively homogeneous gathering of objects [3].

The quality product one can qualify with the point of view consumer and producer. In definitions taking into account point of view consumer turns attention on two aspects [4]:

- aspect of functional needs,
- aspect of impractical needs.

First embraces connected guilds with immediate exploitation of product, the useful comfort, performance of useful functions and connected proprieties with high availability. Second aspect bears upon the picture of product and aesthetical impressions.

Quality with the point of view producer acknowledged is too one from variable explanatory the formation himself profitability and competitiveness of firm. The pursuit profit in the economic activity entails definite connected outlays with the sphere of research and development and marketing. The obtainment required quality of product is connected also with an incurrence suitable costs producing, service and auxiliary services. Defining quality by means the category of costs images wide spectre activities which one ought to undertake for the purpose projectings, producings and offerings of product. Analysing notion quality in cost aspect with difficulty in principle to speak about endeavour to minimization of all groups costs, one ought rather to speak about the endeavour to optimization of costs. The range comprehending quality with point of view producer joins also with competitiveness firm and her products on market in scale of given section or all market.

Customer perceives quality usually across the prism of price, taken as the measure proposed by producer of trumpses given article. In effect as about price level quality article or services are decided by not only possibility satisfying expectations customer in range of technical characterizations, but also price what must be paid too definite level of satisfying expectations. The model quality proposed by G.A Coles' and, representative quality with point of view customer, embraces most of practical connected problems with purchase definite article. This model links the problem of value what determine for customer delivery terms, assembly, postthe marketable service, accessibilities of product during, with the indication meaning price as additional, but the extremely essential permissive element on execution comparative analysis products before execution of choice [4].

Often quality of product priced is by prism his reliabilities and persistences. In the first chance accepting of product is relative to his abilities to satisfying working by one period of time. In second perception level quality of product marks length the period his usings. One ought however to wake up that quality defined as the satisfaction of needs customers does not limit itself to functional features products or services. Universally it is known that the quality some products and services is more tied with a satisfaction with their possessing or obtainings, than with functional guilds. Defining quality for connected aims with management one ought to take into account the possibly latissimus spectre on needs customer and degree of their satisfying. From here the quality qualified is as the team of characterizations product or services which constitute ability to satisfying settled or suggested needs, and also as a whole the guild of productive, marketing, technical products or services by which products or the service will satisfy waitings of customer [5].

The ability to satisfying of needs customers is indispensable not only in activities going outs outside, but also inside all organizations. Irrespective thereon, whether this are great syndicates, banks, universities, or else clinics, hotels or shops, exist series of chains value which can be broken in every point by person or tool satisfying needs of customer so

external, as and internal. All engaged in the organization should have sensitively definite customers. The management with the quality must engage every worker and bear upon all organization. The adversity in satisfying of needs in certain part of chain the quality causes rising difficulty in other parts in system, bringing to creation of more and more greater quantity problems on more and more greater area.

A price quality are outlays carried in relationship with a continuous check of needs customers, both external, as and internal, and with attaining abilities of organization to their satisfying. With effects of obtaining certainty satisfying needs on every level and at any time are: enlargement of competitiveness and market share, reduction costs, height of productiveness, reduction of losses.

### **3. Aspects of administering by quality**

The globalization markets, height of expectations customers, expanding the competition on all surfaces of account customer tradesman, is factors which already at present extort exhibiting quality in strategy firm. During, when for the most of firms drives campaigns about possibly the top quality of product which is a still swift aim, and in endeavour to him commit many errors, became bright, that quality of product is only one from dependent elements to valuing in process of purchase. The progressive unification needs and guilds qualitative products causes that the more and more greater meaning gather remaining factors which can exert the influence on decisions the customer in executing by him files of choice. The indispensability solid recognizing these factors, at the simultaneous more and more wider consciousness of need the domination over competitors on all, priced in respect qualitative, surfaces activity firm, caused that in new „philosophy” of quality she is perceived not only as the aim, but the manner working the all organization. Such sight of quality brought to coming into being o idea Total Quality Management, universally qualified in Poland as the management by quality.

According to definition presented in the British book of standards the quality BS 5750 management by quality is „the philosophy of administering supported with engagement in organization trophy of technology and social for the purpose attainings her intentions impromptu as most effective” [9]. To the foreground in aims in organization advances widely understood satisfaction the customer. Satisfaction customer embraces not only his immediate personal feelings, but also experiencing resulting fact, that customer as member local community takes and prices influence of organization on this community.

G. Borkowska, the management quality defines as „the initiation of general culture quality”[5]. This is, a sentence of author, process of administering driven by chief management at engaging of all crew and realized in all functions the firm and phases and processes creation product (services). So comprehending management is embraced by not only the improvement products and services, but also the quality herself work (so qualifications people, resources and objects work, technologies processes, systems marketing, planner, decision etc.), with the aim while as best satisfaction needs of externa customers and members organization, called with internal customers. The ear qualifies TQM as the manner on business management being characterized: with the system-approach, with enlightening on strategic aims, with the ability to continuous and permanent improvement and with the active joint activity all staff, in this full participation chief management. He there has in view the performance needs on customers in the given moment and futures. TQM realized is by the utilization people and practical by them quantitative methods to estimation and improvings all essential processes inside firms and

improvements provided deliveries from outside to the firm. Determining simultaneously cultural change style activity on firm [6].

#### **4. The range and functions of administering**

In effect the time limit „the management” is practical at will enough , without rigorous complying given in manuals definition. There comes together many associations of administering with „something”, „by something”, and even „some”. Between the management „with something”, „by something”, and even „some” exist differences, however for immature reader or somebody intelligent about administering practically they are little perceptible, and even inexplicable. Most often complies the association „the management with something”. One can it arrange, thinking about classification of administering for subjects, on the process or else for resources. In principle one can administer with every subsystem separated from the structure organization.

To speak about administering impromptu well thought out and systematical, permissive on detection ruling with him rules, one ought first of all to show:

- system administering; this which undertakes matronal decisions,
- system administered; this, wherein driven are acted executive started matronal decisions.

Most more simply one can say that management then activity causing comportment on system administered in compliance with with the intention system administering. The manner, into what the activity this is realized in concrete organization, to the state about practiced in him the manner of administering. The complexity problem of administering one takes from here that one can it see multidimensionally, by the prism itself administering and organization is in which driven.

##### **4.1. Aims of administering**

Aims of administering result the function of administering. They can have different rank, range and temporary horizon. Long term aims qualified are as strategic. They bear upon market position, and also to investment connected intentions with the recrudescency of new possibilities. Their measures they are looks. The sales volume, efficiency, average level of quality. Their measures they are: the continuity of the production, the financial liquidity.

##### **4.2. Functions of management**

The management appears in realizing of following functions: plannings, organizings, leaderships, inspectings and additionally - in administering with quality - improvements.

A result planning is plan which state base efficient and effective realization no matter which undertaking. The plan should contain:

- the qualification aim undertaking - to what realization planned activities and resources has to bring,
- necessary resources to realization put aim, in this : human, material and inquiry,
- binding temporary limitations: time-limits, schedules,
- points (during and space) in which checked will be results of activities embraced a plan,
- measures and methods their marking according to which will be checked results.

In planning one employs different methods, techniques and forms recording [8]. To often practical forms introduction on plans belong sheets and schedules and Gantt graphs.

As far as planning traces aims, this organization is a team of activities pursuing of reaching these aims. The organization in let us shave to seizing it embraces:

- projection of organization and construction her structure according to strategy development accepted by organization,
- partition assignments, competences, responsibilities and authority, according to aim organization and accepted operating- strategy,
- gaining over and the distribution human resources, requisite administrable with all resources on organization, with the information, material and financial, adequately to the aim and the strategy,
- creation of organization, corresponsive in due time.

The leadership moves to running influencing of subjects from the sphere administering on subjects from sphere executing, pursuing steering executive processes on realization plans within framework formed organizational structure [9]. Problems leadership is closed first all in quality of interhuman contacts.

So that management be able to properly to fill provided for him functions, must have provided informations on this, on how much is efficient. Such feedback is a principal condition making possible verification of rightnesses undertaken earlier activities and gives bases to undertaking following decisions. Without the manageable information is not possible assurance of optimum- working system of administering, his development and improvement. This information one obtains as result of supervisory activities.

The creature inspecting moves exercible course activities:

- measurement results,
- comparison results measurement with requirements,
- settlement deviations results from requirements,
- estimation on situation.

In dependence from this, who drives the inspection, one can favour:

- The bureaucratic inspection - driven by managers within framework official dependences. Can be she fully formalised or to have the character more personal. In many organizations just this form irregular inspection is neglected, although her influence on justification workers is especially significant.
- The engaging inspection workers - leaning on delegation authorizations supervisory and wide using technics inspection and the self-observation.

Function is what the improvement, specially favoured in administering a quality, marks the endeavour leadership activity up to the mark exceeding planned results. Unites with the treat of undertakings quality. The improvement - understood as the turn and radical changes servants to attaining of established approach qualities - she relies on introducing of new solutions organizational, constructional and technological which will let on attaining higher qualitative level. It marks also the restoration stability processes, if she became disturbed.

### **4.3. Subjects of administering**

With range of administering quality can be being undertaken every organizational individual being found on any level of structure organization. Usually in every organization one can favour individuals:

- productive in which dominate processes realization of products and services,

- administrative in which dominate processes information processing for needs administering,
- productive-administrative in which appear both actings productive, as and administering.

Of course, in the dependence from the kind organization is possible other partition, especially for his circumstantiality. To the realization of accepted aims management creates suitable organizational structure. One ought to understand her as arrangement of elements organization and detains organizational junctive it into organized guided whole. According to first a condition efficient and efficient administering is univocal and full subordination junior to superior. Second founds that high efficiency and the effectivity administering can be obtained, if controlling acts are executed peaceably with a specialization managers.

#### **4.4. Processes**

Activity driven by the organization one can divide generally on executive, realized in individuals productive and productive-organizational, and matronal, realized in administrative units. Connected while with her processes we divide on executive processes and administerings. Processes which should be especially favoured then such which decide about realizing of requirements customer and which are for organization a source profit. These called processes are basic, remaining - with supporting (matronal or auxiliary).

Basic processes make for comings into being trading value products: they are a source earnings and the profit organization. To their entry and exits can be credited the external customer who places definite demandings and is ready to pay for the result process (basic processes most often identified are with processes of production). Processes supporting accompany to basic processes, deliver the information or regulate the course activities - there have the character decision and regulating-; themselves in do not make for comings into being surplus value. Usually this are processes of administering and auxiliary, connected with maintenance movement, with certain supervisory activities.

Processes about strategic meaning one is called key- processes. With the key- process can be every basic process be supporting. Usually it belongs however to the group basic processes.

#### **4.5. Resources**

Resources are an inseparable component activity of organizational individuals. Generally the partition of resources takes into account [10]:

- material resources, in this natural (raw materials) and artificial (machines, finished products, means of transport, infrastructure),
- immaterial (time, space, knowledge, information, technologies, licences) resources,
- human resources ( employee with its own qualifications).

Resources are: gained over, converted, used up and produced. The waste of resources expressed in financial measure reflects costs on organization.

### **5. The range and functions of administering with quality**

The management with quality one can understand commonly, as management with resources and with processes, by the prism of effects united with the quality [11]. By the management with the quality one can also understand the establishment and the usage in

organizations of practical rules and patterns proceeding, permissive on procurement impromptu economic quality satisfying how most put on weight waitings her customers.

One ought it to understand as planning and organized guided influence system administering on system administered, into the depot which enters every bit of it, what drives directly to realizing qualitative requirements. In administering with quality maternal decisions refer processes, resources and forming individuals or mattering in the creation the quality, with the parent task while is the continuous improvement products and activities [12].

The norm PN-EN ISO 9001:2000 it encourages acceptable approach of a law suit during working out, initiatings and improvements efficiency system administering with the quality for purpose enlargements satisfaction customer by realization on his requirements. For the purpose efficient acting organization should identify numerous interrelated actings and them administer. Acted developed and administered for purpose for purpose of makings possible transformation enter into exits, one can examine as process. Often the exit one process to state directly the entry of the following process. Utilization processes in organization along with with their identification and with interactions between these processes and the management them one can qualify as „the approach a law suit”.

An advantage approach a law suit is the assurance running supervision over related between each processes in system processes, as also over their combination and an interaction. If in system of administering a quality will become being used such approach, then consequently one underlines the meaning:

- understandings and realizings requirements,
- needs examining of processes in categories value added,
- receivings concerning results of working and efficiencies process,
- the continuous improvement of processes ground the objective measurement.

To all processes one can use the method PDCA (Plan - Execute - Check - Act). Plan: fix aims and indispensable processes deliverable peaceable results with requirements customer and the politician of organization. Execute: initiate processes. Check: monitoring and measure processes and the article with reference to policies, aims and concerning requirements article and introduce results. Act: take action concerning continuous improvement of working in process [13].

## **6. The management with quality across the measurement of efficiency activities**

By the efficiency of activities one ought to understand in administering quality, the degree are in what being realized demandings. Demandings are fixed in plans, specifications, the records technological and other documents. Can be appointive by man or on the ground measurement. The fault of requirements in no matter which aspect is tantamount with a rising of the disagreement.

## **7. Initiating of new product**

On the background of above-mentioned problems administering, practical also in certain range in connected aspects with systems initiating new products in industrial plants, one introduced below system of initiating new product in firm working on the international market.

Initiating to the production of new product became characterized on example really working international market of firm, interesting himself a production elements braking

systems of car vehicles. Initiating new product by the firm, begins from conceptual phase and embraces actuation of production new component part. It will demand this engineer firm, tradesmen should during starting production the new article proceed according total process of administering with the development cooperation with tradesmen (fig. 1). Teams to matters initiating new products will qualify the degree neuralgicness given part in cycle development to the product. From degree neuralgicness to depend will be level engaging workers to matters development cooperation with tradesmen into the plan APQP (the advanced plan the quality of products) and processes starting the production at tradesmen. All tradesman, aside from neuralgicness provided by them parts, are obliged to using dependent to compact rules process starting the production.

### **7.1. The advanced planning quality of products (APQP)**

Obliged tradesmen are to folding of reports about the status programme APQP, informing about degree in realization aims programme qualitative, costs, efficiencies and schedule. The firm qualifies size, frequency of folding and required content of these reports. Tradesmen are obliged to keeping agreement of their own processes introducing products with definite guidelines in the manual for tradesmen.

The process APQP consists on five phases:

#### **APQP-1**

This is the starting „phase”. There begins she from the composition ordering at tradesman. In this period the producer defines key- points marking stages on plan, required results stages and waitings in relation to given component part and programme. In this phase tradesman should introduce:

- initial plan of time-limits,
- flow schema process , the first analysis PFMEA and the supervisory plan,
- Manufacturing Feasibility Sign-off (declaration abilities to producing)- this document is a gathering of specified requirements on which tradesman one should agree, in the opposite event, driven are negotiation with a tradesman on of concessions from both pages,
- schedule of project,
- plan preparing of tools and the equipment principle,
- Preliminary Capacity Study (initial analysis efficiency) qualification of quantities produced by tradesman of components and comparison of her with planning application by receiver,
- Product Characteristic Matrix (matrix the guild of product) qualification by means the specification firm of critical points every component. The qualification by tradesman of degree abilities process for every critical characterization and values R&R (repeatabilities) of results of gauges of servants to the measurement of these characterizations.

To used tools in this and in all remaining phases belong:

- Component Design Review (verification of project the part)
- APQP Progress Contango (report about progresses APQP)
- APQP Tracking Contango (report of the tailing APQP)

#### **APQP-2**

In this period tradesman finishes the projection of tools and equipments and begins working out manufacturing process. Possible is organizing meetings for purpose

inspections of progresses in each items APQP and unknottings open matters. In this phase tradesman introduces:

- up to date schedule,
- up to date flow schema on process , first PFMEA and the supervisory plan,
- up to date plan of preparing tools and equipments,
- up to date APQP Progress Contango (report about progresses APQP),
- up to date analysis Capacity Study (analysis efficiency),
- up to date matrix Product Characteristic Matrix (matrix the guild of product),
- plan measuring- equipment/ testing,
- plan deliveries for subcontractors.

#### APQP-3

In this segment takes place the verification of results phase APQP-2. Possible is organizing of meetings for the purpose inspections of progresses in each items APQP and ends open activities. The tradesman introduces up to date documents from phase APQP-2.

#### APQP-4

This is the previous phase PPAP or confirmation. She there is defined as the elaboration process and acts verifying-affirmatory. Under of this phase monitoring is the resolution not closed problems/of assignments from preceding phases. Close by up to date documents from the phase APQP-2, the tradesman should introduce:

- plan enlarging scale of production,
- plan safe initiating SLP (Safe Launch the Plan) this document is a part Product Characteristic Matrix and serves to the qualification by the tradesman of condition assuring the safety of deliveries for firm in period of beginning of lot production.

#### APQP-5

This segment is phase of confirming and initiating product and process. Just in this phase tradesman realizes cycle in manufacturing process underlying affirmable and submits pack of process confirmation part to the production (PPAP). In this segment tradesman should pass:

- procedure Run at Rate on the process,
- verification Launch Readiness Review (verification of readiness to initiating),
- parthian and Process Audit (audit of part and process).

In the dependence from the degree neuralgicness part engineer SDE can be present during these procedures, demand introducings of results or can get the feel of them during future visit in works of tradesman.

How earlier one remembered, aside from neuralgicness of part material every tradesman has a duty removal process APQP. For every new or modified project part be changed in relationship with these modifications manufacturing process necessary can be the performance declaration abilities to producing (Manufacturing Feasibility) and the initial analysis efficiency (Preliminary Capacity Study). These documents are filled and submitted directly after accepting of asking offer and before a factual engagement in institution or with the beginning of preparing tools. Supplier Component/Process Design Review (Verification project part of process to the tradesman) formal verification drawing and plan of confirmation into which is committed interthe functional team firm and tradesman.

There is this most important event in process APQP. One waits that before the accession to verification with the participation representatives firm, tradesmen will pass internal verification project. Indicated is also, so that thereon meeting invited become representatives of sub-suppliers. On the ground talked over during verification open

matters worked out will become action whose the completion, solution all embraced with him problems, will become later checked.

Product Characterization Matrix (PCM, matrix guild of product) is document generated under verification project and evolving along with progresses in process. In the chance of part and materials for which is not required verification of project, tradesman generates this document and will submit him as element pack PPAP. This document to state connection between appointed guilds and guilds with ascriptitious priorities risk (RPN, Risk Priority Number) and with definite supervisory activities. Besides he serves identification of sub-suppliers whom have an influence on these guilds, and evidences supervisory practical procedures by sub-suppliers. This document will become used to formulating plan safe initiating, when will happen such it is necessary.

Supplier Run at Rate - formalised the analysis of productive efficiency which verifies cycle times, waitings quantitative and reaching. Launch and Production Readiness Review - the verification of status manufacturing process and accepted by tradesman plan enlargement production. Safe Launch the Plan (plan safe initiating - Dual Launch Netting, GP12, Pre-Launch Control Plan, etc.) common actings of the tradesman and receivers pursuings introductions of similar plans of the inspection before actuation production in works tradesman and works taking delivery. The plan on safe initiating demands workings out of the plan inspection before actuation production, being with enhanced supervisory plan production tradesman. Required is initiating intensive, short-term process quality inspection. Plans safe initiating will be confirmed by tradesman, engineer SDE on the part of firm and epresentative SQA institution. Within framework this process tradesman is obliged deliverable given to works taking advantage parts. Tradesmen sender of part within framework plan safe initiating should work out special etiquette placed on all wrappings; the etiquette should contain letters indicative membership of part to plan. The criterion end of plan is zero- percentage defects of provided parts by definite time or definite number arts. Every absolute defect in period SLP causes resetting of metre delivered parts.

Three key- documents, also connected with the advanced planning quality, are: flow schema process, PFMEA and the supervisory plan. The firm has concrete waitings of in relation these documents which the tradesman should realize.

## **7.2. Schema of flowing the process**

He there defines the all course of process from the receiving inspection for packing and the dispatching. He must embrace all sub-suppliers or externa tradesmen, and particularly to contain their name. He must contain numbers of machines or other unique name tags equipment confirmed within the framework on process. Tradesmen must show related operations with the production of guilds defined as peculiarities.

The analysis potential flaws (PFMEA, Process Failure Modes Effect Analysis). Tradesmen, unless will receive other instructions, should work out this manual on the ground guidelines from the manual AIAG Potential Failure Mode & Effects Analysis (PFMEA). The analysis must take place in compliance with the consequential course from the schema of flow process.

Among identified kinds of flaws should, close by connected elements with the process and tools, be found also appointed guilds from the drawing in firm.

Tradesmen should initiate process of delivering information on highest values RPN. This can be the report in form of schema Pareto containing RPN seriate from highest to

lowest. Such system should embrace the records of recommended activities and verification of their initiating.

## 8. Conclusions

Introduced in article of the method and tools let on improvement and the improvement of system initiating new products in interesting works themselves with production of responsible elements parley safety (in this brake), in car vehicles and machines and industrial devices. The above - example one can, after certain modifications, achieve to initiating of many products in the heavy industry, in this of metallurgic products.

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