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## INNOVATIVE PROCESS STAGES AS THE BASIS OF AN INDUSTRIAL ENTERPRISE'S INNOVATIVE ACTIVITY

*К.В. Ковтуненко. Стадії інноваційного процесу як основа інноваційної діяльності промислового підприємства.* Розкривається дослідження інноваційного процесу та інноваційної діяльності промислового підприємства. Вбачається, що процес є зручним для представлення основи формування інтелектуального капіталу промислового підприємства.

*Ключові слова:* інноваційний процес, інноваційна діяльність, інтелектуальні ресурси, інтелектуальний капітал.

*К.В. Ковтуненко. Стадии инновационного процесса как основа инновационной деятельности промышленного предприятия.* Раскрывается исследование инновационного процесса и инновационной деятельности промышленного предприятия. Представляется, что процесс является удобным для представления основы формирования интеллектуального капитала промышленного предприятия.

*Ключевые слова:* инновационный процесс, инновационная деятельность, интеллектуальные ресурсы, интеллектуальный капитал.

*K.V. Kovtunenکو. Innovative process stages as the basis of an industrial enterprise's innovative activity.* The article exposes research of the innovative process and the industrial enterprise's innovations-related activity essence. Supposed is that the process is convenient to represent the basis of forming an industrial enterprise's intellectual capital.

*Keywords:* innovative process, innovative activity, intellectual resources, intellectual capital.

The contemporary changes at an enterprise's activity structure, dues to the development of economics' non-material sector, the enlarged sphere of communication systems' application, an increased share of information and knowledge costs at the prime cost of substantially all products' classes do result from the society's overall information input progress and intellectualisation. More than even importance in the quality of productional factor when compared to the land, labour and financial resources is tribute to the enterprise's intellectual capital.

Formulation of problem. The investigations effected allowed to establish that the enterprise's intellectual capital is formed at the issue of intellectual resources' engagement into the innovative process, meanwhile scarcely ever is that namely the innovative process with all its inherent stages sustains the intellectual capital forming. Most often the intellectual capital forming is due to an enterprise's innovations-related activity. In such a way we need to redefine the process at whose expense the intellectual capital of enterprise is formed.

The innovative processes' theoretical grounds have been closely studied by such foreign scientists as: J. Schumpeter, M. Kondratiev, P. Drucker, C.R. Mc Connell, B. Twiss, B. Santo, M. Porter, Yu. Yakovetsev, V. Gusarova et al. The leading Ukrainian researchers in the field are: A. Galchinsky, V. Geets, A. Kuznetsova, V. Chornobaev, V. Vakaliuk, V. Pavlenko et al. Nevertheless of a rich amount of researches dealing the problematic area, the innovative process still is not completely described from the viewpoint of intellectual capital forming.

The intellectual resources involved into the enterprise' intellectual capital structure are innovative process engaged, that results in those resources' transformation into the intellectual capital. For more clear representation of intellectual capital forming process we shall further expose in details the contents of "innovative process" economical category.

The "innovative process" concept progress started in 1950<sup>th</sup> when the innovative process models accentuated the scientific researches' importance thus giving a second plane role to the market. Such

models were identified as the “technological surge” and “market driving force” ones. At that the “market driving force” model paid more attention to the product sales. Establishing equilibrium between the mentioned models’ scientific researches and market sides became possible only with new technologies’ development that issued in creating so-called generalised model, supposing that the technical innovations would go along with the innovations arising in marketing, management and manufacturing technology domains. Recently the predominance is attributed to the “integrated model”, specific with the minimum possible time for scientific researches, product manufacturing organisation and ready product market promotion.

There exist multiple definitions of the “innovative process” category essence and contents, elaborated by the Ukrainian and foreign scientists.

Accordingly to the definition given by B. Twiss [1], the innovative process represents a transformation of scientific knowledge, scientific ideas and inventions embodied into physical reality (innovation) that changes the society. The innovative process relies upon the creation, implementation and progressive expansion of innovations, whose appropriate features consist in scientific and technical novelty, practical applicability and commercial tradability with the aim of satisfying the new social needs.

The innovative process as the the process transforming the scientific knowledge into innovations, represents a serial stages chain of innovations’ embodiment, beginning from the idea and up to the actual products, technologies or services with those innovations’ thus promotion whilst their practical application.

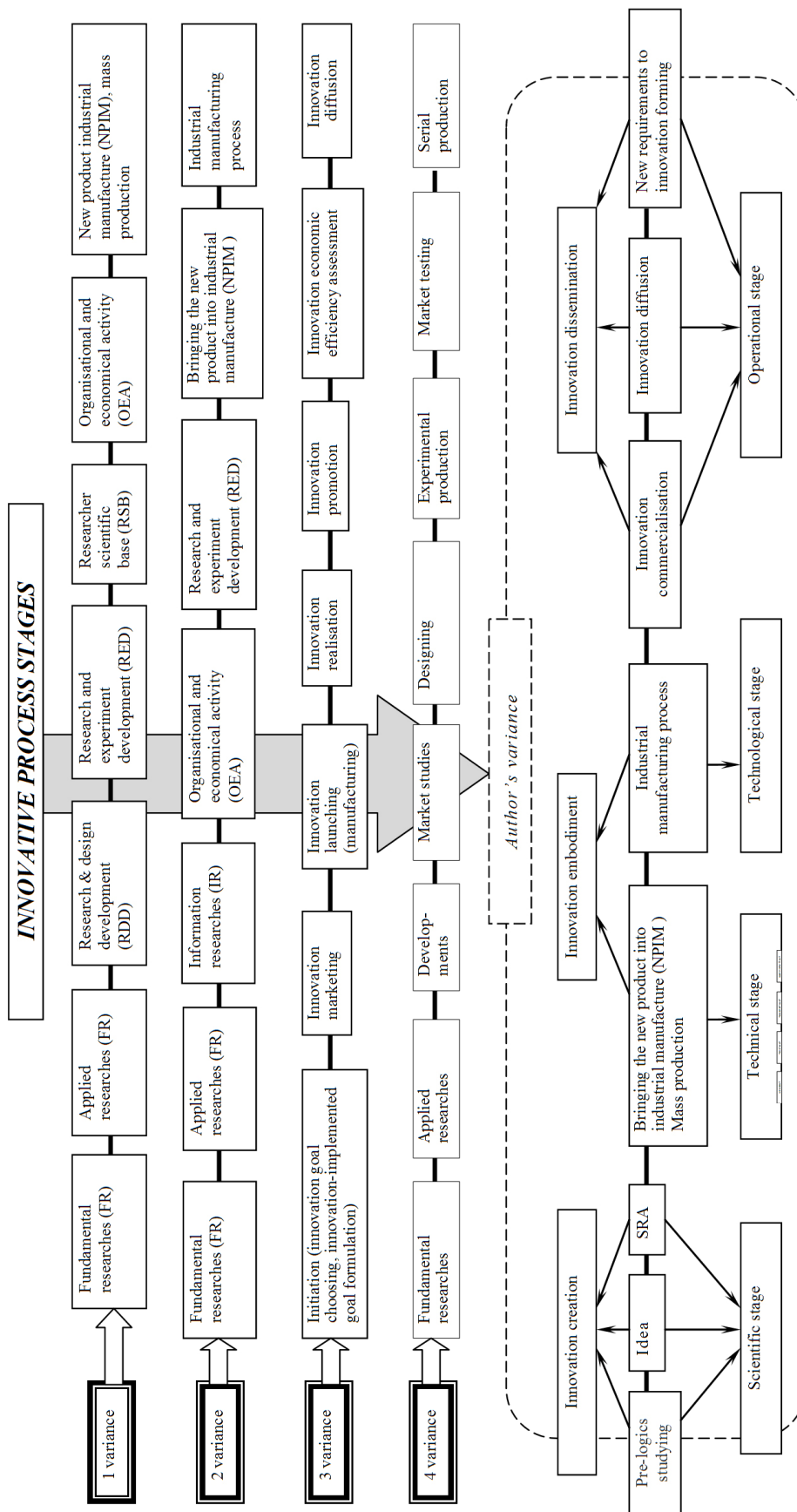
As distinguished from the scientific technical progress, the innovative process never comes to its end with the implementation, i.e. the new product or service first appearance at the market, either a new technology bringing to the designed productivity. This process is never interrupted as the novelties are improved becoming more efficient and reaching new, previously unknown consumer properties. That opens new spheres of application and use as well as access to new consumers perceiving such product or technology as new ones. The innovative process is specific with cyclic development implemented within time and space coordinates by the following stages: scientific, designer, technological, operational. Thus these stages do embrace such activities’ fields [2]: fundamental researches (FR); applied researches (AR); research and design development (RDD); research and experiment development (RED); researcher scientific base (RSB); organisational and economical activity (OEA); new product industrial manufacturing (NPIM), mass production.

A simplified innovative process model can be structured as a cycle of consecutive stages: science — techniques — manufacturing.

The science. This stage is devoted to a given problem’s theoretical bases development and includes the phases of fundamental and applied researches. The fundamental researches target onto investigating the processes/phenomena theoretical grounds. The initial impulse for respective studies corresponds to the origination of a hypothesis requiring a validation. The fundamental research results can issue in some discovery. A discovery embodies a scientific result, bringing the radical changes into the existing knowledge, revealing still unknown principles, properties and phenomena of the material world, crucially influencing the scientific and technical progress and the civilisation progress in a whole and being the source of inventions. The applied researches predefine the applied use field for knowledge resulting from fundamental researches. Thus, the result of applied research is embodied with new technologies, materials and systems.

The techniques. The given stage serves to embodying the phenomena and processes’ theoretical constructs into the material object, embracing the phases of research & design development and project & structure development, which aim onto designing projecting, manufacturing and testing the test samples of new techniques, technology or product. At this stage the new product technical parameters are defined, the engineering staff elaborates the organisational and technical files for new product, creating the test samples and launching the product into experimental series.

The manufacturing. The present stage includes introduction the new product into serial production, elaboration of the marketing program and the new product promotion at the market.



*Innovative process stages' variances and their content*

The novelty commercialisation represents the last innovative process' stage. Meanwhile it is not a rule that the new product further belongs to the enterprise that had created the products. Rights for manufacturing can be bought by other enterprises under respective license deal. Therefore there takes place the innovation' diffusion as a process of novelty expansive distribution for the use at new place, sphere either under new conditions.

Despite of the fact that the relevant references describe numerous approaches to the innovative process defining, they all coincide at conclusion that the innovative process is related to the creation, bringing into practice and dissemination of innovations.

The innovative process stages contents' variances as the effected research reveals are shown at Fig. below with respect to the scientific approaches.

The obtained results of investigation effected allowed to create the author's representation of the innovative process' contents, including apart of the previously exposed stages (Fig.) the new one of "new requirements to innovation forming". Aforementioned is that the innovative process has a cyclic development character. Elaboration of new requirements to the innovation initiates a new turn in that spiral, launching the innovation process stages at a new cycle, related to the innovation improving. That does mean that while expansion (diffusion) and practical use stages, there arise the new requirements to the created innovation, in other words, a need for its improving which becomes possible when a newly initiated innovative process with all its specific stages

Alongside with the innovative process concept, the scientific references in innovations field are using the innovations-related of innovative activity concept.

Review of the publications searching the "innovative activity" term resulted in establishing the absence of the term's clear definition. The analysis reveals an excessive variety in formulations defining the "innovative activity" category; detected is the lack for the scientists' united opinion in that term explanation. From one side the innovative activity is defined as a process targeting the development and the completed scientific developments' (or some scientific technical achievements) results practical implementation into a new or improved product commercialised at the market (or new either improved technological process used at practical activity), as the scientific developments and researches, related to that process [3...5]; from another the innovative activity is considered as this aimed onto use nad commercialisation of scientific researches' and developments' results enabling therefore the bringing into market of new competitive products and services [6, 7]. Apart that several authors are directly equalising the innovative activity and innovative process concepts: "The process of creation, implementation and distribution of innovations is called the innovative activity or innovative process".

Both the efficient innovative process and efficient innovative activity are capable to provide the increase (capitalisation) of the intellectual resources' value, so can be sought when intellectual capital forming process.

In respect of intellectual capital forming we join to the opinion defining the innovative process as: "scientific knowledge transformation into innovation following a sequential stages' chain through which the innovation are embodied beginning from ideas up to the real product, technology or services being disseminated when those final products practical use", but, we would emphasise at that the importance of surplus stage, this one of "New requirements to the innovations forming", that stipulates initiation of the innovative process' new cycles, that, consecutively, enables the innovative development. The author considers that the innovative process is representing a scientific knowledge transformation into innovation following a sequential stages' chain through which the innovation are embodied beginning from ideas up to the real product, technology or services and being disseminated when those final products practical use, are facing new requirements whose satisfaction sustaining the innovative development. At that the industrial enterprise can implement the innovative process independently as well as it can share the functions with partners at several stages of innovative process. The effected investigation into various approaches to the innovative activity essence allow concluding that the innovative activity can consist of the whole innovative process as well as of its several stages

either a given stages' combination. Therefore, the innovative activity represents a part of innovative process either includes all its stages.

Therefore, as can be deducted from the above, the innovative activity makes the foundation of a enterprise's intellectual capital forming. The innovative activity can include both the whole innovative process and its several stages either a given stages' combination. The industrial enterprise's intellectual capital can be formed on the basis of the enterprise's independent innovative activity as well as uniting efforts with other market participants when common interests' are recognized.

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