Розділ 1

Маркетинг інновацій

INNOVATIVE PROCESS RATIONAL CHOICE GROUNDING IN ORGANIZATION

The generalized scheme of innovative activity in organization, characterizing interconnections between innovative process types, innovative business and innovative strategies, is investigated. The essence of SRRCW, innovations marketing types and works on the innovative and life cycle stages of the new product, is confirmed. Author developed table of decisions and innovative process variants choice algorithm block-scheme, which are reasonably to be implemented in the concrete organization, depending on state of its innovative development potential subsystems constituents and stage of the innovative product radicalization. The received results form base to choose rational variant of the organization innovative process and its innovative strategy in the concrete market conditions, allow to provide mutually coordinated interconnection between SRRCW and innovations marketing on the innovative process stages.

Keywords: innovative process, structure variant choice, innovations marketing, SRRCW, innovative business, innovative development potential, innovative strategies.

Problem statement in general. Analysis of the economic development process at some enterprises and establishments, as national economies at a whole shows, that they are based on innovations and innovative activity. Innovative activity in general foresees either scientific and research and research constructive works (SRRCW), or their marketing support (innovations marketing). It can be confirmed by the opinion of the expert specialist in strategic management P.Drucker. He supposes that main business functions are innovations and marketing [2]. Accordingly, the coordinated interconnection between SRRCW and innovations marketing provision is one of the main suppositions to control economy subjects’ development (mostly innovative) effectually. However the variety of innovative business types, and also innovative process variants, complicates the formation of innovative development effective strategies.

1 Робота виконувалась за рахунок бюджетних коштів МОН України, наданих на виконання науково-дослідної роботи на тему №0115У000687 "Фундаментальні основи управління розвитком інноваційної культури промислових підприємств"
Analysis of the recent research and publications. The question to define role and tasks of the innovations marketing, its coordinated interconnection with SRRCW provision on the stages of innovative process, its structural filling were observed in many publications. Particularly, innovations types and their proper innovative process variants, and also innovations marketing tasks are shown in work of T.I. Sherstobytova [12]. Approach to introduce integrative function of the marketing and innovative activity control at the enterprise is described in the work of N.S. Illyashenko [3]. Modern forms of the innovative process organization, variants to built its model for various innovative activity types of economic structures are represented in the work of O.V. Yudina [15]. The O.O. Karpishchenko work [9] is dedicated to investigation of methodic approach to the innovative process rational organization at the enterprise through coordination of its market, productive and innovative activity constituents according to the chosen innovative business type. The variant of the innovative process structural model is suggested by V.Ye. Rassykhina and O.V. Martynova, they specified marketing role at its stages [11]. Author’s view of ecologically oriented innovative activity concerning innovative cycle structure, approaches to prognosticate its stages are shown by V.Yu. Shkola [14]. The innovative process structural model and detailed scheme concerning its subjects` interrelation, determining their role and place are proposed by the work by V.V. Golbert [1].

Unsettled questions, which are part of the general problem. However the given publications don’t reveal peculiarities of the interconnection between SRRCW and innovations marketing for various types of innovative business, comprising some innovative process stages, that is multi variant. So it doesn’t allow to control effectively the innovative process, to adjust works on the innovative ideas producing (determination and grounding of the innovative development perspective directions), to create (investigation and production) and to commercialize innovations. To solve these questions requires to distinguish innovative process possible variants, determination of their correspondence to innovative business types and innovative strategies, which they realize, and organization-innovator’s innovative development potential, to analysis of its scientific and research and marketing activity specific for each variant. It provides to develop recommendations concerning choice of the innovative process procedures rational structure and content in organization, and accordingly, to ensure interrelation between SRCCW and innovations marketing at its stages.

The object of an article is to investigate and scientifically to ground recommendations concerning choice of the rational structure and innovative process content, depending on innovative development potential in the organization and innovation radicalization degree, which provides to coordinate interconnection between SRCCW and innovations marketing at its stages for various innovative business types.

Main material. Basing on the results of analysis concerning various innovative strategies types [16], peculiarities of the main innovative business types [8, p. 22-34], and also role and tasks of the innovations marketing for possible innovative process variants [6], the author developed generalized scheme on organization innovative activity e(enterprise or establishment), shown in the fig. 1. Its concretization for proper enterprise or establishment requires consideration of the innovative activity goal, existing innovative development potential [10, p. 11-16; 56], innovations radicalization degree, created and (or) commercialized, etc.

Blanking on scheme (Fig. 1) represents variants of innovative structure process (1-10), comprising various stages in the innovative and life cycle (LC) of the product innovations. Types of innovative business and innovative strategies are assigned to them. Let’s observe in
Figure 1 – Generalized scheme of the organization innovative activity variants, (author’s investigation, based on [6; 8; 16])

1. Innovative process is started with analysis of internal development possibilities correspondence (innovative development potential) of organization (enterprise and establishment) to external ones, which are generated by the market. In case of the incompatibility one is looking for possibilities of its providing, as a rule, through various innovations creation and introduction: product, technological, managerial etc. It foresees generating of innovations ideas and selection of the best ones. They provide investigation of innovations, describing their ideas variants in clear concepts for consumers (words, formulas, sketches etc). Then the legal defense of innovative investigation occurs – patenting, when it concerns technical and technological decisions. The innovative process is finished with patent sale. The development of the product concept is necessary to increase consumer’s appeal of the patent. Such innovative activity is distinctive for venture business organizations, which realize licensing innovative strategy.

2. Innovative process is started with patent (patents) purchase for technical or technological decisions. Then business-analysis is conducted. During it market perspectives of
the product (item or technology) are evaluated, which can be created on their base and which realizes suggested product concept, or creates new one. After this marketing program to promote the innovations at the market is developed and its realization is estimated at the concrete enterprise. Positive estimation result provides to work out set of constructive and technological documents, to produce prospect sample (prospect lot) of production and carry out laboratory experiences. Then market experiences are conducted, after which if necessary one corrects the constructive and technological documents and the product. The process is finished with license selling to have right to produce innovative goods. This type of innovative process is peculiar for venture business, which realizes imitative innovative strategy.

3. Innovative process includes consequently works of variants 1 and 2. They are carried out by venture business organizations, which realize licensing strategy.

4. Innovative process includes works of the stages “introduction into the market” (innovations) in good LC. They are conducted by organizations exlersents, which realize imitative strategy. They create new markets (innovative goods markets), or radically change existing ones. Exlerents, as a rule, go to alliance with big enterprises, which can explicate innovative goods commercial production, because they are limited to producing and financial abilities.

5. Innovative process includes works of stage “sales amount increase” product LC. They are conducted by organizations patients, who make innovative product features corresponding to new market segments demands (differentiation of the innovative good), confirm circle of the target consumers, realize marketing complex actions, connected with determined market segment mastering. Usually patients don’t compete directly with market leaders. They try to be oriented to the segments or niches of the market, where there is unsatisfied demand, and also to those, which don’t attract main competitors.

6. Innovative process includes works of stage “maturity” in good LC. They are conducted by violents – large enterprises, which function in mass or large scale production. They realize traditional or protective innovative strategy and produce modified (perfective innovations) middle price and quality goods, assigned for wide circle of consumers and can be fast accepted by them. They realize actions, connected with new mass market perspectives estimations and with its win (traditional strategy), and further – with current satisfied market position save (protective strategy).

7. Innovative process includes works of stage “market exit” in product LC. They are conducted by organizations commutants, oriented to consumers-outsiders and they satisfy specific needs.

8. Innovative process is started with purchase of patent for technical and technological investigations and includes works of variants 2 and 4. They are conducted by organizations which have powers to carry marketing and producing and sales activity, to a lesser extent scientific and research one. They perform imitative innovative strategy.

9. Innovative process includes works of variants 1, 2 and 4. They are conducted by organizations which have power to carry marketing, scientific and research and producing and sales activity. They realize forward innovative strategy.

10. Innovative process includes works of variants 5, 6 and 7. They are conducted by large-scale or mass production enterprises, which have power to carry scientific and research and producing-sales activity, to a lesser extent marketing one. They realize protective innovative strategy.

11. Innovative process comprises works of variants 9 and 10. They are conducted by large-scale or mass production enterprises, which have power to carry marketing, scientific and
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research, producing and sales activity. They realize consequently forward (variant 9) and protective (variant 10) innovative strategy. They can form internal ventures to create innovations.

The evidences presented suggest, that variants 8-11 are realized by powerful enterprises, which have combined innovative business type. The author proposes methodic approach to select innovative process variant from possible alternatives, for example, 8 or 9 (Table 1).

Type codes in the Table 1: $C_w$ – cost of works concerning investigation and mastering of new good production in own hand; $B_p$ – cost of patent purchase and mastering of the good producing; $D_w$ – duration of works concerning development and mastering of the new good in own hand; $D_p$ – duration of the works on patent purchase and mastering of the new good; ? – problematic variants, which are to be studied further. Decisions concerning reasonability to realize works of variant 10 (after 7, 8 or 9) are made mainly through its economic efficiency evaluation.

Table 1 – Comparing of innovative good independent investigation efficiency from the ground up (variant 9) and patent purchase (variant 8), ([7] modified)

<table>
<thead>
<tr>
<th>Cost of works</th>
<th>Duration of the innovative cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>$C_w &gt; C_p$</td>
<td>$D_w &gt; D_p$</td>
</tr>
<tr>
<td>$C_w = C_p$</td>
<td>$D_w = D_p$</td>
</tr>
<tr>
<td>$C_w &lt; C_p$</td>
<td>$D_w &lt; D_p$</td>
</tr>
</tbody>
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<tr>
<th></th>
<th>To purchase patent</th>
<th>To purchase patent</th>
<th>To purchase patent</th>
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<tbody>
<tr>
<td>$C_w &gt; C_p$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$C_w = C_p$</td>
<td>Equal variants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$C_w &lt; C_p$</td>
<td>Personal investigation</td>
<td>Personal investigation</td>
<td>Personal investigation</td>
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</tbody>
</table>

Based on results of the innovative process distinguished analysis, author confirms SRRCW essence and content and innovations marketing at the innovative and life cycle stages of the innovative good. Results are shown in the Table 2.

It is necessary to mention, that organization-innovator can conduct innovative activity, which comprise all (variant 11) or several innovative process variants distinguished in the fig. 1 and in the Table 2. Therefore, it is either consequently (for one or various innovative goods), or simultaneously for various goods.

The author develops table of decisions to ground innovative activity procedures consequence choice (variant of the innovative process) in the concrete organization, depending on its innovative development potential state, and also innovations novelty (Table 3).

Estimations of the innovative development potential state ($E_{PID}$), mentioned in the Table 3, is calculated by formula [4]

$$E_{PID} = (E_M, E_I, E_{PS}),$$

(1)

where $E_M$ – index of the market potential level; $E_I$ – index of the innovative potential level; $E_{PS}$ – index of the producing-sales potential level.

Therefore: $E_i = 1$, if the level of $i$-potential is enough (high); $E_i = 0$, if the level of $i$-potential is not enough (low). $E_i$ is calculated by method [13].

In boxes table 3 marking points numbers of the innovative process recommended variants with mentioned variants $E_{PID}$ and innovation radicalization stage.

Therefore, if the organization plans to realize several variants in the innovative process consequently (separate innovative project corresponds to each of them), for example, 9 and 10, the estimation of their use reasonability will be conducted for each one by the Table 3.
Table 2 – Correlation between SRRCW and innovations marketing works at the product innovative and life cycle stages, (author’s investigation)

<table>
<thead>
<tr>
<th>Stages of the innovative and LC</th>
<th>Types of the innovative process</th>
<th>SRRCW</th>
<th>Innovations marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generating of idea and investigation of the innovation concept</td>
<td>1</td>
<td>Generating and selecting of the better ideas with use of formalized methods: prototype analysis, brain attack, synectics, liquidation of “blind corner” situations, morphological maps etc. Prognostication of innovations technical and economic characteristics. Legal defense.</td>
<td>SWOT-analysis. Analysis of the current and perspective consumers’ and other market subjects’ needs. Consolidated evaluation of the new product correspondence to market subjects’ demands. Search of ways to strengthen product innovation market attractiveness.</td>
</tr>
<tr>
<td>Business-analysis</td>
<td>2</td>
<td>Confirmation of product innovation technical and economic characteristics. Formation of business-idea, innovative project main goal and targets. Technical and economic grounding of the project.</td>
<td>Marketing studies conduct, investigation of the marketing program and strategy concerning new product promotion at the market. Evaluation of the enterprise marketing potential sufficiency.</td>
</tr>
<tr>
<td>Creation (investigation and production) of the new product</td>
<td>3</td>
<td>Development of the constructive and technological documentation, fine-tuning technologies, studied sample trials, state trials (if necessary).</td>
<td>Confirmation of the target market, estimation of the product innovation competitive positions, market trials program investigation.</td>
</tr>
<tr>
<td>Market experiments</td>
<td>4</td>
<td>Correction of the product innovation construction and its producing technology using market trials results.</td>
<td>Experiential marketing.</td>
</tr>
<tr>
<td>Innovation introduction to the market</td>
<td>5</td>
<td>Laboratory research conduct concerning new production and its producing technologies improvement.</td>
<td>Search (formation) of the consumers’ circle at the target market; confirmation of the target consumers’ circle and their requests; analysis of the innovation market adequacy; selection of the price setting strategy; primary demand actions forming; formation of the sales net, etc.</td>
</tr>
<tr>
<td>Market exit</td>
<td>7</td>
<td>Investigation of goods modifications to satisfy consumers-outsiders’ demands. Improvement of production and its producing technologies.</td>
<td>Analysis of the market and marketing program development. Marketing control of realization and profitability.</td>
</tr>
</tbody>
</table>
Table 3 – Table of decisions concerning structure variants in the innovative process, (author’s study)

<table>
<thead>
<tr>
<th>Novelty degree of innovation</th>
<th>Estimation of the innovative development potential level ( E_{IDP} = (E_M, E_I, E_P, S) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radical</td>
<td>9, 11</td>
</tr>
<tr>
<td>Improving, modifying</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>2, 3, 8</td>
</tr>
<tr>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0, 0, 0</td>
</tr>
<tr>
<td></td>
<td>0, 0, 0</td>
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<tr>
<td></td>
<td>0, 0, 0</td>
</tr>
</tbody>
</table>

If the enterprise parallel (parallel-consequently) plans to realize several different innovative projects (for various goods), the estimation of conduct reasonability for each of them is hold analogically. However at each innovative or LC stage (see Fig. 1 and Table 2) one should estimate innovative development potential adequacy in the organization на кожному for all innovative processes (innovative projects) which are conducted at it at once.

Concluding set forth above, the developed enlarged block-scheme of the algorithm to choose innovative process rational structure is investigated (Fig. 2).

**Figure 2 – Algorithm of rational structure choice in the innovative process, (author’s study)**

**Conclusions.** Thus, one can make the following conclusions:

1. The generalized scheme of organization innovative activity is investigated. It characterizes interconnections between innovative process types, innovative business and
innovative strategies. The peculiarities of the works conduct concerning innovative process distinguished types are confirmed.

2. Recommendations concerning works conduct reasonability of the several stages in the innovative process for organizations, which have innovative business combined type are suggested.

3. Essence and content of SRRCW works and innovations marketing works are confirmed at the innovative and life cycle stages of the new product.

4. Table of decisions is developed to choose innovative process variants, which are reasonably to realize by concrete organization, depending on subsystems constituents state of its innovative development potential and innovative product radicalization degree.

5. The enlarged block-scheme of the algorithm to choose rational structure in the innovative process within one or every innovative projects, realized by organization, is investigated.

Author’s studies together allow to increase validity and decrease risk to choose rational variant in the innovative process in the concrete organization under concrete market conditions, and also its innovative strategy type, to provide mutually coordinated interconnection between SRRCW and innovations marketing at the innovative process stages.

Further researches have to be oriented to investigate innovative process control mechanism grounds at the innovative and life cycle stage concerning new product.


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С.М. Ілляшенко. Обґрунтування вибору раціональної структури інноваційного процесу в організації

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Обґрунтування вибору раціональної структури інноваційного процесу в організації

Розроблена узагальнена схема інноваційної діяльності організації, що характеризує взаємозв’язки видів інноваційного процесу, інноваційного бізнесу та інноваційних стратегій. Уточнена сутність і зміст видів НДДКР та робіт маркетингу інновацій на етапах інноваційного й життєвого циклу нового продукту. Розроблено таблицю рішення та блок-схему алгоритму вибору варіантів інноваційного процесу, які доцільно реалізувати конкретній організації залежно від стану складових підсистем її потенціалу інноваційного розвитку та ступеня радикалізації інноваційного продукту. Отримані результати в комплексі формують підгрунтя для вибору раціонального варіанту інноваційного процесу організації та її інноваційної стратегії в конкретних ринкових умовах, дозволяють забезпечити взаємозумовлену взаємодію НДДКР і маркетингу інновацій на етапах інноваційного процесу.

Ключові слова: інноваційний процес, вибір варіанта структури, маркетинг інновацій, НДДКР, інноваційний бізнес, потенціал інноваційного розвитку, інноваційні стратегії.

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Обоснование выбора рациональной структуры инновационного процесса в организации

Разработана обобщенная схема инновационной деятельности организации, которая характеризует взаимосвязи видов инновационного процесса, инновационного бизнеса и инновационных стратегий. Уточнена сущность и содержание видов НИОКР и работ маркетинга инноваций на этапах инновационного и жизненного цикла нового продукта. Разработана таблица решений и блок-схема алгоритма выбора вариантов инновационного процесса, которые целесообразно реализовать конкретной организации, в зависимости от состояния составляющих подсистем ее потенциала инновационного развития и степени радикализации инновационного продукта. Полученные результаты в комплексе формируют предпосылки для выбора рационального варианта инновационного процесса организации и ее инновационной стратегии в конкретных рыночных условиях, позволяют обеспечить взаимосогласованное взаимодействие НИОКР и маркетинга инноваций на этапах инновационного процесса.

Ключевые слова: инновационный процесс, выбор варианта структуры, маркетинг инноваций, НИОКР, инновационный бизнес, потенциал инновационного развития, инновационные стратегии.

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