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AN INSURER'S INNOVATION APPRAISAL MODEL – PROCESSES APPROACH (PART II)

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Extended abstract:
The aim of the following extended abstract is a discussion of new idea to create a model to assist evaluation of the innovation companies in the insurance sector. The problem of innovation in the field of insurance has been undertaken by the authors of TIIM forum. They pointed out various aspects of the innovation. In 2013, in the text titled *Innovations in the context of the risk management* (presented at previous TIIM conference) authors stressed the way of cost management of innovation in the insurance sector and have presented an original way of monitoring the effectiveness of the cost of the investment project over the entire period of the life of "the innovation effect" based on tracing the dynamics of the EVA (Economic Value Added) (2013). In 2014, in turn, is in the text titled: *Insurance Products Innovations based on Management Accounting* have proposed to use the concept of the learning curve-management accounting tools-in product innovation in insurance assisting. The concept could be applied in the situation when an innovative insurance entity does not have empirical observation (which may take place, for example, the offering of insurance relating to nano-production). Then, in 2015, The Authors have presented the first part devoted to the development of *an Insurer's Innovation Appraisal Model – Processes Approach* (2015). The main basis to take challenges that tries to develop a model, so-called InZu Model is the idea of creating a methodical approach, through which it would be possible in practice, creating a kind of ranking of insurance companies in terms of their innovation. The model created could have broad cognitive effects on the research on areas which are subject for innovative solutions and could deepen the knowledge on the competitiveness of the insurance entities. By innovation we understand here all activities implemented to processes, sub-processes and activities of the insurance undertaking, which reduce the costs of these processes by increasing their efficiency. By implementing such an innovative activities an insurer may (1) generate more cash flow, (2) optimize the premium level to the level of risk and thus implement social functions. As a starting point for the construction of the model, the Authors have adopted the process-activity approach. The construction of the model was presented at TIIM2015 in Barii. There are 10 processes and 22 actions. The processes and action were put into hierarchy and some parameters that could be used to describe the processes and activities were proposed.

Keywords: innovations, insurance, insurance processes, mapping

1. THE CONTEXT OF THE PRESENTED CONCEPTS

The aim of the following extended abstract is a discussion of new idea to create a model to assist evaluation of the innovation companies in the insurance sector. The problem of innovation in the field of insurance has been undertaken by the authors of TIIM forum. They pointed out various aspects of the innovation. In 2013, in the text titled *Innovations in the context of the risk management* (presented at previous TIIM conference) authors stressed the way of cost management of innovation in the insurance sector and have presented an original way of monitoring the effectiveness of the cost of the investment project over the entire period of the life of "the innovation effect" based on tracing the dynamics of the EVA (Economic Value Added) (2013). In 2014, in turn, is in the text titled: *Insurance Products Innovations based on Management Accounting* have proposed to use the concept of the learning curve-management accounting tools-in product innovation in insurance assisting. The concept could be applied in the situation when an innovative insurance entity does not have empirical observation (which may take place, for example, the offering of insurance relating to nano-production). Then, in 2015, The Authors have presented the first part devoted to the development of *an Insurer's Innovation Appraisal Model – Processes Approach* (2015).

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2. THOUGHTS OF FURTHER DEVELOPMENT OF INZU MODEL

The point of conceptual thinking about the measurement of innovativeness in an insurance company would be, in places where this innovativeness may occur, the following categories:

$$\{P_i;\ rh_i\ k_i\}\ \text{lub}\ \{S_{ik};\ rh_{ik}\ k_{ik}\}\ .$$

P_i–process *i*
S_{ik} –sub-process *k* in process *i*
rh_i – process potential measured with potentially effective man-hours
rh_{ik} – potential of sub-process *k* in process *i* measured with potentially effective man-hours
k_i – cost of insurance activity in process *i* (real or planned, depending on the analytical context)
k_{ik} – cost of insurance activity in sub-process *k* within process *i* (real or planned, depending on the analytical context)

The construction of the InZu model may also account for the reasoning based on time equations taking into account the original significance of the innovativeness factor in all sub-processes with reference to every individual process.

Such equations for the major process could be based on the interviews and time analysis in selected insurance companies and presented in an exemplary form according to TD ABC, as follows:

$$T_{Pi} = (t_{Si1} - in_{Si1}) + (\ldots) + (t_{Sik} - in_{Sik})$$

where:
T_{Pi}– process implementation time P_i(real or planned, depending on the analytical context)
t_{Sik}– sub-process implementation time S_{ik}(real or planned, depending on the analytical context)
in_{Sik}– time saved in sub-process S_{ik} achieved or expected to achieve due to innovation

Thanks to these equations, the data on two periods allow for the assessment of the progress made in the area of innovation. It would be important to determine the parameter of time saving achieved thanks to the application of innovative solutions. The equations shown above would also allow for the determination of process related costs and the diagnosis of costs of unused potential as an area which requires innovation.

3. FURTHER THOUGHTS AND INTENTIONS

Processes shown in the paper presented by the Authors at TIIM2015 in a number of 10 still would be a basic group for modelling. Sub-processes would be treated as a diagnostic features. Features are quantifiable. The value of the features is expressed by the changes in terms of working hours needed to complete a particular sub-process.

The diagnostic features could be interpreted as a synergistic effect of operation of the knowledge, skills and attitudes of people having an impact on their implementation in the sub-process. It is assumed that: (1) innovative solutions are implemented at the level of sub-processes and activities above all because of the need to manage costs, which can lead to competitive advantages of an insurance undertaking. For example in a sphere of offering good quality products (with good insurance coverage), but with lower insurance premiums and/or crashing customer service time and increase overall organizational culture, (2) in a variety of insurance companies – the value of diagnostic features can be different, which can provide varying degrees of potential insurance undertakings in respect of the implementation of innovative solutions in its operation.

Innovation of insurance undertaking can be assessed using as far as the similarity of the objects due to the level of features (taxonomy measure). The main problem in this reasoning is the designation of the reference object. By reference object we understand a hypothetical insurance company InZu, characterized by the highest level of innovation, economic and geographical considerations.

Determination of the reference object is crucial here. It may be followed by expert method using the methodology of the analysis of the cases and the familiarity of the organization of the business of insurance and in-depth interviews, conducted in the leading insurance companies in the country, the region of the world or the insurance section (depending on analytical context). Expert approach here is certainly challenging, and therefore requires the prior preparation of the methodical. It is also necessary due to the fact that the so-called reference object can change over time. The reference object could represented by the diagnostic features based on: (a) real data describing a set of insurers which are the subject for further assessment of innovativeness; (b) benchmark insurers (foreign) which could be treated as a role model.

At that stage of the discussion est. stage of creation of the concept of future empirical study, which the Authors are going to undertake, in terms of creation “InZu model” the following steps are assumed:

- to determine the total number of employment in the insurance industry in two years, separate for two moments in time; for example 2005 and 2015 (in Poland on the basis of data available from the Financial Supervision Commission); creation, for each of those two years a reference object for the investigated insurance sector;
- to determination of benchmark gauge (InZu-M1) of long-term impact of innovation in insurance on the structure of the potential involvement of the process (expressed in working hours).

In proposed approach an assessment of innovation of an insurer become possible when the reference object is defined. The assessment would be done by comparison of the level of similarity measure. The results would be presented on radar graph. Surface area for reference object is equal to 100%. The surface area for particular insurer would varies from 0% to 100%. Thus also by comparison of surface area of the studied object (particular insurer) to the surface area of reference object it would be possible to establish the position of particular insurer in terms of its innovation level. It should be pointed out that the reference object may be changing over time. Ways of functioning of insurance undertakings may change, in fact, influenced by a number of technical and social factors, but also influenced by the fact that innovative solutions at a particular moment in time will become the standard solutions in the future. This ability is an important factor and modeling of the proceedings, which would be, in a sense, timeless (at least in the longer term) should find appropriate reflection.

Proposed approached could give the researcher answers for following questions:

1. What in allocation of available resources (in year 1 and year 2) in particular insurer in comparison to reference object (model InZu)?
2. How commitment of resources has changed over a period of time analyzed?
3. How the real allocation of resources look like in particular insurer?
4. In what process the differences occur?

The findings should allow the assessment of the organizational areas in which the insurance undertaking identifies solutions to achieve the parameters of reference object. At this point some risk of improper assessment raises. It might result from the fact that the employment level in particular insurer could be inappropriately large for the scale or quality of operation, expressed for example by gross written premium or achieved financial result. To examine this issue and to eliminate the establishments where such employment hypertrophy can be easily identified, is a prerequisite for a good selection of population of insurers, which will be assessed in terms of innovation. The analysis requires the appropriate valuation of diagnostic features (expressed in working hours). For example if over a period of 10 years in particular process usage of resources reduced from 8% to 7% it could be assumed that it has happened because of application of innovative solution more effective than assumed in terms of reference object. In order not to make the mistake in the evaluation of such a situation, it would be useful to see whether the change in the pattern of allocation of resources actually was financially advantageous. It could happen that at a lower percentage of the allocation of resources to the process actually more people would be employed in the process. It is good if over the period analyzed growth is justify by increasing the scale of the operation. It that terms the ten year employment trend should be evaluated.

5. What are the financial implications of changes in the allocation of the resources of the insurance undertaking and whether they correspond to reference object allocation?

Such an analysis requires to create reference for research insurance sector cost of working hours. It could be calculated using aggregated date concerning the whole sector in terms of cost and total number of employment.

The above discussion and proposed approach may raise a number of concerns. The authors try to search for ways to measure a good concept to enable assessment of the innovation of insurance both in time and in space (set of insurers, which could be assessed).

It seems that thanks to the development of such a modeling, even if only to a certain extent, on the above basic reasoning and - in the future - empirical study it could be possible to establish interesting and useful characteristics of insurance sector.

There is no way to present the example to illustrate completely outlined reasoning at this point. The following illustration of the framework of thinking about how to determine the standard of measurement for the selected diagnostic features does not reflect all the issues. However it is the best and the shortest way to present our concept. For example, there is not a criterion of the standard size of an insurance undertaking, and this criterion seems to be appropriate here. Presented example should be seen as an elementary illustration of methodology which presented for the selected sample of sub-process eventually could lead to the findings (see column G) of characteristics representing a reference point in evaluating other insurance undertakings.

Table.1 Elementary illustration of methodology proposed

		A	B	C	D	E	F	G
2.3.	S3 –underwriting process	O1	8	1 331 200	9	1 302 912	1	-28 288

Legend:

A – Process level: O1 – operation level of first degree, O2 – operation level of second degree, O3 – operation level of third degree, W – supporting processes (sample process above);
B, D – Benchmark, standardized measures of expert, separately for two years: year 1 – column B, for example 2005, year 2 – column D, for example 2015,
C, E – Allocation of annual resource to processes, working hours, according to TD-Activity Based Costing,: 80% x column C x 8 working hours x 5 days x 52 weeks) (in above sample: 8% of resources is 1.331.200 working hours in a year; 1, 9% of resource is to 1.302.912 working hours in

year 2);
F – Change (in %) in the structure of annual allocation of resources between year 1 and year 2
G – Synergy (i.e., caused by many factors, such as detailed knowledge, attitudes and behaviours, relationships with the environment, technical methods and other solutions) measures the effect of innovation in processes over 10 years .

Source: A. Sliwinski, A. Karmanska, T. Michalski, *Insurance Innovation Assessment Model – Process Based Approach (Part I),* TIIM 2015, Barii 2015

REFERENCE LIST

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