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INSURANCE INNOVATION ASSESSMENT MODEL – PROCESS BASED APPROACH (PART I)

Adam Śliwiński
Warsaw School of Economics, Poland
asliwin@sgh.waw.pl

Anna Karmanska
Warsaw School of Economics, Poland
akarman@sgh.waw.pl

Tomasz Michalski
Warsaw School of Economics, Poland
tomich@sgh.waw.pl

Abstract:
Innovations determine corporate competitive advantage in every field of activity, which also applies to insurance companies. The innovativeness pursued by insurers is to a large extent derived from the innovativeness pursued by their clients. When providing insurance services for non-financial entities, insurance companies often support their clients' innovative activities. Thus, they perform an important economic function, also from the macroeconomic perspective. The development of tools for the assessment of the level of innovativeness in insurance companies seems legitimate. The assessment of this kind could actually be used in diagnosing the innovativeness potential of an insurance company as well as the whole insurance sector. The results of such an assessment would facilitate the creation of ranking lists of innovative insurers and could also provide information about how adequate the insurance sector is in view of the contemporary economic determinants. The main problem connected with the assessment stems from the fact that an insurance product and anything related to its concept, i.e. implementation, marketing and controlling of results, is the resultant of the innovativeness of internal processes and activities within an insurance company. These activities are often insurance specific. Only a comprehensive approach to the subject can solve the problem. The main aim of the paper is to describe the first stage of development of insurance innovativeness assessment model, whose concept is developed in stages. The present stage includes the creation of a universal map of all internal processes and activities pursued by an insurance company. It is a starting point to create the tool called the InZu model, which can be used to model and assess the innovativeness level within an insurance company. Eventually, the concept and the tool are to enhance the broadly perceived sustainable economic development of companies within the insurance sector.

Keywords: innovativeness, innovation, insurance, insurance process, mapping

1. INTRODUCTION

The problem of insurance innovativeness has already been discussed by the authors on the TIIM forum before. They pointed to different innovativeness related aspects. In 2013, in the text *Innovations in the Context of the Risk Management* they focused on the method of cost management of the insurance sector innovative activity and presented, based on tracking of the Economic Value Added (EVA) dynamics, an original way of monitoring of the investment project costs efficiency in the whole life period of the "innovation effect" (Karmańska, Michalski, Śliwiński, 2013). In 2014 in the text *Insurance Products Innovations based on Management Accounting* they referred to the idea of application of the learning curve concept, which is a management accounting tool, in support of product innovativeness in insurance companies provided the insurance company did not have any empirical observations (which may occur for example in nanotechnology based production insurance), thanks to which it could regard the risk factors connected with the customer's innovative product as recognized to a certain degree, due to the "history of insurance of products similar to the innovative product"(Karmańska, Michalski, Śliwiński, 2014).

Innovativeness is an idea extensively defined in the literature (Schumpeter, 1960, p. 104; Whitfield, 1979; Bielski, 2000, p. 6; Niedzielski, Rychlik, 2006, p. 19; Janasz, Kozioł, 2007, p. 14). However, these definitions generally refer to processes in kind and not to financial services. It may be due to the fact that the research on the innovativeness in the financial sector is definitely less frequently conducted than with regard to the industrial sector. Interestingly, an isolated example of research referring to insurance related innovativeness is a study conducted by L. Laeven, R. Levin, S. Michalopoulos (Laeven, R. Levin, S. Michalopoulos, 2014). These authors dealt with the modelling of financial decisions connected with the assessment, made in the financial sector, of the level and degree of innovativeness of entrepreneurs based on the definition of innovation proposed by Schumpeter, i.e. innovation resulting from the launching of new products. In the light of the above statement, it may be assumed that in this research the problem of innovativeness occurred in the financial (banking) area, but it referred to this area primarily by the observation that offering new and profitable products by entrepreneurs in the productive area may be an important factor to maximise profits also in the financial sector. In this connection, they wondered whether innovations in the financial area (understood as a different kind of improvement allowing for the selection of potential customers including e.g. new procedures of financial reporting expected from innovative entrepreneurs applying for the sources of financing) are a prerequisite for the sustainable economic development.

The research conducted by Laeven and other scholars attempts to establish what innovations in finance (banking) should consist in so that it could earn on good (innovative) operation of a non-financial sector. On the other hand, the authors consistently following their previous publications, a different, i.e. pro-social way of thinking. Thus, it is important to diagnose the degree to which the innovativeness in the financial sector meets the satisfaction of social functions ascribed to the entities in this area. i. e. helping to manage individual risk.

Indicating the lack of methodology of assessment of the level of innovativeness of financial companies connected with the social aspect of the mission of their operation, the authors express their intention to work out an appropriate proposal. Bearing this in mind, in the present text they undertake the first step aimed at the creation of a model to measure the innovativeness in insurance companies. It could possess extensive cognitive values to be applied in research of the insurance sector areas susceptible to innovative solutions and the significance of this innovativeness for the accurate pursuit of the social mission of the insurance sector.

2. DEFINITION OF THE MODELLING AREA

The economic effect of innovation may become a construction basis of a model assessing the innovativeness in financial institutions, including insurance companies and as a consequence in the whole sector. Obviously, insurance companies play here a leading role, but within the sector there are also insurance related institutions as for example insurance chambers, guarantee funds or institutions supporting the insurance operation like insurance agents or brokers. Innovations and innovativeness in each of these institutions may have an impact on the level of innovativeness in the whole sector and consequently affect economic development. At the same time, within the insurance activities themselves, when focusing of the allocation of risk, there is a division to be made into insurance and re-insurance companies.

Expressing a conviction that the operation of other organisations and institutions may also contribute to the development of innovativeness, we assume that it has an impact on the level of innovativeness in insurance companies themselves. Even if we set limitations to our considerations, we face problems as the activity of insurance companies is not uniform. Within this activity there is the insurance work proper like risk assessment, tariff setting, policy sales, claim adjustment, but insurance companies also conduct investment activity. It has a different character but it should be innovative as well. The operations of an insurer are diverse. For example, activities aimed at the assessment of the risk level, an offer construction, policy sales or claim adjustment differ significantly from each other. In each of these processes we may have to do with technological innovation, which may be illustrated by insurance policy sales on the Internet or telephone or broadly understood innovativeness reflected in the organisation of the management process in risk conditions or sales process management. A common element of all activities undertaken by insurance companies, significant for the insurer's market value is the financial result achieved by them. This result is created by processes implemented. It is determined by their specific character. However, their mutual relations, indispensable and identified from the perspective of the whole insurance company, make the insurance company generate a definite result of its activity. Therefore, we decided to adopt a process-activity approach as a starting point in the construction of the aforementioned model to measure the innovativeness in insurance companies.

3. PROCESS VISUALISATION OF INSURANCE OPERATION

Insurance products are a host of effects of operations conducted in insurance companies in basic processes as well as those supporting the development and sales of these products. The elementary work done constitutes an area of innovativeness. It determines a definite activity in the insurance company in a sub-process or process. Innovations introduced at such an elementary level may result synergically in the innovativeness of the whole process, and this fact may translate into innovativeness in the whole insurance company and as a consequence in the rise in its profitability, without "greed and deviousness" and "financial drilling" of customers.

In connection with the authors' intention to create a measurement concept of insurance companies innovativeness called the *InZU model* for the sake of good order, they present below their first attempt to determine parameters, whose identification in practice would be necessary in measurement of insurance company innovativeness and is important in the development of the concept of the model. The authors would like the study to provoke a discussion within the environment about the very idea of creation of the InZu model as well as the concept constituting a starting point of its stage construction.

The following reasoning is to be taken into account:

1. Process based management is not common in the insurance sector all the time. New management concepts spread to this sector at a much slower pace than for example to manufacturing companies.
2. The working out of a model decomposition of insurance activity will allow for the identification of insurance company operation areas crucial for innovativeness measurement in individual processes as well as the whole company.
3. Another issue is the determination of a method of innovativeness measurement in every process distinguished in the model.
4. Finally, the reasoning should lead to the presentation of the process based innovativeness measurement method.
5. At every stage, it is indispensable to comprehensively verify practically all the findings with regard to their legitimacy, accessibility and the cost of information acquisition.

With reference to the first point, there is a proposal of model decomposition of process based insurance activity presented below.

The basis of the process specification in an insurance company is simultaneous thinking in terms of creating value for the insurance company's customer (i.e. the criterion of the impact power of the process on customer and costs related to the insurance product at its different life stages) and the criterion of the impact of policy conducted within the process on the profitability of the insurance company. The profitability, which is the background for the classification of processes, is important here as it in a way determines the number of processes to be regarded as operational. In the light of this criterion, it may be justified to classify as operational such processes as: the process of re-

insurance of risks, the process of insurance fund allocation management, the process of insurance statistics administration or the prevention process. The fact that these processes are not directly related to the creation of an insurance product, its sale or customer handling may lead the assumption that they should be regarded as support (auxiliary) processes. However, it may be worthwhile mentioning here that the quality of the aforementioned processes strongly determines the major operational processes, i.e. selling insurance products as well as the compensation process and recourse procedures. Bearing this in mind, it may be assumed that in the case of an insurer it is justified to grade operational processes and to isolate processes in between the insurer and customer as well as processes resulting from this relation. This observation may have an impact on the construction of the InZu model, and that is why it should be observed at the initial conceptual stage.

There are different relations between the processes which may be distinguished in an insurance company. The determination of the character of these relations may be difficult due to the fact that the majority of them are not based on the flow of resources but on the flow of information created during the successive processes.

The specification of activities within individual processes and their classification are possible through the top-down approach or bottom-up approach (Miller, 1996, pp. 72-76)[1]. A practical rule, Miller claims, is to isolate 8 to 16 processes and 10 to 20 activities in every process (Miller, 1996, p. 71). However, if one considers the fact that the InZu model will be created as a tool to be used by insurer's external and internal stakeholders, and that it should be based on easily available data, it does not seem realistic to obtain the information on 16 processes consisting of 12 activities each by the insurer's external stakeholders (nearly 200 activities in total). Therefore, the authors decided to reduce the model decomposition of insurance activities down to the specification of 10 processes and 22 sub-processes although initially the specification included also 75 activities.

The next task is to determine the parameters which will characterise the isolated processes and which have some cognitive value in the area of innovativeness. The parameters may include: (a) the *process level*, (b) *the process potential expressed by man-hours of the people involved in the process* as well as (c) *the costs of insurance of activity allocated in individual processes*.

The model specification of operational and support processes together with isolated sub-processes within them as well as exemplary parameters characterising the processes are presented in Table 1.

Table 1: Process based decomposition of an insurance company indicating exemplary attributes potentially relevant for the model evaluation of its innovativeness

No.	*Processses and sub-processes*	*A*	*B*	*C*	*D*
1.	*M –marketing process*	*O1*	*10*		
	M_1 – process of marketing strategy development	O1	2	206	42 823
	M_2 – process of operational marketing and new product creation	O1	8	824	171 292
2.	*S – process of sales of insurance products*	*O1*	*20*	*2 059*	*428 230*
	S_1 – process of launching of channels of distribution	O1	1	103	21 412
	S_2 – process of using of channels of distribution	O1	10	1 029	214 115
	S_3 – process of underwriting	O1	8	824	171 292
	S_4 – process of monitoring of insurance payments	O1	1	103	21 412
3.	*OiR – process of compensation or benefit implementation and recourse procedures*	*O1*	*20*	*2 059*	*428 230*
	OiR_1 – process of compensation or benefit payment	O1	14	1 441	299 761
	OiR_2 – process of recourse	O1	3	309	64 235
4.	*R – process of risk re-insurance*	*O2*	*3*	*309*	*64 235*
5.	*L – process of insurance fund allocation*		*5*	*515*	*107 058*

[1]See more: (Miller, 2000), (Ostrenga, 1990), (Cooper, Kaplan, 2000).

	management	*O2*			
	L_1 – process of determination and monitoring of allocation policy	O2	2	206	42 823
	L_2 – process of financial allocation management	O2	2	206	42 823
	L_3 – process of property management	O2	1	103	21 412
6.	*P –process of prevention*	*O2*	*1*	*103*	*21 412*
7.	*SU – process of administration of insurance statistical data*	*O3*	*16*	*1 647*	*342 584*
	SU_1 – process of modelling of statistical databases	O3	2	207	43 056
	SU_2 – process of updating database contents	O3	8	823	171 184
	SU_3 – process of technical administration of statistical records	O3	6	617	128 336
8.	*K – process of human resources management*	*W*	*5*	*515*	*107 058*
	K_1 – process of staff selection	W	1	103	21 424
	K_2 – process of staff training and qualifications improvement	W	2	206	42 823
	K_3 – process of current staff administration	W	2	206	42 823
9.	*F – process of finance management*	*W*	*19*	*1 956*	*406 819*
	F_1 – process of asset and finance registering	W	16	1 750	364 000
	F_2 – process of actuarial calculations	W	2	206	42 823
	F_3 – process of own fund management	W	1	103	21 412
10.	*Z – process of branch network management*	*W*	*4*	*412*	*85 646*
	Z_1 – process of branch network management planning	W	1	103	21 412
	Z_2 – process of supervision and control of branch network	W	3	309	64 235
	Total:		100	10294	2 141152

Legend:

A – Process level: O1 – first degree operational level O2 – second degree operational level O3 – third degree operational level W – suport processes
B – Process based staff employment – determination through an expert method
C – Allocation – according to the percentage employment in individual processes – *average annual number of staff (persons)*, derived from the 2012 Financial Report of an exemplary insurance company (totally 10,294 persons)
D – Annual economic potential of processes expressed in man-hours – allocation (processes according to the concept of TD-Activity Based Costing, i.e. according to the formula: 80% x column C x 8 man-hours x 5 days x 52 weeks
E – Allocation of annual costs of insurance activity (in 2012 amounting to 2 118 773) on processes according to the formula: PLN 2,118,773 / 10 294 persons xD

Source: authors' own material based on the concept presented in: (Karmańska, 2003) and Financial Report data: (*Powszechny Zakład Ubezpieczeń, 2012, pp*. 27,155).

4. CONCLUSION – DELIBERATIONS ON THE ASSESSMENT MODEL OF INNOVATIVENESS IN AN INSURANCE COMPANY

The above specification displays the parameters whose significance is recognised by the authors in the further procedure of the InZu model construction. In the course of discussion it was observed that meeting all the parameters characteristic of every process will not be an easy task, primarily due to a limited access to data and, importantly, due to the fact that insurance companies do not tend to fully apply the process based approach to the current activity management. This leads to the need for the development (through an expert method on a large scale) of the process based (in a way benchmark) structure of employment in an insurance company. Such a benchmark method could be used to easily allocate employment in processes in any insurance company, under the only condition, i.e. the knowledge of the average annual employment in the company. It seems that the acquisition of this information from financial reports is possible. Thanks to it, the costs of the insurance activity could be

allocated in processes with the application of the Time Driven Activity Based Costing concept[2], which is exemplarily proposed in Table 1[3].

In this way, 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.

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[2] See more: (Anderson, Kaplan, 2004).

[3] It is worth emphasizing that, although the simulation was worked out for an existing insurance company: PZU S.A., the largest insurer in Poland, and is based on the information on the number of employed people derived from a reliable source. i.e. the 2012 Annual Financial Report, the allocation of the number of people in activities is subjective and may not correspond to the corporate reality. It is only meant here to serve the purpose of illustration of the procedure. See: *Powszechny Zakład Ubezpieczeń Spółka Akcyjna, 2012*

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