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### Development of e-Services in Latvian Insurance Industry: the Critical Role of Quality Benchmarking

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**Abstract.** The purpose of this paper is to report on the development of comparable set of metrics, or else – a benchmarking standard – on the Latvian non-life insurance market. In this research we used a case study methodology, deploying a number of research strategies, namely: in-depth interviews with heads of industry associations and a survey of representatives of insurance broker companies. We argue that for such information-intensive service industry as insurance to contribute to the development of e-Society, (e-)service offering must be based on common quality benchmarking standards to allow consumers and entrepreneurs have unbiased information on and be able to compare the offered services from different firms. Mutual interaction though e-services between society, enterprises and insurance industry contribute to the development of e-Society, and such service further can contribute to the improvement of insurance industry.

**Keywords:** benchmarking, quality, criteria of quality, non-life insurance industry.

#### 1 Introduction

In 1999 Council of the European Union announced an ambitious vision of Europeans inhabiting Information Society (also dubbed as "e-Society" or "e-Europe") by 2005 [9]. More than a decade down the road, we have learned the hard way that the success of establishing Information Society cannot be measured by the availability of (often very complex) services provided to citizens over the Internet. e-Society must be built on the principle of maximally even distribution of knowledge among the citizens and businesses. The ultimate measure for success must be the extent to which people are aware about the availability of relevant content, are using the services, and the percentage of population using the services [10, p.285].

The vision of e-Europe was to bring forth "changes, the most significant since the Industrial Revolution" [9, p.2]. However, the issue of interoperability and compatibility of services remains to be a serious obstacle even in the most highly ranked e-societies in the world [24, p.26]. The challenge of making e-services available, known, and used goes beyond the "technical" aspect of the services' build-out.

The aim of this work is to report on the development of comparable set of metrics, or else – a benchmarking standard – on the Latvian non-life insurance market. Authors argue that for such information-intensive service industry as insurance to contribute to the development of e-Society, (e-) services offering must be based on common quality benchmarking standards to allow consumers and entrepreneurs have access to unbiased information on and be able to compare the offered services from different providers.

#### 2 From e-Services to e-Society

What can be referred to as the first, focused statement on e-Society development was the 1993 Clinton Administration's policy initiative on National Information Infrastructure (NII) [26]. European Union responded to the NII with what is often referred to as Bangemann Report in 1994 [25]. The principles laid out in these documents set the scope for the development of e-Society: everything that produces, contains, processes, or uses information, in whatever form, or whatever media, as well as the people who develop the information, applications, and services [18, p.163].

Looking at the history of national informatization processes in Europe and elsewhere one can notice that the task of building e-Society was far too often understood (or tackled) as bringing a large number of services online [10], i.e., seeing e-Society as a composite of the largest possible amount of e-Services.

The lessons learned from the past, however, tell us that the mere availability of eservices doesn't inevitably cause the transformation of practices [20, p.8] and least so the economies. The programs aimed at bringing about e-services often fail to contribute to the formation of effective e-Society due to cultural, political or other reasons [19].

In the context of our work, one key distinction has to be made in the e-service development – that between availability of information and knowledge. Knowledge about content, quality, pricing of services, as opposed to information about services, facilitates consumers' weighed decision-making, whereas abundance of information about existence, availability of disparate e-services leads to confusion and consumers' inability to make a favorable decision. Even distribution of knowledge among the citizens and businesses reduces knowledge asymmetry and facilitates market and democratic processes [5], thus bringing about the sought for transformation of society. Excess of information leads to mental stress [13].

Today, insurance services play a major role in Europe's economic growth and development, generating premium income of over  $\textcircled{1}^{100bn}$  and investing almost  $\textcircled{7}^{1500bn}$  in the economy [6].

Hardly any insurer in Europe does not present information about offered services on the Web or allow the citizens making transactions online – i.e., offering e-services. However, to date, there are no unified non-life insurance quality benchmarking standards in Europe. Such standards would allow reduce the amount of information consumers are exposed to and serve in establishing grounded knowledge on the (comparable) quality of available services. Existence of quality standards for (insurance) services would allow communicating information on available services in uniform and understandable format, thus helping individuals and enterprises make weighed purchase decisions.

In Latvia, efforts to set a common quality benchmarking standard in non-life insurance market were launched already in 2005 by LIBA – insurance brokers' association of Latvia. The first author participated in these quality standard-setting efforts as one of the members of LIBA. Since then, Latvian insurers ranking is developed and maintained by LIBA. Six years down the road, neither those insurance quality benchmarking activities, nor the insurers ranking itself are widely known outside LIBA. Knowledge about benchmarking possibilities and results, although available on the Web, is not distributed beyond the narrow circle of insurance professionals. Such situation presents yet another example, where availability of e-services does not contribute to the formation of e-Society.

#### **3** The Role of Standards in the Formation of e-Society

Infrastructures evolve from different and relatively independent from each other technologies and practices that are meshed into a single overarching structure [11]. Successful informatization projects must bring about novel socio-technical configurations, which link together regulatory framework, communications infrastructure, user practices, etc. [15, p.1257]. Standards become crucial elements in informatization processes because of their ability to coordinate activities between and within diverse social groups [21].

Traditionally, the role of standards in informatization projects was studied from technological viewpoint – standards enable interconnectivity, compatibility and interoperability of multiple technologies [16].

However, for the proliferation of e-services to lead to e-Society, informatization process must successfully align diverse interests of participating groups: government organizations, entrepreneurs, consumers, etc. [14]. Standards are also a basis for grouping and comparing diverse and disparate services.

Negotiating which technological element or work practice must be chosen over its alternatives to become a part of e-service offering is often complicated due to the possible economic consequences of these decisions. A body or a firm, which succeeds in promoting its favorable technical or service solution as a common standard, often receives large returns, whereas its competitors may be effectively locked out or provided only with residual market niches [23]<sup>1</sup>. This motivates vendors to adopt protectionist policies for their products, forcing customers into lock-in to a specific product [1]. Such behaviors cause major obstacles in the creation of e-Society as they act counter to even knowledge distribution.

Both for emerging technology infrastructure and for emerging e-service platform, standards are both necessary and helpful in that they early on limit the technical or

<sup>&</sup>lt;sup>1</sup> Sometimes this "battle of the systems" can culminate with the invention of devices that make possible the interconnection between incompatible systems [17] T.P. Hughes, "The Evolution of Large Technological Systems," in Wiebe E. Bijker, Thomas P. Hughes, and Trevor J. Pinch, ed., *The social construction of technological systems: New directions in the sociology and history of technology*, Cambridge: MIT Press, 1993, pp. 51-82.

service design space and help obtain a sufficiently fast implementation of a working design with a large enough user base. This is critical for the emerging markets, where chaotic competition needs to be organized relatively quickly around a relatively stable set of concepts [12]. Standards thus help reduce the risk of choosing underperforming services or products among entrepreneurs as well as consumers.

Finally, for e-service offering to contribute to the development of e-Society, the service must contribute to the improvement of economy. Standard-based services help coordinate and organize service offering in such a way, which enables benchmarking and control over distance [7, 22, p.89, 27] – i.e., service providers, their customers and other stakeholders can communicate meaningful knowledge on service offering between one another over the Internet.

#### 3.1 Standards and benchmarking

Benchmarking assists businesses in identifying potential targets for improvement. As a systematic process for improving performance, benchmarking has gained a great popularity worldwide since the 1980s.

As a classic of benchmarking, Camp observed, "establishing operating targets based on the best possible (industry) practices is a critical component in the success of every business" [4]. These "best industry practices" can be dubbed as "quality of operations", if the quality is defined as one of the core aspects of organizational competiveness. In general, organizational operational quality is aggregate of internal and external practices, aimed at satisfying customers, catering to the needs of society, management, and the expectations of shareholders and employees. Thus, benchmarking moves management thinking from a purely internal focus on organizational modus operandi to one that is external and competitive and can lead to revolutionary rather than evolutionary change [3].

The benchmarking process is usually defined to include four parts, often undertaken continuously or through numerous iterations [8]: 1) analyze the position you are currently in; 2) find someone who is performing measurably better; 3) learn from them what they are doing to achieve that performance; and 4) adapt your practices and processes as a result of that learning and thus implement relevant changes which will effect superior performance in your organization. Thus, the benchmarking process starts by asking a question "what to analyze and how to evaluate"? Looking at the benchmarking process through quality lens, it is important to conduct identification and comparison of quality criteria to obtain an understanding on how to determine which practices are achieving superior quality performance levels.

By benchmarking key activities and processes of different firms operating in the same business domain, one can demonstrate given company's effectiveness in comparison to other service providers, convincing external stakeholders that the company management remain in the best mode of delivery of the service in question [2]. Surprisingly enough, insurance companies in Latvia do not carry out mutual quality benchmarking, and as a result of that neither consumers, nor the insurance companies could rank their service offering against one another in terms of quality. This, in turn, does not allow effective decision making, leads to confusion and, hence, forms a serious obstacle on the way to formation of effective e-services market in Latvia.

#### 4 Case Study: non-Life Insurance Industry in Latvia

#### 4.1 Research Design

In this research we used a case study methodology to investigate whether there are any (common) standards for benchmarking in insurance industry in Latvia. In our case study we deployed a number of research strategies, namely: in-depth interviews with heads of industry associations and a survey of representatives of insurance broker companies.

Three open-ended in-depth interviews were conducted with principals of the three Latvian associations representing insurance industry – LIBA, LIA and LPBA (description of these associations is provided further in the text). Interview with the head of LIBA lasted for 106 min., with the head of LIA – for 90 min, with the head of LPBA – for 56 min. All interviews were audio-recorded, notes of interviews were written down. To compliment interview data, results of insurance broker companies' survey, conducted by Latvian insurance brokers association (LIBA) were corroborated.

Corroboration of data from the interviews and survey, complemented and verified by (industry) expert knowledge of the first author and secondary sources contributed to establishing internal validity of the case data.

#### 4.2 Non-Life Insurance Industry in Latvia

There are 10 non-life insurance companies operating in Latvia. All of them are offering different kind of e-services online. Simplest form of e-services is possibility to communicate via their web page using chat function or VOIP – most common one in use is Skype. Most common e-services are those of selling insurance online. As an informational tool, online calculators for determining product/service's price are used. Car, travel, personal accident and private property insurance are common type of eservices offered and sold through Internet. Several technologically advanced insurers offer additional e-services such as: possibility to submit insurance claim and further monitor claim handling process, log in clients to their personal accounts and overview information about active insurance policies.

Several insurance broker companies are offering even more sophisticated eservices to customers. Brokers are using different information and communication technologies to acquire information about insurance price offers using price calculators available on different insurers' web sites, combining results in one offer and displaying it for clients in their web pages. One of the most popular aggregate e-services of an insurance broker is to obtain/calculate, compare prices and sell Motor Third Party Liability (MTPL) insurance to car owners. Here, the only criteria for comparison is price. For MTPL insurance such benchmarking is reasonable, because MTPL policy conditions are defined by law. However, in the case when other kind of insurance is to be offered, a substantial (level of) benchmarking of available on the Latvian market products and insurance services' quality must be undertaken, but neither the process nor the results can be easily communicated to the consumer. Peculiar enough, while insurance companies in Latvia do not benchmark their performance against one another, benchmarking of insurers in Latvia has been done since 2007 by insurance brokers' association LIBA. The developed benchmarking reflect criteria which are specifically important from brokers point of view – insurers may have different opinion what should and should not be benchmarked. LIBA's benchmarking is based on the results of annual survey of insurance companies titled "Insurers' performance evaluation by insurance brokers." All members of LIBA participate in this survey evaluating each insurer's performance, according to 9 criteria, by giving marks from 1 to 5, where 1 is the lowest possible performance evaluation, and 5 is the highest evaluation. According to this evaluation benchmarking is performed and the ranking of the insurers is made, insurance brokers are licensed, they are experienced insurance professionals, so they can be considered as insurance field experts. Some insurers include the results of the survey in their annual reports, which also show validity of the survey. One insurer even boosted on own competitive superiority having scored the highest in this survey.

Insurance industry in Latvia is represented by three associations. Insurance companies are represented by Latvian Insurers Association (LIA), which works in Latvia since 1993. LIA unites 18 insurance companies and branches of foreign insurers (10 non-life and 8 life), which control approximately 99.8% of the total Latvian insurance market. LIA represents the common interests of the insurance industry of Latvia. The association discusses issues that are relevant to the insurers, as well as informs the society about topics significant for the clients. LIA members offer to their clients all kinds of insurance including motor, property, health, life, as well as pension and savings insurance.

Latvian Insurance Brokers Association (LIBA) was founded in 2000 by insurance broker companies registered in the Republic of Latvia. Currently there are 104 insurance broker companies in Latvia, 45 of them are members of LIBA. The aim of the LIBA is to develop insurance brokers' market, raise the quality of insurances services and representation of common interest of the members.

The other organization representing Latvian insurance brokers is Latvian Professional Brokers Association (LPIBA). LPIBA was founded in 2000 by insurance broker companies registered in the Republic of Latvia, but distinctively from LIBA members of LPIBA are mainly foreign capital companies. Currently there are 6 insurance broker companies in Latvia who are members of LPIBA.

The summary of the opinion expressed in the in-depth interviews by the three heads of associations representing insurance industry enabled formulating the quality benchmarking criteria.

The first association, LIA, does not currently conduct any quality benchmarking activities, but they do admit the necessity for such benchmarking. The head of LIA determined such quality criteria:

- Client satisfaction (client references, loyalty);
- Client complaints (the number of complaints submitted to LIA ombudsman, Finance and Capital Supervision Commission state governed regulatory institution in Latvia, as well as the number of complaints in media);
- Claim handling agility and attitude (quickness, simplicity and accessibility of the process of handling claims);

- Reputation (evaluation of the insurer by customers, partners, media and other institutions);
- Accessibility (number of affiliates, 24 hour call centers, accessibility through internet);
- Service level (kindness of employees, IT service level);
- Concessionality (interpretation of insurance conditions in clients' favor).

All aforementioned criteria are focused on a client, all aimed to client's satisfaction. In addition to those criteria there exists another perspective. As described by the head of LIA: There are 2 groups of insurers in Latvia. The first group is insurers with Western European owners, and the second is domestically owned companies. There is an assumption that Western European companies have better quality practices than domestically owned ones. Therefore it can be concluded, that ownership of the company, can be indirectly determined as a quality criteria.

The other association – LIBA – has been completing insurer's quality benchmarking already for 3 years for its own purpose. The interview with the head of LIBA revealed that:

- There is an organization of insurance industry professionals apart from LIA, who have independent opinion about insurers;
- LIBA independently has developed they own insurers quality criteria shown in survey.
- Those criteria are specifically defined for insurers evaluation from brokers' point of view.
- LIBA criteria differ from LIA criteria because they are defined for different evaluation purposes.

In order to summarize their members' opinion on the quality of Latvia's insurance companies LIBA has conducted a survey to benchmark insurance companies according to the following criteria:

- Performance agility (how quickly insurer serves clients, brokers, claims);
- The quality of insurers' product and services (coverage, deductibles, exceptions, obligatory conditions, conditions of compensation, other conditions);
- Price level (comparison of prices to the similar products from competitors);
- Insurers' public reputation (how clients evaluate insurer, reviews from clients);
- Is insurer well known (do clients recognize particular insurer, evaluation of insurers' marketing activity);
- Insurers' attitude towards insurance brokers (insurers' employees attitude -friendly, arrogant, other and public expressions about brokers);
- Do insurers treat direct clients, and broker clients equally (do broker clients receive equal offer in the sense of price and service);
- How quickly insurance claims are handled;
- Does insurer compete fair (Does insurer try to cheat broker by addressing client directly).

As it can be concluded from the surveys' questions, LIBA benchmarks insurers from their stakeholders' perspective – as partners/distributors of insurance companies, and simultaneously as representatives of their clients.

It is noteworthy that LIBA considers more important to benchmark their partners – insurers – than to benchmark themselves. Such position can be explained by the fact that insurers are "owners" of the product (i.e., services provided to the customers), and in the sense of quality they are more influential than insurance brokers, which are "distributors".

# 5 Analysis of the Case Study Results – Benchmarking Standard as a Basis for e-Services

As admitted by the principals of the examined associations, there is no methodological and comprehensive quality evaluation approach implemented for benchmarking non-life insurance services in Latvia. There is a need (and potential benefits) for an adequate benchmarking standard to be established. There is no quality benchmarking conducted between members of associations. However, insurance association members are benchmarked by members of another insurance market association – insurance brokers association. Since brokers are participants of the same insurance market, and work in close cooperation with insurers, they claim to be experts in the field.

According to the research it can be concluded that companies in Latvia's insurance industry have an understanding about quality benchmarking, but they do not conduct benchmarking according to any model or methodology.

Further research is needed to evaluate different models and to possibly choose the best one for the insurance industry. The authors suggest to the associations in the industry to conduct educational explanatory work aimed at convincing companies to participate in benchmarking, to conduct comparison of quality criteria in order to ascertain position organization is currently in, and which practices are achieving superior performance levels.

We suggest that if industry representatives (associations) themselves could achieve mutual consensus about quality standards, and establish mutually accepted qualitative benchmarking criteria and standards within insurance industry, then insurance industry could overcome the gap from almost non-existing publicly accessible insurers qualitative benchmarking to effective e-service offering. In this case standards are needed to build clearly defined and trustful environment firstly in industry itself, and afterwards between industry and society. Specifically, we argue that for the insurance industry's e-service development to contribute to the broader development of e-Society, the following has to be done:

- 1. Knowledge must be accessible to the society in a simple and understandable form, such as ranking of insurers. At same time, criteria and ranking formation principles must be clear and easily accessible for anyone interested. Currently this is not the case.
- 2. Results of and knowledge about insurers qualitative benchmarking must be communicated throughout all stakeholders' e-resources, thereby ensuring wider infor-

mation dissemination and maximally even distribution of knowledge among the citizens and businesses.

- 3. Stakeholders involved in benchmarking process must be clearly identified, since different stakeholders have different criteria and understanding about quality, and insures brokers evaluation reflect reality from brokers as stakeholders point of view. Such detailed explanation can prevent misperception of rankings as it can currently happen with LIBA ranking.
- 4. Insurance industry stakeholders such as insurers themselves, banks, leasing companies, supervising government institution and clients are not currently involved in quality benchmarking and have potential to participate in this process if credible and efficient tools are provided by industry. Internet can be used as a platform for collaborative effort of the stakeholders.
- 5. Since e-environment is agile and variable, it requires constant effort from industry to keep information on offered services up to date, thus safeguarding its credibility. Timely information updates seem to be a challenge for the industry, as can be judged by widespread presence of outdated information on websites of organizations we have studied.
- 6. Inasmuch as successful positioning and promotion of e-services contributes to the prevalence of knowledge, the knowledge leads to formation of opinion on competing services in the society. Proper Internet-based feedback mechanisms can help improve the original e-service offering if consumers' opinions are fed back to the insurance industry.
- 7. The interaction that can take place around e-services between society, enterprises and insurance industry would be a great example of "the spirit of e-Society" and would contribute to the improvement of the industry and economy, too.

#### References

- 1. W.B. Arthur, "Competing Technologies, Increasing Returns, and Lock-In by Historical Events," *The Economic Journal*, vol. 99, no. March 1989, 1989, pp. 116-131.
- M. Bowerman, G. Francis, A. Ball, and J. Fry, "The evolution of benchmarking in UK local authorities," *Benchmarking: An International Journal*, vol. 9, no. 5, 2002, pp. 429-449.
- 3. R.J. Boxwell, *Benchmarking for Competitive Advantage*, New York, NY: McGraw-Hill, 1994.
- 4. R.C. Camp, *Benchmarking: The search for industry best practices that lead to superior performance*, ed. American Society for Quality Control, Milwaukee, WI: Quality press, 1989.
- 5. M. Castells, *The Rise of the Network Society*, 2nd (2000) ed., The Information Age: Economy, Society and Culture, Vol. I, Oxford: Blackwell Publishers, Ltd, 1996.
- 6. CEA, About CEA the European insurance and reinsurance federation. 2011, CEA European insurance and reinsurance federation: Brussels.

- C.U. Ciborra, K. Braa, A. Cordella, B. Dahlbom, A. Failla, O. Hanseth, V. Hepso, J. Ljungberg, E. Monteiro, and K.A. Simon, ed., *From Control to Drift. The Dynamics of Corporate Information Infrastructures*, New York: Oxford University Press, 2001.
- 8. S. Codling, Benchmarking, Brookfield, VT: Gower, 1998.
- 9. Council of the European Union, eEurope. An Information Society for All. 1999.
- 10. E.M. Daniel and H.N. Wilson, "Dynamic capabilities in e-business transformation," *European Journal of Information Systems*, vol. 12, 2003, pp. 282-296.
- 11. P.N. Edwards, "Y2K: Millennial Reflections on Computers as Infrastructure," *History & Technology*, vol. 15, no. December, 1998, pp. 7-29.
- 12. P.N. Edwards, "Infrastructure and Modernity: Force, Time, and Social Organization in the History of Sociotechnical Systems," in Thomas J. Misa, Philip Brey, and Andrew Feenberg, ed., *Modernity and Technology*, Cambridge, MA: MIT Press, 2003, pp. 185-226.
- 13. A.F. Farhoomand and D.H. Drury, "Managerial information overload," *Commun. ACM*, vol. 45, no. 10, 2002, pp. 127-131.
- 14. V.V. Fomin and K. Lyytinen, "How to distribute a cake before cutting it into pieces: Alice in Wonderland or radio engineers' gang in the Nordic Countries?," in Kai Jakobs, ed., *Information Technology Standards and Standardization: A Global Perspective*, Hershey: Idea Group Publishing, 2000, pp. 222-239.
- 15. F.W. Geels, "Technological transitions as evolutionary reconfiguration process: a multi-level perspective and a case-study," *Research Policy*, vol. 31, 2002, pp. 1257-1274.
- 16. O. Hanseth and E. Monteiro, "Inscribing behavior in information infrastructure standards," *Accounting, management and information technologies*, vol. 7, no. 4, 1997, pp. 183-211.
- 17. T.P. Hughes, "The Evolution of Large Technological Systems," in Wiebe E. Bijker, Thomas P. Hughes, and Trevor J. Pinch, ed., *The social construction of technological systems: New directions in the sociology and history of technology*, Cambridge: MIT Press, 1993, pp. 51-82.
- 18. B. Kahin, "The U.S. National Information Infrastructure Initiative: The Market, the Net, and the Virtual Project," in Brian Kahin and Ernest Wilson, ed., *National Information Infrastructure Initiatives: Vision and Policy Design*, Cambridge, Mass: MIT Press, 1997, pp. 150-189.
- 19. N. Kazama, "The regional informatization policies of the local governments in Japan: Why they fail to..." *Information Infrastructure & Policy*, vol. 5, no. 4, 1996, pp. 279-290.Presents information on Japan pertaining to the national government and local governments, which have promoted policies to utilize information technology in regional areas. Evaluation of regional informatization policies; How reasons for failure is analyzed; Information on the policy process of local governments; Details of future prospects
- 20. K.L. Kraemer and J.L. King, Information Technology and Administrative Reform: Will the Time After E-Government Be Different?, CRITO Research Report, University of California, Irvine, August, 2003 2003.

- 21. K. Lyytinen and V.V. Fomin, "Achieving high momentum in the evolution of wireless infrastructures: the battle over the 1G solutions," *Telecommunications Policy*, vol. 26, no. 3-4, 2002, pp. 149-170.
- 22. K.H. Rolland and E. Monteiro, "Balancing the Local and the Global in Infrastructural Information Systems," *The Information Society*, vol. 18, no. 2, 2002, pp. 87-100.
- 23. M.A. Schilling, "Technological lockout: An integrative model of the economic and strategic factors driving technological success and failure," *Academy of Management Review*, vol. 23, no. 2, 1998, pp. 267-284.
- 24. The Danish Government, Using IT Wisely: IT and Telecommunications Policy Action Plan, Report, Ministry of Science, Technology, and Innovation, October 2003.
- 25. The High-Level Group on the Information Society, Europe and the global information society: Recommendations to the European Council. 1994, Council of the European Union.
- 26. The White House, The Administration's Agenda for Action. 1993, NII.
- 27. J. Yates, *Control through communication: The rise of system in America*, Baltimore, MD: John Hopkins University Press, 1989.