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THE USEFULNESS OF READABILITY FORMULAS IN THE INSURANCE INDUSTRY

Katarzyna Barczuk

Department of Insurance
Wroclaw University of Economics

K e y w o r d s: text readability, simplification, readability formulas, insurance.

A b s t r a c t

The aim of this paper is to characterize the most important methods which are used to determine the level of text readability. The author presents practical examples of the usage of chosen methods by foreign insurance companies. The final section of the study is completed with general conclusions relating to the application of the given solutions to the Polish insurance market.

„There is nothing wrong with the formulas except they are not used enough" (William DuBay)

ZASTOSOWANIE MIERNIKÓW PRZYSTĘPNOŚCI TEKSTU W BRANŻY UBEZPIECZENIOWEJ

Katarzyna Barczuk

Katedra Ubezpieczeń
Uniwersytet Ekonomiczny we Wrocławiu

S ł o w a k l u c z o w e: czytelność i przystępność tekstu, symplifikacja, wskaźniki przystępności, sektor ubezpieczeń.

A b s t r a k t

W artykule scharakteryzowano najważniejsze metody do badań nad stopniem przystępności dowolnego tekstu, ze szczególnym uwzględnieniem ubezpieczeniowych wzorców umownych. Autorka prezentuje przykłady zastosowań wybranych metod przez zagraniczne zakłady ubezpieczeń, które mogłyby zostać z powodzeniem wykorzystane przez polski sektor ubezpieczeniowy.

Introduction

An enormous amount of information from a variety of sources, processed and provided daily, makes one realize that readability is a significant part of our life. It is also a subject of research by many companies and organizations in order to hit the target group of people with their messages. The problem is usually the same – limitations. There is a limited number of space, and a limit to the amount of characters which often leads to a difficult-to-understand text instead of an easy-to-read one. With regards to this, such materials are filled with incomprehensible terminology, frequently containing long sentences or exotic syntactic constructions, which do not demonstrate a customer-oriented approach. Therefore, a broad area for formulas measuring readability is available.

The readability formulas and existing methods used to measure readability have become more popular. In recent years, the problem of text readability has attracted considerable attention. It is not surprising that nowadays, in the era of information technology and the computer age, all formulas are computerized and are acting mainly as online calculators, which show the readability level of every kind of text that is pasted into it. Due to this fact, the readability of various types of documents and agreements can be probed thoroughly; in particular, different trade agreements which consumers deal with all the time. They are written in a very complex way so that their understanding by an average, non-expert audience is practically impossible. It also applies to insurance contracts where readability leaves a lot to be desired. However, readability formulae should in that case be regarded as a cure-all and a rough indicator of insurance policy quality, according to the *KISS* principle („keep it short and simple").

General considerations on readability

Reading comprehension is appropriate to any situation and it is verified at every life stage. The understanding of written texts is a specific human ability, which has awakened the interest of representatives of many disciplines in the social and behavioral sciences for a long time. Statistics on readability and competencies of adults are alarming. The human population is having problems with basic reading skills from understanding the given text as a whole, through difficulties with understanding the meaning of sentences, and up to minor lapses in vocabulary. Furthermore, the problem isgrowing. A rich source of data on adults' proficiency, for example in literacy, is provided by a survey „Programme for the International Assessment of Adult Competencies"

(PIAAC) sponsored by the OECD. Literacy in this context means the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. PIAAC assessed the level and distribution of adult skills across selected countries, focusing on the cognitive and workplace skills needed for successful participation in the economy and society of the 21st century.

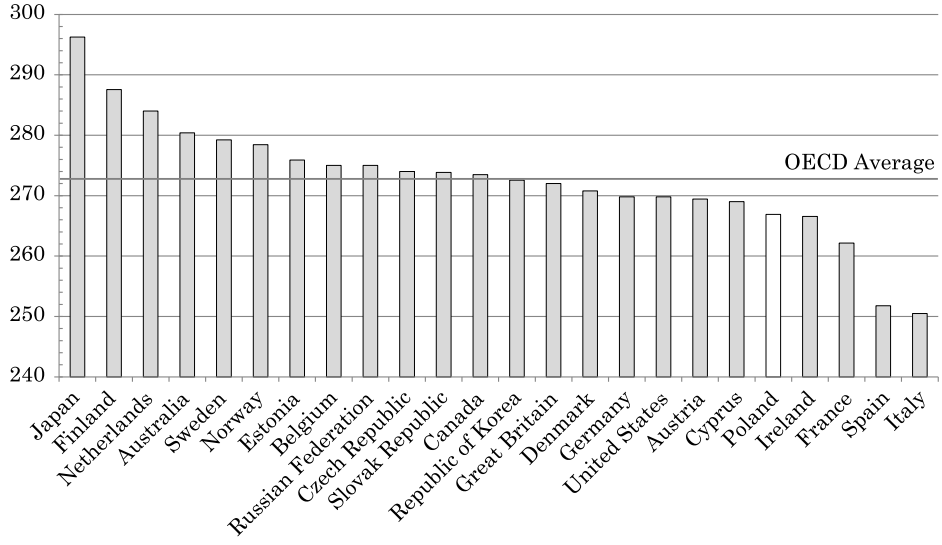

Fig. 1. The average literacy score among adults aged 16–65 years in selected countries
Source: self-study based on: OECD, *Programme for the International Assessment of Adult Competencies* (PIAAC), 2012 (data retrieved from http://piaacdataexplorer.oecd.org).

The graph presents how literacy skills are distributed across a population of 24 countries that participated in the Survey of Adult Skills (PIAAC).The highest country-average literacy level of 296 points was scored by Japan. Countries occupying the Scandinavian Peninsula are at the top of this ranking as well. According to the column graph, the average score for Poland seems to be a bit on the weak side and remains substantially below the OECD average (267 points against 273). The results put Poland together with Ireland on one of the last places among the analyzed countries, which cannot be treated as a positive effect when it comes to reading comprehension.

To summarize the above studies on readability, the difference between two similar concepts: readability and understandability should be emphasized. Readability can be defined in numerous ways: for instance, as a „quality of writing (print or handwriting) that can be easily read". The term readability

does not equal understandability, which means „capable of being understood". In general, there are three ways the term readability (this paper focuses exactly on readability) is used in research (LARSSON 2006, p. 8):

1. To indicate legibility of the printed material as well as its layout or typography.
2. To indicate ease of reading due to the interest-value or the pleasantness of writing.
3. To indicate ease of comprehension due to the style of writing.

Apparently, the third definition of readability is the most suitable for the purposes of this article. On the basis of analyzing the structure of sentences, words and phrases; many readability formulas (tests) were created, which are methods for measuring and determining the difficulty of a given text.

Existing methods for measuring readability

It seems obvious that measuring the readability of a piece of writing can lead to its simplification. For this reason, different metrics which differ in their range of evaluated features and complexity of formulas have been discovered. Evaluations of readability fall into two broader categories:

– quantitative measures,
– psycholinguistic methods (cloze tests).

The first group involves mathematical and statistical analysis of specific linguistic characteristics of the given text. To this group belong reading comprehension tests or analytical methods such as readability formulas. The second one, so-called cloze deletion tests, aim to determine the understanding of a text by letting readers fill in blanks that represent left-out words.

Over the past decades, many experts through their studies have compiled recommendations connected with readability and its measurement or techniques for effective writing documentation. There is a lot of readability research available, most of it was conducted between 1930 and 1960 and designed for American English. However, present-day readability tests are only adaptations of the original preexisting ones, in spite of the fact that they are tailored for almost every language in the world,

Readability tests are indicators which measure how easily a piece of writing can be read and understood by the man on the street. They give a quick, handy overview of whether or not a sentence is too long and/or so full of polysyllabic words that it is virtually unreadable to all but a particular sub-set of over-educated individuals. In short, all procedures which are used to measure readability are known as readability formulas.

Perhaps, the most common and the most publicized test for computing readability was the one credited to Rudolph Flesch in 1948. The popularity of his formula made Flesch a leading authority on readability (HEYDARI, RIAZI 2012, p. 177). This test has also been incorporated into software applications such as Microsoft Office Word, so that every user may easily check a word for its spelling and grammar, as well as its readability level. Flesch Reading Ease Readability Index (FLESCH 1949) is based on the average number of syllables per word and words per sentence. It rates texts on a 100-point scale – the higher the score, the easier it is to understand the text. Although quite simple at first sight, today this formula is still considered to be very efficient and this is most likely due to its easy application. This is why it continues to be one of the most widely used tests to measure text difficulty. On the other hand, we have The Gunning Fog Index Readability Formula (simply called FOG Index), from the name of the author- Robert Gunning, which also measures the readability of any piece of writing. The formula estimates the number of years of education that a reader hypothetically needs to understand the passage of a text. It is based on the percentage of hard words (normally those with three or more syllables). Nowadays the FOG Index is commonly used for running texts in health care, general insurance industries and for general publication as well (KOUAMÉ 2010, p. 137).Last, but not least is the Automated Readability Index (ARI), which is designed to evaluate the readability of text. Like the other two Indices previously mentioned, the ARI formula outputs a number which approximates the grade level needed to comprehend the given text. One aspect, which is particularly remarkable, is that ARI relies on a factor of characters per word instead of the usual syllables per word. As it turns out, such a solution is a faster one, because the number of characters may be counted more accurately than syllables by software applications.

The following (Table 1) is an outline of the chosen, well-known methods for measuring readability of a text.

It is fair to recognize that all readability formulas provide an indication of text readability that is based on the word and sentence lengths found in the text. The output of the statistics used here is an indication of the number of years of education that a person needs to be able to understand the text easily on the first reading (LARSSON 2006, p. 10). Most of them return a score where a higher result indicates a more difficult piece of writing, and has to be interpreted with a scale to get the exact difficulty. That is how the target audience of a given text which is being analyzed is set. Undoubtedly, it is a significant advantage of readability formulae. Obviously, they cannot measure or give an answer to a question of whether a piece of writing is suitable and easy-to-understand by an audience or a group of clients, or if it is understandable for them. However, readability tests can surely help by

Table 1

Main characteristics of the chosen readability formulae

	Formula	Output	Description
Flesch Kincaid Reading Ease (1948)	206.835 – 1.015 · asl – 84.6 · asw asl = average sentence length (the number of words divided by the number of sentences) asw = average number of syllables per word (the number of syllables divided by the number of words)	– 90–100 easily understandable by an average 5th grader – 80–90 easy – 70–80 fairly easy – 60–70 easily understood by 8th and 9th graders – 30–50 difficult – 0–30 best understood by university graduates	– higher score indicates more difficult text – the score between 60 and 70 is largely considered acceptable – most used and well--known formula (incorporated in Microsoft Office Word) – suitable for all kinds of texts
Gunning Fog Index (1952)	0.4 · (asl + phw) asl = average sentence length phw = percentage of hard words	FOG index = number of years of formal education needed to understand the text i.e. score of 8 = eighth grade student (13-14 years old)	– short sentences written in Plain English achieve a better score – „ideal" score is 7 or 8, anything above 12 is too hard for most people to read, widely used inhealth care and insurance. Ideal for business publication and journals
Automated Readability Index (ARI, 1967)	4.71 · chw + 0.5 · asl – 21.43 chw = characters per word asl = average sentence length	outputs a number that approximates the age needed to understand the text	– formula relies on a factor of characters per word – used in technical documents and manuals – produces a reason-ably accurate score in most European languages

Source: from ReadabilityFormulas.com, http://www.readabilityformulas.com (access: 17.07.2015).

forming rules for writers so that the text will be clear and understood by people with a given educational background. This may contribute to the retention of the readers or clients, and also increase their speed of reading. The fact is, many of the formulas can be easily adopted by software programs (they are mathematical equations) to make them easy-to-use. There are prepared tools available on websites, so the only work to be done is to copy-paste a text and the programs return a result very quickly using the preferred formula. Some readability calculators can also display complicated sentences (those with

many words and syllables) with suggestions of what might be done to improve its readability.

In spite of the success of the formulas for computing readability on the one hand, they were always at the centre of controversy on the other. It is obvious that the methods for measuring text readability are based on a limited number of independent variables – they cover only a fraction of all factors that actually contribute to the comprehensibility of a particular document. Even though there are some disadvantages of tests for computing readability, they can significantly improve text simplicity and, therefore, its readability. To enable the non-expert audience to understand most of the evaluation document, the author should take into account some techniques that might increase its readability. Shorter words, shorter sentences, words with fewer syllables, and words that are used more frequently are easier to read. Indeed, longer words and sentences are generally harder to understand and read due to the fact that they require more mental work by the reader. In any case, the clearer and simpler, the better for the reader or customer.

In conclusion, readability formulae are easy to learn, easy to use (mainly through their computerization) and an inexpensive way of testing document comprehension. They could be treated as a first step leading to any text simplification. What is more, using more than one formula could provide greater insight into a given piece of writing. Nowadays, more than 40 different methods used in readability testing can be identified. Some of them are better known and more popular than the others. Furthermore, there are also available readability measurement tools for languages such as: Chinese, Hindi, Hebrew or Vietnamese. Unquestionably, they have great utility.

Use of readability formulas in the insurance practice

Currently, readability indices can be applied to anything from textbooks to government documents and they are more popular than ever. Readability measures have been historically used primarily to place textbooks into grade level categories; but for over 50 years now, these formulas have been massively used in many languages and worldwide in (SCOTT 2015):

– education and publishing (from the abovementioned textbooks, to journals, to literature which tends to form the backbone of a good educational system),

– health care (testing clinical leaflets relevant to patients, doctors, pharmacists, researchers),

– military and governmental agencies (several important readability formulas were developed to measure the readability of enlistment applications and technical manuals),

– financial and accounting sector (measuring the readability of loan applications, insurance contracts, financial reports, tax forms).

The reason for this massive use is that a growing number of incomprehensible words in various kinds of documents have beenobserved which is against the plain English drafting. The concept of plain language is based on a clear, concise, direct, and exactly readable style of drafting documents in English. It rather means presenting clear and accurate information, not just using simple language or easy words.

In one form or another, plain language laws have existed for more than 40 years. In 1972, U.S. President Richard Nixon initiated plain language reforms by decreeing that the Federal Register should be written in 'layman's terms'. The First National Bank of Boston has implemented plain English into loan agreements, and in 1973 Citibank converted a promissory note to plain language (by cutting its length in half), which has been seen as a leader in improving customer relations. By mid-1986, twenty states had enacted legislation requiring plain English in insurance policies, and nearly thirty-nine states had considered some form of plain language legislation. Plain English laws for consumer contracts have been implemented in more than 35 states. New York was the first state to pass a law requiring that contracts governing consumer transactions should be written in plain English, as opposed to legalese. Beginning in the early 1980s, a number of states began to regulate the „readability" of insurance policies. Nowadays, about 30 states have enacted readability laws designed to simplify the language in insurance contracts (ASPREY 2010, p. 1–3).

The plain-language movement has also been joined by other countries outside the U.S. Proponents of plain language have been active in Australia, where a plain English car insurance policy was introduced by NRMA in 1976, and other plain language policies quickly came forward. The UK has also implemented standards for plain English for improving readability (DWYER 1993, p. 335). Other countries which have mandated plain language in all credit and financial agreements are: Canada, Sweden, Mexico, the Netherlands, South Africa and New Zealand.

The USA is the forerunner of the regulation for improving simplicity of the contractual language used in insurance practice. Most states have regulations that impose a plain language requirement on insurance policies or legal documents in general. Although these requirements differ slightly from state to state, the general terms are relatively common to all of them. The readability standards can be subdivided into three categories (FRIMAN 1995, p. 106, 107):

a) subjective tests,
b) objective tests,
c) formulas (Flesch test).

The first group of standards for determining readability can be found in some state's regulations, and frequently use terms such as „reasonable", „clear" and „common". The New York statute, for instance, requires that consumer contracts be written in a „clear and coherent" manner. It concludes that subjective tests allow for flexibility and interpretation dependent upon the particular parties involved. In that case especially „reasonableness" requires additional judicial interpretation. In contrast, the objective test relies on mechanical, precise formulas to determine reading ease. They are based on the nature and length of the words and sentences used in customer contracts. Specifically, the Connecticut statute requires such technical details as: „the average number of words per sentence (...) less than twenty-two" or „allows at least three-sixteenths of an inch of blank space between each paragraph and section". Definitely, a great benefit of the objective standards is their precision and clear guidelines for contract drafters. But on the other hand, they are quite naturally inflexible and full of technicalities which cause problems in their application. At the end of this article, the readability formulas are presented.

Most U.S. States and jurisdictions mandate that insurance policies and contract forms meet a readability test. The most popular index for gauging insurance language is the Flesch test. In many of the states shown in Figure 2 (marked green), the language used in auto, life, health and other insurance policies must pass the Flesch Reading Ease test. A number of state insurance Commissioners (responsible for the harmonization of the country's different laws and regulations with regards to the insurance industry, customer service and quality of insurance products) demand that policies issued in their state be „readable"; in practice, that means about Grade 8. The standard for the insurance industry is a Flesch score of 40 that is equivalent to a high-school graduate's reading level in insurance forms.

Historically, insurance policies have been written in very small type and contained much fine print where many of the important items from an insurance perspective can be found. The contracts have been drafted in language that challenges even the most experienced insurance professional. This refers to lawyers or judges, and also drafters of legal language, who are stumped by its meaning; even though they are engaged with insurance policy argot (ROSSMILLER 2008, p. 9).Most insurance companies have used this fine print to exaggerate the insurance contract length (over 20 pages) or layout; not to mention to add loopholes into the content of the agreement which should not be ignored.

An InsuranceQuotes.com poll (HAWKINS 2011) presents that 87% of drivers who currently have auto insurance said that they read at least part of their auto insurance policies. Thirty-six percent of surveyed drivers who had read their policy found them to be somewhat or very difficult to understand. It is

Fig. 2. States in the U.S. using readability formulas in the insurance sector
Source: own elaboration.

assumed that less than 5% of insurance company clients actually read their insurance policies, and with good reason. Of course, the easiest way is to read all product documentation before signing, but it is not as simple as that because much of the documentation is not written in a way that is accessible to clients. Consumers are often not familiar with insurance concepts, principles and laws, and the reason for this lies in the customer's insufficient education with regards to insurance. This can contribute to a lack of insurance vocabulary (terms) and, as is known, many insurance contracts (General Terms and Conditions or Tariffs) are long documents containing large amount of legalese and industrial terminology. In consequence, only „seasoned experts" can easily understand the specific details of each policy, such as: general provisions, amount of coverage, insurance premium to be paid, sum insured and guarantee sum or exclusion clauses. Usually the only time most of the Insured ever pull out their insurance policy is when they have a claim. Moreover, it often turns out that this it is a difficult-to-read document with a long list of items that are excluded and the particular accident is not covered by the insurance policy. Badly written customer-oriented documentation results in poor customer satisfaction and can lead to lawsuits. More clarity and simplification of insurance contracts will reduce customer service calls and appeals. When an insurance policy is given to a customer that is too difficult to understand, they

will be less informed. A readable insurance product/service specification saves money and time by avoiding unnecessary customer complaints. For Insurers, it should be crucial to provide its standard agreements in a simple and easy--to-read way; such asa concise, easy-to-read summary. Presenting the same information, but with simplified details, can convince the most uninterested customers to buy a policy. That is the main reason the insurance industry should use and implement readability standards.

As mentioned previously, plain English laws for consumer contracts have been enacted in most of the states in response to the urging by consumer groups. They have mainly incorporated the Flesch test into their legislation. For instance, the State of Massachusetts (Mass. Gen. Laws 2014) has incorporated the Flesch reading ease test, which forces insurance policies to have a minimum score of 50 (equivalent to a 10^{th} grade reading level). In Michigan, each insurance company needs to obtain prior approval of its policy from the Insurance Bureau before the company can offer that policy for sale. One of the requirements is that each policy must meet a „readability score for a form for which approval is required (...) shall not be less than 45". Moreover, state regulations do not refer only to readability. Oregon Law(ORS 2013) says that „consumer contract complies with plain language standards if it uses: words that convey meanings clearly and directly, the present tense and active voice whenever possible, margins adequate for ease in reading and frequent section headings". Another example is the Connecticut definition of readable language which states there must be a standard layout, font, and the policy must avoid „the use of unnecessarily long, complicated, or obscure words, sentences, paragraphs or constructions" (Conn. Gen. Stat. 2015). Some states go further than that: the North Carolina Department of Insurance says its agency runs a consumer hotline available to anyone in the state where they can get „free unbiased information" and the Texas Department of Insurance provides toll-free consumer help.

Many states are trying to improve consumer-friendly legislation so that the Insured understand easily and comfortably general terms and conditions. While most state statutes differ in the exact language used, penalties applied, and coverage; they all tend to employ either a subjective standard or an objective standard, or both. Foreign experts and regulators have taken note of the complexity of insurance policies, and they are working to create additional protections for insurance consumers. Nonetheless, the idea of readability, and more precisely readability formulas, has had an important effect on the insurance industry in simplifying their policies and determining the direction which other foreign countries (without any readability regulations) should follow.

Conclusions

There are numerous examples from other countries, mostly developed ones, where the readability formulas are working well in the insurance business (they even regulate the degree of insurance policy readability). However, it is true that such simple formulas providing readability statistics could be relatively widely used; but instead, are very often ignored. Although, as mentioned previously, today so many formulas exist for different languages, but none of them are used by the Polish insurance sector.

The main reason the insurance industry in Poland should use and implement readability formulae is that every policyholder must understand general terms and conditions, standard contractual clauses and their rights and obligations arising from the insurance contract. In 2013 the Polish Financial Supervision Authority (KNF 2013) recorded an increase in the number of complaints referred to it. Almost half of them (47%) were related to the insurance industry. Many complaints occur when Policyholders or the Insured do not clearly understand general terms and conditions of a given insurance product. The main concerns contained in the complaints regarding personal and non-life insurance include a focus on insurance compensation payment. When concluding an insurance contract, people are not often aware of all the conditions because they do not read them or only roughly analyze them. The result of this is improperly selected insurance coverage where certain insured events are excluded. As a consequence of making a claim, it may transpire that such a loss or damage is not covered by the insurance policy and the Insured Person is not entitled to receive any compensation. This is mainly the subject of the complaints by Polish consumers.

The readability of the polish insurance contract leaves a lot to be desired. Much of the product documentation is not written in a way that is accessible to clients. There are so many twists and turns in the language that it is even possible to read through the entire policy and not understand it. However, in the Polish legislation (Polish Civil Code 2015) there is a provision which is applicable to all contracts entered into with consumers and which states that „any provisions of general terms and conditions which are ambiguous shall be interpreted in favor of the consumer". The main criterion for choosing the insurance product should be readability and not just the price as often happens. Consumers should not buy an insurance product that they find confusing.

Poland ought to take advantage of this new opportunity and apply the given solutions to the insurance market. Looking at the experience of other countries with regards to insurance materials readability, the Polish insurance market should rely on readability formulae and concentrate on implementing

and putting into force the proposed measures as soon as possible. More importantly, text difficulty can be measured without language-specific adaptation, which means that such a solution could bring clear, measurable benefits for the Polish insurance industry.

* The paper achieves a score of 36 on the Flesch reading ease test.

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