WEB-BASED CUSTOMER RELATIONS ABILITY OF INSURANCE COMPANIES IN UNITED KINGDOM AND TURKEY: AN ANALYSIS WITH MULTI-CRITERIA DECISION MAKING

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Abstract— This study aims at (1) testing the ability of insurance companies at providing information to current and prospective policyholders and (2) determining prominent multinational insurance companies in this process in two separate international markets (UK and Turkey).For this purpose, two Multi-Criteria Decision Making analysis methods are used. AHP and PROMETHEE analysis show that there is a contextual differentiation between two countries and multinational insurance companies which is successful to reach customers via internet in UK have not same affect in Turkey.

Keywords— Insurance, Multi-criteria Decision Making, AHP, PROMETHEE, Customer Relations.

I. INTRODUCTION

Insurance industry, which provides the most basic contribution in today's modern societies' economic and social development, is considered as one of the three main steps of finance sector. Along with the globalization that knows no bounds, the use of insurance as a risk transfer technique has been popularized because of meeting the rapidly increasing security needs of stated that are registered in financial and geographical boundaries and because of the decreasing cost bearing power. Insurance industry plays a key role in the development of capital markets that provide the flow of funds to economy and in its healthy and stable growth. Therefore, it wouldn't be correct to regard insurance as a simple transfer mechanism where merely the damages of damaged units due to unfortunate events are spread to several actors in the system.

Insurance companies which can provide reliable and dependable financial support for policyholder, especially during damage and indemnity process, are fundamental ways to increase the confidence level of policyholders about the system. When the ability of insurers to honour claims comes into question, this can often lead to regulation, such as Solvency II, which in part exists to maintain the confidence of stakeholders.

In today's world, accessibility and immediate access to information has become increasingly important. This is in part because investors and policyholders' increased ability to access crucial information regarding the insurance companies position, strength, strategy and outlook for example, can exert influence on their decision making. Therefore, it is perhaps unsurprising that insurance companies have adjusted their approach and transitioned toward sharing more information through internet than previously.

This study aims at (1) testing the ability of insurance companies at providing information to current and prospective policyholders and (2) determining prominent multinational insurance companies in this process in two separate international markets. On this basis, this study considers these markets to be suitable for making intercultural comparison between developed and developing (UK and Turkey) insurance markets.

II. DEFINITION OF PROBLEM

A great variety of products/services including insurance, banking, publishing, visual activities and computer applications are completely produced and priced on internet and their promotion and delivery are conducted via the internet as well. For this reason, the use of websites has become a leading outlet for insurance companies seeking to promote their products and services through internet-based marketing activities. Additionally, websites are fundamentally useful communication channels when seeking to convey contact information to customers. It is therefore held that the characteristics and the content of individual websites, prepared by insurance companies, can be a potential source of competitive advantage in the pursuit of new customers and the retention of existing ones.

Especially in the sectors such as insurance where the relationship based on trust plays an important role, the information contained on insurers' websites should be understandable, accessible and reliable. It has long been recognized that trust is a key ingredient in fostering economic and financial transaction and achieving business success [1]. In insurance terms trust is arguably more important as the counterparty risk would only become evident after a period of time following the purchase of the policy. Furthermore, trust is tied to the idea that insurance is itself an intangible product. When insurance is purchased it is merely a promise of indemnity sometime in the future.

The promotion and the sale of insurance system on the internet in the developed countries such as United Kingdom are significant. Although the distribution channels of insurance vary according to countries, the

internet service has recently become important for a lot of countries. Today, a wide array of insurance companies provide online services to their customers. This is because the managers have to understand the competitive factors having an impact on electronic trade and they have to assess the opportunities and threats of the use of internet for trading purposes. Henceforward it is not enough just to make use of the best internet applications and to build a webpage. What matters is to present the one which is different and which creates much more value [2]. When the online sale of the insurance companies is compared with the sales made through agencies thanks to the use of internet, it is observed that internet sales result in 23% cost advantage [3]. The budget that the organizations allocate for the communication technologies leads to significant cost advantages in the long term. Furthermore, by means of websites, investors can simply access to the financial and economic news, current data in the past, comparative analyses of the competitors and basic research results about the investment targets.

However, in insurance system, it is mystery that how insurance companies use their web sites effectively and which multinational insurance companies are successful in this process in developed and developing insurance markets.

III. METHODOLOGY

Multi-Criteria Decision Making (MCDM) is one of the most extensive branch of operations research field. It combines basic principles of the systems approach with the in problem-solving approach that combines multiple disciplines [4]. MCDM, in simple terms, without ignoring several criteria that do not have the same dimensions and is concerned with the purpose of resolving a problem by following them. MCDM as a general approach. It is taking into account the values of the people's choice to help them to make decisions [5]. The multi-criteria decision-making methods in the literature have been used in many studies.

In our daily lives to the decision of the problems we face decisions that should be considered entirely clear of certain criteria. For example, even in the process of buying a car comfort, quality, evaluation of fuel consumption and other quantitative and qualitative factors and it should be decided accordingly. Companies in the decision will also give some criteria for evaluating decisions and tend to improve their business performance. Companies are obliged to provide effective decisions by evaluating multiple criteria to achieve their objectives. When multiple variables or factors are considered together into a complex decision problems. Therefore there is a need for the use of multi-criteria decision-making methods. In recent study of Kirkbesoglu et. al. [6], five insurance companies which have the highest gross premium productionand operate in Turkey and United Kingdom have been incorporated into the research scope. These insurance companies constitute the majority of insurance market in both countries. AXA, Aviva, Direct Line Group, RSA Group, Zurich insurance companies are selected for UK. On the other hand, Allianz, AXA, Anadolu, Ak, Mapfre insurance companies were chosen to comprise the representative sample for Turkey. Accordingly, it is proposed that it is possible to draw generalizable inferences about the insurance sector of each country.Those company's weights are verified with AHP method.

3.1. Data Gathering

In recent study of Kirkbesoglu et. al. [6], the characteristics which should take place on the website of any insurance company are presented under four categories. Each of these criteria has also sub criteria within themselves. In the application part of this study, whether the Turkish and the British insurance companies have a website content regarding the criteria indicated in Table 1 has been questioned.

Table1: Data Set of the Study

INFORMATION (I)	Main Page Info (MPI)
	Headline (H)
	Logo (L)
	Motto (M)
	Advertisement (AD)
	News & Announcements (N&A)
	Communication Info (CI)
	Address Info (RI)
	Security Info (SI)
	On-line Access (OA)
	Founding Date (FD)
	Mission & Vision (M&V)
	Branch Office Address (B&AI)
	Financial Statement (FS)
	Board of Directors (M&M)
	Products (P)
ERGONOMIC (E)	Site Map (SM)
	Search Engine (SE)
	Main Page Button (MPB)
	Language Variety (LV)
ACCESS (A)	Up to Datedness (UTD)
	Security & Confidentiality (S&C)
	Loading Speed Quality (LSQ)
	Comprehensibility (C)
DEPENDENCY (D)	Frequently Asked Questions (FAQ)
	Survey/Complain/Request (SCR)
	Social Media Links (SML)
	Current News (CN)

3.2. AHP Method

AHP method is a MCDM technique which is developed in 1977 by Thomas L [7]. Analytic Hierarchy Process can be understood by managers because of the hierarchical visualization on complex, multi-person, multi-criteria problems. Selection process is used for qualitative and quantitative criteria to determine the relative importance weights of each decision criterion of the transmitter and then choosing between alternatives based on the decision based on any criteria. The steps of the Analytic Hierarchy Process Many applications which form is given below [7]:

Step 1: Create Hierarchical Structures

Step 2: Identification of Priority

Step 3: Bilateral Comparison Matrix and Solution
Step 4: Normalization and Relative Importance Weights
Step 5: Calculation of Consistency Rate
Step 6: Determination of the Final Order.

3.3. PROMETHEE Method

PROMETHEE is one of the preferable method of MCDM methods recently developed and conferred to the literature by Brans in 1982 [8]. This method is by developed Brans and Vincke in 1985 [9]. The main features of PROMETHEE method are simplicity, openness and to be balanced formed. The method uses preference functions for creating a ranking. The easy way of creation to a decision, decision-makers must be defined all the parameters clearly. PROMETHEE method makes possible to ranking a finite number of alternatives on both with partial order (PROMETHEE I) and the full sequence order (PROMETHEE II) [10].

In PROMETHEE method, the process of decision-making matrix is formed with alternatives ($a1$, $a2$, …,an) and criteria ($q1$, $q2$, ..., qk). For more information about the PROMETHEE method, referenced by the typed documents can be checked [8 - 11]. After making the decision matrix, full and partial rankings would be seen at the end of stage 5 the following steps.

Step 1: PROMETHEE method starts with by making binary comparisons of the value of the alternative criteria for achieving the decision-making process. The choice between alternative functions are as specified in the Equation (1).

$$p[f(a), f(b)] = p[f(a) - f(b)] \quad (1)$$

The structure of the preferred function PROMETHEE method was based on the comparison of the two alternatives. In this case, considering the difference between two alternative values on certain criteria. Small deviations (differences) shows that decisions made by a small margin to choose between alternatives of the transmitter. Decision-makers can not ignore this difference, then do not make a choice between the two. The greater the difference, it is up to the final choice. These preferences are changing numbers between 0 and 1 [11].

Step 2: When the decision-makers are comparing two alternatives on the basis of criteria, they use the 6 preferred function defined by Brans [8]. Information on the aforementioned choice of the function is given in Figure 1.Preference Function and Threshold Type (p, q and s) selection can be depend on by the nature of criteria. Some rules for the selection of the correct choice of the function determined by the nature of the criteria is as follows[12]:

- V-type (type 3) and Linear (Type 5) preference functions is the most appropriate for quantitative criteria (price, cost, power, etc.). V-type is a special case of the linear things selection indifference threshold depends on the use.
- Ordinary (Type 1) and Level (Type 4) preference function is suitable for the qualitative criteria. In the case of a low number of criteria scale level (eg yes / no to the criteria or five-point scale) and different levels are quite different from each other, the usual preference function will be a good choice. If the smaller ones, are desired to distinguish deviations from large, level of preference functions would be more efficient. - Type (Type 2) is to miss a state preference with the function level and rarely used.
- Gaussian (Type 4) function is not used very often preferred for complex parameters (s threshold; q is somewhere between indifference threshold and choosing p threshold).

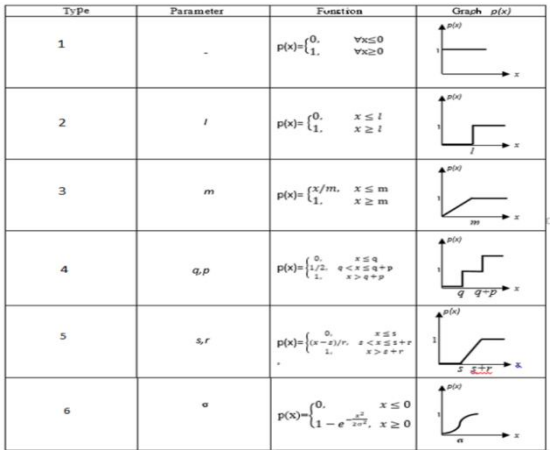


Fig.1. Preference Function

Step 3: Preference indexes are specified with the help of preference function, to see priorities of alternatives on each other. Preference indexes are shown in terms of equation (2) and (3) for determining the advantages of both alternatives (a, b) mutually [10].

$$\pi(a, b) - \sum_{j=1}^{n} w_j \cdot P_j(a, b) \quad (2)$$

$$\pi(b, a) = \sum_{j=1}^{n} w_j \cdot P_j(b, a) \quad (3)$$

Step 4: By means of preferred indexes obtained for each alternative are obtained by alternating positive and negative values.

Alternatively, preference index is calculated by dividing (n-1) in their own rows and columns of the sum of in the matrix. The value of positive and negative current are specified equation (4) and (5) [10].

Positive current:

$$\Phi^{+}(a) = \frac{1}{n-1} \sum_{b \in A} \pi(a,b) \quad (4)$$

Negative current:

$$\Phi^{-}(a) = \frac{1}{n-1} \sum_{b \in A} \pi(b,a) \quad (5)$$

Step 5: Decision makers may be unable to obtain ranking results by the best alternative from the worst option from positive and negative current values before he or she get the PROMETHEE I results. PROMETHEE II net current value is calculated by equation (6) [10].

$$\Phi(a) = \Phi^{+}(a) - \Phi^{-}(a) \quad (6)$$

Calculated net priority value Φ (a) creates a balance of positive and negative current. The greater the net performance of the alternative current is higher. Calculated net current end may now be possible to make a ranking of alternatives. Alternatives are not included in PROMETHEE II status compared with each other [13]. Although the positive and negative currents in the net current result obtained by extraction from each other, though some information is lost, it is necessary to sort the alternatives from the best to the worst option.

IV. ANALYSIS

In our study, Visual Promethee is used for PROMETHEE method calculations. The weights of the all criteria are calculatedwith AHP methodbefore from Kirkbesoglu's study[6].The gathering weight data are entered Visual PROMETHEE as weight values. Other calculations are done with the help of this software. All calculations are divided by two section. First of all is done for UK insurance companies. The second one is done for the companies which are in Turkey. Visual PROMETHEE result is shown in fig.2 for UK companies.

PROMETHEE Flow Table

Rank	action	Phi	Phi+	Phi-
1	ZURICH	0,0754	0,3028	0,2275
2	DIRECT LINE GROUP	0,0640	0,2944	0,2304
3	AVIVA	0,0330	0,2737	0,2407
4	AXA	-0,0823	0,2327	0,3150
5	RSA GROUP	-0,0900	0,2368	0,3268

Fig.2. Results of UK Companies

Visual PROMETHEE result is shown in fig.3 for Turkey companies.

PROMETHEE Flow Table

Rank	action	Phi	Phi+	Phi-
1	AXA	0,1482	0,2944	0,1462
2	ALLIANZ	0,1074	0,2817	0,1743
3	ANADOLU	0,0769	0,2653	0,1883
4	AK	-0,1377	0,1626	0,3003
5	MAPFRE	-0,1948	0,1673	0,3621

Fig.3. Results of Turkey Companies

V. FINDINGS &CONCLUSIONS

According to our analysis, PROMETHEE calculations give a ranking for each country's insurance companies. UK and Turkey have different contextual results. For this reasons, this study aims at seeing the ranks of insurance companies at providing information to current and prospective policyholders in two separate international markets. British and Turkish insurance industries was compared in terms of effective usage of internet sites. The results show that Turkish and British insurance companies' demonstrate different responses based on the preset criteria.

AHP and PROMETHEE analysis show that there is a contextual differentiation between two countries and multinational insurance companies which is successful to reach customers via internet in UK have not same affect in Turkey.

REFERENCES

[1] L. Guiso, "Trust and insurance markets", Economic notes, vol. 41, no. 1/2, pp. 1-26, 2012.

[2] M. J. Cronin, "Global Advantage on the Internet." New York, Van Nostrand Reinhold, 1996.

[3] S. Yanik, and S. Yazici, "E-Insurance." D&R Publishing, Ankara, 2002.

[4] P. Bogetoft, and P. Pruzan, "Planning With Multiple Criteria: Investigation, Communication and Choice". HandelshojskolensForlag, Copenhagen Business School Press, Copenhagen, Vol. 13, pp. 7-12 1997.

[5] S. Zionts, "Mcdm-If Not A Roman Numeral Then What?" Interfaces, vol. 9, no. 4, pp. 94-101, 1979.

[6] E. Kirkbesoglu, J. Mcneill and E. H. Ozder, "An Evaluation of the Effectiveness of Insurance Organizations at Providing Information to Policyholders: A Cross-Cultural Comparison between United Kingdom & Turkey."International Business Research, vol. 8, no. 9, pp. 35-46, 2015.

[7] T. L. Saaty, "Fundamentals of decision making and priority theory with the analytic hierarchy process" Vol. 6, Rws Publications, 2000.

[8] J. P., Brans, "L'ingenierie de la decision: Elaboration d'instrumentsd'aide a la decision. La Methode PROMETHEE", Universite Laval, Colloqued'aide a la Decision, Quebec, Canada, pp. 183-213, 1982.

[9] J. P. Brans, and P. Vincke, "A Preference Ranking Organization Method: The PROMETHEE Method for MCDM", Management Science, vol. 31, no. 6, pp. 647-656, 1985.

[10] J. P. Brans, P. Vincke, and B. Mareschal, "How to Select and How to Rank Projects: The PROMETHEE Method", European Journal of Operational Research, vol. 24, pp. 228-238, 1986.

[11] J. P. Brans, and B. Mareschal, "PROMETHEE Methods", in Figueiraet. al. (ed.) Multiple Criteria Decision Analysis, State of the Art Survey, New York, Springer Science, 2005.

[12] N. Bedir, E. H. Özder, and T. Eren, "The Third Party Logistics Firm Selection Using AHP-PROMETHEE Methods", 13th International Logistics and Supply Chain Congress, İzmir, 2015.

[13] T. Genç, "PROMETHEE Yöntemive GAIA Düzlemi", AfyonKocatepeÜniversitesiİktisadiveİdariBilimlerFakültesiDergisi, Cilt.15, Sayı.1, ss.121-142, 2013.

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