DECISION MAKING APPROACHES FOR PERFORMANCE EVALUATION

(PERFORMANS DEĞERLENDİRME İÇİN KARAR VERME YAKLAŞIMLARI)

by

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Thesis

Submitted in Partial Fulfillment

of the Requirements

for the Degree of

MASTER OF SCIENCE

in

LOGISTICS AND FINANCIAL MANAGEMENT

in the

GRADUATE SCHOOL OF SCIENCE AND ENGINEERING

of

GALATASARAY UNIVERSITY

Supervisor: Asst. Prof. Dr. Tuncay GÜRBÜZ

July 2019

This is to certify that the thesis entitled

DECISION MAKING APPROACHES FOR PERFORMANCE MANAGEMENT

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ACKNOWLEDGEMENTS

I would first like to thank my thesis advisor Asst. Prof. Dr. Tuncay Gürbüz for the continuous support of my study and research, for motivation and immense knowledge since my bachelor degree.

I would also like to thank my professors in Galatasaray University for their effort and experience for our education.

Finally, I must express my very profound gratitude to my parents, my sister and my friends. This accomplishment would not have been possible without them. Thank you.

July 2019
Kübra KARABECE

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LIST OF SYMBOLS

AHP	**:** Analytic Hierarchy Process
ANP	**:** Analytic Network Process
BOCR	**:** Benefits, Opportunities, Costs, Risks
BSC	**:** Balance Scorecard
CRM	**:** Customer Relationship Management
DEMATEL	**:** The Decision Making Trial and Evaluation Laboratory
ELECTRE	**:** Elimination and Choice Translating Reality English
FAHP	**:** Fuzzy Analytic Hierarchy Process
FANP	**:** Fuzzy Analytic Network Process
SWOT	**:** Strength, Weakness, Opportunities, Threats
TOPSIS	**:** Technique for Order Preference by Similarity to Ideal Solution
VIKOR	**:** Vise Kriterijumska Optimizacija I Kompromisno Resenje

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ABSTRACT

Companies are paying more attention to performance evaluation as markets are dynamic and competition is increasing. Performance evaluation gain importance issue in order to overcome competition and identify their strategies. This approach with improving performance evaluation criteria in companies, ensured that companies are managed correctly, specify effective strategies for their companies and obtain the advantage of competition.

In literature, there are many studies that contain performance evaluation topic but generally, performance evaluation is specified with just financial performance evaluation. In this study, beside the financial performance evaluation metrics, strategic criteria, customer criteria etc. are considered. Balance Scorecard (BSC) is one of the most important methods for performance evaluation and strategic road map. In this research, performance measures categorized with BSC perspective, therefore evaluation metrics include financial and non-financial criteria. This study is specialized with performance evaluation in four dimensions. General performance evaluation model structure is created with Benefits, Opportunities, Costs, Risks (BOCR) method. Criteria weights are calculated with Fuzzy Analytic Network Process. This study is applied in retail sector and alternatives are ranked with Technique for Order Preference by Similarity to Ideal Solution (TOPSIS).

ÖZET

Piyasaların dinamik olduğu ve rekabetin her geçen arttığı ortamlarda şirketler performans değerlendirmesine gün geçtikçe daha çok önem vermektedir. Rakiplerinin önüne geçmek, stratejilerini belirlemek için performans değerlendirme yaklaşımının uygulanması yaygınlaşmaktadır. Bu yaklaşım, şirketlerdeki performans ölçüm kriterlerinin iyileştirilmesiyle birlikte, şirketlerin doğru yönetilmesi, doğru strateji belirlemesi ve rekabet avantajını elde etmelerini sağlamaktadır.

Literatürde performans değerlendirmesi ile ilgili birçok çalışma bulunmaktadır fakat genel olarak çok ölçütlü karar verme yönteminin kullanılması finansal performans değerlendirme özelindedir. Yapılan çalışmada, finansal performansların yanında, müşteri kriterleri, stratejik kriterler vb. diğer metrikler de değerlendirmeye dahil edilmiştir. BSC şirketlerin performans değerlendirmesinde ve strateji planlamalarında çok önemli bir metottur. Bu çalışmada karar ölçütlerinin sınıflandırılmasında BSC yöntemiyle birlikte finansal ve finans dışı ölçütler kullanılmıştır. Bu çalışmayı özelleştiren konu ise performans değerlendirmenin dört farklı boyutta incelenmesidir. Genel performans değerlendirme model yapısı BOCR yöntemiyle oluşturulmuştur. BOCR yönteminde modeldeki kriterlerin ağırlıklarının belirlenmesi ise FANP yöntemiyle sağlanmıştır. Perakende sektöründe uygulanan bu çalışmada alternatiflerin sıralaması ise TOPSIS yöntemiyle yapılıp en iyi performansa sahip olan şirkete seçilmiştir.

1 INTRODUCTION

In a competitive world, performance evaluation for a company is seriously of great importance. That is not only important from the perspective of company managers but also that of investors, rivals, banks that provides credits for companies want to measure company's performance.

In an environment in which financial markets are entering into an integration process and speedy and radical changes take place due to technological developments (Seçme, et al., 2009). Therefore, companies have to stabilize production, quality services, customer satisfaction and financial performance in radical changes. Performance evaluation helps organizations to screen their situation in the face of changes or crises in the market and to take action to ameliorate their measures.

Analytic methods for performance analysis change by type of organization depend on company management, market situation. Nevertheless, most successful companys' have common characterictis, effective methods of performance management. Companys' can reach their goals by prioritizing their actions in order to fulfill corporate visions and by incorporating effective performance management (Davis & Albright, 2004).

Parker (2000) explained firm's reasons to measure their performance in five arguments:

- Measuring the level of customers' satisfaction, getting feedback from their customers about the services they are offered.
- Positioning in the sector by making a comparison between themselves and their benchmarks.
- Determining whether the organization is successful for both themselves and their shareholders. Being sure that decisions are made on the basis of real data and not emotions or assumptions.

- Defining the problematic areas in the organization and making proposals to solve these problems,
- Determining the areas which are open to development and might create advantage in the organization

In literature, there are many researches about performance evaluation systems. Many related studies have investigated the key performance indicator with strategy tools, multi criteria decision making approaches, statictical methods. In this research, a new customizing model for general performance evaluation model using FANP based on BOCR, BSC and TOPSIS is proposed. ANP/AHP based on BOCR method is generally used to identify strategy, process evaluation and system evaluation. The originality of this study comes from evaluating general performance with BOCR analysis by proposing a model that can be applicable in each sector with evaluation of different perspectives of BOCR dimensions.

This study is organized as follows: Literature review of performance evaluation metrics and performance measures are explained in Section 2. Proposed model is explained in Section 3. Methods that are used in this study are explained in Section 4. Application and result are explained in Section 5. In the last section conclusion and suggestion for future research is explained.

2 LITERATURE REVIEW

2.1 Performance Evaluation Methods

There are many theories and methods for performance evaluation that have been used in research. The Balance Scorecard (BSC), regression analysis, MDCM methods, Delphi analysis are some examples.

BSC is an extensive and through performance evaluation tool to adequately plan and control and organization (Davis & Albright, 2004). Kaplan and Norton (1992) developed a system that evaluates four main perspectives that are finance, customer, internal business process and learning and growth. Four perspectives are presented in performance measurement: financial perspective as a lagging indicator and customers, internal business process and learning and growth perspective as leading indicators. These indicators can properly reflect the performance of a company and help evaluators make accurate decisions (Varmazyar, et al., 2016).

In previous researches, performance evaluation has been considered as an MCDM problem that provides option with determined alternatives. Yang et al. (2007) proposed this approach with aim of ranking the alternatives and optimum form with highest degree of satisfaction. In research, alternatives are compared ranking with performance measures included in their comparison. Beside the classic MCDM methods, fuzzy MCDM methods are applied in performance evaluation model. The fuzzy set theory, first introduced by Zadeh (1965) is appropriate for dealing with uncertainty and imprecision associated with information. Generally, classic methods include expert opinions that are not capable to describe human's vague thoughts (Seçme, et al., 2009).

Seçme et al. (2009) evaluated banking sector with FAHP and TOPSIS, FAHP, they also used TOPSIS and VIKOR method manufacturing sector (Yalcin, et al., 2012) .

Generally, BSC approach and MCDM method are combined in performance evaluation example. Performance evaluation measures categorized with BSC structure and ranked with MCDM approach. Chang and Tasai (2015) composed a hybrid performance evaluation model. They determined performance measures weights with ANP and ranked with VIKOR. Wu et al. (2009) applied fuzzy MCDM approach with BSC. They also weighted criteria with FAHP and ranked with TOPSIS in banking sector. Hashemkhani Zolfani and Safaei Ghadikolaei (2012) used DEMATEL and ANP to identify relevant indices in each BSC perspectives to decrease the risk along with a short-term planning in private universities. Shaverdi et al. (2011) ranked the performance TOPSIS, VIKOR, ELECTRE method adapted with BSC. Keramati and Shapouri (Keramati & Shapouri, 2015) evaluated firms CRM systems performance with DEMATEL.

In this research BOCR approach of ANP (Saaty, 2001) will be used in performance evaluation. The BOCR enables a riche analysis; it is based on the bipolarity nature of attributes with regard to objectives in terms of support and rejects (Tchangani, 2009). Benefit-cost analysis may be defined as a decision-making tool that may be adopted in various areas. New factors, such as opportunities and risks, extend this analysis for estimating future outcomes of the project (strategy, policy or scheme) (Šimelytė, et al., 2014). BOCR analysis is similar to SWOT analysis. Two methods can be applied to evaluate internal and external processes of a company that can change the performance of a company.

In literature, BOCR approach of ANP method is generally used to identify strategy, process evaluation, system evaluation. Šimelytė et al. (2014) used it to design foreign direct investment policy, Amokrane et al. (2013) used it to evaluate system in end life systems. Tornjanski et al. (2017) used with BSC customized ANP/BOCR approach in CRM performance measurement. There is no research for general performance evaluation with BOCR analysis.

In this research, integrated BSC and customized Fuzzy ANP-BOCR approach will be used. The BSC is used to develop and classification of financial and non-financial indicators to provide strategical view for performance evaluation. The Fuzzy ANP based on BOCR method is used to evaluate with performance metrics and compose realistic method for general performance evaluation with four dimensions of BOCR method. FANP is used for calculating weights of criteria and TOPSIS is used ranking of alternatives in FANP based on BOCR method.

2.2 Performance Measures

In literature, different types of ratios are used for performance evaluation. They evaluate the firms with financial approach and therefore generally analyze with traditional financial ratios. Financial criteria can be listed as follows: return of equity, net profit margin, liquidity, net income etc.

In literature, Li et al. (2001) used nine financial ratios in their research. Güven and Persentilli (1997) used company's balance sheet metrics. Mercan et al. (2003) studied firms' performance with financial ratios between years 1989 and 1999. Koley and Chakraborty (2015) used ten financial ratios in public sector enterprises. Demir and Astarcıoğlu (2007) consulted total commercial, interest income, interest expenses, non-interest income and non-interest expenses. Eyüboğlu and Çelik (2016) categorized five main financial criteria that are growth (sales growth, asset growth, shareholders equity growth), activity (account receivable turnover, fixed asset turnover, equity turnover, total asset turnover), financial leverage (debt ratio, debt to equity ratio), profitability (ROA, ROE, net profit margin), liquidity ratios (current ratio, quick ratio, cash ratio) for the performance evaluation of energy firms.

Financial criteria are not sufficient to performance evaluation. Neely (1999), summarized with five reasons why the non-financial criteria have to use in performance evaluation.

- Cost calculation methods have change.
- The existing competition in the sector fiercely increased.
- The image in national and international platforms.
- Existence of corporate roles which constantly change.
- External demands change and unpreventable increase in changes in information technologies.

In literature, Tözüm (2002) carried out the performance metrics with using the ratio analysis in comparing the bank's performances. He is not just using traditional ratio in bank's performance evaluation, he highlighted that traditional ratio is not sufficient, it should be multilateral dimension. Soteriu and Zenios (1999) considered operating and service quality performance metrics in their paper. Seçme et al. (2009) categorized two main criteria that are financial and non-financial criteria. Financial criteria are group by seven main criteria that are capital adequacy, asset quality, profitability, liquidity, income expenditure structure, group share and sectoral share with 27 ratios. Non-financial criteria are group with pricing, marketing, differentiation, service delivery, productivity.

Chang and Tsai (2015) constituted five dimensions that are service, performance, professionalism, risk control, confidence their performance evaluation model. All dimensions include financial and non-financial metrics. For example in performance dimension, customer satisfaction and operational performance satisfaction (sales revenue) are under the same title. Ming and Tao (2013) scored besides of profitability, growth etc. the ability of carbons.

The purpose of this study, create a new model for performance evaluation based on financial and non-financial criteria. In the following Table 32 performance criteria was summarized based on literature review. In section 4, categorization of criteria with BOCR and BSC perspectives are explained.

Table 2.1 : Performance Metrics

Main Criteria	Sub Criteria	Reference
Profitability	Net Profit Rate	(Varmazyar, et al., 2016)
	Return on Networth	(Koley & Chakraborty, 2015)
	Return on Asset	(Yalcin, et al., 2012)
Liquidity	Current Ratio	(Koley & Chakraborty, 2015)
	Quick Ratio	(Koley & Chakraborty, 2015)
	Cash Ratio	(Eyüboğlu et al., 2016)
Activity Ratio	Accounts Receivable Turnover	(Eyüboğlu et al., 2016)
	Equity Turnover	(Eyüboğlu et al., 2016)
	Fixed Asset Turnover	(Eyüboğlu et al., 2016)
Marketing	Learning environment	(Wu, et al., 2011)
	Advertising Cost	(Wu, et al., 2011)
	Image and reputation	(Wu, et al., 2011)
	Brand reliability	(Chang et al, 2015)
Growth	Sales Growth	(Eyüboğlu et al., 2016)
	Shareholders' Equity Growth	(Eyüboğlu et al., 2016)
	Total Asset Growth Rate	(Su, et al., 2011)
Personal	Employee Turnover	(Varmazyar, et al., 2016)
	Professional Training	(Wu, 2012)
Innovation	R&D Portfolio	(Wu, 2012)
	Number of New Service Items	(Wu, 2012)
	Information Systems	(Wu, 2012)
Customer	Long Term Customer Retention Index	(Varmazyar, et al., 2016)
	After sales service offer	(Varmazyar, et al., 2016)
	Customer Satisfaction	(Wu, et al., 2011)
	Continuation of customers	(Wu, et al., 2011)
	Market share	(Wu, et al., 2011)
Risk	Risk management	(Varmazyar, et al., 2016)
	Safety & Healthy	(Wu, 2012)
	Market Risk	(Chang et al., 2015)
	Customer Risk Control Mechanism	(Chang et al., 2015)
Quality	Product Quality	(Wu, et al., 2011)
	Flexibility of service system	(Wu, et al., 2011)

3 PROPOSED MODEL

This study proposes a new performance measurement model using integrated BSC and Fuzzy ANP based on BOCR method. The process of this study explain in six steps figure below.

1) Performance metrics are collected based on literature review respect to BSC structure. Each criteria categorized with Financial, Customer, Internal Business, Learning and Growth main criteria.
2) Respect to BSC, four models are created based on BOCR structure.
3) Fuzzy comparison matrixes are composed with ANP method. In ANP method, matrixes are normalized with Wang (2006) normalization method and defuzzified with centroid method. Weights of criteria are calculated.
4) Alternatives are chosen in BIST100 retail firm of Turkey that are Bim (BIMAS), Carrefoursa (CARFB), Adese (ADESE), Migros (MGROS), Şok (SOKM). Data are collected using financial statement of company and survey. Financial statement data calculated average of 2013 and 2018 years.
5) Alternatives are ranked with TOPSIS method in four models.
6) Finally, results are collected and finalized choose high performance company with final step of BOCR method.

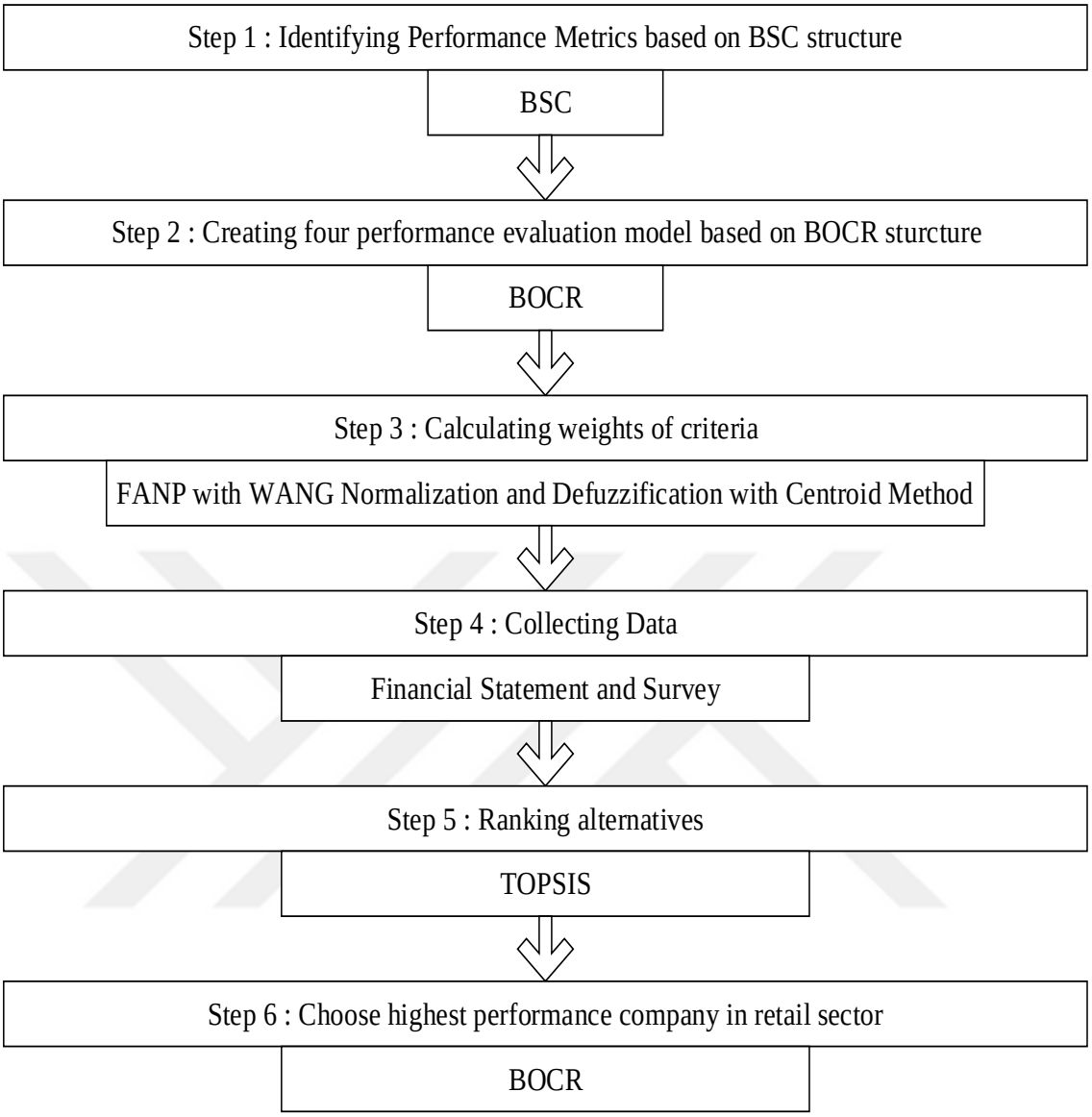

Figure 3.1: Steps of Study

Performance measures that are explained previous section are categorized with Financial (C1), Learning and Growth (C2), Customer (C3) and Internal Business (C4) main criteria. In Figure 1, general decision model is shown.

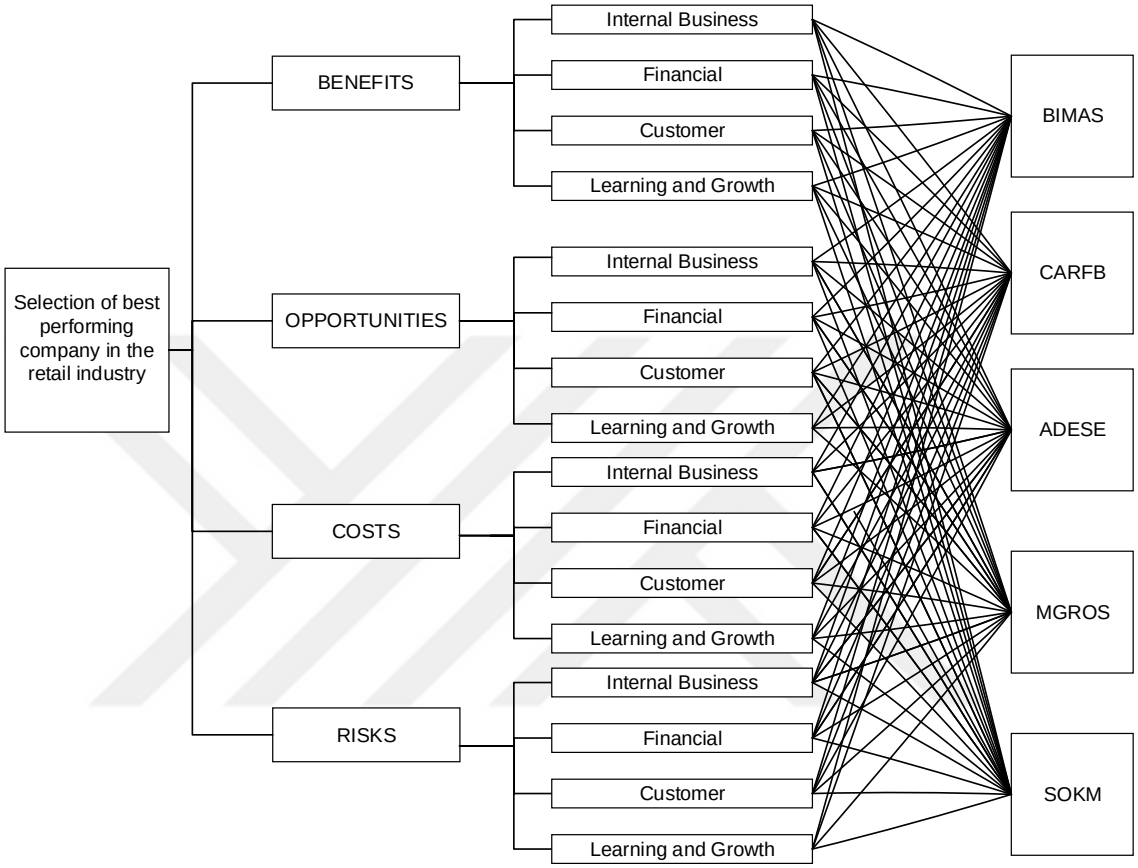

Figure 3.2: General structure of model

Benefits model criteria are shown in table below.

Table 3.1: Benefits Dimensions Criteria

Criteria	ID	Sub Criteria	ID
Financial	C1	Net Profit Rate	bfn1
		Return on Networth	bfn2
		Return on Asset	bfn3
		Accounts Receivable Turnover	bfn4
		Equity Turnover	bfn5
		Fixed Asset Turnover	bfn6
		Current Ratio	bfn7
		Quick Ratio	bfn8
		Cash Ratio	bfn10
Learning and Growth	C2	Sales Growth	blg1
		Shareholders' Equity Growth	blg2
		Total Asset Growth Rate	blg3
		Product Quality	blg4
		Flexbibility of service system	blg5
Customer	C3	Market share	bcs1
		Customer Satisfaction	bcs2
		Continuation of customers	bcs3
		Long Term Customer Retention Index	bcs4
Internal Business	C4	Image and reputation	bib1
		Brand reliability	bib2
		Learning environment	bib3

Cluster connection of benefits model is shown figure below.

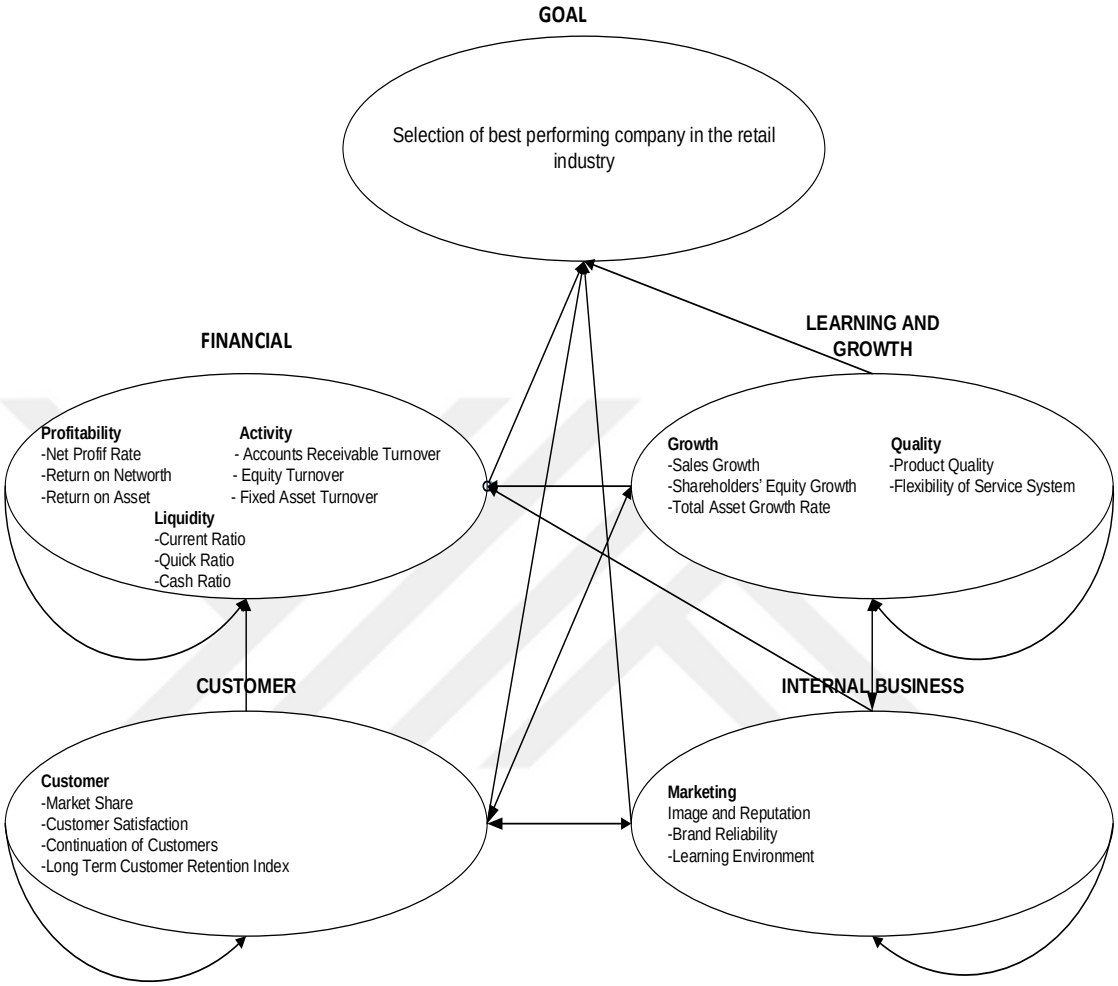

Figure 3.3: Benefits Dimension of Model

Opportunities model criteria are shown in table below

Table 3.2: Opportunities Dimensions Criteria

Criteria	ID	Sub Criteria	ID
Financial	C1	Net Profit Rate	ofn1
		Return on Networth	ofn2
		Return on Asset	ofn3
		Accounts Receivable Turnover	ofn4
		Equity Turnover	ofn5
		Fixed Asset Turnover	ofn6
		Current Ratio	ofn7
		Quick Ratio	ofn8
		Cash Ratio	ofn10
Learning and Growth	C2	Sales Growth	olg1
		Shareholders' Equity Growth	olg2
		Total Asset Growth Rate	olg3
		Product Quality	olg4
		Flexoibility of service system	olg5
		R&D Portfolio	olg6
		Number of New Service Items	olg7
		Information Systems	olg8
Customer	C3	Market share	ocs1
		Customer Satisfaction	ocs2
		Continuation of customers	ocs3
		Long Term Customer Retention Index	ocs4
Internal Business	C4	Image and reputation	oib1
		Brand reliability	oib2
		Learning environment	oib3

Cluster connection of opportunities model is shown figure below.

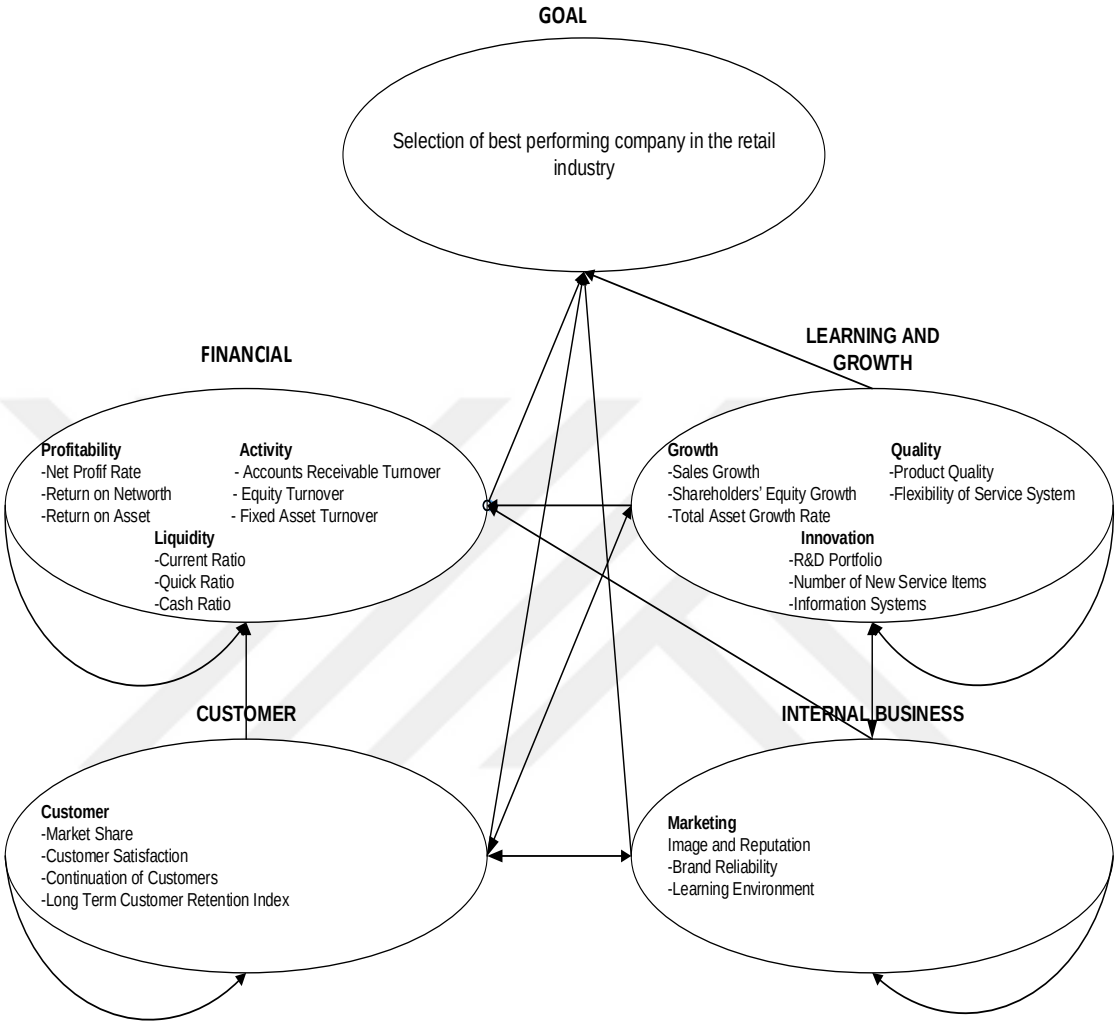

Figure 3.4: Opportunities Dimension of Model

Costs model criteria are shown in table below.

Table 3.3: Costs Dimensions Criteria

Criteria	ID	Sub Criteria	ID
Financial	C1	Net Profit Rate	cfn1
		Return on Networth	cfn2
		Return on Asset	cfn3
		Current Ratio	cfn4
		Quick Ratio	cfn5
		Cash Ratio	cfn6
Learning and Growth	C2	Sales Growth	clg1
		Total Asset Growth Rate	clg2
		Product Quality	clg3
		Flexcibility of service system	clg4
Customer	C3	Market share	ccs1
		Customer Satisfaction	ccs2
		Continuation of customers	ccs3
		Long Term Customer Retention Index	ccs4
Internal Business	C4	Advertising Cost	cib1
		Professional Training	cib2

Cluster connection of costs model is shown figure below.

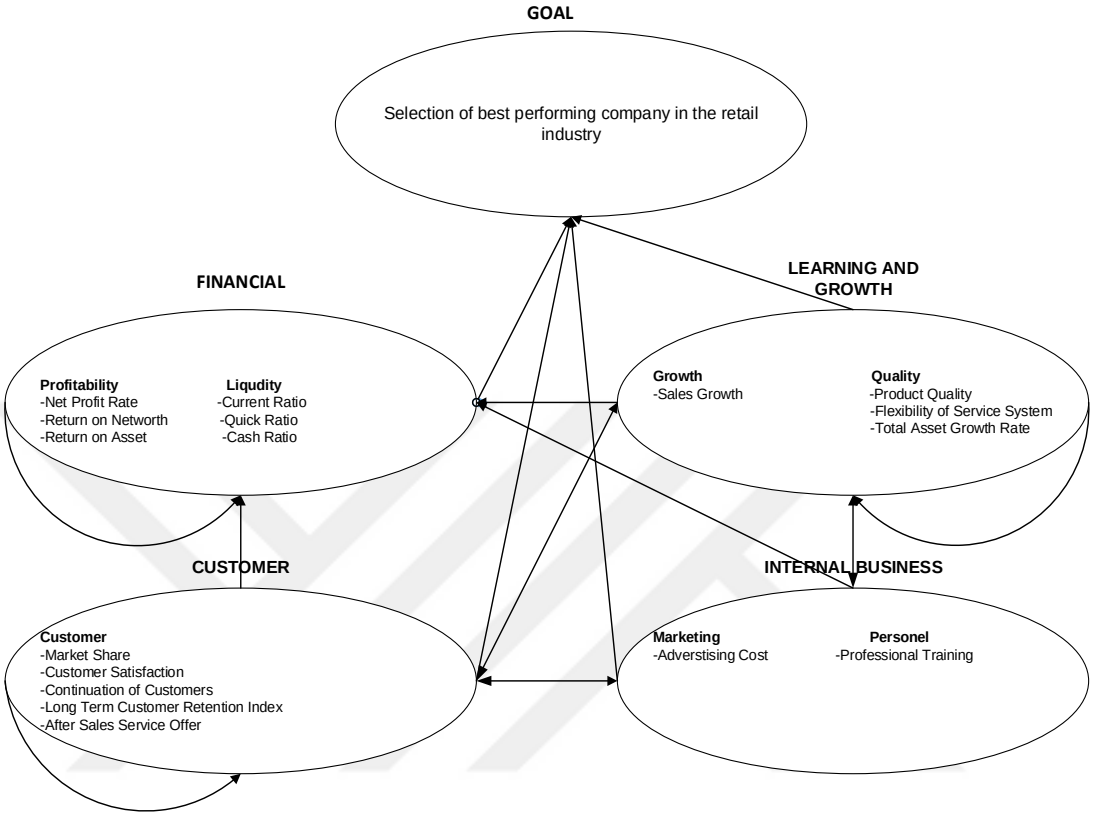

Figure 3.5: Costs Dimension of Model

Risks model criteria are shown in table below.

Table 3.4: Costs Dimensions

Criteria	ID	Sub Criteria	ID
Financial	C1	Net Profit Rate	rfn1
		Return on Networth	rfn2
		Return on Asset	rfn3
Learning and Growth	C2	Sales Growth	rlg1
		Product Quality	rlg2
		Flexibility of service system	rlg3
		R&D Portfolio	rlg4
		Number of New Service Items	rlg5
		Information Systems	rlg6
Customer	C3	Market share	rcs1
		Customer Satisfaction	rcs2
		Continuation of customers	rcs3
		Long Term Customer Retention Index	rcs4
Internal Business	C4	Image and Reputation	rib1
		Brand Reliability	rib2
		Learning Environment	rib3
		Risk Management	rib4
		Safety and Healthy	rib5
		Employee Turnover	rib6

Cluster connection of risks model is shown figure below.

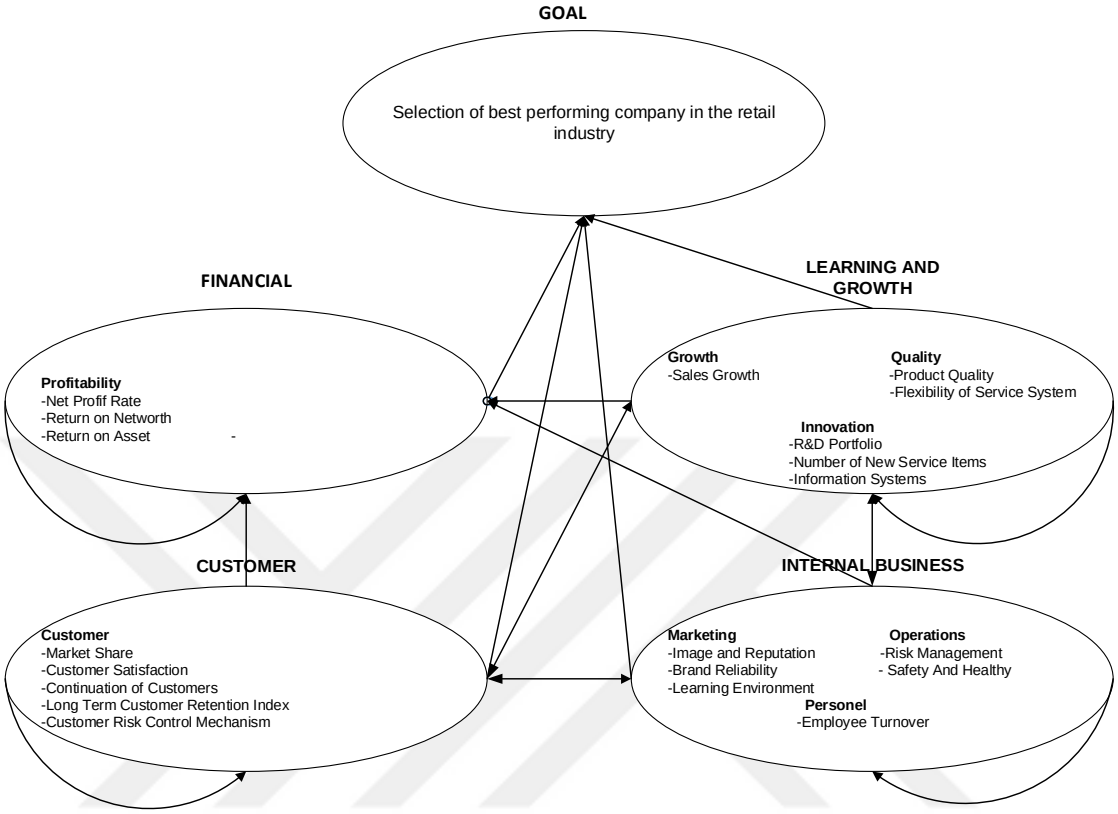

Figure 3.6: Risks Dimension of Model

4 METHODOLOGY

4.1 BSC

The concept of BSC was developed by Robert Kaplan and David Norton (Kaplan & Norton, 1992) at Harvard Business School in 1992. Then BSC became a useful method to identify business performance measures based on organizational vision and strategy. They realized that companies have a tendency to manage their business based solely on financial measurements. The BSC is used as a tool to measure the performance of both public and private organizations to achieve business goals and strategies (2018). Kaplan and Norton (1992) define the Balance Score Card: "A set of measures that gives top managers a fast but comprehensive view of the business. Include financial measures that tell result of action already taken. Complements the financial measures with operational measures on customer satisfaction, internal processes, and the organization's innovation and improvement activities-operational measures that are drivers of future financial performance." .

This definition provides an understanding that BSC is a management system that includes measurement and control to describe the organization from 4 perspectives namely, financial, customer, internal process and growth and learning. These four perspectives have relationship and causality (2018). The balanced scorecard allows managers to look at the business from four important perspectives. It provides answers to four basic questions (1992) :

- How do customers see us? (customer perspective)
- What must we excel at? (internal business perspective)
- Can we continue to improve and create value? (innovation and learning perspective)
- How do we look to shareholders? (financial perspective)

In figure below four perspectives of BSC are shown.

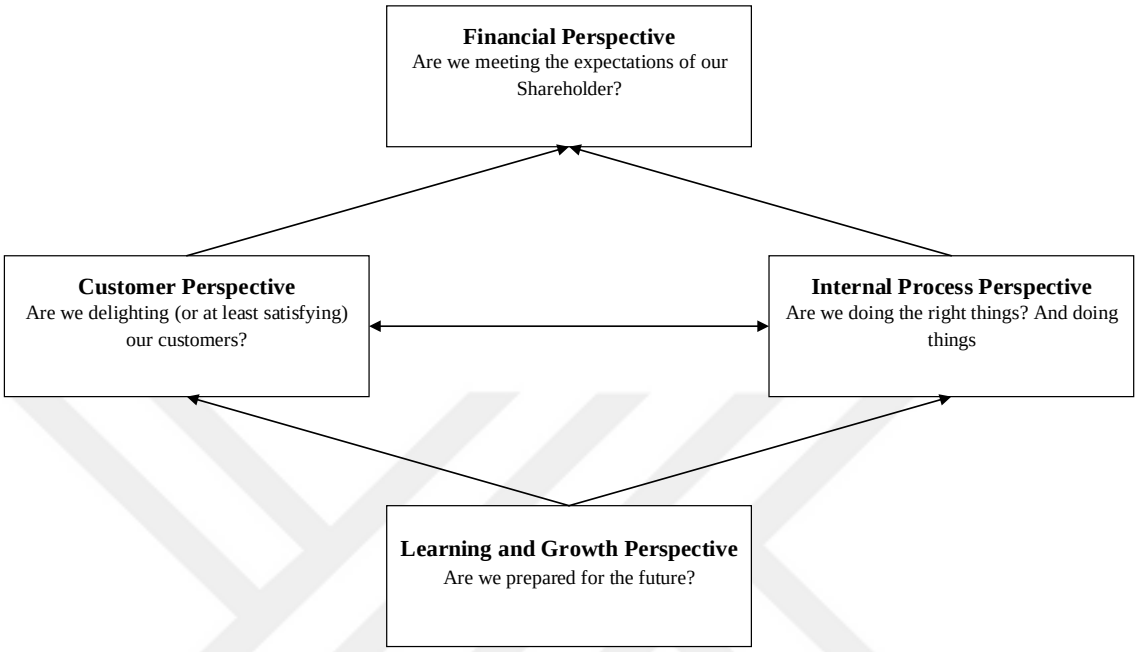

Figure 4.1 Four perspectives of BSC

4.2 FANP Based on BOCR

4.2.1 FANP Method

In literature, there is lot of studies that applied MCDM approach for calculation the weights of criteria. In these studies, they supposed that criteria are independent. Respect to literature review result, performance evaluation criteria have direct conncection between some of criteria that are used in model. Therefore FANP is used for calculation the weights of criteria with considering the innerdependence relationships among them.

The ANP, developed by Saaty (Saaty, 1996) provides a means to input judgments. The ANP also provides measurements to derive ratio scale priorities for the distribution of influence between factors and groups of factors in the decision (Saaty, 2003).

In this study, the relative importance (fuzzy weight) of sub-criteria is evaluated using linguistic scales (see Table 4.1). Fuzzy weights are calculated with Chang's (1996) Fuzzy synthetic extent method using Wang's (2008) normalization and defuzzified using centroid method.

Table 4.1 : Fuzzy linguistic scales

Linguistic scale	TFN
Equal Importantce	(1,1,1)
Moderate Importance	(1,3,5)
Strong Importance	(3,5,7)
Very Strong Importance	(5,7,9)

4.2.1.1 Fuzzy Extent Analysis

Assume that $O = o_1, o_2 \ldots o_n$ be an object set, and $G = g_1, g_2 \ldots g_m$ be a goal set. Each object is taken and extent analysis for each goal is performed, respectively. Therefore, *m* extent analysis values for each object can be obtained, with the following signs: $\widetilde{Q_{g_i}^1}, \ldots, \widetilde{Q_{g_i}^2}, \ldots, \widetilde{Q_{g_i}^3}, \ldots, \widetilde{Q_{g_i}^m}$ i=1,2,…α where all the $\widetilde{Q_{g_i}^m}$ ($j = 1, 2, \ldots, m$) are triangular fuzzy numbers (TFNs).

The value of fuzzy synthetic extent with respect to the *i*th object is defined as

$$\widetilde{S_i} = \sum_{j=1}^{m} \widetilde{Q_{g_i}^j} \otimes \left[\sum_{j=1}^{m} \sum_{j=1}^{m} \widetilde{Q_{g_i}^j} \right]^{-1}, \tag{4.1}$$

the next perform the fuzzy addition operation of β extent analysis values for a particular matrix such that:

$$\sum_{j=1}^{m} \widetilde{Q_{g_\iota}^{J}} = \left(\sum_{j=1}^{m} l_j , \sum_{j=1}^{m} m_j \sum_{j=1}^{m} u_j \right), \tag{4.2}$$

and to obtain $\left[\sum_{j=1}^{m} \sum_{j=1}^{m} \widetilde{Q_{g_\iota}^{J}}\right]^{-1}$, perform the fuzzy addition operation of $\widetilde{Q_{g_\iota}^{J}}$ (j = 1, 2, … , β) values such that

$$\sum_{j=1}^{\alpha} \sum_{j=1}^{\beta} \widetilde{Q_{g_\iota}^{J}} = \left(\sum_{j=1}^{\alpha} l_j , \sum_{j=1}^{\alpha} m_j \sum_{j=1}^{\alpha} u_j \right). \tag{4.3}$$

Then the inverse of the vector above is computed:

$$\left[\sum_{j=1}^{\alpha} \sum_{j=1}^{\beta} \widetilde{Q_{g_\iota}^{J}}\right]^{-1} = \left(\frac{1}{\sum_{j=1}^{\alpha} u_j}, \frac{1}{\sum_{j=1}^{\alpha} m_j}, \frac{1}{\sum_{j=1}^{\alpha} l_j} \right) \tag{4.4}$$

4.2.1.2 Wang Normalization:

Wang and Elhag (2006) introduced an approach for normalization. It is based on the assumption that normalized interval (or fuzzy) weights express the ranges of the particular weights that are required to be summed to one. This means that for any computation with such interval weights, the concept of constrained interval (or fuzzy) arithmetic has to be applied.

Suppose $w_i = [w_i^L, w_i^U]$ and $x_i = [x_i^L, x_i^U]$ i = 1,…,n. are respectively non-normalized and normalized interval weights.

On the basis of this interval weights, Wang and Elhag (2006) construct the set of normalized weighted vectors. If a set of fuzzy weights is provided independently without considering their mutual relationships, such a set of fuzzy weights is referred to as independent. For the independent fuzzy weights, we have the following equations to the α cuts;

$$(x)_{\alpha}^{U} = \frac{(w)_{\alpha}^{U}}{(w)_{\alpha}^{U} + \sum_{j\neq 1}^{n}(w)_{\alpha}^{L}} \tag{4.5}$$

$$(x)_{\alpha}^{L} = \frac{(w)_{\alpha}^{L}}{(w)_{\alpha}^{L} + \sum_{j\neq 1}^{n}(w)_{\alpha}^{U}} \tag{4.6}$$

4.2.1.3 Centroid Method:

In this study, after the Wang Normalization in FANP, defuzzificaiton is applied in each comparison matrix. This method is also known as center of gravity or center of area defuzzification. This is the most commonly used technique for defuzzification. The only disadvantage of this method is that it is computationally difficult for complex membership functions (Naaz , et al., 2011). The centroid defuzzification technique can be expressed as:

$$z_{COG} = \frac{\int_{z} \mu_A(z) z dz}{\int_{z} \mu_A(z) dz} \tag{4.7}$$

where z_{COG} is the crisp output, $\mu_A(z)$ is the aggregated membership function and z is the output variable.

4.2.2 BOCR Analysis

In this study, general performance evaluation is constructed in BOCR structure with different perspectives. BOCR provide a deep analysis with effect of benefits, opportunities, costs and risks. O (opportunities) means factors usually catch expectations about positive spin-off and, future profits, while B (benefits) represents current revenue or those profits from positive developments that one is relatively certain of R (risks) represents factors that arise as a result of development of hostile/negative situations in the future, while C (costs) represents factors that arise as a result of current loss or relatively predictable development of hostile/negative situation (Sul, et al., 2011).

There are five methods to combine the scores of each alternative under B, O, C and R (Saaty et al., 2003):

- Additive:

$$P_i = bB_i + oO_i + c(1/C_i)_{normalized} + r(1/R_i)_{normalized} \quad (4.8)$$

where B_i, O_i, C_i and R_i are the synthesized results of alternative i under merit B, O, C and R, respectively, and b, o, c and r are normalized weights of merit B, O, C and R, respectively.

- Probabilistic additive:

$$P_i = bB_i + oO_i + c(1/C_i) + r(1/R_i) \quad (4.9)$$

- Subtractive:

$$P_i = bB_i + oO_i + cC_i - rR_i \quad (4.10)$$

- Multiplicative priority powers:

$$P_i = B_i^b O_i^0 [(1/C_i)_{normalized}]^c [(1/R_i)_{normalized}]^r \quad (4.11)$$

- Multiplicative:

$$P_i = B_i O_i / C_i R_i \quad (4.12)$$

4.3 TOPSIS

In this study, TOPSIS is used to rank alternatives. TOPSIS is developed by Yoon and Hwang. (1981). The basic concept of TOPSIS is the best alternative not only has the shortest distance from the ideal solution, but also the longest distance from the negative ideal solution (Hwang, et al., 1993).

The TOPSIS method assumes that each criterion offers a monotone increasing or decreasing utility (Garwey, 2008). It is easy to define the ideal and negative ideal solutions. The Euclidean distance approach has been proposed to evaluate the relative proximity of the alternatives to the ideal solution. Thus, the order of preference of the alternatives can be obtained by a series of comparisons of these relative distances.

TOPSIS is performed as follows:

Step 1: Evaluation matrix $(\alpha_{ij})_{mxn.}$ is created to consisting of *m* alternatives and *n* criteria, with the intersection of each alternative and the criteria given α_{ij}.

$$A_{ij} = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ . & & & . \\ . & & & . \\ . & & & . \\ a_{m1} & a_{m2} & \dots & a_{mn} \end{bmatrix} \tag{4.13}$$

Step 2: The matrix is normalized to form the matrix *R* using the normalization method. The elements of *R* are calculated using the following formula:

$$r_{ij} = \frac{a_{ij}}{\sqrt{\sum_{i=1}^{m} a_{ij}^2}} \tag{4.14}$$

$$R_{ij} = \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{22} & \dots & r_{2n} \\ . & & & . \\ . & & & . \\ . & & & . \\ r_{m1} & r_{m2} & \dots & r_{mn} \end{bmatrix}$$

Step 3 : Normalized weighted matrix is calculated after finding the weights w_{ij} where

$$\sum_{j=1}^{n} w_j = 1 \tag{4.15}$$

$$V_{ij} = \begin{bmatrix} w_1 r_{11} & w_2 r_{12} & \dots & w_n r_{1n} \\ w_1 r_{21} & w_2 r_{22} & \dots & w_n r_{2n} \\ . & & & . \\ . & & & . \\ . & & & . \\ w_1 r_{m1} & w_2 r_{m2} & \dots & w_n r_{mn} \end{bmatrix}$$

Step 4: Solutions ideal and anti-ideal are determined.

$$A^{*} = \left\{ (\max_{i} v_{ij} \,\middle|\, j \in J), (\min_{i} v_{ij} \,\middle|\, j \in J^{'} \right\} \tag{4.16}$$

$$A^{-} = \left\{ (\min_{i} v_{ij} \,\middle|\, j \in J), (\max_{i} v_{ij} \,\middle|\, j \in J^{'} \right\} \tag{4.17}$$

Step 5: The linear distance between the target and the maximum / minimum solution is calculated. The number of points of S^{+} and S^{-} are equal to the number of target points.

$$S_i^{+} = \sqrt{\sum_{J=1}^{n} (v_{ij} - v_j^{+})^2} \tag{4.18}$$

$$S_i^{-} = \sqrt{\sum_{J=1}^{n} (v_{ij} - v_j^{-})^2} \tag{4.19}$$

Step 6: For all the alternatives, relative proximity (C_i^{+} with the use of the ideal and anti-ideal solution) is calculated. The criterion is the rate of the anti-ideal measurement in all the measurements.

$$C_i^{+} = \frac{S_i^{-}}{S_i^{-} + S_i^{+}} \tag{4.20}$$

The value of C_i^{+} is between the interval $0 \leq C_i^{+} \leq 1$. $C_i^{+} = 1$ shows us the absolute proximity for the ideal solution and $C_i^{+} = 0$ shows us the absolute proximity for the anti-ideal solution.

5 APPLICATIONS

In the application part of this study, first step is creation of fuzzy comparison matrix of each model. In figure below, an example of comparison matrix is shown. The matrix show that market share (bcs1) comparison matrix in customer main criteria in benefits model, fuzzy comparison matrices are normalized and defuzzied with centroid method for creating limit super matrix. All comparison matrices are given in appendix.

Table 5.1: Benefits model market share fuzzy comparison matrix in criteria customer

bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs2	(1,1,1)	(1,3,5)	(1,3,5)	(0.33,0.6,0.71)	0.54
bcs3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.23
bcs4	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.23

Final step of comparison matrix is unweighted matrix that is shown in the following table.

Table 5.2 : Benefits model unweighted matrix

			C1									C2					C3				C4		
		goal	bfn1	bfn2	bfn3	bfn4	bfn5	bfn6	bfn7	bfn8	bfn9	blg1	blg2	blg3	blg4	blg5	bcs1	bcs2	bcs3	bcs4	bib1	bib2	bib3
G	goal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	bfn1	0.25	0.00	0.31	0.31	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	bfn2	0.09	0.34	0.00	0.31	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	bfn3	0.09	0.29	0.31	0.00	0.17	0.17	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	bfn4	0.09	0.13	0.13	0.13	0.00	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	bfn5	0.09	0.13	0.13	0.13	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	bfn6	0.09	0.13	0.13	0.13	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	bfn7	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	bfn8	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	bfn9	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	blg1	0.38	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.00	0.57	0.00	0.00	0.00	0.13	0.13	0.13	0.11	0.13	0.13	0.13
	blg2	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	blg3	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	blg4	0.22	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.57	0.00	0.00	0.00	0.00	0.30	0.30	0.30	0.31	0.56	0.30	0.30
	blg5	0.22	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.43	0.00	0.00	0.00	0.00	0.56	0.56	0.56	0.57	0.30	0.56	0.56
C3	bcs1	0.45	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.51	0.00	0.00	0.00	0.00	0.00	0.13	0.13	0.13	0.19	0.07	0.51
	bcs2	0.18	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.24	0.00	0.00	0.00	0.00	0.54	0.00	0.31	0.31	0.20	0.31	0.24
	bcs3	0.18	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.12	0.00	0.00	0.00	0.00	0.23	0.56	0.00	0.57	0.34	0.31	0.12
	bcs4	0.18	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.12	0.00	0.00	0.00	0.00	0.23	0.30	0.57	0.00	0.27	0.31	0.12
C4	bib1	0.56	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.58	0.00	0.00	0.00	0.00	0.23	0.56	0.54	0.54	0.00	0.75	0.65
	bib2	0.30	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.29	0.00	0.00	0.00	0.00	0.23	0.30	0.23	0.23	0.65	0.00	0.35
	bib3	0.13	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.00	0.00	0.00	0.00	0.54	0.13	0.23	0.23	0.35	0.25	0.00

In benefits model, with the result of limit super matrix, results of criteria weights are shown in table below.

Table 5.3: Criteria weights in benefits model

Criteria	Weights
bfn1	0.065
bfn2	0.064
bfn3	0.026
bfn4	0.016
bfn5	0.016
bfn6	0.016
bfn7	0.067
bfn8	0.066
bfn9	0.038
blg1	0.061
blg2	0.032
blg3	0.058
blg4	0.047
blg5	0.032
bcs1	0.063
bcs2	0.088
bcs3	0.083
bcs4	0.054
bib1	0.046
bib2	0.032
bib3	0.026

In benefits model, most important criteria customer satisfaction and continuation of customers' criteria and least important criteria are accounts receivable turnover, equity turnover and fixed asset ratio.

Calculated weights are used in TOPSIS for the ranking of alternatives in each model. Table 5.3 shows criteria values for each alternative and Table 5.4 shows final results of alternatives in benefits model. Financial criteria result are calculated with the average of between 2013 and 2018 years.

Table 5.4: Criteria values of alternatives in benefits model

Criteria	BIMAS	CARFB	ADESE	MGROS	SOKM
bfn1	0.03	0.00	0.06	0.00	-0.06
bfn2	0.33	-0.01	0.07	-0.02	0.27
bfn3	0.13	-0.01	0.03	0.00	-0.18
bfn4	24.17	92.57	3.16	138.36	21.95
bfn5	9.99	3.04	1.17	14.42	-4.94
bfn6	9.39	5.23	2.51	5.84	11.83
bfn7	0.91	0.73	0.78	0.69	0.26
bfn8	0.82	1.66	1.87	1.25	0.36
bfn9	0.20	0.26	0.03	0.30	0.02
blg1	-0.16	-0.07	-0.04	-0.19	-0.27
blg2	-0.26	0.01	0.02	0.51	-0.34
blg3	-0.23	-0.06	-0.02	-0.17	-0.17
blg4	0.33	0.72	0.46	0.75	0.43
blg5	0.23	0.78	0.18	0.86	0.32
bcs1	0.82	0.28	0.09	0.52	0.26
bcs2	0.45	0.56	0.37	0.48	0.65
bcs3	0.82	0.45	0.18	0.78	0.66
bcs4	0.85	0.67	0.38	0.75	0.72
bib1	0.18	0.64	0.35	0.83	0.43
bib2	0.35	0.88	0.10	0.95	0.75
bib3	0.46	0.68	0.35	0.72	0.42

As shown in Table 5.5, SOKM is the first ranked company in benefits model.

Table 5.4: Results of alternatives in benefits model

	BIMAS	CARFB	ADESE	MGROS	SOKM
Final Result	0.415	0.373	0.399	0.383	0.501

In each model, criteria weights are calculated with ANP comparison matrix.

In Table 5.5 opportunities model criteria weights are shown. In opportunities model, according to the result generally learning and growth criteria have priority. Flexibility of service system (0.093) and number of new service items (0.085) have high scored. In addition, customer criteria are privileged comparing others.

Table 5.6: Criteria weights in opportunities model

Criteria	Weights
ofn1	0.035
ofn2	0.034
ofn3	0.021
ofn4	0.009
ofn5	0.009
ofn6	0.009
ofn7	0.022
ofn8	0.022
ofn9	0.022
olg1	0.071
olg2	0.032
olg3	0.067
olg4	0.059
olg5	0.093
olg6	0.038
olg7	0.085
olg8	0.045
ocs1	0.052
ocs2	0.065
ocs3	0.065
ocs4	0.051
oib1	0.036
oib2	0.032
oib3	0.026

In opportunuties model, MGROS and SOKM almost same score as first place.

Table 5.7: Results of Alternatives in opportunities model

	BIMAS	CARFB	ADESE	MGROS	SOKM
Final Result	0.273	0.253	0.156	0.290	0.290

Costs models criteria weights are shown in Table 5.7. According to the result market share, net profit rate and sales growth are important criteria. Generally financial and customer criteria are top of priority criteria.

Table 5.8: Criteria weights in costs model

Criteria	Weights
cfn1	0.085
cfn2	0.063
cfn3	0.063
cfn4	0.042
cfn5	0.042
cfn6	0.042
clg1	0.082
clg2	0.069
clg3	0.057
clg4	0.044
ccs1	0.095
ccs2	0.078
ccs3	0.078
ccs4	0.060
cib1	0.059
cib2	0.041

As shown in Table 5.8 SOKM as first place ranked in BOCR perspective. Because costs model is the negative affect the result.

Table 5.9 Results of alternatives in costs model

	BIMAS	CARFB	ADESE	MGROS	SOKM
Final Result	0.457	0.542	0.553	0.576	0.456

In risk model, risk management, brand reliability, safety and healty are the most important criteria comparing the others.

Table 5.10: Criteria weights in risks model

Criteria	Weights
rfn1	0.042
rfn2	0.023
rfn3	0.023
rlg1	0.054
rlg2	0.038
rlg3	0.058
rlg4	0.024
rlg5	0.046
rlg6	0.046
rcs1	0.085
rcs2	0.051
rcs3	0.047
rcs4	0.042
rib1	0.072
rib2	0.081
rib3	0.045
rib4	0.095
rib5	0.082
rib6	0.046

In Table 5.11, alternatives score is shown.

Table 5.11: Results of alternatives in risk model

	BIMAS	CARFB	ADESE	MGROS	SOKM
Final Result	0.585	0.517	0.535	0.533	0.447

According to result of BOCR, SOKM is the high performance company the model. In Table 5.11, final ranking result is shown.

Table 5.12: Final ranking table in BOCR

	BIMAS	CARFB	ADESE	MGROS	SOKM
Final Result	4,58	4,41	4,24	4,29	5,23
Final Rank	2	3	5	4	1

6 CONCLUSION

In this study, we propose a customizing performance evaluation structure using financial and non-financial measure with BSC perspective under fuzzy environment.

The evaluation process is based on varying criteria under different dimensions also not having the same importance level. In benefits model, customer satisfaction and market share is the most important evaluation criterion in "Customer" main criterion. This is realistic result because retail market is in service sector that is attached directly customer satisfaction. In addition, financial criteria which are ranked as first in main total (especially profitability and liquidity ratios) is the most important index for performance in competitive industry. Liquidity ratios show that company has successful policy in general economic situation and profitability ratios shows company's efficiency.

In opportunities model, difference of the benefits model criteria, R&D portfolio, number of new services items and information systems criteria learning and growth criteria are added. Flexibility of service system is the most important criteria with the opposite of the benefits criteria. Generally, learning and growth criteria provide differentiation in sector, therefore these criteria are dominant in opportunities model. In costs model, sales growth, net profit rate are most important criteria and customer main criterion is important such as benefits model. In risks model, new internal business criteria are added such as risk management, safety and healthy. Naturally, internal business main criterion is important in risks model.

As can be seen, in four model although models have common criteria, weights and results of alternative are different. In each model, companies have different rank results. Therefore, BOCR bring a different approach in general performance measurement. In essence, combination of BSC and BOCR method provide the categorized criteria and evaluated with different perspective.

Proposed model is applied for retail sector. However, the alternatives can be chosen from any sector and as this study offers a general performance evaluation model. In further research, performance criteria can be chosen for the related sector and the model can be applied in the same way. Differently from BSC structure, for the categorizing of criteria SPACE matrix or can be used. In addition, for ranking of the alternatives in BOCR, other MCDM methods such as ELECTRE, VIKOR can be used

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APPENDICES

Appendix A. (Benefits Model)

Table AA.1: Benefits model market share fuzzy comparison matrix in criteria learning and growth criteria

bcs1	blg1	blg4	blg5	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.06,0.1,0.24)	0.54
blg4	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.13,0.29,0.52)	0.23
blg5	(3,5,7)	(1,3,5)	(1,1,1)	(0.35,0.61,0.79)	0.23

Table AA.2: Benefits model market share fuzzy comparison matrix in criteria internal business criteria

bcs1	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.37)	0.23
bib2	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.37)	0.23
bib3	(1,3,5)	(1,3,5)	(1,1,1)	(0.33,0.6,0.71)	0.54

Table AA.3: Benefits model customer satisfaction fuzzy comparison matrix in learning and growth criteria

bcs2	blg1	blg4	blg5	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.06,0.1,0.24)	0.13
blg4	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.13,0.29,0.52)	0.30
blg5	(3,5,7)	(1,3,5)	(1,1,1)	(0.35,0.61,0.79)	0.56

Table AA.4: Benefits model customer satisfaction fuzzy comparison matrix in customer criteria

bcs2	bcs1	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.06,0.1,0.24)	0.13
bcs3	(3,5,7)	(1,1,1)	(1,3,5)	(0.35,0.61,0.79)	0.56
bcs4	(1,3,5)	(0.2,0.33,1)	(1,1,1)	(0.13,0.29,0.52)	0.30

Table AA.5: Benefits model customer satisfaction fuzzy comparison matrix in internal business criteria

bcs2	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(3,5,7)	(0.35,0.61,0.79)	0.56
bib2	(0.2,0.33,1)	(1,1,1)	(1,3,5)	(0.13,0.29,0.52)	0.30
bib3	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.06,0.1,0.24)	0.13

Table AA.6: Benefits model continuation customer's fuzzy comparison matrix in learning and growth criteria

bcs3	blg1	blg4	blg5	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.06,0.1,0.24)	0.13
blg4	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.13,0.29,0.52)	0.30
blg5	(3,5,7)	(1,3,5)	(1,1,1)	(0.35,0.61,0.79)	0.56

Table AA.7: Benefits model continuation customer's fuzzy comparison matrix in customer criteria

bcs3	bcs1	bcs2	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(0,2,0,33,1)	(0,14,0,2,0,33)	(0,06,0,1,0,24)	0,13
bcs2	(1,3,5)	(1,1,1)	(0,2,0,33,1)	(0,13,0,29,0,52)	0,31
bcs4	(3,5,7)	(1,3,5)	(1,1,1)	(0,35,0,61,0,79)	0,57

Table AA.7: Benefits model continuation customer's fuzzy comparison matrix in internal business criteria

bcs3	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(1,3,5)	(0,33,0,6,0,71)	0,54
bib2	(0,2,0,33,1)	(1,1,1)	(1,1,1)	(0,14,0,2,0,37)	0,23
bib3	(0,2,0,33,1)	(1,1,1)	(1,1,1)	(0,14,0,2,0,37)	0,23

Table AA.8: Benefits model flexibility of service system fuzzy comparison matrix in learning and growth criteria

bcs4	blg1	blg4	blg5	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0,0.1,0.24)	0.11
blg4	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.13,0.29,0.52)	0.31
blg5	(3,5,7)	(1,3,5)	(1,1,1)	(0.35,0.61,0.79)	0.57

Table AA.9: Benefits model flexibility of service system fuzzy comparison matrix in customer criteria

bcs4	bcs1	bcs2	bcs3	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.06,0.1,0.24)	0.13
bcs2	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.13,0.29,0.52)	0.31
bcs3	(3,5,7)	(1,3,5)	(1,1,1)	(0.35,0.61,0.79)	0.57

Table AA.10: Benefits model flexibility of service system fuzzy comparison matrix in internal business criteria

bcs4	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(1,3,5)	(0.33,0.6,0.71)	0.54
bib2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.23
bib3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.23

Table AA.11: Benefits model image and reputation fuzzy comparison matrix in learning and growth criteria

bib1	blg1	blg4	blg5	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.06,0.1,0.24)	0.13
blg4	(3,5,7)	(1,1,1)	(1,3,5)	(0.35,0.61,0.79)	0.56
blg5	(1,3,5)	(0.2,0.33,1)	(1,1,1)	(0.13,0.29,0.52)	0.30

Table AA.12: Benefits model image and reputation fuzzy comparison matrix in customer criteria

bib1	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(1,3,5)	(0.06,0.18,0.4)	0.19
bcs2	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.07,0.18,0.43)	0.20
bcs3	(3,5,7)	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.16,0.36,0.64)	0.34
bcs4	(0.2,0.33,1)	(1,3,5)	(1,3,5)	(1,1,1)	(0.1,0.28,0.55)	0.27

Table AA.13: Benefits model image and reputation fuzzy comparison matrix in internal business criteria

bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib2	(1,1,1)	(1,2,3)	(1,9,1)	0.65
bib3	(0.33,0.5,1)	(1,1,1)	(0.57,4.5,0.91)	0.35

Table AA.14: Benefits model brand reliability fuzzy comparison matrix in learning and growth criteria

bib2	blg1	blg4	blg5	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.06,0.1,0.24)	0.13
blg4	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.13,0.29,0.52)	0.30
blg5	(3,5,7)	(1,3,5)	(1,1,1)	(0.35,0.61,0.79)	0.56

Table AA.15: Benefits model brand reliability fuzzy comparison matrix in customer criteria

bib2	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.05,0.06,0.1)	0.07
bcs2	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(0.21,0.31,0.43)	0.31
bcs3	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(0.21,0.31,0.43)	0.31
bcs4	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(0.21,0.31,0.43)	0.31

Table AA.16: Benefits model brand reliability fuzzy comparison matrix in internal business criteria

bib2	bib1	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,2,3)	(1,0.6,1)	0.75
bib3	(0.33,0.5,1)	(1,1,1)	(0.16,0.3,0.4)	0.25

Table AA.16: Benefits model learning environment fuzzy comparison matrix in internal business criteria

bib3	blg1	blg4	blg5	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.06,0.1,0.24)	0.13
blg4	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.13,0.29,0.52)	0.30
blg5	(3,5,7)	(1,3,5)	(1,1,1)	(0.35,0.61,0.79)	0.56

Table AA.17: Benefits model learning environment fuzzy comparison matrix in customer criteria

bib1	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(1,2,3)	(3,5,7)	(3,5,7)	(0.35,0.54,0.68)	0.51
bcs2	(0.33,0.5,1)	(1,1,1)	(1,2,3)	(1,2,3)	(0.12,0.23,0.38)	0.24
bcs3	(0.14,0.2,0.33)	(0.33,0.5,1)	(1,1,1)	(1,1,1)	(0.08,0.11,0.19)	0.12
bcs4	(0.14,0.2,0.33)	(0.33,0.5,1)	(1,1,1)	(1,1,1)	(0.08,0.11,0.19)	0.12

Table AA.18: Benefits model learning environment fuzzy comparison matrix in internal business criteria

bib3	bib1	bib2	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,2,3)	(1,15,1)	0.65
bib2	(0.33,0.5,1)	(1,1,1)	(0.8,7.5,0.93)	0.35

Table AA.19: Benefits model sales growth fuzzy comparison matrix in learning and growth criteria

blg1	blg2	blg4	Normalized Fuzzy Weights	Defuzzied Weights
blg2	(1,1,1)	(1,2,3)	(1,0.67,0.75)	0.57
blg4	(0.33,0.5,1)	(1,1,1)	(1,0.33,0.5)	0.43

Table AA.20: Benefits model sales growth fuzzy comparison matrix in customer criteria

blg1	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(1,2,3)	(3,5,7)	(3,5,7)	(0.35,0.54,0.68)	0.51
bcs2	(0.33,0.5,1)	(1,1,1)	(1,2,3)	(1,2,3)	(0.12,0.23,0.38)	0.24
bcs3	(0.14,0.2,0.33)	(0.33,0.5,1)	(1,1,1)	(1,1,1)	(0.08,0.11,0.19)	0.12
bcs4	(0.14,0.2,0.33)	(0.33,0.5,1)	(1,1,1)	(1,1,1)	(0.08,0.11,0.19)	0.12

Table AA.21: Benefits model sales growth fuzzy comparison matrix in internal business criteria

blg1	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(3,5,7)	(0.35,0.65,0.81)	0.58
bib2	(0.2,0.33,1)	(1,1,1)	(1,3,5)	(0.11,0.26,0.52)	0.29
bib3	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.24)	0.13

Table AA.22: Benefits model product quality fuzzy comparison matrix in learning and growth criteria

blg2	blg1	blg4	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(1,2,3)	(1,0.67,0.75)	0.57
blg4	(0.33,0.5,1)	(1,1,1)	(1,0.33,0.5)	0.43

Table AA.23: Benefits model net profit rate fuzzy comparison matrix in financial criteria

bfn1	bfn2	bfn3	bfn4	bfn5	bfn6	Normalized Fuzzy Weights	Defuzzied Weights
bfn2	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(0.14,0.38,0.59)	0.34
bfn3	(0.2,0.33,1)	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.1,0.3,0.53)	0.29
bfn4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.24)	0.13
bfn5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.24)	0.13
bfn6	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.24)	0.13

Table AA.24: Benefits model net profit rate fuzzy comparison matrix in learning and growth criteria

bfn1	blg1	blg4	blg5	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(3,5,7)	(1,3,5)	(0.35,0.61,0.79)	0.56
blg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.12,0.28,0.5)	0.29
blg5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.07,0.11,0.3)	0.15

Table AA.25: Benefits model net profit rate fuzzy comparison matrix in customer criteria

bfn1	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
bcs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AA.26: Benefits model net profit rate fuzzy comparison matrix in internal business criteria

bfn1	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
bib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
bib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AA.27: Benefits model return on networth fuzzy comparison matrix in learning and growth criteria

bfn1	blg1	blg4	bib3	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(3,5,7)	(1,3,5)	(0.35,0.61,0.79)	0.56
blg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.12,0.28,0.5)	0.29
blg5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.07,0.11,0.3)	0.15

Table AA.28: Benefits model return on networth fuzzy comparison matrix in financial criteria

bfn2	bfn2	bfn3	bfn4	bfn5	bfn6	Normalized Fuzzy Weights	Defuzzied Weights
bfn2	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(0.14,0.38,0.59)	0.34
bfn3	(0.2,0.33,1)	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.1,0.3,0.53)	0.29
bfn3	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.24)	0.13
bfn5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.24)	0.13
bfn6	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.24)	0.13

Table AA.29: Benefits model return on networth fuzzy comparison matrix in learning and growth criteria

bfn2	blg1	blg4	Blg53	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,5,3)	(3,5,7)	(1,3,5)	(0.35,0.69,0.81)	0.59
blg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.11,0.22,0.5)	0.26
blg5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.3)	0.14

Table AA.30: Benefits model return on networth fuzzy comparison matrix in customer criteria

bfn2	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
bcs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AA.31: Benefits model return on networth fuzzy comparison matrix in internal business criteria

bfn2	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.14,0.43)	0.22
bib2	(0.2,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.14,0.2)	0.13
bib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.71,0.81)	0.64

Table AA.32: Benefits model return on asset fuzzy comparison matrix in financial criteria

bfn3	bfn1	bfn2	bfn4	bfn5	bfn6	Normalized Fuzzy Weights	Defuzzied Weights
bfn1	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.14,0.33,0.53)	0.31
bfn2	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.14,0.33,0.53)	0.31
bfn4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.23)	0.13
bfn5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.23)	0.13
bfn6	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.23)	0.13

Table AA.33: Benefits model return on asset fuzzy comparison matrix in learning and growth criteria

bfn3	blg1	blg4	bib3	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(3,5,7)	(1,3,5)	(0.35,0.61,0.79)	0.56
blg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.12,0.28,0.5)	0.29
blg5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.07,0.11,0.3)	0.15

Table AA.34: Benefits model return on asset fuzzy comparison matrix in customer criteria

bfn3	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
bcs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AA.35: Benefits model return on asset fuzzy comparison matrix in internal business criteria

bfn3	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
bib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
bib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AA.36: Benefits model account receivable turnover fuzzy comparison matrix in financial criteria

bfn4	bfn1	bfn2	bfn3	bfn5	bfn6	Normalized Fuzzy Weights	Defuzzied Weights
bfn1	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
bfn2	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
bfn3	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.16,0.23)	0.17
bfn5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13
bfn6	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13

Table AA.37: Benefits model account receivable turnover fuzzy comparison matrix in learning and growth criteria

bfn4	blg1	blg4	bib3	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(3,5,7)	(1,3,5)	(0.35,0.61,0.79)	0.56
blg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.12,0.28,0.5)	0.29
blg5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.07,0.11,0.3)	0.15

Table AA.38: Benefits model account receivable turnover fuzzy comparison matrix in customer criteria

bfn4	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
bcs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AA.39: Benefits model account receivable turnover fuzzy comparison matrix in internal business criteria

bfn4	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
bib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
bib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AA.40: Benefits model equity turnover fuzzy comparison matrix in financial criteria

bfn5	bfn1	bfn2	bfn3	bfn4	bfn6	Normalized Fuzzy Weights	Defuzzied Weights
bfn1	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
bfn2	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
bfn3	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.16,0.23)	0.17
bfn4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13
bfn6	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13

Table AA.41: Benefits model equity turnover fuzzy comparison matrix in learning and growth criteria

bfn5	blg1	blg4	bib3	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,5,3)	(3,5,7)	(1,3,5)	(0.35,0.69,0.81)	0.59
blg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.11,0.22,0.5)	0.26
blg5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.3)	0.14

Table AA.42: Benefits model equity turnover fuzzy comparison matrix in customer criteria

bfn5	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
bcs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AA.43: Benefits model equity turnover fuzzy comparison matrix in internal business criteria

bfn5	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
bib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
bib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AA.44: Benefits model fixed asset turnover fuzzy comparison matrix in financial criteria

bfn6	bfn1	bfn2	bfn3	bfn4	bfn5	Normalized Fuzzy Weights	Defuzzied Weights
bfn1	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
bfn2	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
bfn3	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.16,0.23)	0.17
bfn4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13
bfn5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13

Table AA.45: Benefits model fixed asset turnover fuzzy comparison matrix in learning and growth criteria

bfn6	blg1	blg4	bib3	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,5,3)	(3,5,7)	(1,3,5)	(0.35,0.69,0.81)	0.59
blg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.11,0.22,0.5)	0.26
blg5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.3)	0.14

Table AA.46: Benefits model fixed asset turnover fuzzy comparison matrix in customer criteria

bfn6	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
bcs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AA.47: Benefits model fixed asset turnover fuzzy comparison matrix in internal business criteria

bfn6	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
bib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
bib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AA.48: Benefits model current ratio fuzzy comparison matrix in financial criteria

bfn7	bfn8	bfn9	Normalized Fuzzy Weights	Defuzzied Weights
bfn8	(1,1,1)	(1,2,3)	(0.5,0.23,0.75)	0.58
bfn9	(0.33,0.5,1)	(1,1,1)	(0.25,0.33,0.5)	0.42

Table AA.49: Benefits model current ratio fuzzy comparison matrix in learning and growth criteria

bfn7	blg1	blg4	bib3	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(3,5,7)	(1,3,5)	(0.35,0.61,0.79)	0.56
blg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.12,0.28,0.5)	0.29
blg5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.07,0.11,0.3)	0.15

Table AA.50: Benefits model current ratio fuzzy comparison matrix in customer criteria

bfn7	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
bcs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AA.51: Benefits model current ratio fuzzy comparison matrix in internal business criteria

bfn7	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
bib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
bib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AA.52: Benefits model quick ratio fuzzy comparison matrix in financial criteria

bfn8	bfn7	bfn9	Normalized Fuzzy Weights	Defuzzied Weights
bfn7	(1,1,1)	(1,3,5)	(0.5,0.31,0.83)	0.64
bfn9	(0.2,0.33,1)	(1,1,1)	(0.17,0.25,0.5)	0.36

Table AA.53: Benefits model quick ratio fuzzy comparison matrix in learning and growth criteria

bfn8	blg1	blg4	bib3	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,5,3)	(3,5,7)	(1,3,5)	(0.35,0.69,0.81)	0.59
blg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.11,0.22,0.5)	0.26
blg5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.3)	0.14

Table AA.54: Benefits model quick ratio fuzzy comparison matrix in customer criteria

bfn8	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
bcs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AA.55: Benefits model quick ratio fuzzy comparison matrix in internal business criteria

bfn8	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
bib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
bib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AA.56: Benefits model cash ratio fuzzy comparison matrix in financial criteria

bfn9	bfn7	bfn8	Normalized Fuzzy Weights	Defuzzied Weights
bfn7	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50
bfn8	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50

Table AA.57: Benefits model cash ratio fuzzy comparison matrix in learning and growth criteria

bfn8	blg1	blg4	bib3	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,5,3)	(3,5,7)	(1,3,5)	(0.35,0.69,0.81)	0.59
blg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.11,0.22,0.5)	0.26
blg5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.3)	0.14

Table AA.58: Benefits model cash ratio fuzzy comparison matrix in customer criteria

bfn9	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
bcs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
bcs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AA.59: Benefits model cash ratio fuzzy comparison matrix in internal business criteria

bfn9	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
bib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
bib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AA.60: Benefits model goal fuzzy comparison matrix in learning and growth criteria

g	blg1	blg2	blg3	blg4	blg5	Normalized Fuzzy Weights	Defuzzied Weights
blg1	(1,1,1)	(3,5,7)	(3,5,7)	(1,3,5)	(1,3,5)	(0.21,0.23,0.65)	0.38
blg2	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.04,0.04,0.18)	0.09
blg3	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.04,0.04,0.18)	0.09
blg4	(0.2,0.33,1)	(1,3,5)	(1,3,5)	(1,1,1)	(1,1,1)	(0.08,0.11,0.42)	0.22
blg5	(0.2,0.33,1)	(1,3,5)	(1,3,5)	(1,1,1)	(1,1,1)	(0.08,0.11,0.42)	0.22

Table AA.61: Benefits model goal fuzzy comparison matrix in financial criteria

g	bfn1	bfn2	bfn3	bfn4	bfn5	bfn6	bfn7	bfn8	bfn9	Normalized Fuzzy Weights	Defuzzied Weights
bfn1	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(0.11,0.34,0.38)	0.25
bfn2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
bfn3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
bfn4	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
bfn5	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
bfn6	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
bfn7	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
bfn8	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
bfn9	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09

Table AA.62: Benefits model goal fuzzy comparison matrix in customer criteria

g	bcs1	bcs2	bcs3	bcs4	Normalized Fuzzy Weights	Defuzzied Weights
bcs1	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.25,0.5,0.63)	0.45
bcs2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.17,0.28)	0.18
bcs3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.17,0.28)	0.18
bcs4	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.17,0.28)	0.18

Table AA.63: Benefits model goal fuzzy comparison matrix in internal business criteria

g	bib1	bib2	bib3	Normalized Fuzzy Weights	Defuzzied Weights
bib1	(1,1,1)	(1,3,5)	(3,5,7)	(0.35,0.61,0.79)	0.56
bib2	(0.2,0.33,1)	(1,1,1)	(1,3,5)	(0.13,0.29,0.52)	0.30
bib3	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.06,0.1,0.24)	0.13

Table AA.64: Benefits model financial criteria fuzzy comparison matrix in all main criteria

C1	C1	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C1	(1,1,1)	(5,7,9)	(1,3,5)	(1,3,5)	(0.29,0.53,0.72)	0.48
C2	(0.11,0.14,0.2)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.04,0.07,0.18)	0.09
C3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(0.09,0.2,0.39)	0.21
C4	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(0.09,0.2,0.39)	0.21

Table AA.65: Benefits model learning and growth criteria fuzzy comparison matrix in all main criteria

C2	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,0)	(3,5,0)	(5,7,0)	(0.61,0.79,0)	0.56
C3	(0.33,1,0)	(1,1,0)	(0.33,1,0)	(0.11,0.3,0)	0.15
C4	(0.2,0.33,0)	(3,5,0)	(1,1,0)	(0.28,0.5,0)	0.29

Table AA.66: Benefits model customer criteria fuzzy comparison matrix in all main criteria

C3	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.09,0.14,0.33)	0.18
C3	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41
C4	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41

Table AA.67: Benefits model internal business criteria fuzzy comparison matrix in all main criteria

C4	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.06,0.1,0.24)	0.13
C3	(1,3,5)	(1,1,1)	(1,3,5)	(0.21,0.47,0.66)	0.43
C4	(3,5,7)	(0.2,0.33,1)	(1,1,1)	(0.24,0.43,0.67)	0.43

			C1									C2					C3				C4		
		goal	fn1	fn2	fn3	fn4	fn5	fn6	fn7	fn8	fn9	lg1	lg2	lg3	lg4	lg5	cs1	cs2	cs3	cs4	ib1	ib2	ib3
G	goal	0.00																					
C1	fn1	0.06	0.00	0.15	0.15	0.14	0.14	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn2	0.02	0.16	0.00	0.15	0.14	0.14	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn3	0.02	0.14	0.15	0.00	0.08	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn4	0.02	0.06	0.06	0.06	0.00	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn5	0.02	0.06	0.06	0.06	0.06	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn6	0.02	0.06	0.06	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn7	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn8	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn9	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	lg1	0.10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.32	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	lg2	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	lg3	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	lg4	0.05	0.03	0.02	0.03	0.03	0.02	0.03	0.03	0.02	0.02	0.32	0.00	0.00	1.00	0.00	0.06	0.06	0.06	0.06	0.07	0.04	0.04
	lg5	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.24	0.00	0.00	0.00	1.00	0.10	0.10	0.10	0.10	0.04	0.07	0.07
C3	cs1	0.11	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.08	0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.06	0.08	0.03	0.22
	cs2	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.00	0.00	0.00	0.00	0.22	0.00	0.13	0.13	0.09	0.13	0.10
	cs3	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.09	0.23	0.00	0.23	0.15	0.13	0.05
	cs4	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.09	0.12	0.23	0.00	0.12	0.13	0.05
C4	ib1	0.14	0.12	0.13	0.12	0.12	0.13	0.12	0.12	0.13	0.13	0.17	0.00	0.00	0.00	0.00	0.09	0.23	0.22	0.22	0.00	0.32	0.28
	ib2	0.08	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.08	0.00	0.00	0.00	0.00	0.09	0.12	0.09	0.09	0.28	0.00	0.15
	ib3	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.00	0.00	0.00	0.00	0.22	0.05	0.09	0.09	0.15	0.11	0.00

Figure AA.1: Weighted Matrix of Benefits Model

Appendix B. (Opportunities Model)

Table AB.1: Opportunities model market share fuzzy comparison matrix in learning and growth criteria

ocs1	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,3,5)	(0.03,0.08,0.23)	0.10
olg2	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.16,0.35)	0.16
olg3	(3,5,7)	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(3,5,7)	(0.12,0.29,0.54)	0.27
olg4	(3,5,7)	(1,1,1)	(0.2,1,1)	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(0.08,0.19,0.39)	0.18
olg5	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,3,5)	(0.07,0.19,0.41)	0.19
olg6	(0.2,0.33,1)	(0.2,0.33,1)	(1,3,5)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.09,0.26)	0.11

Table AB.2: Opportunities model market share fuzzy comparison matrix in customer criteria

ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs2	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.09,0.14,0.33)	0.18
ocs3	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41
ocs4	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41

Table AB.3: Opportunities model market share fuzzy comparison matrix in internal business criteria

ocs1	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.37)	0.23
oib2	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.37)	0.23
oib3	(1,3,5)	(1,3,5)	(1,1,1)	(0.33,0.6,0.71)	0.54

Table AB.4: Opportunities model customer satisfaction fuzzy comparison matrix in learning and growth criteria

ocs2	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.15,0.36,0.55)	0.32
olg2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg4	(0.2,0.33,1)	(1,1,1)	(0.14,1,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.15,0.26)	0.14
olg5	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg6	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.06,0.16)	0.08

Table AB.5: Opportunities model customer satisfaction fuzzy comparison matrix in customer criteria

ocs2	ocs1	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.06,0.1,0.24)	0.13
ocs3	(3,5,7)	(1,1,1)	(1,3,5)	(0.35,0.61,0.79)	0.56
ocs4	(1,3,5)	(0.2,0.33,1)	(1,1,1)	(0.13,0.29,0.52)	0.30

Table AB.6: Opportunities model customer satisfaction fuzzy comparison matrix in internal business criteria

ocs2	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,3,5)	(3,5,7)	(0.35,0.61,0.79)	0.56
oib2	(0.2,0.33,1)	(1,1,1)	(1,3,5)	(0.13,0.29,0.52)	0.30
oib3	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.06,0.1,0.24)	0.13

Table AB.7: Opportunities model continuation of customers' fuzzy comparison matrix in learning and growth criteria

ocs3	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.15,0.36,0.55)	0.32
olg2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg4	(0.2,0.33,1)	(1,1,1)	(0.14,1,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.15,0.26)	0.14
olg5	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg6	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.06,0.16)	0.08

Table AB.8: Opportunities model continuation of customers' fuzzy comparison matrix in customer criteria

ocs3	ocs1	ocs2	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.06,0.1,0.24)	0.13
ocs2	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.13,0.29,0.52)	0.30
ocs4	(3,5,7)	(1,3,5)	(1,1,1)	(0.35,0.61,0.79)	0.56

Table AB.9: Opportunities model continuation of customers' fuzzy comparison matrix in internal business criteria

ocs3	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,3,5)	(1,3,5)	(0.33,0.6,0.71)	0.54
oib2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.23
oib3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.23

Table AB.10: Opportunities model long-term customer retention index fuzzy comparison matrix in learning and growth criteria

ocs4	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.15,0.36,0.55)	0.32
olg2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg4	(0.2,0.33,1)	(1,1,1)	(0.14,1,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.15,0.26)	0.14
olg5	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg6	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.06,0.16)	0.08

Table AB.11: Opportunities model long-term customer retention index fuzzy comparison matrix in customer criteria

ocs4	ocs1	ocs2	ocs3	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.09,0.14,0.33)	0.18
ocs2	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41
ocs3	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41

Table AB.12: Opportunities model long-term customer retention index fuzzy comparison matrix in internal business criteria

ocs3	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,3,3)	(1,3,5)	(1,3,5)	(0.33,0.66,0.75)	0.57
oib2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.12,0.17,0.37)	0.22
oib3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.12,0.17,0.37)	0.22

Table AB.13: Opportunities model image and reputation fuzzy comparison matrix in learning and growth criteria

oib4	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.15,0.36,0.55)	0.32
olg2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg4	(0.2,0.33,1)	(1,1,1)	(0.14,1,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.15,0.26)	0.14
olg5	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.15,0.28)	0.15
olg6	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.06,0.16)	0.08

Table AB.14: Opportunities model image and reputation fuzzy comparison matrix in customer criteria

oib1	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(1,3,5)	(0.06,0.18,0.4)	0.19
ocs2	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.07,0.18,0.43)	0.20
ocs3	(3,5,7)	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.16,0.36,0.64)	0.34
ocs4	(0.2,0.33,1)	(1,3,5)	(1,3,5)	(1,1,1)	(0.1,0.28,0.55)	0.27

Table AB.15: Opportunities model image and reputation fuzzy comparison matrix in internal business criteria

oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib2	(1,1,1)	(3,5,7)	(1,18,1)	0.80
oib3	(0.14,0.2,0.33)	(1,1,1)	(0.53,3.6,0.87)	0.20

Table AB.16: Opportunities model brand reliability fuzzy comparison matrix in learning and growth criteria

oib2	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(3,5,7)	(1,3,5)	(3,5,7)	(1,3,5)	(3,5,7)	(0.17,0.35,0.6)	0.33
olg2	(0.14,0.2,0.33)	(1,1,1)	(0.2,0.33,1)	(1,1,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.06,0.15)	0.07
olg3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,3,5)	(1,1,1)	(1,3,5)	(0.07,0.18,0.39)	0.19
olg4	(0.14,0.2,0.33)	(1,1,1)	(0.14,3,0.33)	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(0.04,0.14,0.23)	0.12
olg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,3,5)	(1,1,1)	(1,3,5)	(0.07,0.18,0.39)	0.19
olg6	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.09,0.24)	0.11

Table AB.17: Opportunities model brand reliability fuzzy comparison matrix in customer criteria

oib2	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.05,0.06,0.1)	0.07
ocs2	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(0.21,0.31,0.43)	0.31
ocs3	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(0.21,0.31,0.43)	0.31
ocs4	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(0.21,0.31,0.43)	0.31

Table AB.18: Opportunities model brand reliability fuzzy comparison matrix in internal business criteria

oib2	oib1	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(3,5,7)	(1,1.2,1)	0.82
oib3	(0.14,0.2,0.33)	(1,1,1)	(0.14,0.24,0.31)	0.18

Table AB.19: Opportunities model learning environment fuzzy comparison matrix in learning and growth criteria

oib3	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(1,3,5)	(1,3,5)	(3,5,7)	(1,3,5)	(3,5,7)	(0.15,0.33,0.58)	0.31
olg2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(1,1,1)	(0.05,0.08,0.18)	0.09
olg3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,1,1)	(1,3,5)	(0.07,0.16,0.34)	0.17
olg4	(0.14,0.2,0.33)	(1,1,1)	(0.14,3,0.33)	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(0.04,0.14,0.23)	0.12
olg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,3,5)	(1,1,1)	(1,3,5)	(0.07,0.19,0.4)	0.19
olg6	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.1,0.25)	0.11

Table AB.20: Opportunities model learning environment fuzzy comparison matrix in customer criteria

oib3	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(1,2,3)	(3,5,7)	(3,5,7)	(0.35,0.54,0.68)	0.51
ocs2	(0.33,0.5,1)	(1,1,1)	(1,2,3)	(1,2,3)	(0.12,0.23,0.38)	0.24
ocs3	(0.14,0.2,0.33)	(0.33,0.5,1)	(1,1,1)	(1,1,1)	(0.08,0.11,0.19)	0.12
ocs4	(0.14,0.2,0.33)	(0.33,0.5,1)	(1,1,1)	(1,1,1)	(0.08,0.11,0.19)	0.12

Table AB.21: Opportunities model learning environment fuzzy comparison matrix in internal business criteria

oib3	oib1	oib2	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,2,3)	(1,15,1)	0.65
oib2	(0.33,0.5,1)	(1,1,1)	(0.8,7.5,0.93)	0.35

Table AB.22: Opportunities model sales growth fuzzy comparison matrix in learning and growth criteria

olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg2	(1,1,1)	(1,3,5)	(3,5,7)	(1,3,5)	(3,5,7)	(0.23,0.45,0.64)	0.41
olg3	(0.2,0.33,1)	(1,1,1)	(1,3,5)	(1,1,1)	(1,3,5)	(0.09,0.22,0.41)	0.22
olg4	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.2,0.33,1)	(1,1,1)	(0.05,0.08,0.17)	0.09
olg5	(0.2,0.33,1)	(1,1,1)	(1,3.03,5)	(1,1,1)	(1,1,1)	(0.08,0.17,0.32)	0.18
olg6	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.06,0.09,0.18)	0.10

Table AB.23: Opportunities model sales growth fuzzy comparison matrix in customer criteria

oib3	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.04,0.07,0.16)	0.08
ocs2	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.07,0.18,0.37)	0.19
ocs3	(3,5,7)	(1,3,5)	(1,1,1)	(1,1,1)	(0.2,0.38,0.59)	0.36
ocs4	(3,5,7)	(1,3,5)	(1,1,1)	(1,1,1)	(0.2,0.38,0.59)	0.36

Table AB.24: Opportunities model sales growth fuzzy comparison matrix in internal business criteria

olg1	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,3,5)	(3,5,7)	(0.35,0.61,0.79)	0.56
oib2	(0.2,0.33,1)	(1,1,1)	(1,3,5)	(0.13,0.29,0.52)	0.30
oib3	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.06,0.1,0.24)	0.13

Table AB.25: Opportunities model net profit rate fuzzy comparison matrix in internal business criteria

ofn1	ofn2	ofn3	ofn4	ofn5	ofn6	Normalized Fuzzy Weights	Defuzzied Weights
ofn2	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(0.14,0.38,0.59)	0.34
ofn3	(0.2,0.33,1)	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.1,0.3,0.53)	0.29
ofn4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.24)	0.13
ofn5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.24)	0.13
ofn6	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.24)	0.13

Table AB.26: Opportunities model net profit rate fuzzy comparison matrix in learning and growth criteria

ofn1	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(3,5,7)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.16,0.35,0.59)	0.32
olg2	(0.14,0.2,0.33)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.06,0.16)	0.07
olg3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg4	(0.2,0.33,1)	(1,3,5)	(0.14,3,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.2,0.33)	0.17
olg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.07,0.16)	0.08

Table AB.27: Opportunities model net profit rate fuzzy comparison matrix in customer criteria

ofn1	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(5,7,9)	(1,3,5)	(5,7,9)	(0.39,0.59,0.75)	0.56
ocs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.06,0.08,0.15)	0.09
ocs3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.09,0.18,0.32)	0.19
ocs4	(0.11,0.14,0.2)	(1,3.03,5)	(0.2,0.33,1)	(1,1,1)	(0.06,0.15,0.29)	0.16

Table AB.28: Opportunities model net profit rate fuzzy comparison matrix in internal business

ofn1	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
oib2	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
oib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.6,0.71,0.78)	0.70

Table AB.29: Opportunities model return on networth fuzzy comparison matrix in financial criteria

ofn2	ofn1	ofn3	ofn4	ofn5	ofn6	Normalized Fuzzy Weights	Defuzzied Weights
ofn1	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.14,0.33,0.53)	0.31
ofn3	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.14,0.33,0.53)	0.31
ofn4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.23)	0.13
ofn5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.23)	0.13
ofn6	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.23)	0.13

Table AB.30: Opportunities model return on networth fuzzy comparison matrix in learning and growth criteria

ofn2	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(3,5,7)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.16,0.35,0.59)	0.32
olg2	(0.14,0.2,0.33)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.06,0.16)	0.07
olg3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg4	(0.2,0.33,1)	(1,3,5)	(0.14,3,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.2,0.33)	0.17
olg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.07,0.16)	0.08

Table AB.31: Opportunities model return on networth fuzzy comparison matrix in customer criteria

ofn2	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(5,7,9)	(1,3,5)	(5,7,9)	(0.39,0.59,0.75)	0.56
ocs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.06,0.08,0.15)	0.09
ocs3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.09,0.18,0.32)	0.19
ocs4	(0.11,0.14,0.2)	(1,3.03,5)	(0.2,0.33,1)	(1,1,1)	(0.06,0.15,0.29)	0.16

Table AB.32: Opportunities model return on networth fuzzy comparison matrix in internal business

ofn2	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
oib2	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
oib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.6,0.71,0.78)	0.70

Table AB.33: Opportunities model return on asset fuzzy comparison matrix in financial criteria

ofn3	ofn1	ofn2	ofn4	ofn5	ofn6	Normalized Fuzzy Weights	Defuzzied Weights
ofn1	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.14,0.33,0.53)	0.31
ofn2	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.14,0.33,0.53)	0.31
ofn4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.23)	0.13
ofn5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.23)	0.13
ofn6	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.23)	0.13

Table AB.34: Opportunities model return on asset fuzzy comparison matrix in learning and growth criteria

ofn3	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(3,5,7)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.16,0.35,0.59)	0.32
olg2	(0.14,0.2,0.33)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.06,0.16)	0.07
olg3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg4	(0.2,0.33,1)	(1,3,5)	(0.14,3,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.2,0.33)	0.17
olg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.07,0.16)	0.08

Table AB.35: Opportunities model return on asset fuzzy comparison matrix in customer criteria

ofn3	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(5,7,9)	(1,3,5)	(5,7,9)	(0.39,0.59,0.75)	0.56
ocs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.06,0.08,0.15)	0.09
ocs3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.09,0.18,0.32)	0.19
ocs4	(0.11,0.14,0.2)	(1,3.03,5)	(0.2,0.33,1)	(1,1,1)	(0.06,0.15,0.29)	0.16

Table AB.36: Opportunities model return on asset fuzzy comparison matrix in internal business criteria

ofn3	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
oib2	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
oib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.6,0.71,0.78)	0.70

Table AB.37: Opportunities model accounts receivable turnover fuzzy comparison matrix in financial criteria

ofn4	ofn1	ofn2	ofn3	ofn5	ofn6	Normalized Fuzzy Weights	Defuzzied Weights
ofn1	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
ofn2	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
ofn3	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.16,0.23)	0.17
ofn5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13
ofn6	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13

Table AB.38: Opportunities model accounts receivable turnover fuzzy comparison matrix in learning and growth criteria

ofn4	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(3,5,7)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.16,0.35,0.59)	0.32
olg2	(0.14,0.2,0.33)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.06,0.16)	0.07
olg3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg4	(0.2,0.33,1)	(1,3,5)	(0.14,3,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.2,0.33)	0.17
olg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.07,0.16)	0.08

Table AB.39: Opportunities model accounts receivable turnover fuzzy comparison matrix in customer criteria

ofn4	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ocs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AB.40: Opportunities model accounts receivable turnover fuzzy comparison matrix in internal business criteria

ofn4	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
oib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
oib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AB.41: Opportunities model equity turnover fuzzy comparison matrix in financial criteria

ofn5	ofn1	ofn2	ofn3	ofn4	ofn6	Normalized Fuzzy Weights	Defuzzied Weights
ofn1	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
ofn2	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
ofn3	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.16,0.23)	0.17
ofn4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13
ofn6	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13

Table AB.42: Opportunities model equity turnover turnover fuzzy comparison matrix in learning and growth criteria

ofn5	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(3,5,7)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.16,0.35,0.59)	0.32
olg2	(0.14,0.2,0.33)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.06,0.16)	0.07
olg3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg4	(0.2,0.33,1)	(1,3,5)	(0.14,3,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.2,0.33)	0.17
olg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.07,0.16)	0.08

Table AB.43: Opportunities model equity turnover fuzzy comparison matrix in customer criteria

ofn5	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ocs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AB.44: Opportunities model equity turnover fuzzy comparison matrix in internal business criteria

ofn5	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
oib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
oib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AB.45: Opportunities model fixed asset turnover fuzzy comparison matrix in financial criteria

ofn6	ofn1	ofn2	ofn3	ofn4	ofn5	Normalized Fuzzy Weights	Defuzzied Weights
ofn1	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
ofn2	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(0.15,0.3,0.44)	0.28
ofn3	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.16,0.23)	0.17
ofn4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13
ofn5	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.12,0.21)	0.13

Table AB.46: Opportunities model fixed asset turnover turnover fuzzy comparison matrix in learning and growth criteria

ofn6	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(3,5,7)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.16,0.35,0.59)	0.32
olg2	(0.14,0.2,0.33)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.06,0.16)	0.07
olg3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg4	(0.2,0.33,1)	(1,3,5)	(0.14,3,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.2,0.33)	0.17
olg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.07,0.16)	0.08

Table AB.47: Opportunities model fixed asset turnover fuzzy comparison matrix in customer criteria

ofn6	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ocs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AB.48: Opportunities model current ratio fuzzy comparison matrix in internal business criteria

ofn6	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
oib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
oib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AB.49: Opportunities model current ratio fuzzy comparison matrix in internal business criteria

ofn7	ofn8	ofn9	Normalized Fuzzy Weights	Defuzzied Weights
ofn8	(1,1,1)	(1,3,5)	(0.5,0.75,0.83)	0.69
ofn9	(0.2,0.33,1)	(1,1,1)	(0.17,0.25,0.5)	0.31

Table AB.50: Opportunities model current ratio fuzzy comparison matrix in learning and growth criteria

ofn7	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(3,5,7)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.16,0.35,0.59)	0.32
olg2	(0.14,0.2,0.33)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.06,0.16)	0.07
olg3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg4	(0.2,0.33,1)	(1,3,5)	(0.14,3,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.2,0.33)	0.17
olg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.07,0.16)	0.08

Table AB.51: Opportunities model current ratio fuzzy comparison matrix in customer criteria

ofn7	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ocs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AB.52: Opportunities model current ratio fuzzy comparison matrix in internal business criteria

ofn7	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
oib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
oib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AB.53: Opportunities model quick ratio fuzzy comparison matrix in internal business criteria

ofn8	ofn7	ofn9	Normalized Fuzzy Weights	Defuzzied Weights
ofn7	(1,1,1)	(1,3,5)	(0.5,0.75,0.83)	0.69
ofn9	(0.2,0.33,1)	(1,1,1)	(0.17,0.25,0.5)	0.31

Table AB.54: Opportunities model quick ratio fuzzy comparison matrix in learning and growth criteria

ofn8	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(3,5,7)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.16,0.35,0.59)	0.32
olg2	(0.14,0.2,0.33)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.06,0.16)	0.07
olg3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg4	(0.2,0.33,1)	(1,3,5)	(0.14,3,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.2,0.33)	0.17
olg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.07,0.16)	0.08

Table AB.55: Opportunities model quick ratio fuzzy comparison matrix in customer criteria

ofn8	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ocs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AB.56: Opportunities model quick ratio fuzzy comparison matrix in internal business criteria

ofn8	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
oib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
oib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AB.57: Opportunities model cash ratio fuzzy comparison matrix in internal business criteria

ofn9	ofn7	ofn8	Normalized Fuzzy Weights	Defuzzied Weights
ofn7	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50
ofn8	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50

Table AB.58: Opportunities model cash ratio fuzzy comparison matrix in learning and growth criteria

ofn8	olg1	olg2	olg3	olg4	olg5	olg6	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(3,5,7)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.16,0.35,0.59)	0.32
olg2	(0.14,0.2,0.33)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.06,0.16)	0.07
olg3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg4	(0.2,0.33,1)	(1,3,5)	(0.14,3,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.2,0.33)	0.17
olg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.16,0.35)	0.17
olg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.07,0.16)	0.08

Table AB.59: Opportunities model cash ratio fuzzy comparison matrix in customer criteria

ofn8	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ocs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ocs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AB.60: Opportunities model cash ratio fuzzy comparison matrix in internal business criteria

ofn8	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.11,0.25,0.43)	0.26
oib2	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.06,0.09,0.2)	0.12
oib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.45,0.66,0.81)	0.63

Table AB.61: Opportunities model goal fuzzy comparison matrix in financial criteria

g	ofn1	ofn2	ofn3	ofn4	ofn5	ofn6	ofn7	ofn8	ofn9	Normalized Fuzzy Weights	Defuzzied Weights
ofn1	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(0.11,0.34,0.38)	0.25
ofn2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
ofn3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
ofn4	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
ofn5	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
ofn6	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
ofn7	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
ofn8	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09
ofn9	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.12)	0.09

Table AB.62: Opportunities model goal fuzzy comparison matrix in learning and growth criteria

g	olg1	olg2	olg3	olg4	olg5	olg6	olg7	olg8	Normalized Fuzzy Weights	Defuzzied Weights
olg1	(1,1,1)	(5,7,9)	(5,7,9)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.14,0.43,0.47)	0.27
olg2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.02,0.04,0.06)	0.03
olg3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.02,0.04,0.06)	0.03
olg4	(0.2,0.33,1)	(3,5,7)	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.23,0.29)	0.15
olg5	(0.2,0.33,1)	(3,5,7)	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.23,0.29)	0.15
olg6	(0.2,0.33,1)	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.18,0.23)	0.12
olg7	(0.2,0.33,1)	(3,5,7)	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.23,0.29)	0.15
olg8	(0.14,0.2,0.33)	(1,3,5)	(1,3,5)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.11,0.19)	0.08

Table AB.63: Opportunities model goal fuzzy comparison matrix in customer criteria

g	ocs1	ocs2	ocs3	ocs4	Normalized Fuzzy Weights	Defuzzied Weights
ocs1	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.06,0.1,0.25)	0.13
ocs2	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(0.17,0.3,0.45)	0.29
ocs3	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(0.17,0.3,0.45)	0.29
ocs4	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(0.17,0.3,0.45)	0.29

Table AB.64: Opportunities model goal fuzzy comparison matrix in customer criteria

g	oib1	oib2	oib3	Normalized Fuzzy Weights	Defuzzied Weights
oib1	(1,1,1)	(1,3,5)	(1,3,5)	(0.33,0.6,0.71)	0.23
oib2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.23
oib3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.54

Table AB.65: Opportunities model financial fuzzy comparison matrix in all criteria

C1	C1	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C1	(1,1,1)	(1,3,5)	(1,3,5)	(3,5,7)	(0.28,0.52,0.67)	0.47
C2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.11,0.23,0.41)	0.24
C3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.1,0.14,0.26)	0.16
C4	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.21)	0.13

Table AB.66: Opportunities model learning and growth fuzzy comparison matrix in all criteria

C2	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(0.13,0.29,0.52)	0.31
C3	(1,3,5)	(1,1,1)	(3,5,7)	(0.35,0.61,0.79)	0.58
C4	(0.2,0.33,1)	(0.14,0.2,0.33)	(1,1,1)	(0.06,0.1,0.24)	0.14

Table AB.67: Opportunities model customer fuzzy comparison matrix in all criteria

C3	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.06,0.1,0.24)	0.13
C3	(3,5,7)	(1,1,1)	(1,3,5)	(0.35,0.61,0.79)	0.56
C4	(1,3,5)	(0.2,0.33,1)	(1,1,1)	(0.13,0.29,0.52)	0.30

Table AB.68: Opportunities model internal business fuzzy comparison matrix in all criteria

C4	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.06,0.1,0.24)	0.13
C3	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.13,0.29,0.52)	0.30
C4	(3,5,7)	(1,3,5)	(1,1,1)	(0.35,0.61,0.79)	0.56

			C1									C2								C3				C4		
		g	ofn1	ofn2	ofn3	ofn4	ofn5	ofn6	ofn7	ofn8	ofn9	olg1	olg2	olg3	olg4	olg5	olg6	olg7	olg8	ocs1	ocs2	ocs3	ocs4	oib1	oib2	oib3
Goal	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	ofn1	0.25	0.00	0.31	0.31	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn2	0.09	0.34	0.00	0.31	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn3	0.09	0.29	0.31	0.00	0.17	0.17	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn4	0.09	0.13	0.13	0.13	0.00	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn5	0.09	0.13	0.13	0.13	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn6	0.09	0.13	0.13	0.13	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn7	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn8	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn9	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	olg1	0.27	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.32	0.32	0.32	0.12	0.33	0.31
	olg2	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00
	olg3	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00
	olg4	0.15	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.41	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.16	0.15	0.15	0.15	0.26	0.07	0.09
	olg5	0.15	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.22	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.27	0.15	0.15	0.15	0.22	0.19	0.17
	olg6	0.12	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.09	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.18	0.14	0.14	0.14	0.09	0.12	0.12
	olg7	0.15	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.18	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.19	0.15	0.15	0.15	0.19	0.19	0.19
	olg8	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.10	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.11	0.08	0.08	0.08	0.12	0.11	0.11
C3	ocs1	0.13	0.56	0.56	0.56	0.69	0.69	0.69	0.69	0.69	0.69	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.13	0.18	0.19	0.07	0.51
	ocs2	0.29	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.30	0.41	0.20	0.31	0.24
	ocs3	0.29	0.19	0.19	0.19	0.10	0.10	0.10	0.10	0.10	0.10	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.56	0.00	0.41	0.34	0.31	0.12
	ocs4	0.29	0.16	0.16	0.16	0.10	0.10	0.10	0.10	0.10	0.10	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.30	0.56	0.00	0.27	0.31	0.12
C4	oib1	0.54	0.15	0.15	0.15	0.26	0.26	0.22	0.22	0.28	0.28	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.56	0.54	0.57	0.00	0.82	0.65
	oib2	0.23	0.15	0.15	0.15	0.12	0.12	0.13	0.13	0.12	0.12	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.30	0.23	0.22	0.80	0.00	0.35
	oib3	0.23	0.70	0.70	0.70	0.63	0.63	0.64	0.64	0.60	0.60	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54	0.13	0.23	0.22	0.20	0.18	0.00

Figure AB.1: Unweigted Matrix of Opportunities Model

			C1									C2								C3				C4		
		g	ofn1	ofn2	ofn3	ofn4	ofn5	ofn6	ofn7	ofn8	ofn9	olg1	olg2	olg3	olg4	olg5	olg6	olg7	olg8	ocs1	ocs2	ocs3	ocs4	oib1	oib2	oib3
Goal	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	ofn1	0.06	0.00	0.15	0.15	0.13	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn2	0.02	0.16	0.00	0.15	0.13	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn3	0.02	0.13	0.15	0.00	0.08	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn4	0.02	0.06	0.06	0.06	0.00	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn5	0.02	0.06	0.06	0.06	0.06	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn6	0.02	0.06	0.06	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn7	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn8	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ofn9	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	olg1	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.04	0.04	0.02	0.04	0.04
	olg2	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	olg3	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00
	olg4	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.12	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.04	0.01	0.01
	olg5	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.07	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.04	0.02	0.02	0.02	0.03	0.02	0.02
	olg6	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.00	0.00	0.00	2.00	1.00	0.00	0.00	0.02	0.02	0.02	0.02	0.01	0.02	0.02
	olg7	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.00	0.00	0.00	3.00	0.00	1.00	0.00	0.02	0.02	0.02	0.02	0.03	0.02	0.03
	olg8	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.00	0.00	0.00	4.00	0.00	0.00	1.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02
	ocs1	0.03	0.09	0.09	0.09	0.11	0.11	0.11	0.11	0.11	0.11	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.10	0.06	0.02	0.16
	ocs2	0.07	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.17	0.23	0.06	0.09	0.07
	ocs3	0.07	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.32	0.00	0.23	0.10	0.09	0.04
	ocs4	0.07	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.17	0.32	0.00	0.08	0.09	0.04
	oib1	0.14	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.17	0.16	0.17	0.00	0.46	0.36
	oib2	0.06	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.09	0.07	0.07	0.45	0.00	0.20
	oib3	0.06	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.04	0.07	0.07	0.11	0.10	0.00

Figure AB.2: Weighted Matrix of Opportunities Model

Table AB.69: Criteria values of alternatives in opportunities model

ID	BIMAS	CARFB	ADESE	MGROS	SOKM
ofn1	0.03	0.00	0.06	0.00	-0.06
ofn2	0.33	-0.01	0.07	-0.02	0.27
ofn3	0.13	-0.01	0.03	0.00	-0.18
ofn4	24.17	92.57	3.16	138.36	21.95
ofn5	9.99	3.04	1.17	14.42	-4.94
ofn6	9.39	5.23	2.51	5.84	11.83
ofn7	0.91	0.73	0.78	0.69	0.26
ofn8	0.82	1.66	1.87	1.25	0.36
ofn10	0.20	0.26	0.03	0.30	0.02
olg1	-0.16	-0.07	-0.04	-0.19	-0.27
olg2	-0.26	0.01	0.02	0.51	-0.34
olg3	-0.23	-0.06	-0.02	-0.17	-0.17
olg4	0.33	0.72	0.35	0.75	0.43
olg5	0.23	0.78	0.18	0.86	0.32
olg6	0.12	0.34	0.12	0.56	0.18
olg7	0.23	0.42	0.13	0.57	0.27
olg8	0.21	0.36	0.16	0.45	0.39
ocs1	0.82	0.28	0.09	0.52	0.26
ocs2	0.45	0.56	0.23	0.48	0.65
ocs3	0.82	0.45	0.18	0.78	0.66
ocs4	0.85	0.67	0.26	0.75	0.72
oib1	0.18	0.64	0.35	0.83	0.43
oib2	0.35	0.88	0.10	0.95	0.75
oib3	0.46	0.68	0.35	0.72	0.42

Appendix C. (Costs Model)

Table AC.1: Costs model market share fuzzy comparison matrix in criteria learning and growth criteria

ccs1	clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,1,1)	(1,3,5)	(1,3,5)	(0.33,0.6,0.71)	0.54
clg4	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.23
clg4	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.23

Table AC.2: Costs model market share fuzzy comparison matrix in criteria customer criteria

ccs1	ccs2	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs2	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.09,0.14,0.33)	0.18
ccs3	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41
ccs4	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41

Table AC.3: Costs model market share fuzzy comparison matrix in criteria customer criteria

ccs1	cib1	cib2	Normalized Fuzzy Weights	Defuzzied Weights
cib1	(1,1,1)	(3,5,7)	(0.57,0.83,0.88)	0.62
cib2	(0.14,0.2,0.33)	(1,1,1)	(1,0.17,0.25)	0.38

Table AC.4: Costs model customer satisfaction fuzzy comparison matrix in criteria learning and growth criteria

ccs2	clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,1,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.07,0.09,0.14)	0.10
clg4	(3,5,7)	(1,1,1)	(1,1,1)	(0.32,0.45,0.59)	0.45
clg4	(3,5,7)	(1,1,1)	(1,1,1)	(0.32,0.45,0.59)	0.45

Table AC.5: Costs model customer satisfaction fuzzy comparison matrix in customer criteria

ccs2	ccs1	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.06,0.1,0.24)	0.13
ccs3	(3,5,7)	(1,1,1)	(1,3,5)	(0.35,0.61,0.79)	0.56
ccs4	(1,3,5)	(0.2,0.33,1)	(1,1,1)	(0.13,0.29,0.52)	0.30

Table AC.6: Costs model customer satisfaction fuzzy comparison matrix in internal business criteria

ccs2	cib1	cib2	Normalized Fuzzy Weights	Defuzzied Weights
cib1	(1,1,1)	(3,5,7)	(0.63,0.83,0.87)	0.62
cib2	(0.14,0.2,0.33)	(1,1,1)	(1,0.17,0.25)	0.38

Table AC.7: Costs model continuation of customers fuzzy comparison matrix in criteria learning and growth criteria

ccs3	clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,1,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.07,0.09,0.14)	0.10
clg4	(3,5,7)	(1,1,1)	(1,1,1)	(0.32,0.45,0.59)	0.45
clg4	(3,5,7)	(1,1,1)	(1,1,1)	(0.32,0.45,0.59)	0.45

Table AC.8: Costs model continuation of customers fuzzy comparison matrix in customer criteria

ccs3	ccs1	ccs2	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.07,0.09,0.14)	0.10
ccs2	(3,5,7)	(1,1,1)	(1,1,1)	(0.32,0.45,0.59)	0.45
ccs4	(3,5,7)	(1,1,1)	(1,1,1)	(0.32,0.45,0.59)	0.45

Table AC.9: Costs model continuation of customers fuzzy comparison matrix in internal business criteria

ccs3	cib1	cib2	Normalized Fuzzy Weights	Defuzzied Weights
cib1	(1,1,1)	(3,5,7)	(0.71,0.83,0.87)	0.63
cib2	(0.14,0.2,0.33)	(1,1,1)	(1,0.17,0.25)	0.37

Table AC.10: Costs model long-term customer retention index fuzzy comparison matrix in criteria learning and growth criteria

ccs4	clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,1,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.07,0.09,0.14)	0.10
clg4	(3,5,7)	(1,1,1)	(1,1,1)	(0.32,0.45,0.59)	0.45
clg4	(3,5,7)	(1,1,1)	(1,1,1)	(0.32,0.45,0.59)	0.45

Table AC.11: Costs model long-term customer retention index fuzzy comparison matrix in customer criteria

ccs4	ccs1	ccs2	ccs3	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.06,0.1,0.24)	0.13
ccs2	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.13,0.29,0.52)	0.30
ccs3	(3,5,7)	(1,3,5)	(1,1,1)	(0.35,0.61,0.79)	0.56

Table AC.12: Costs model long-term customer retention index fuzzy comparison matrix in internal business criteria

ccs4	cib1	cib2	Normalized Fuzzy Weights	Defuzzied Weights
cib1	(1,1,1)	(3,5,7)	(0.63,0.83,0.88)	0.62
cib2	(0.14,0.2,0.33)	(1,1,1)	(1,0.17,0.25)	0.38

Table AC.13: Costs model advertising cost fuzzy comparison matrix in criteria learning and growth criteria

cib1	clg1	clg4	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,1,1)	(0.2,0.33,1)	(1,0.25,0.5)	0.40
clg4	(1,3,5)	(1,1,1)	(1,0.75,0.83)	0.60

Table AC.14: Costs model advertising cost fuzzy comparison matrix in customer criteria

cib1	ccs1	ccs2	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.2,0.33,1)	(0.04,0.08,0.21)	0.10
ccs2	(3,5,7)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.14,0.27,0.51)	0.28
ccs3	(1,3,5)	(1,3,5)	(1,1,1)	(1,1,1)	(0.14,0.33,0.55)	0.31
ccs4	(1,3,5)	(1,3,5)	(1,1,1)	(1,1,1)	(0.14,0.33,0.55)	0.31

Table AC.15: Costs model professional training fuzzy comparison matrix in criteria learning and growth criteria

cib2	clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,1,1)	(1,3,5)	(0.14,0.2,0.33)	(0.1,0.22,0.38)	0.23
clg4	(0.2,0.33,1)	(1,1,1)	(0.11,0.14,0.2)	(0.05,0.08,0.16)	0.10
clg4	(3,5,7)	(5,7,9)	(1,1,1)	(0.51,0.7,0.83)	0.67

Table AC.16: Costs model professional training fuzzy comparison matrix in customer criteria

cib2	ccs1	ccs2	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.05,0.06,0.1)	0.07
ccs2	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(0.21,0.31,0.43)	0.31
ccs3	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(0.21,0.31,0.43)	0.31
ccs4	(3,5,7)	(1,1,1)	(1,1,1)	(1,1,1)	(0.21,0.31,0.43)	0.31

Table AC.17: Costs model sales growth fuzzy comparison matrix in criteria learning and growth criteria

clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg4	(1,1,1)	(1,3,5)	(1,0.75,0.83)	0.60
clg5	(0.2,0.33,1)	(1,1,1)	(1,0.25,0.5)	0.40

Table AC.18: Costs model sales growth fuzzy comparison matrix in customer criteria

clg1	ccs1	ccs2	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.06,0.1,0.25)	0.13
ccs2	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(0.17,0.3,0.45)	0.29
ccs3	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(0.17,0.3,0.45)	0.29
ccs4	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(0.17,0.3,0.45)	0.29

Table AC.19: Costs model sales growth fuzzy comparison matrix in internal business criteria

clg1	ib1	ib2	Normalized Fuzzy Weights	Defuzzied Weights
ib1	(1,1,1)	(1,3,5)	(1,0.75,0.83)	0.73
ib2	(0.2,0.33,1)	(1,1,1)	(0.19,0.25,0.5)	0.27

Table AC.20: Costs model net profit rate fuzzy comparison matrix in financial criteria

cfn1	cfn2	cfn3	Normalized Fuzzy Weights	Defuzzied Weights
cfn2	(1,1,1)	(1,3,5)	(0.5,0.27,0.83)	0.64
cfn3	(0.2,0.33,1)	(1,1,1)	(0.17,0.25,0.5)	0.36

Table AC.21: Costs model net profit rate fuzzy comparison matrix in learning and growth criteria

cfn1	clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,5,3)	(3,5,7)	(3,5,7)	(0.45,0.72,0.83)	0.65
clg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.1,0.2,0.43)	0.24
clg4	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.05,0.07,0.2)	0.11

Table AC.22: Costs model net profit rate fuzzy comparison matrix in customer criteria

cfn1	ccs1	ccs2	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ccs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AC.23: Costs model net profit rate fuzzy comparison matrix in internal business criteria

cfn1	cib1	cib2	Normalized Fuzzy Weights	Defuzzied Weights
cib1	(1,1,1)	(3,5,7)	(1,0.83,0.88)	0.68
cib2	(0.14,0.2,0.33)	(1,1,1)	(0.85,0.17,0.25)	0.32

Table AC.24: Costs model return on networth fuzzy comparison matrix in internal business criteria

Cfn2	cfn1	cfn3	Normalized Fuzzy Weights	Defuzzied Weights
cfn1	(1,1,1)	(1,3,5)	(1,0.75,0.83)	0.73
cfn3	(0.2,0.33,1)	(1,1,1)	(0.19,0.25,0.5)	0.27

Table AC.25: Costs model return on networth fuzzy comparison matrix in learning and growth criteria

cfn1	clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,5,3)	(3,5,7)	(1,3,5)	(0.35,0.69,0.81)	0.59
clg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.11,0.22,0.5)	0.26
clg4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.3)	0.14

Table AC.26: Costs model return on networth fuzzy comparison matrix in customer criteria

cfn2	ccs1	ccs2	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ccs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AC.27: Costs model return on networth fuzzy comparison matrix in internal business criteria

cfn2	cib1	cib2	Normalized Fuzzy Weights	Defuzzied Weights
cib1	(1,1,1)	(3,5,7)	(1,0.83,0.88)	0.68
cib2	(0.14,0.2,0.33)	(1,1,1)	(0.85,0.17,0.25)	0.32

Table AC.28: Costs model return on asset fuzzy comparison matrix in financial criteria

cfn3	cfn1	cfn2	Normalized Fuzzy Weights	Defuzzied Weights
cfn1	(1,1,1)	(1,3,5)	(0.5,0.31,0.83)	0.64
cfn2	(0.2,0.33,1)	(1,1,1)	(0.17,0.25,0.5)	0.36

Table AC.29: Costs model return on asset fuzzy comparison matrix in learning and growth criteria

cfn3	clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,5,3)	(3,5,7)	(1,3,5)	(0.35,0.69,0.81)	0.59
clg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.11,0.22,0.5)	0.26
clg4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.3)	0.14

Table AC.30: Costs model return on asset fuzzy comparison matrix in customer criteria

cfn3	ccs1	ccs2	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ccs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AC.31: Costs model return on asset fuzzy comparison matrix in internal business criteria

cfn3	cib1	cib2	Normalized Fuzzy Weights	Defuzzied Weights
cib1	(1,1,1)	(3,5,7)	(1,0.83,0.88)	0.68
cib2	(0.14,0.2,0.33)	(1,1,1)	(0.85,0.17,0.25)	0.32

Table AC.32: Costs model current ratio fuzzy comparison matrix in financial criteria

cfn4	cfn5	cfn6	Normalized Fuzzy Weights	Defuzzied Weights
cfn5	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50
cfn6	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50

Table AC.33: Costs model current ratio fuzzy comparison matrix in learning and growth criteria

cfn4	clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,5,3)	(3,5,7)	(1,3,5)	(0.35,0.69,0.81)	0.59
clg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.11,0.22,0.5)	0.26
clg4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.3)	0.14

Table AC.34: Costs model current ratio fuzzy comparison matrix in customer criteria

cfn3	ccs1	ccs2	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ccs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AC.35: Costs model current ratio fuzzy comparison matrix in internal business criteria

cfn3	cib1	cib2	Normalized Fuzzy Weights	Defuzzied Weights
cib1	(1,1,1)	(3,5,7)	(1,0.83,0.88)	0.68
cib2	(0.14,0.2,0.33)	(1,1,1)	(0.85,0.17,0.25)	0.32

Table AC.36: Costs model quick ratio fuzzy comparison matrix in financial criteria

cfn5	cfn4	cfn6	Normalized Fuzzy Weights	Defuzzied Weights
cfn4	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50
cfn6	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50

Table AC.37: Costs model quick ratio fuzzy comparison matrix in learning and growth criteria

cfn5	clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,5,3)	(3,5,7)	(1,3,5)	(0.35,0.69,0.81)	0.59
clg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.11,0.22,0.5)	0.26
clg4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.3)	0.14

Table AC.38: Costs model quick ratio fuzzy comparison matrix in customer criteria

cfn5	ccs1	ccs2	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ccs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AC.39: Costs model quick ratio fuzzy comparison matrix in internal business criteria

cfn5	cib1	cib2	Normalized Fuzzy Weights	Defuzzied Weights
cib1	(1,1,1)	(3,5,7)	(1,0.83,0.88)	0.68
cib2	(0.14,0.2,0.33)	(1,1,1)	(0.85,0.17,0.25)	0.32

Table AC.40: Costs model cash ratio asset fuzzy comparison matrix in financial criteria

cfn6	cfn4	cfn5	Normalized Fuzzy Weights	Defuzzied Weights
cfn4	(1,1,1)	(1,3,5)	(0.5,0.31,0.83)	0.64
cfn5	(0.2,0.33,1)	(1,1,1)	(0.17,0.25,0.5)	0.36

Table AC.41: Costs model cash ratio fuzzy comparison matrix in learning and growth criteria

cfn6	clg1	clg4	clg5	Normalized Fuzzy Weights	Defuzzied Weights
clg1	(1,5,3)	(3,5,7)	(1,3,5)	(0.35,0.69,0.81)	0.59
clg4	(0.14,0.2,0.33)	(1,1,1)	(1,3,5)	(0.11,0.22,0.5)	0.26
clg4	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.3)	0.14

Table AC.38: Costs model cash ratio fuzzy comparison matrix in customer criteria

cfn6	ccs1	ccs2	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
ccs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
ccs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AC.39: Costs model cash ratio fuzzy comparison matrix in internal business criteria

cfn6	cib1	cib2	Normalized Fuzzy Weights	Defuzzied Weights
cib1	(1,1,1)	(3,5,7)	(1,0.83,0.88)	0.68
cib2	(0.14,0.2,0.33)	(1,1,1)	(0.85,0.17,0.25)	0.32

Table AC.42: Costs model goal fuzzy comparison matrix in customer criteria

g	ccs1	ccs2	ccs3	ccs4	Normalized Fuzzy Weights	Defuzzied Weights
ccs1	(1,1,1)	(3,5,7)	(1,3,5)	(1,3,5)	(0.24,0.49,0.69)	0.44
ccs2	(0.14,0.2,0.33)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.04,0.08,0.21)	0.10
ccs3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(0.1,0.22,0.43)	0.23
ccs4	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(0.1,0.22,0.43)	0.23

Table AC.43: Costs model goal fuzzy comparison matrix in internal business criteria

g	ib1	ib2	Normalized Fuzzy Weights	Defuzzied Weights
ib1	(1,1,1)	(3,5,7)	(1,0.83,0.88)	0.74
ib2	(0.14,0.2,0.33)	(1,1,1)	(0.53,0.17,0.25)	0.26

Table AC.44: Costs model financial criteria fuzzy comparison matrix in all main criteria

C1	C1	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C1	(1,1,1)	(1,3,5)	(1,3,5)	(5,7,9)	(0.34,0.56,0.7)	0.52
C2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.11,0.21,0.37)	0.22
C3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.09,0.13,0.23)	0.15
C4	(0.11,0.14,0.2)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.07,0.1,0.18)	0.11

Table AC.45: Costs model learning and growth criteria fuzzy comparison matrix in all main criteria

C2	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,0)	(3,5,0)	(5,7,0)	(0.61,0.79,0)	0.56
C3	(0.33,1,0)	(1,1,0)	(0.33,1,0)	(0.11,0.3,0)	0.15
C4	(0.2,0.33,0)	(3,5,0)	(1,1,0)	(0.28,0.5,0)	0.29

Table AC.46: Costs model customer criteria fuzzy comparison matrix in all main criteria

C3	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(0.13,0.29,0.52)	0.31
C3	(1,3,5)	(1,1,1)	(3,5,7)	(0.35,0.61,0.79)	0.58
C4	(0.2,0.33,1)	(0.14,0.2,0.33)	(1,1,1)	(0.06,0.1,0.24)	0.14

Table AC.47: Costs model internal business criteria fuzzy comparison matrix in all main criteria

C4	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(0.13,0.29,0.52)	0.31
C3	(1,3,5)	(1,1,1)	(3,5,7)	(0.35,0.61,0.79)	0.58
C4	(0.2,0.33,1)	(0.14,0.2,0.33)	(1,1,1)	(0.06,0.1,0.24)	0.14

			C1						C2				C3				C4	
		g	cfn1	cfn2	cfn3	cfn4	cfn5	cfn6	clg1	clg2	clg3	clg4	ccs1	ccs2	ccs3	ccs4	cib1	cib2
Goal	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	cfn1	0.33	0.00	0.64	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	cfn2	0.13	0.64	0.00	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	cfn3	0.14	0.36	0.36	0.00	0.00	0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	cfn4	0.13	0.00	0.00	0.27	0.00	0.64	0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	cfn5	0.13	0.00	0.00	0.73	0.43	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	cfn6	0.13	0.00	0.00	0.00	0.57	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	clg1	0.49	0.65	0.59	0.59	0.59	0.59	0.59	0.60	0.00	0.00	0.00	0.54	0.10	0.10	0.10	0.40	0.23
	clg2	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	clg3	0.11	0.24	0.26	0.26	0.26	0.26	0.26	0.00	0.00	0.00	0.00	0.23	0.45	0.45	0.45	0.00	0.00
	clg4	0.11	0.11	0.14	0.14	0.14	0.14	0.14	0.40	0.00	0.00	0.00	0.23	0.45	0.45	0.45	0.60	0.10
C3	ccs1	0.44	0.69	0.69	0.69	0.69	0.69	0.69	0.13	0.00	0.00	0.00	0.00	0.13	0.10	0.13	0.10	0.07
	ccs2	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.29	0.00	0.00	0.00	0.18	0.00	0.45	0.30	0.28	0.31
	ccs3	0.23	0.10	0.10	0.10	0.10	0.10	0.10	0.29	0.00	0.00	0.00	0.41	0.56	0.00	0.56	0.31	0.31
	ccs4	0.23	0.10	0.10	0.10	0.10	0.10	0.10	0.29	0.00	0.00	0.00	0.41	0.30	0.45	0.00	0.31	0.31
C4	cib1	0.74	0.68	0.68	0.68	0.68	0.68	0.68	0.73	0.00	0.00	0.00	0.62	0.62	0.63	0.62	0.00	0.00
	cib2	0.26	0.32	0.32	0.00	0.32	0.32	0.32	0.27	0.00	0.00	0.00	0.38	0.38	0.37	0.38	0.00	0.00

Figure AC.1: Unweighted Matrix of Risks Model

			C1						C2				C3				C4	
		g	cfn1	cfn2	cfn3	cfn4	cfn5	cfn6	clg1	clg2	clg3	clg4	ccs1	ccs2	ccs3	ccs4	cib1	cib2
Goal	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	cfn1	0.08	0.00	0.33	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	cfn2	0.03	0.33	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	cfn3	0.03	0.19	0.19	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	cfn4	0.03	0.00	0.00	0.14	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	cfn5	0.03	0.00	0.00	0.38	0.22	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	cfn6	0.03	0.00	0.00	0.00	0.29	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	clg1	0.12	0.15	0.13	0.13	0.13	0.13	0.13	0.33	0.00	0.00	0.00	0.16	0.03	0.03	0.03	0.12	0.07
	clg2	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	clg3	0.03	0.05	0.06	0.06	0.06	0.06	0.06	0.00	0.00	1.00	0.00	0.07	0.14	0.14	0.14	0.00	0.00
	clg4	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.23	0.00	0.00	1.00	0.07	0.14	0.14	0.14	0.18	0.03
C3	ccs1	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.02	0.00	0.00	0.00	0.00	0.07	0.06	0.07	0.06	0.04
	ccs2	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.00	0.00	0.00	0.10	0.00	0.25	0.17	0.16	0.17
	ccs3	0.06	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.00	0.00	0.00	0.23	0.32	0.00	0.32	0.17	0.17
	ccs4	0.06	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.00	0.00	0.00	0.23	0.17	0.25	0.00	0.17	0.17
C4	cib1	0.19	0.08	0.08	0.08	0.08	0.08	0.08	0.21	0.00	0.00	0.00	0.08	0.08	0.08	0.08	0.00	0.00
	cib2	0.06	0.04	0.04	0.00	0.04	0.04	0.04	0.08	0.00	0.00	0.00	0.05	0.05	0.05	0.05	0.00	0.00

Figure AC.2: Weighted Matrix of Risks Model

Table AC.48: Criteria values of alternatives in risks model

ID	BIMAS	CARFB	ADESE	MGROS	SOKM
cfn1	0.03	0.00	0.06	0.00	-0.06
cfn2	0.33	-0.01	0.07	-0.02	0.27
cfn3	0.13	-0.01	0.03	0.00	-0.18
cfn4	24.17	92.57	3.16	138.36	21.95
cfn5	9.99	3.04	1.17	14.42	-4.94
cfn6	9.39	5.23	2.51	5.84	11.83
clg1	-0.16	-0.07	-0.04	-0.19	-0.27
clg2	-0.23	-0.06	-0.02	-0.17	-0.17
clg3	0.33	0.72	0.35	0.75	0.43
clg4	0.23	0.78	0.18	0.86	0.32
ccs1	0.82	0.28	0.09	0.52	0.26
ccs2	0.45	0.56	0.23	0.48	0.65
ccs3	0.82	0.45	0.18	0.78	0.66
ccs4	0.85	0.67	0.26	0.75	0.72
cib1	0.40	0.64	0.12	0.83	0.65
cib2	0.32	0.93	0.45	0.95	0.75

Appendix D. (Risks Model)

Table AD.1: Risks model market share fuzzy comparison matrix in learning and growth criteria

rcs1	rlg1	rlg2	rlg3	rlg4	rlg5	rlg6	Normalized Fuzzy Weights	Defuzzied Weights
rlg1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.2,0.33,1)	(1,3,5)	(0.03,0.09,0.26)	0.11
rlg2	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.16,0.37)	0.16
rlg3	(3,5,7)	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(3,5,7)	(0.12,0.3,0.56)	0.27
rlg4	(1,3,5)	(1,1,1)	(0.2,1,1)	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(0.05,0.16,0.36)	0.16
rlg5	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,3,5)	(0.07,0.2,0.43)	0.19
rlg6	(0.2,0.33,1)	(0.2,0.33,1)	(1,3,5)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.09,0.27)	0.11

Table AD.2: Risks model market share fuzzy comparison matrix in customer criteria

rcs1	rcs2	rcs3	rcs4	Normalized Fuzzy Weights	Defuzzied Weights
rcs2	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.09,0.14,0.33)	0.18
rcs3	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41
rcs4	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41

Table AD.3: Risks model market share fuzzy comparison matrix in internal business criteria

rcs1	rib1	rib2	rib3	Normalized Fuzzy Weights	Defuzzied Weights
rib1	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.37)	0.23
rib2	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.37)	0.23
rib3	(1,3,5)	(1,3,5)	(1,1,1)	(0.33,0.6,0.71)	0.54

Table AD.4: Risks model customer satisfaction fuzzy comparison matrix in learning and growth criteria

rcs2	rlg1	rlg2	rlg3	rlg4	rlg5	rlg6	Normalized Fuzzy Weights	Defuzzied Weights
rlg1	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,3,5)	(0.2,0.33,1)	(3,5,7)	(0.06,0.13,0.27)	0.14
rlg2	(1,3,5)	(1,1,1)	(1,1,1)	(3,5,7)	(1,1,1)	(5,7,9)	(0.13,0.24,0.39)	0.23
rlg3	(1,3,5)	(1,1,1)	(1,1,1)	(3,5,7)	(1,1,1)	(5,7,9)	(0.13,0.24,0.39)	0.23
rlg4	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.14,1,0.33)	(1,1,1)	(0.14,0.2,0.33)	(1,3,5)	(0.03,0.07,0.15)	0.08
rlg5	(1,3,5)	(1,1,1)	(1,1,1)	(3,5,7)	(1,1,1)	(5,7,9)	(0.13,0.24,0.39)	0.23
rlg6	(0.14,0.2,0.33)	(0.11,0.14,0.2)	(3,5,7)	(0.2,0.33,1)	(0.11,0.14,0.2)	(1,1,1)	(0.05,0.09,0.18)	0.10

Table AD.5: Risks model customer satisfaction fuzzy comparison matrix in customer criteria

rcs2	rcs1	rcs3	rcs4	Normalized Fuzzy Weights	Defuzzied Weights
rcs1	(1,1,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.06,0.1,0.24)	0.13
rcs3	(3,5,7)	(1,1,1)	(1,3,5)	(0.35,0.61,0.79)	0.56
rcs4	(1,3,5)	(0.2,0.33,1)	(1,1,1)	(0.13,0.29,0.52)	0.30

Table AD.6: Risks model customer satisfaction fuzzy comparison matrix in internal business

rcs1	rib1	rib2	rib3	Normalized Fuzzy Weights	Defuzzied Weights
rib1	(1,1,1)	(1,3,5)	(3,5,7)	(0.35,0.61,0.79)	0.56
rib2	(0.2,0.33,1)	(1,1,1)	(1,3,5)	(0.13,0.29,0.52)	0.30
rib3	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.06,0.1,0.24)	0.13

Table AD.7: Risks model continuation of customers' fuzzy comparison matrix in learning and growth criteria

rcs3	rlg1	rlg2	rlg3	rlg4	rlg5	rlg6	Normalized Fuzzy Weights	Defuzzied Weights
rlg1	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,3,5)	(0.2,0.33,1)	(1,3,5)	(0.04,0.13,0.29)	0.14
rlg2	(1,3,5)	(1,1,1)	(1,1,1)	(3,5,7)	(1,1,1)	(3,5,7)	(0.13,0.25,0.44)	0.24
rlg3	(1,3,5)	(1,1,1)	(1,1,1)	(3,5,7)	(1,1,1)	(3,5,7)	(0.13,0.25,0.44)	0.24
rlg4	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.2,1,1)	(1,1,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.06,0.13)	0.07
rlg5	(1,3,5)	(1,1,1)	(1,1,1)	(1,3,5)	(1,1,1)	(3,5,7)	(0.1,0.22,0.4)	0.21
rlg6	(0.2,0.33,1)	(0.14,0.2,0.33)	(1,3,5)	(1,1,1)	(0.14,0.2,0.33)	(1,1,1)	(0.04,0.09,0.2)	0.10

Table AD.8: Risks model continuation of customers' fuzzy comparison matrix in customer criteria

rcs3	rcs1	rcs2	rcs4	Normalized Fuzzy Weights	Defuzzied Weights
rcs1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.06,0.1,0.24)	0.13
rcs2	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.13,0.29,0.52)	0.30
rcs4	(3,5,7)	(1,3,5)	(1,1,1)	(0.35,0.61,0.79)	0.56

Table AD.9: Risks model continuation of customers' fuzzy comparison matrix in internal business criteria

rcs1	rib1	rib2	rib3	Normalized Fuzzy Weights	Defuzzied Weights
rib1	(1,1,1)	(1,1,1)	(1,3,5)	(0.23,0.43,0.61)	0.41
rib2	(1,1,1)	(1,1,1)	(1,3,5)	(0.23,0.43,0.61)	0.41
rib3	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.09,0.14,0.33)	0.18

Table AD.10: Risks model long-term customer retention index fuzzy comparison matrix in learning and growth criteria

rcs4	rlg1	rlg2	rlg3	rlg4	rlg5	rlg6	Normalized Fuzzy Weights	Defuzzied Weights
rlg1	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,3,5)	(0.2,0.33,1)	(1,3,5)	(0.04,0.13,0.29)	0.14
rlg2	(1,3,5)	(1,1,1)	(1,1,1)	(3,5,7)	(1,1,1)	(3,5,7)	(0.13,0.25,0.44)	0.24
rlg3	(1,3,5)	(1,1,1)	(1,1,1)	(3,5,7)	(1,1,1)	(3,5,7)	(0.13,0.25,0.44)	0.24
rlg4	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.2,1,1)	(1,1,1)	(0.2,0.33,1)	(1,1,1)	(0.03,0.06,0.13)	0.07
rlg5	(1,3,5)	(1,1,1)	(1,1,1)	(1,3,5)	(1,1,1)	(3,5,7)	(0.1,0.22,0.4)	0.21
rlg6	(0.2,0.33,1)	(0.14,0.2,0.33)	(1,3,5)	(1,1,1)	(0.14,0.2,0.33)	(1,1,1)	(0.04,0.09,0.2)	0.10

Table AD.11: Risks model long-term customer retention index fuzzy comparison matrix in customer criteria

rcs4	rcs1	rcs2	rcs3	Normalized Fuzzy Weights	Defuzzied Weights
rcs1	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.09,0.14,0.33)	0.18
rcs2	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41
rcs3	(1,3,5)	(1,1,1)	(1,1,1)	(0.23,0.43,0.61)	0.41

Table AD.12: Risks model long-term customer retention index fuzzy comparison matrix in internal business criteria

rcs1	rib1	rib2	rib3	Normalized Fuzzy Weights	Defuzzied Weights
rib1	(1,1,1)	(1,3,5)	(1,3,5)	(0.33,0.6,0.71)	0.54
rib2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.23
rib3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.14,0.2,0.37)	0.23

Table AD.13: Risks model image and reputation fuzzy comparison matrix in learning and growth criteria

rib1	rlg1	rlg2	rlg3	rlg4	rlg5	rlg6	Normalized Fuzzy Weights	Defuzzied Weights
rlg1	(1,1,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,3,5)	(0.2,0.33,1)	(1,3,5)	(0.04,0.11,0.28)	0.12
rlg2	(3,5,7)	(1,1,1)	(1,3,5)	(3,5,7)	(1,3,5)	(1,3,5)	(0.12,0.29,0.52)	0.26
rlg3	(1,3.03,5)	(0.2,0.33,1)	(1,1,1)	(3,5,7)	(1,1,1)	(3,5,7)	(0.1,0.22,0.44)	0.22
rlg4	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(1,3,5)	(0.03,0.07,0.2)	0.09
rlg5	(1,3.03,5)	(0.2,0.33,1)	(1,1,1)	(3,5,7)	(1,1,1)	(1,3,5)	(0.08,0.19,0.4)	0.19
rlg6	(0.2,0.33,1)	(0.2,0.33,1)	(3,5,7)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.05,0.11,0.27)	0.12

Table AD.14: Risks model image and reputation fuzzy comparison matrix in customer criteria

rib1	rcs1	rcs2	rcs3	rcs4	Normalized Fuzzy Weights	Defuzzied Weights
rcs1	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.25,0.5,0.63)	0.45
rcs2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.17,0.28)	0.18
rcs3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.17,0.28)	0.18
rcs4	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.12,0.17,0.28)	0.18

Table AD.15: Risks model image and reputation fuzzy comparison matrix in internal business criteria

rib1	rib2	rib3	rib4	rib5	rib6	Normalized Fuzzy Weights	Defuzzied Weights
rib2	(1,1,1)	(1,3,5)	(5,7,9)	(5,7,9)	(5,7,9)	(0.36,0.54,0.69)	0.52
rib3	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.1,0.24,0.39)	0.23
rib4	(0.11,0.14,0.2)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.05,0.07,0.13)	0.08
rib5	(0.11,0.14,0.2)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.05,0.07,0.13)	0.08
rib6	(0.11,0.14,0.2)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.05,0.07,0.13)	0.08

Table AD.16: Risks model brand reliability fuzzy comparison matrix in learning and growth criteria

Rib2	rlg1	rlg2	rlg3	rlg4	rlg5	rlg6	Normalized Fuzzy Weights	Defuzzied Weights
rlg1	(1,1,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,3,5)	(0.2,0.33,1)	(1,3,5)	(0.04,0.11,0.28)	0.12
rlg2	(3,5,7)	(1,1,1)	(1,3,5)	(3,5,7)	(1,3,5)	(1,3,5)	(0.12,0.29,0.52)	0.26
rlg3	(1,3.03,5)	(0.2,0.33,1)	(1,1,1)	(3,5,7)	(1,1,1)	(3,5,7)	(0.1,0.22,0.44)	0.22
rlg4	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(1,3,5)	(0.03,0.07,0.2)	0.09
rlg5	(1,3.03,5)	(0.2,0.33,1)	(1,1,1)	(3,5,7)	(1,1,1)	(1,3,5)	(0.08,0.19,0.4)	0.19
rlg6	(0.2,0.33,1)	(0.2,0.33,1)	(3,5,7)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.05,0.11,0.27)	0.12

Table AD.17: Risks model brand reliability fuzzy comparison matrix in customer criteria

rib2	rcs1	rcs2	rcs3	rcs4	Normalized Fuzzy Weights	Defuzzied Weights
rcs1	(1,1,1)	(0.2,0.33,1)	(1,3,5)	(1,3,5)	(0.11,0.28,0.49)	0.28
rcs2	(1,3,5)	(1,1,1)	(3,5,7)	(3,5,7)	(0.3,0.53,0.72)	0.49
rcs3	(0.2,0.33,1)	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.06,0.1,0.2)	0.11
rcs4	(0.2,0.33,1)	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.06,0.1,0.2)	0.11

Table AD.18: Risks model brand reliability fuzzy comparison matrix in internal business criteria

rib2	rib1	rib3	rib4	rib5	rib6	Normalized Fuzzy Weights	Defuzzied Weights
rib1	(1,1,1)	(1,3,5)	(5,7,9)	(5,7,9)	(5,7,9)	(0.36,0.54,0.69)	0.52
rib3	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(0.1,0.24,0.39)	0.23
rib4	(0.11,0.14,0.2)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.05,0.07,0.13)	0.08
rib5	(0.11,0.14,0.2)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.05,0.07,0.13)	0.08
rib6	(0.11,0.14,0.2)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.05,0.07,0.13)	0.08

Table AD.19: Risks model sales growth fuzzy comparison matrix in learning and growth criteria

rlg1	rlg2	rlg3	rlg4	rlg5	rlg6	Normalized Fuzzy Weights	Defuzzied Weights
rlg2	(1,1,1)	(1,1,1)	(3,5,7)	(1,3,5)	(3,5,7)	(0.2,0.38,0.56)	0.36
rlg3	(1,1,1)	(1,1,1)	(1,3,5)	(1,3,5)	(3,5,7)	(0.16,0.33,0.51)	0.31
rlg4	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.2,0.33,1)	(1,1,1)	(0.05,0.07,0.16)	0.09
rlg5	(0.2,0.33,1)	(0.2,0.33,1)	(1,3.03,5)	(1,1,1)	(1,1,1)	(0.07,0.14,0.29)	0.16
rlg6	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(1,1,1)	(0.06,0.09,0.14)	0.09

Table AD.20: Risks model sales growth fuzzy comparison matrix in customer criteria

rlg1	rcs1	rcs2	rcs3	rcs4	Normalized Fuzzy Weights	Defuzzied Weights
rcs1	(1,1,1)	(0.2,0.33,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.04,0.07,0.16)	0.08
rcs2	(1,3,5)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.07,0.18,0.37)	0.19
rcs3	(3,5,7)	(1,3,5)	(1,1,1)	(1,1,1)	(0.2,0.38,0.59)	0.36
rcs4	(3,5,7)	(1,3,5)	(1,1,1)	(1,1,1)	(0.2,0.38,0.59)	0.36

Table AD.21: Risks model sales growth fuzzy comparison matrix in i criteria

rlg1	rib1	rib2	rib3	Normalized Fuzzy Weights	Defuzzied Weights
rib1	(1,1,1)	(1,3,5)	(3,5,7)	(0.35,0.61,0.79)	0.56
rib2	(0.2,0.33,1)	(1,1,1)	(1,3,5)	(0.13,0.29,0.52)	0.30
rib3	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.06,0.1,0.24)	0.13

Table AD.22: Risks model net profit rate fuzzy comparison matrix in financial criteria

rfn1	rfn2	rfn3	Normalized Fuzzy Weights	Defuzzied Weights
rfn2	(1,1,1)	(1,3,5)	(0.5,0.75,0.83)	0.69
rfn3	(0.2,0.33,1)	(1,1,1)	(0.17,0.25,0.5)	0.31

Table AD.23: Risks model net profit rate fuzzy comparison matrix in learning ad growth criteria

rfn1	rlg1	rlg2	rlg3	rlg4	rlg5	rlg6	Normalized Fuzzy Weights	Defuzzied Weights
rlg1	(1,1,1)	(1,3,5)	(1,3,5)	(1,3,5)	(1,3,5)	(3,5,7)	(0.13,0.33,0.57)	0.30
rlg2	(0.2,0.33,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.06,0.19)	0.08
rlg3	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.17,0.37)	0.18
rlg4	(0.2,0.33,1)	(1,3,5)	(0.14,3,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.06,0.21,0.35)	0.18
rlg5	(0.2,0.33,1)	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.17,0.37)	0.18
rlg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.07,0.17)	0.08

Table AD.24: Risks model net profit rate fuzzy comparison matrix in learning ad growth criteria

rfn1	rcs1	rcs2	rcs3	rcs4	Normalized Fuzzy Weights	Defuzzied Weights
rcs1	(1,1,1)	(5,7,9)	(1,3,5)	(5,7,9)	(0.39,0.59,0.75)	0.56
rcs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.06,0.08,0.15)	0.09
rcs3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.09,0.18,0.32)	0.19
rcs4	(0.11,0.14,0.2)	(1,3.03,5)	(0.2,0.33,1)	(1,1,1)	(0.06,0.15,0.29)	0.16

Table AD.25: Risks model net profit rate fuzzy comparison matrix in internal business criteria

rfn1	rib1	rib2	rib3	Normalized Fuzzy Weights	Defuzzied Weights
rib1	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
rib2	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
rib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.6,0.71,0.78)	0.70

Table AD.26: Risks model return on networth fuzzy comparison matrix in financial criteria

rfn2	rfn1	rfn3	Normalized Fuzzy Weights	Defuzzied Weights
rfn1	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50
rfn3	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50

Table AD.27: Risks model return on networth fuzzy comparison matrix in learning and growth criteria

rfn2	rlg1	rlg2	rlg3	rlg4	rlg5	rlg6	Normalized Fuzzy Weights	Defuzzied Weights
rlg1	(1,1,1)	(1,3,5)	(1,3,5)	(3,5,7)	(1,3,5)	(3,5,7)	(0.2,0.39,0.56)	0.36
rlg2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,1,1)	(1,1,1)	(0.08,0.14,0.26)	0.15
rlg3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.14,0.26)	0.15
rlg4	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.14,1,0.33)	(1,1,1)	(1,1,1)	(1,1,1)	(0.05,0.09,0.13)	0.09
rlg5	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.14,0.26)	0.15
rlg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.15)	0.10

Table AD.28: Risks model return on networth fuzzy comparison matrix in customer criteria

rfn2	rcs1	rcs2	rcs3	rcs4	Normalized Fuzzy Weights	Defuzzied Weights
rcs1	(1,1,1)	(5,7,9)	(5,7,9)	(5,7,9)	(0.63,0.7,0.75)	0.69
rcs2	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
rcs3	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10
rcs4	(0.11,0.14,0.2)	(1,1,1)	(1,1,1)	(1,1,1)	(0.08,0.1,0.13)	0.10

Table AD.29: Risks model return on networth fuzzy comparison matrix in internal business criteria

rfn2	rib1	rib2	rib3	Normalized Fuzzy Weights	Defuzzied Weights
rib1	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
rib2	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
rib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.6,0.71,0.78)	0.70

Table AD.30: Risks model return on networth fuzzy comparison matrix in financial criteria

rfn3	rfn1	rfn2	Normalized Fuzzy Weights	Defuzzied Weights
rfn1	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50
rfn2	(1,1,1)	(1,1,1)	(0.5,0.5,0.5)	0.50

Table AD.31: Risks model return on asset fuzzy comparison matrix in learning and growth criteria

rfn3	rlg1	rlg2	rlg3	rlg4	rlg5	rlg6	Normalized Fuzzy Weights	Defuzzied Weights
rlg1	(1,1,1)	(1,3,5)	(1,3,5)	(3,5,7)	(1,3,5)	(3,5,7)	(0.2,0.39,0.56)	0.36
rlg2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,1,1)	(1,1,1)	(0.08,0.14,0.26)	0.15
rlg3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.14,0.26)	0.15
rlg4	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.14,1,0.33)	(1,1,1)	(1,1,1)	(1,1,1)	(0.05,0.09,0.13)	0.09
rlg5	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.08,0.14,0.26)	0.15
rlg6	(0.14,0.2,0.33)	(1,1,1)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(1,1,1)	(0.06,0.09,0.15)	0.10

Table AD.32: Risks model return on asset fuzzy comparison matrix in customer criteria

rfn3	rcs1	rcs2	rcs3	rcs4	Normalized Fuzzy Weights	Defuzzied Weights
rcs1	(1,1,1)	(5,7,9)	(1,3,5)	(1,3,5)	(0.29,0.53,0.72)	0.48
rcs2	(0.11,0.14,0.2)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.04,0.07,0.18)	0.09
rcs3	(0.2,0.33,1)	(1,3.03,5)	(1,1,1)	(1,1,1)	(0.09,0.2,0.39)	0.21
rcs4	(0.2,0.33,1)	(1,3.03,5)	(1,1,1)	(1,1,1)	(0.09,0.2,0.39)	0.21

Table AD.33: Risks model return on asset fuzzy comparison matrix in internal business criteria

rfn3	rib1	rib2	rib3	Normalized Fuzzy Weights	Defuzzied Weights
rib1	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
rib2	(1,1,1)	(1,1,1)	(0.14,0.2,0.33)	(0.11,0.14,0.2)	0.15
rib3	(3,5,7)	(3,5,7)	(1,1,1)	(0.6,0.71,0.78)	0.70

Table AD.34: Risks model goal fuzzy comparison matrix in financial criteria

g	rfn1	rfn2	rfn3	Normalized Fuzzy Weights	Defuzzied Weights
rfn1	(1,1,1)	(1,1,1)	(1,1,1)	(0.33,0.33,0.33)	0.33
rfn2	(1,1,1)	(1,1,1)	(1,1,1)	(0.33,0.33,0.33)	0.33
rfn3	(1,1,1)	(1,1,1)	(1,1,1)	(0.33,0.33,0.33)	0.33

Table AD.35: Risks model goal fuzzy comparison matrix in learning and growth criteria

g	rlg1	rlg2	rlg3	rlg4	rlg5	rlg6	Normalized Fuzzy Weights	Defuzzied Weights
rlg1	(1,1,1)	(1,3,5)	(1,3,5)	(3,5,7)	(1,3,5)	(3,5,7)	(0.17,0.37,0.58)	0.34
rlg2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(1,1,1)	(1,3,5)	(0.08,0.17,0.34)	0.18
rlg3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.14,0.27)	0.14
rlg4	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.14,1,0.33)	(1,1,1)	(1,1,1)	(1,3,5)	(0.05,0.12,0.23)	0.12
rlg5	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.07,0.14,0.27)	0.14
rlg6	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.04,0.06,0.15)	0.08

Table AD.36: Risks model goal fuzzy comparison matrix in customer criteria

g	rcs1	rcs2	rcs3	rcs4	Normalized Fuzzy Weights	Defuzzied Weights
rcs1	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.2,0.33,1)	(0.06,0.1,0.25)	0.13
rcs2	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(0.17,0.3,0.45)	0.29
rcs3	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(0.17,0.3,0.45)	0.29
rcs4	(1,3,5)	(1,1,1)	(1,1,1)	(1,1,1)	(0.17,0.3,0.45)	0.29

Table AD.37: Risks model goal fuzzy comparison matrix in customer criteria

g	rib1	rib2	rib3	rib4	rib5	rib6	Normalized Fuzzy Weights	Defuzzied Weights
rib1	(1,1,1)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,3,5)	(0.06,0.12,0.27)	0.13
rib2	(1,1,1)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,3,5)	(0.06,0.12,0.27)	0.13
rib3	(1,1,1)	(1,1,1)	(1,1,1)	(0.2,0.33,1)	(0.2,0.33,1)	(1,3,5)	(0.06,0.12,0.27)	0.13
rib4	(1,3,5)	(1,3,5)	(0.2,3,1)	(1,1,1)	(1,1,1)	(3,5,7)	(0.11,0.29,0.46)	0.25
rib5	(1,3,5)	(1,3,5)	(1,3,5)	(1,1,1)	(1,1,1)	(3,5,7)	(0.13,0.29,0.51)	0.27
rib6	(0.2,0.33,1)	(0.2,0.33,1)	(1,1,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(1,1,1)	(0.04,0.06,0.14)	0.07

Table AD.38: Risks model financial comparison matrix in all criteria

C1	C1	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C1	(1,1,1)	(1,3,5)	(1,3,5)	(3,5,7)	(0.28,0.52,0.67)	0.47
C2	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,3,5)	(0.11,0.23,0.41)	0.24
C3	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(1,1,1)	(0.1,0.14,0.26)	0.16
C4	(0.14,0.2,0.33)	(0.2,0.33,1)	(1,1,1)	(1,1,1)	(0.07,0.11,0.21)	0.13

Table AD.39: Risks model learning and growth comparison matrix in all criteria

C2	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,1)	(0.14,0.2,0.33)	(1,3,5)	(0.1,0.22,0.38)	0.24
C3	(3,5,7)	(1,1,1)	(5,7,9)	(0.51,0.7,0.83)	0.68
C4	(0.2,0.33,1)	(0.11,0.14,0.2)	(1,1,1)	(0.05,0.08,0.16)	0.10

Table AD.40: Risks model customer comparison matrix in all criteria

C3	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,1)	(0.14,0.2,0.33)	(0.2,0.33,1)	(0.06,0.1,0.24)	0.14
C3	(3,5,7)	(1,1,1)	(1,3,5)	(0.35,0.61,0.79)	0.58
C4	(1,3,5)	(0.2,0.33,1)	(1,1,1)	(0.13,0.29,0.52)	0.31

Table AD.40: Risks model internal business comparison matrix in all criteria

C4	C2	C3	C4	Normalized Fuzzy Weights	Defuzzied Weights
C2	(1,1,1)	(0.14,0.2,0.33)	(0.14,0.2,0.33)	(0.07,0.09,0.14)	0.10
C3	(3,5,7)	(1,1,1)	(1,1,1)	(0.32,0.45,0.59)	0.45
C4	(3,5,7)	(1,1,1)	(1,1,1)	(0.32,0.45,0.59)	0.45

			C1			C2						C3				C4					
		g	fn1	fn2	fn3	lg1	lg2	lg3	lg4	lg5	lg6	cs1	cs2	cs3	cs4	ib1	ib2	ib3	ib4	ib5	ib6
Goal	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	fn1	0.33	0.00	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn2	0.33	0.69	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn3	0.33	0.31	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	lg1	0.34	0.30	0.36	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.14	0.14	0.14	0.12	0.12	0.00	0.00	0.00	0.00
	lg2	0.18	0.08	0.15	0.15	0.36	0.00	0.00	0.00	0.00	0.00	0.16	0.23	0.24	0.24	0.26	0.26	0.00	0.00	0.00	0.00
	lg3	0.14	0.18	0.15	0.15	0.31	0.00	0.00	0.00	0.00	0.00	0.27	0.23	0.24	0.24	0.22	0.22	0.00	0.00	0.00	0.00
	lg4	0.12	0.18	0.09	0.09	0.09	0.00	0.00	0.00	0.00	0.00	0.16	0.08	0.07	0.07	0.09	0.09	0.00	0.00	0.00	0.00
	lg5	0.14	0.18	0.15	0.15	0.16	0.00	0.00	0.00	0.00	0.00	0.19	0.23	0.21	0.21	0.19	0.19	0.00	0.00	0.00	0.00
	lg6	0.08	0.08	0.10	0.10	0.09	0.00	0.00	0.00	0.00	0.00	0.11	0.10	0.10	0.10	0.12	0.12	0.00	0.00	0.00	0.00
C3	cs1	0.13	0.56	0.69	0.48	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.13	0.18	0.45	0.28	0.00	0.00	0.00	0.00
	cs2	0.29	0.09	0.10	0.09	0.19	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.30	0.41	0.18	0.49	0.00	0.00	0.00	0.00
	cs3	0.29	0.19	0.10	0.21	0.36	0.00	0.00	0.00	0.00	0.00	0.41	0.56	0.00	0.41	0.18	0.11	0.00	0.00	0.00	0.00
	cs4	0.29	0.16	0.10	0.21	0.36	0.00	0.00	0.00	0.00	0.00	0.41	0.30	0.56	0.00	0.18	0.11	0.00	0.00	0.00	0.00
C4	ib1	0.13	0.15	0.15	0.15	0.56	0.00	0.00	0.00	0.00	0.00	0.23	0.56	0.41	0.54	0.00	0.52	0.00	0.00	0.00	0.00
	ib2	0.13	0.15	0.15	0.15	0.30	0.00	0.00	0.00	0.00	0.00	0.23	0.30	0.41	0.23	0.52	0.00	0.00	0.00	0.00	0.00
	ib3	0.13	0.70	0.70	0.70	0.13	0.00	0.00	0.00	0.00	0.00	0.54	0.13	0.18	0.23	0.23	0.23	0.00	0.00	0.00	0.00
	ib4	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00	0.00	0.00
	ib5	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00	0.00	0.00
	ib6	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00	0.00	0.00

Figure AD.1: Unweigted matrix of risks model

			C1			C2						C3				C4					
		g	fn1	fn2	fn3	lg1	lg2	lg3	lg4	lg5	lg6	cs1	cs2	cs3	cs4	ib1	ib2	ib3	ib4	ib5	ib6
Goal	g	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	fn1	0.08	0.00	0.24	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn2	0.08	0.33	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	fn3	0.08	0.14	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C2	lg1	0.08	0.07	0.09	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00
	lg2	0.04	0.02	0.04	0.04	0.08	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.03	0.03	0.03	0.00	0.00	0.00	0.00
	lg3	0.04	0.04	0.04	0.04	0.07	0.00	1.00	0.00	0.00	0.00	0.04	0.03	0.03	0.03	0.02	0.02	0.00	0.00	0.00	0.00
	lg4	0.03	0.04	0.02	0.02	0.02	0.00	0.00	1.00	0.00	0.00	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
	lg5	0.04	0.04	0.04	0.04	0.04	0.00	0.00	0.00	1.00	0.00	0.03	0.03	0.03	0.03	0.02	0.02	0.00	0.00	0.00	0.00
	lg6	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	2.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
C3	cs1	0.03	0.09	0.11	0.08	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.10	0.20	0.12	0.00	0.00	0.00	0.00
	cs2	0.07	0.01	0.02	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.17	0.23	0.08	0.22	0.00	0.00	0.00	0.00
	cs3	0.07	0.03	0.02	0.03	0.24	0.00	0.00	0.00	0.00	0.00	0.23	0.32	0.00	0.23	0.08	0.05	0.00	0.00	0.00	0.00
	cs4	0.07	0.03	0.02	0.03	0.24	0.00	0.00	0.00	0.00	0.00	0.23	0.17	0.32	0.00	0.08	0.05	0.00	0.00	0.00	0.00
C4	ib1	0.03	0.02	0.02	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.07	0.17	0.12	0.16	0.00	0.23	0.00	0.00	0.00	0.00
	ib2	0.03	0.02	0.02	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.07	0.09	0.12	0.07	0.23	0.00	0.00	0.00	0.00	0.00
	ib3	0.03	0.09	0.09	0.09	0.01	0.00	0.00	0.00	0.00	0.00	0.16	0.04	0.06	0.07	0.10	0.10	0.00	0.00	0.00	0.00
	ib4	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00
	ib5	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00
	ib6	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00

Figure AD.2: Weigted matrix of risks model

Table AD.41: Criteria values of alternatives in risks model

ID	BIMAS	CARFB	ADESE	MGROS	SOKM
rfn1	0.03274	-0.0044	0.05605	-0.0014	-0.0554
rfn2	0.32717	-0.0135	0.06581	-0.0203	0.27354
rfn3	0.12936	-0.0075	0.03122	-0.0022	-0.1784
rlg1	-0.1639	-0.0695	-0.042	-0.1884	-0.2694
rlg2	0.33	0.72	0.35	0.75	0.43
rlg3	0.23	0.78	0.18	0.86	0.32
rlg4	0.12	0.34	0.12	0.56	0.18
rlg5	0.23	0.42	0.13	0.57	0.27
rlg6	0.21	0.36	0.16	0.45	0.39
rcs1	0.82	0.28	0.09	0.52	0.26
rcs2	0.45	0.56	0.23	0.48	0.65
rcs3	0.82	0.45	0.18	0.78	0.66
rcs4	0.85	0.67	0.26	0.75	0.72
rib1	0.18	0.64	0.35	0.83	0.43
rib2	0.345	0.88	0.1	0.95	0.75
rib3	0.46	0.68	0.35	0.72	0.42
rib4	0.59	0.64	0.32	0.75	0.56
rib5	0.13	0.56	0.25	0.64	0.46
rib6	0.28	0.15	0.13	0.12	0.23

BIOGRAPHICAL SKETCH

Kübra Karabece was born in Ankara, 1993. She is graduated from Aksaray Science High Scool. She received in B.S in Industrial Engineering from Galatasaray University. She participated Erasmus program in Grenoble Institute of Technology.

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