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Model for Determining the Optimum Marketing Strategy for Schneider Electric Products Using Game Theory Approach (Case Study: Authorized Distributor Schneider Electric)

Anggi Ridho Habibi[1], Meilita Tryana Sembiring[1], Anizar Anizar[*1]
[1]*Department of Industrial Engineering, Faculty of Engineering, Universitas Sumatera Utara, Medan, Indonesia*
[*] Corresponding Author: anizar_usu@usu.ac.id

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ABSTRACT

Market competition, sales area, and similar business process between authorized distributors of Schneider Electric Medan namely KAK and PJ have an impact on the problems experienced by consumers, resulting in sales decrease and unachieved targets by distributors. Optimal marketing strategy modeling for each distributor is needed to restore consumer confidence and also increase sales. Game theory is used to analyze the most optimum applications by finding the best mathematical model for each distributor, where each player is expected to find the most optimum indicator in maximizing profits or minimizing losses. The novelty in this study is related to the application of strategy implementation (sub-variables) which will be actions that can be taken in implementing selected strategies (main variables) for each distributor. The results of the study show that the optimum marketing strategy of the main variable for KAK is the payment strategy, and for PJ is the aftersales strategy, with the saddle point value of the game is 17.73. The applications of the optimum marketing strategy for KAK payment strategy are COD, Net OEMD, and CIA, while for PJ aftersales strategy are Warranty, Technician, and Service Center, with the saddle point value of the game is 28.18.

Keyword: Marketing, Strategy, Game-Theory, Linear Programming, Distributors

ABSTRACT

Kompetisi market, area penjualan, serta proses bisnis yang sama antar distributor resmi Schneider Electric Medan yaitu KAK dan PJ berdampak pada permasalahan yang dialami konsumen, sehingga menyebabkan penjualan yang menurun dan target yang tidak tercapai oleh distributor. Pemodelan strategi pemasaran yang optimal untuk setiap distributor diperlukan agar dapat mengembalikan kepercayaan konsumen dan juga meningkatkan penjualan. Teori permainan digunakan untuk menganalisis strategi pemasaran dan aplikasi penerapan yang paling optimum dengan menemukan model matematika terbaik untuk setiap distributor, dimana setiap pemain diharapkan dapat menemukan nilai indikator yang paling optimum dalam memaksimumkan keuntungan ataupun meminimumkan kerugiannya. Keterbaruan pada penelitian ini yaitu terkait aplikasi penerapan strategi (sub-variabel) yang akan menjadi tindakan-tindakan yang dapat diambil dalam menerapkan strategi-strategi terpilih (variabel utama) untuk setiap distributor. Hasil penelitian menunjukkan bahwa strategi pemasaran optimum variabel utama untuk distributor KAK yaitu strategi pembayaran, dan untuk distributor PJ yaitu strategi aftersales, dengan nilai saddle point permainan adalah 17,73. Aplikasi penerapan strategi pemasaran optimum untuk strategi pembayaran KAK adalah COD, Net OEMD, dan CIA, sedangkan untuk strategi aftersales PJ adalah Garansi, Teknisi, dan Service Centre, dengan nilai saddle point permainan adalah 28,18.

Keyword: Pemasaran, Strategi, Teori Permainan, Pemrograman Linear, Distributor

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1. Introduction

Marketing is the process of planning and implementing the conception, pricing, promotion and distribution of ideas, goods and services to create exchange value that satisfies individual and organizational goals [1]. The main goal of marketing is to know and understand customers thoroughly so that the products or services offered are in accordance with their needs and desires [2]. The marketing strategy that is developed is usually a strategy that is related to the four main variables of the market mix, namely Price, Product, Place and Promotion or commonly called 4P [3]. The marketing mix is a collection of variables that can be used by companies to influence consumer responses, so that with the variables used by the company, it will create a combination that provides maximum results. The concept of the marketing mix is one of the important and dominant concepts in the marketing paradigm [4].

Schneider Electric is a company engaged in energy distribution through digital transformation, energy management and automation. The main focus of the products marketed by Schneider Electric are products used in power management. The business process of marketing and selling Schneider Electric products is carried out through cooperation with various types of Partners and Authorized Distributors [5]. Authorized distributors are companies or entities that licensed or officially recognized by the manufacturer to distribute and selling products in a specific market area [6]. Authorized Distributor Schneider Electric for the Sumbagut area currently there are several, two of which are KAK and PJ. Schneider Electric plays a role in determining sales targets and the best marketing strategies for each distributor in order to meet the specified targets. Lately, consumer complaints have often been found regarding the services and business processes carried out by distributors. These complaints come from various experiences faced by consumers when interacting and transacting directly with distributors.

The main problems often found in authorized distributors based on the 4P marketing mix intersection are related to price, discount (price, promotion), delivery (place), payment (price, place), and aftersales (price, product, place). Consumers often find differences in prices given by distributors, causing confusion regarding the actual price. In addition, the discounts given also vary, there are discounts that are given too high by one of the distributors so that they damage market prices. Product delivery is also often an obstacle faced by consumers, where there are often delays in delivery, especially for indent products. Payment is also often a problem faced by consumers and distributors, where consumers expect payment variations but often cannot be fulfilled by the distributor. Finally, the most common peak problem is aftersales service, warranty claim process, availability of spare parts, technicians, and service centers that are often not met, causing consumers to feel disadvantaged by the damage to the products that occur.

In 2024, the distributor sales target has been reduced due to the failure to achieve the target in the previous year, this indicates a decrease in sales and consumer interest in Schneider Electric products marketed by Authorized Distributors. Therefore, actions or applications are needed in implementing the optimum marketing strategy expected by consumers so that it can be applied to distributors. Through Schneider Electric's role as a vendor and product owner, it is hoped that determining the strategy and its application can increase the sales of each distributor so that the target set by Schneider Electric can be achieved in the next period.

Game theory can be the best method that can be used to determine these optimal marketing strategies, because game theory focuses on in getting the value of the saddle point [7], and also game theory is a calculation that can investigate the procedure between the main parts in serious conditions to achieve the nash equilibrium condition. Nash equilibrium is the best condition with the system used by each player [8]. Each player can reach the optimal point for each strategy, both in maximizing profits or minimize losses. Thus, through various strategies formulated, the final result is that each player gets the best strategy and its application [9].

Implementation of game theory provides the right answer regarding the most influential and prioritized strategy variables in marketing activities, as well as marketing actions in realizing the priority strategy [10]. This theory was developed to analyze the decision-making process involving two or more interests. Schneider Electric Area Manager plays a role in decision-making in competitive situations that occur between distributors, so that they can find optimum strategy solutions and applications that can be applied by each distributor. In game theory, if the strategy chosen by each player is optimal, then the game is said to have reached a point of equilibrium (saddle point) [11].

This study aims to determine the optimum marketing strategy and its application using game theory, so that the marketing actions carried out by both distributors can be optimal. Authorized Distributor Schneider Electric selected as the subject of the study are KAK and PJ, where through this study the best marketing mathematical model can be found for both distributors in order to maximize profits or minimize losses, through modeling in finding the right equilibrium point value using Game Theory.

2. Method

2.1. Types and steps of research

The type of research used is mix-method research. Mix-method is a research method where qualitative and quantitative data are used together or combined [12]. The reason for using mix-method research is because in this study there is qualitative data collection which is then carried out quantitative calculations on the research objects taken. The procedure of the research describes all activities carried out during the research activities which are equipped with a presentation of a flowchart. The following are the research steps shown in the Figure 1 below.

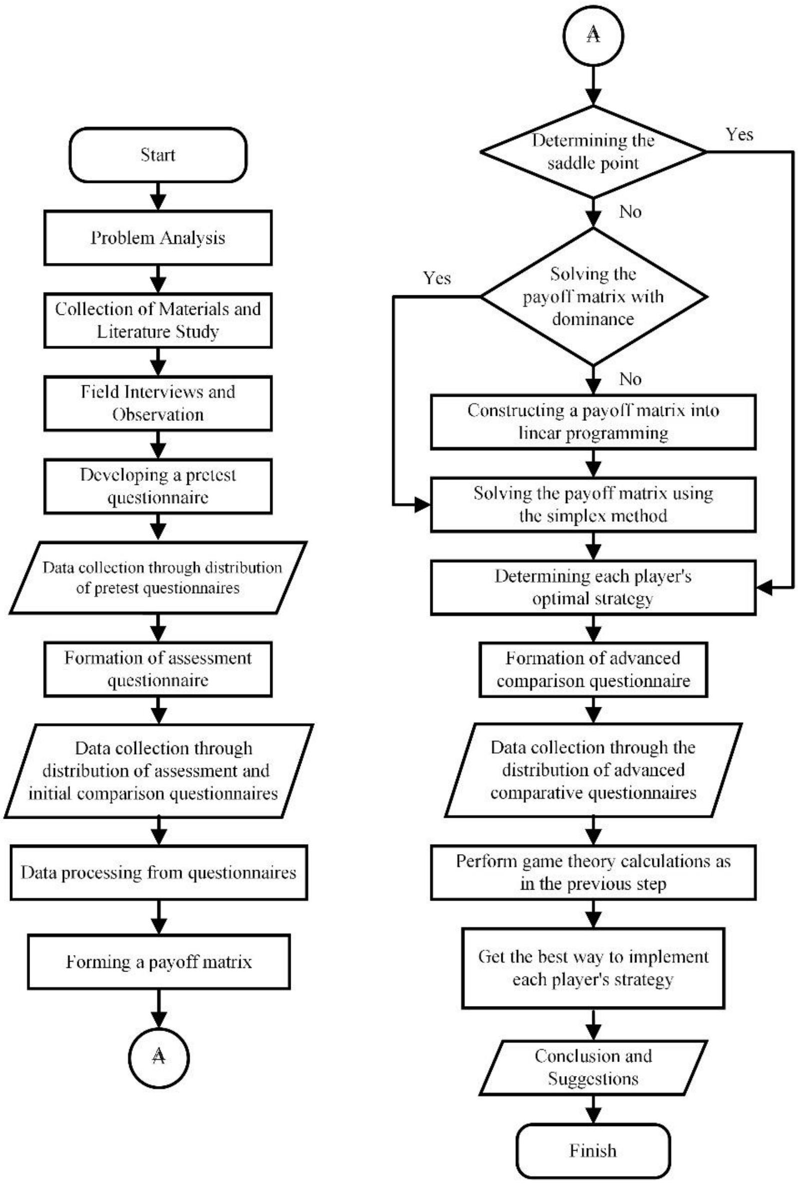

Figure 1. Research Methodology Flowchart

In this study, two types of data were used, namely qualitative data and quantitative data. Qualitative data were obtained from studies of research literature and related journals, field observations of distributor and consumer conditions, and the results of direct interviews with the Schneider Electric Area Manager. The collection of qualitative data resulted in several criteria for the application of the marketing strategy that was to be implemented, namely related to price, discounts, delivery, payment, and aftersales service, as well as sub-strategies of the five main variables. These criteria are the application of the strategy that will be used as variable data in the questionnaire that will be distributed to consumers. Quantitative data is data obtained from distributing questionnaires to respondents. The questionnaire will be conducted in three stages, namely the Assessment Questionnaire, Comparison Questionnaire A and Comparison Questionnaire B. Assessment Questionnaire to determine strategy preferences based on history services, interactions and transactions that consumers have ever made with both distributors. Comparison Questionnaire A is to find out the best strategy for each distributor based on the main research variables, while Comparison Questionnaire B is to find out the application of strategy implementation for each distributor, based on selected strategy sub-variables through game theory calculation results.

2.2. Marketing mix

Previous research describes the concept of the 4P marketing mix integrated with the concept of game theory based on marketing strategy sources proposed by previous researchers. The integrated marketing mix model developed is depicted in Figure 2 below [13].

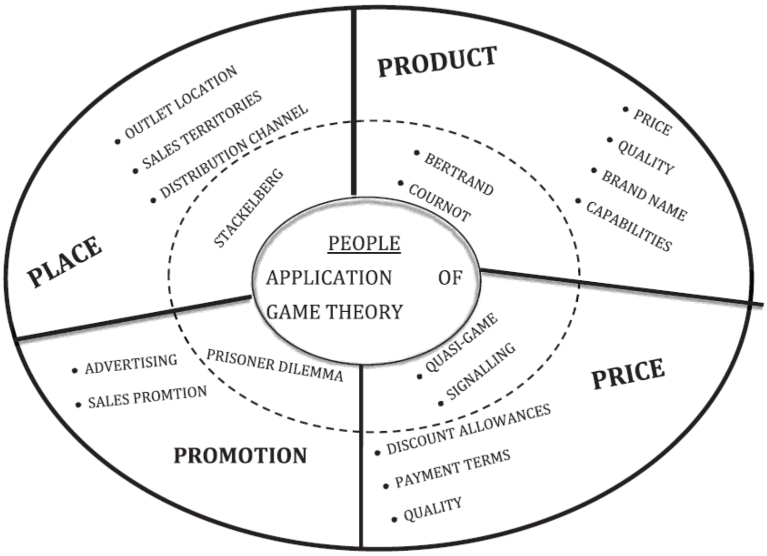

Figure 2. Integrated Marketing Mix Model

Based on the model above, the relationship between selected variables of each company can be determined based on the integrated marketing mix model. The relationship between strategy variables used in this study based on the integrated mix model can be seen in Table 1 below.

Table 1. Integrated Marketing Mix Model on Selected Company Variables

No	Marketing Mix (4P)	Integrated Marketing Mix Model	Corporate Strategy Mix Variables
1.	Price	Discount Allowance Payment Terms Quality	Price (S1) Discount (S2) Payment (S3) Aftersales (S5)
2.	Products	Price Quality Brand Name Capabilities	Price (S1) Aftersales (S5) Delivery (S4)
3.	Place	Outlet Location Sales Territory Distribution Channel	Delivery (S4) Aftersales (S5)
4.	Promotion	Advertising Sales Promotion	Discount (S2)

2.3. Design of research questionnaire

The Variable, Sub-Variable, Indicator, Predictor, and Item Number Models developed by previous researchers [14] were used by the author in this study to select the strategy to be implemented. Sub-Variables are broken down into Indicators, then each Indicator is described into Descriptors so that they can be easily formulated into Item Numbers or Question or Statement Item Numbers. Sub-Variables, Indicators, and

Descriptors are obtained from operational definitions that explain the definition of each variable based on theoretical foundations or explanations of previous research. The following are the Details of the Sub-Variables obtained from the operational definition theories of previous research, which can be seen in Table 2 below.

Table 2. Breakdown of Variables into Sub variables (Dimensions)

No.	Variable (S)	Sub variables (Dimensions)
1.	Price (S1)	1. Affordability 2. Competition 3. Assumptions 4. Quality 5. Period
2.	Discount (S2)	1. Payment Time 2. Purchase Amount 3. Buying Season
3.	Delivery (S3)	1. Waiting time 2. Flexibility 3. dependency 4. Quality 5. Cost 6. Capacity 7. Utilization of assets
4.	Payment (S4)	1. Cash on Delivery (COD) 2. Cash Before Delivery (CBD) 3. Cash in Advance (CIA) 4. Net 30 5. Net EOM Days
5.	After sales (S5)	1. Warranty 2. Spare parts 3. Manpower 4. Maintenance 5. Facilities
6.	Optimum Marketing Strategy (SP)	1. Target 2. Sales Amount 3. Trust

In accordance with the procedure for compiling research instruments [15], after each variable is described into its subvariables, these variables are then developed into indicators and descriptors known as the instrument compilation grid. Table 3 below contains the expression for the instrument compilation grid.

Table 3. Instrument Compilation Grid

No.	Variable (S)	Sub-Variables (Dimensions)	Indicator	Descriptor (SV)	No Item
1.	Price (S1)	a. Affordability	(1) Affordable prices	(a) Affordable prices for consumers	1
		b. Competition	(2) Competitive price	(b) Competitive prices with other products/sellers	2
		c. Assumptions	(3) Price assumptions	(c) Price according to buyer's assumption	
		d. Quality	(4) Quality for price	(d) Price is according to the quality provided	3
		e. Period	(5) Price period	(e) Price period according to purchase time (latest price)	4
					5
2.	Discount (S2)	a. Payment Time	(1) Cash payment	(a) Discounts are given when paying in cash or in advance.	6
		b. Purchase Amount	(2) Quantity of purchase amount	(b) Discounts are given when the number of items reaches a certain quantity.	7
		c. Buying Season	(3) Purchase Subscription	(c) Discounts are given when the purchase value is above a certain amount.	8
			(4) Discounts during certain seasons	(d) Discounts are given to subscribers	9
			(5) Obsolete Products	(e) Discounts are given during certain seasons (eg end of year; national holidays, etc.)	10
				(f) Discounts are given for old items/ obsolete products	11

No.	Variable (S)	Sub-Variables (Dimensions)	Indicator	Descriptor (SV)	No Item
3.	Delivery (S3)	a. Waiting time b. Quality c. dependence d. Flexibility e. Cost f. CapacityAsset g. Utilization	(1) Delivery waiting time (2) Delivery quality (3) Delivery dependency (4) Delivery flexibility (5) Delivery costs (6) Delivery capacity (7) Asset Utilization	(a) The waiting time for delivery of goods is in accordance with the agreement that has been set (there are no delays) (b) The quality of the packaging of goods complies with applicable standards. (c) The cargo or expedition used is guaranteed in terms of quality (registered and certified) (d) Delivery does not depend on a particular expedition (e) Flexible delivery regarding the choice of delivery type (water, air, sea) (f) Cheap and affordable delivery costs (g) Delivery capacity can be maximized (h) Utilization of existing assets (transportation equipment) to reduce delivery costs	12 13 14 15 16 17 18 19
4.	Payment (S4)	a. CBD (Cash Before Delivery) b. COD (Cash on Delivery) c. CIA (Cash in Advance) d. Net 30 e. Net EOM Days (End of Month)	(1) Payment before delivery (2) Payment when goods arrive (3) Full payment in advance (4) Payment 30 days after invoice is issued (5) Payment at the end of the month when the invoice is issued	(a) There are payment method facilities before delivery (b) There are payment method facilities when the goods arrive (c) There is a full payment method facility at the beginning (d) There is a payment method facility 30 days after the invoice is issued (e) There is a payment method facility at the end of the month when the invoice is issued.	20 21 22 23 24
5.	Aftersales (S5)	a. Warranty b. Spareparts c. Manpower d. Maintenance e. Facility	(1) Claim warranty (2) Warranty period (3) Completeness of spare parts (4) Spare part waiting time (5) Availability of Technicians (6) Maintenance guarantee (7) Aftersales Facilities	(a) Warranty claims are easy to make (a) Longer warranty period than standard for similar items (b) Warranty period when the goods arrive (c) Warranty period when the item is used (a) Spare parts available when needed (b) All types/models of spare parts are complete (a) If spare parts are not available, the waiting time required is not too long. (a) Availability of technicians to carry out maintenance (manpower) (a) Maintenance guarantee if damage occurs during the warranty period (breakdown) (b) Service contract facilities related to preventive or scheduled maintenance (a) There is a repair facility service (service center) (b) Location of repair facilities nearby	25 26 27 28 29 30 31 32 33 34 35 36
6.	Optimum Sales Strategies (SP)	a. Target b. Sales Amount c. Trust	(1) Achievement of sales targets (2) Increase in sales volume (3) Consumer trust in products, sellers and companies	(a) Achievement of monthly sales targets (b) Quarterly sales target achieved (c) Achievement of annual sales targets (d) Increased number of monthly sales (e) Increased quarterly sales numbers (f) Increased annual sales figures (g) Building consumer trust in area managers (h) Building consumer trust in sales representatives (i) Building consumer trust in distributors (j) Building consumer trust in the company	37 38 39 40 41 42 43 44 45 46

From the instrument compilation grid in Table 3 above, there are 46 descriptor items from the 6 main variables (S), where there are 36 descriptors of independent sub-variables (SV) and 10 descriptors of dependent variables (SP). Furthermore, an initial research questionnaire (*pretest*) was designed, based on 36 descriptor items of independent variables that will be used as statements in the Assessment Questionnaire in this study.

2.4. Game theory

The main goal of solving a game is to determine the optimal strategy. The optimal strategy can be determined using a theory called the minimax theory which in principle states that each player unilaterally seeks the maximum level of security for himself [16]. Static game theory or simultaneous games is a branch of game theory that analyzes decisions taken by several players simultaneously without any time interaction. In this context, all players make decisions simultaneously, and the outcome of those decisions depends on the choices of each player. The main features of static game theory include: (a) Players: There are two or more players involved; (b) Strategy: Each player has several strategies to choose from; (c) Outcome: The outcome of the game is determined by the combination of strategies chosen by all players; (d) Payoff: Each combination of strategies produces a certain payoff or reward for each player [17].

The concepts of game theory that include basic elements that are very important in solving each case with game theory are as follows: (a) Developing a framework for the analysis of decision making in competitive (and sometimes cooperative) situations; (b) Describes a systematic quantitative method that enables competitive players to choose rational strategies to achieve their goals; (c) Provides an overview and explanation of the phenomena of competitive or conflict situations, such as bargaining and coalition formation [18].

2.5. Simplex method of linear programming

Linear programming problems can be solved using a variety of methods. such as graphical methods, trial and error methods, vector methods, and simplex. Among all these methods, the simplex method is the strongest. This method is used to solve problems concerning two or more variables [19]. Basically, the simplex method uses two conditions, namely optimal conditions and feasible conditions. The optimality condition states that the optimal solution is the solution that most good. Meanwhile, the feasible condition states that the solution that optimized is a basic feasible solution. The solution using the simplex method is carried out through the iteration stage. repeatedly until an optimal solution is obtained [20].

3. Results and Discussion

3.1. Test the reliability and validity of data

Reliability test is carried out to determine the level of trust in the measurement results. The results of the reliability test of the assessment questionnaire using SPSS 22 Software obtained a value of α = 0.957. In this case, each sub-variable item is declared reliable because the value obtained is α = 0.957 > 0.60. The following are the results of the reliability test of the actual research questionnaire data using SPSS22 software, which can be seen in Figure 3 below.

Case Processing Summary

		N	%
Cases	Valid	60	100.0
	Excluded[a]	0	0.0
	Total	60	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.957	25

Figure 3. Results of the Reliability Test of Assessment Questionnaire (Actual)

Validity test in the assessment questionnaire was filled by 30 initial respondents to validate the sub-variables and then distributed to 60 main respondents, while 30 initial respondents (pretest) and 60 actual respondents were Schneider Electric consumers from contractors and industries who had interacted and transacted with KAK and PJ.

The degree of freedom of the actual questionnaire is (df) = n - 2 = 58 and a significant level of 5% then r_{table} = 0.2542. The average value of the validity test for the 60 main respondents is 0.701> 0.2542 so that the data is said to be valid. The following are the results of the validity test of the actual research questionnaire data using SPSS22 software, which can be seen in Figure 4 below.

Correlations

		S1A	S1B	S1C	S1D	S1E	S2A	S2B	S2C	S2D	S2E	S3A
S3F	Pearson Correlation	.516**	.445**	.575**	.467**	.453**	.216	.783**	.502**	.488**	.309*	.551**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.097	.000	.000	.000	.016	.000
	N	60	60	60	60	60	60	60	60	60	60	60
S3G	Pearson Correlation	.540**	.664**	.536**	.515**	.645**	.366**	.589**	1.000**	.378**	.620**	.465**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.004	.000	0.000	.003	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60
S4A	Pearson Correlation	.570**	.920**	.563**	.421**	.633**	.405**	.583**	.605**	.504**	.481**	.515**
	Sig. (2-tailed)	.000	.000	.000	.001	.000	.001	.000	.000	.000	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60
S4B	Pearson Correlation	.515**	.492**	.872**	.260*	.457**	.611**	.724**	.481**	.706**	.467**	.446**
	Sig. (2-tailed)	.000	.000	.000	.045	.000	.000	.000	.000	.000	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60
S4C	Pearson Correlation	.188	.422**	.262*	.914**	.456**	.158	.355**	.386**	.321*	.272*	.374**
	Sig. (2-tailed)	.151	.001	.043	.000	.000	.227	.005	.002	.012	.036	.003
	N	60	60	60	60	60	60	60	60	60	60	60
S4D	Pearson Correlation	.485**	.906**	.522**	.412**	.603**	.359**	.551**	.608**	.493**	.507**	.499**
	Sig. (2-tailed)	.000	.000	.000	.001	.000	.005	.000	.000	.000	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60
S4E	Pearson Correlation	.564**	.522**	.874**	.276*	.430**	.512**	.647**	.511**	.784**	.573**	.384**
	Sig. (2-tailed)	.000	.000	.000	.033	.001	.000	.000	.000	.000	.000	.002
	N	60	60	60	60	60	60	60	60	60	60	60
S5A	Pearson Correlation	.459**	.544**	.363**	.429**	.847**	.305*	.556**	.543**	.280*	.311*	.464**
	Sig. (2-tailed)	.000	.000	.004	.001	.000	.018	.000	.000	.030	.016	.000
	N	60	60	60	60	60	60	60	60	60	60	60
S5E	Pearson Correlation	.342**	.312*	.358**	.031	.352**	.574**	.314*	.367**	.168	.429**	.174
	Sig. (2-tailed)	.007	.015	.005	.813	.006	.000	.015	.004	.199	.001	.183
	N	60	60	60	60	60	60	60	60	60	60	60
S5H	Pearson Correlation	.577**	.651**	.700**	.495**	.564**	.450**	.800**	.644**	.613**	.537**	.703**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60
S5J	Pearson Correlation	.519**	.628**	.428**	.341**	.571**	.286*	.519**	.846**	.284*	.593**	.460**
	Sig. (2-tailed)	.000	.000	.001	.008	.000	.027	.000	.000	.028	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60
S5K	Pearson Correlation	.460**	.496**	.732**	.191	.247	.324*	.521**	.345**	.819**	.376**	.339**
	Sig. (2-tailed)	.000	.000	.000	.143	.057	.012	.000	.007	.000	.003	.008
	N	60	60	60	60	60	60	60	60	60	60	60
Total	Pearson Correlation	.682**	.826**	.825**	.590**	.759**	.533**	.832**	.793**	.715**	.664**	.656**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60

		S3B	S3D	S3F	S3G	S4A	S4B	S4C	S4D	S4E	S5A	S5E	S5H	S5J	S5K	Total
S3F	Pearson Correlation	.254*	.503**	1	.502**	.395**	.530**	.423**	.420**	.527**	.476**	.317*	.660**	.494**	.415**	.691**
	Sig. (2-tailed)	.050	.000		.000	.002	.000	.001	.001	.000	.000	.014	.000	.000	.001	.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
S3G	Pearson Correlation	.275*	.489**	.502**	1	.605**	.481**	.386**	.608**	.511**	.543**	.367**	.644**	.846**	.345**	.793**
	Sig. (2-tailed)	.034	.000	.000		.000	.000	.002	.000	.000	.000	.004	.000	.000	.007	.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
S4A	Pearson Correlation	.386**	.404**	.395**	.605**	1	.497**	.378**	.891**	.551**	.550**	.334**	.661**	.543**	.523**	.809**
	Sig. (2-tailed)	.002	.001	.002	.000		.000	.003	.000	.000	.000	.009	.000	.000	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
S4B	Pearson Correlation	.220	.802**	.530**	.481**	.497**	1	.203	.454**	.750**	.432**	.399**	.626**	.436**	.655**	.762**
	Sig. (2-tailed)	.091	.000	.000	.000	.000		.120	.000	.000	.001	.002	.000	.000	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
S4C	Pearson Correlation	.256*	.176	.423**	.386**	.378**	.203	1	.400**	.183	.449**	-.060	.419**	.275*	.223	.520**
	Sig. (2-tailed)	.049	.178	.001	.002	.003	.120		.002	.161	.000	.647	.001	.033	.086	.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
S4D	Pearson Correlation	.339**	.356**	.420**	.608**	.891**	.454**	.400**	1	.465**	.539**	.335**	.593**	.586**	.491**	.780**
	Sig. (2-tailed)	.008	.005	.001	.000	.000	.000	.002		.000	.000	.009	.000	.000	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
S4E	Pearson Correlation	.223	.796**	.527**	.511**	.551**	.750**	.183	.465**	1	.337**	.402**	.652**	.423**	.726**	.770**
	Sig. (2-tailed)	.086	.000	.000	.000	.000	.000	.161	.000		.009	.001	.000	.001	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
S5A	Pearson Correlation	.521**	.342**	.476**	.543**	.550**	.432**	.449**	.539**	.337**	1	.271*	.520**	.523**	.166	.676**
	Sig. (2-tailed)	.000	.007	.000	.000	.000	.001	.000	.000	.009		.036	.000	.000	.204	.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
S5E	Pearson Correlation	.249	.333**	.317*	.367**	.334**	.399**	-.060	.335**	.402**	.271*	1	.391**	.443**	.258*	.459**
	Sig. (2-tailed)	.055	.009	.014	.004	.009	.002	.647	.009	.001	.036		.002	.000	.046	.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
S5H	Pearson Correlation	.384**	.643**	.660**	.644**	.661**	.626**	.419**	.593**	.652**	.520**	.391**	1	.603**	.506**	.854**
	Sig. (2-tailed)	.002	.000	.000	.000	.000	.000	.001	.000	.000	.000	.002		.000	.000	.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
S5J	Pearson Correlation	.276*	.443**	.494**	.846**	.543**	.436**	.275*	.586**	.423**	.523**	.443**	.603**	1	.303*	.718**
	Sig. (2-tailed)	.033	.000	.000	.000	.000	.000	.033	.000	.001	.000	.000	.000		.018	.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
S5K	Pearson Correlation	.140	.602**	.415**	.345**	.523**	.655**	.223	.491**	.726**	.166	.258*	.506**	.303*	1	.638**
	Sig. (2-tailed)	.287	.000	.001	.007	.000	.000	.086	.000	.000	.204	.046	.000	.018		.000
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Total	Pearson Correlation	.456**	.715**	.691**	.793**	.809**	.762**	.520**	.780**	.770**	.676**	.459**	.854**	.718**	.638**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Figure 4. Results of the Validity Test of Assessment Questionnaire (Actual)

3.2. Results of processing with game theory

Given that KAK is a row player and PJ is a column player, a game matrix is formed with the competition value between KAK and PJ as seen in Table 4 below.

Table 4. Recapitulation of Competition Values between KAK and PJ

PJ / KAK	P_1	P_2	P_3	P_4	P_5
K_1	27 33	40 20	34 26	28 32	23 37
K_2	33 27	37 23	24 36	30 30	22 38
K_3	33 27	25 35	34 26	38 22	29 31
K_4	35 25	20 40	29 31	35 25	23 37
K_5	34 26	41 19	20 40	33 27	25 35

After the competition value is obtained, the next step is to use a pure strategy. For players in the KAK row, the maximin rule will be used and players in the PJ column will use the minimax rule, which can be seen in Table 5. From the KAK and PJ competition matrices in the Table 5 below, it can be seen that the maximin value is not the same as the minimax value, where the minimax value is -2 and the maximin value is -10, which means that the saddle point is not achieved and is not an optimum strategy, so the game cannot be solved using a pure strategy. The next step to be taken is to apply a dominance strategy.

A strategy in a game matrix is said to be dominant over other strategies if it has a better payoff value than other strategies. In this case, after eliminating strategies with dominance, the most optimal strategies for the payoff of the KAK row are strategies K_1, K_3, K_4 and K_5. While the most optimal strategies for the payoff of the PJ column are strategies P_2, P_3, dan P_5. The following results of the maximum dominance of the KAK row and PJ column can be seen in Table 6.

Table 5. Maximin and Minimax Values of Competition between KAK and PJ

KAK \ PJ	P_1	P_2	P_3	P_4	P_5	Minimum Row	Maximin Value
K_1	-6	20	8	-4	-14	-14	
K_2	6	14	-12	0	-16	-16	
K_3	6	-10	8	16	-2	-10	
K_4	10	-20	-2	10	-14	-20	-10
K_5	8	22	-20	6	-10	-20	
Maximum Column	10	22	8	16	-2		
Minimax Value				-2			

Table 6. Results of Maximum Dominance of KAK Rows and PJ Columns

KAK \ PJ	P_2	P_3	P_5
K_1	20	8	-14
K_3	-10	8	-2
K_4	-20	-2	-14
K_5	22	-20	-10

Each element of the matrix can be made positive by adding a constant number to each element, so that V > 0. To make the game value (V) positive, all elements of the game matrix are added with an absolute value of the smallest element. Since the smallest value of this game matrix is -20, then all elements of the game matrix between KAK and PJ are added with k > 20, in this study a constant k = 30 is added so that there are no negative values and to facilitate the calculation. The results of the modification of the additional payoff matrix values can be seen in Table 7 below.

Table 7. Modified Payoff Matrix of Main Strategy Values KAK and PJ

KAK \ PJ	P_2	P_3	P_5
K_1	50	38	16
K_3	20	38	28
K_4	10	28	16
K_5	52	10	20

The following are the results of constructing the payoff matrix into linear programming by minimizing,

$$Z=\frac{1}{V}=\sum_{i=1}^{4} X_i=X_1+X_2+X_3+X_4 \quad (1)$$

with limitations; $50X_1 + 20X_2 + 10X_3 + 52X_4 \geq 1$; $38X_1 + 38X_2 + 28X_3 + 10X_4 \geq 1$; $16X_1 + 28X_2 + 16X_3 + 20X_4 \geq 1$; $X_1, X_2, X_3, X_4 \geq 1$, where, $X_1 = K_1$; $X_2 = K_3$; $X_3 = K_4$; $X_4 = K_5$; and dual $Y_1 = P_2$; $Y_2 = P_3$; $Y_3 = P_5$.

3.3. The steps of the simplex method iteration

The first step is changing the linear programming problem into a standard form of linear programming, namely by changing the "≤" sign to "=", and adding the Slack variable (S). The results of the standard form of the minimum linear programming problem are as follows.

$$\text{Minimize } Z=\frac{1}{V}=\sum_{i=1}^{4} X_i = X_1 + X_2 + X_3 + X_4 \quad (2)$$

with limitations, $50X_1 + 20X_2 + 10X_3 + 52X_4 = 1$; $38X_1 + 38X_2 + 28X_3 + 10X_4 = 1$; $16X_1 + 28X_2 + 16X_3 + 20X_4 = 1$; $X_1, X_2, X_3, X_4 \geq 0$.

The following is the initial simplex form which can be seen in Table 8.

Table 8. Initial Simplex

C_b	C_j	1	1	1	1	0	0	0	Index	Ratio
	Base	X_1	X_2	X_3	X_4	S_1	S_2	S_3	(b_j)	
0	S_1	50	20	10	52	1	0	0	1	-
0	S_2	38	38	28	10	0	1	0	1	-
0	S_3	16	28	16	20	0	0	1	1	-
Z_j - C_j		-1	-1	-1	-1	0	0	0	Z = 0	

Where the value of Zj – Cj is obtained from:

$$Z_1 - C_1 = \sum_{i=1}^{3} C_{bi} X_{1i} - C_1 = (0 \times 50 + 0 \times 38 + 0 \times 16) - 1 = -1 \quad (3)$$

$$Z_2 - C_2 = \sum_{i=1}^{3} C_{bi} X_{2i} - C_2 = (0 \times 20 + 0 \times 38 + 0 \times 28) - 1 = -1 \quad (4)$$

$$Z_3 - C_3 = \sum_{i=1}^{3} C_{bi} X_{3i} - C_3 = (0 \times 10 + 0 \times 28 + 0 \times 16) - 1 = -1 \quad (5)$$

$$Z_4 - C_4 = \sum_{i=1}^{3} C_{bi} X_{4i} - C_4 = (0 \times 52 + 0 \times 10 + 0 \times 20) - 1 = -1 \quad (6)$$

$$Z_5 - C_5 = \sum_{i=1}^{3} C_{bi} S_{1i} - C_5 = (0 \times 1 + 0 \times 0 + 0 \times 0) - 0 = 0 \quad (7)$$

$$Z_6 - C_6 = \sum_{i=1}^{3} C_{bj} S_{2i} - C_6 = (0 \times 0 + 0 \times 1 + 0 \times 0) - 0 = 0 \quad (8)$$

$$Z_7 - C_7 = \sum_{i=1}^{3} C_{bj} S_{3i} - C_7 = (0 \times 0 + 0 \times 0 + 0 \text{ x } 1) - 0 = 0 \quad (9)$$

Meanwhile, the Z value is obtained from:

$$Z = \sum_{i=1}^{3} C_{bi} b_{ji} = 0\times1+0\times1+0\times1=0 \quad (10)$$

The second step is performing iteration by searching for key columns, key rows, and key numbers (pivot numbers). In the maximum problem, the key column is taken based on the most negative Zj - Cj value. Meanwhile, the key row is taken based on the smallest ratio. Based on the Initial Simplex Table, the key column taken (entering variable) is X1 because at the beginning each column has the same Zj - Cj value. Meanwhile, the key row is taken based on the smallest ratio value. The ratio is obtained using the following formula.

Ratio = index of each row ÷ each coefficient of the new key column (11)

The calculation result for the ratio is 0,02 for first ratio, 0,0263 for second ratio and 0,625 for third ratio. Thus, the key row taken (leaving variable) is S1 because it has the smallest ratio value of 0.02, and the key number is obtained with a value of 50 which is the meeting point between the key column (X1) and the key row (S1). The following is the 1st iteration simplex after selecting the key variables, which can be seen in Table 9 below.

Table 9. Key Variable Selection Iteration 1

C_b	C_j	1	1	1	1	0	0	0	Index	Ratio
	Base	X_1	X_2	X_3	X_4	S_1	S_2	S_3	(b_j)	
0	S_1	50	20	10	52	1	0	0	1	0.02
0	S_2	38	38	28	10	0	1	0	1	0.0263
0	S_3	16	28	16	20	0	0	1	1	0.0625
Z_j - C_j		-1	-1	-1	-1	0	0	0	Z = 0	

The third step is changing the decision variables in the key row with the decision variables in the key column, then define a new key row, and another row. The decision variable in the key row, namely S1, is changed to X1 and the value of Cb becomes 1. Next, determine the new key row based on the following formula.

New key row = old key row ÷ key number (12)

Meanwhile, to determine the other rows, namely Row 2 and Row 3, use the following formula:

New key column coefficient = key column coefficient in the initial row - (key column coefficient in the initial row × key number ÷ key number) (13)

New row = initial row - (initial key row × key column coefficient in initial row ÷ initial key number) (14)

The same calculation is done for each new row until the index column. The following are the results of calculating the new key rows and other rows from the 1st iteration which can be seen in Table 10 below.

Table 10. New Row Calculation Results from 1st Iteration

C_b	C_j	1	1	1	1	0	0	0	Index	Ratio
	Base	X_1	X_2	X_3	X_4	S_1	S_2	S_3	(b_j)	
1	X_1	1	0.4	0.2	1.04	0.02	0	0	0.02	-
0	S_2	0	22.8	20.4	-29.52	-0.76	1	0	0.24	-
0	S_3	0	21.6	12.8	3.36	-0.32	0	1	0.68	-
	Z_j - C_j	0	-0.6	-0.8	0.04	0.02	0	0	Z = 0.02	

The final step is ensuring that the Zj - Cj value is not negative so that an optimal solution is obtained. If the Zj – Cj value is still negative, then the next iteration is carried out as in steps (b) and (c). Based on Table 10, it can be concluded that the Zj - Cj values are still negative, namely X2 and X3, then the most negative value between the two is selected, namely X3 with a value of -0.8. Therefore, the next iteration is carried out as in steps (b) and (c) and the key column (entering variable) is obtained as X3.

Meanwhile, for the key row, the value taken is based on the smallest ratio value according to step (b) so that the key row taken (leaving variable) is S2 with the smallest ratio value of 0.0117. After determining the key column, key row, and ratio value, the key number is obtained, namely 20.4. The results of selecting key variables for the 2nd iteration calculation can be seen in Table 11 below.

Based on Table 10. Iteration 2 above, the decision variable in the key row, namely S2 is changed to X3 and the value of Cb becomes 1. Next, determine the value of the new key row, and other new rows according to the formula and calculations in step c).

Table 11. Key Variable Selection Iteration 2

C_b	C_j	1	1	1	1	0	0	0	Index	Ratio
	Base	X_1	X_2	X_3	X_4	S_1	S_2	S_3	(b_j)	
1	X_1	1	0.4	0.2	1.04	0.02	0	0	0.02	0.1
0	S_2	0	22.8	20.4	-29.52	-0.76	1	0	0.24	0.0117
0	S_3	0	21.6	12.8	3.36	-0.32	0	1	0.68	0.0531
	Z_j - C_j	0	-0.6	-0.8	0.04	0.02	0	0	Z = 0.02	

To calculate the value of Zj - Cj and Z is done in the same way as before. The following are the results of the calculation of the new key row and other rows from the 2nd iteration can be seen in Table 12 below.

Table 12. New Row Calculation Results from 2nd Iteration

C_b	C_j	1	1	1	1	0	0	0	Index	Ratio
	Base	X_1	X_2	X_3	X_4	S_1	S_2	S_3	(b_j)	
1	X_1	1	0.1764	0	1.3294	0.0274	-0.0098	0	0.0176	-
1	X_3	0	1.1176	1	-1.4470	-0.0372	0.0490	0	0.0117	-
0	S_3	0	7.2941	0	21.8823	0.1568	-0.6274	1	0.5294	-
	Z_j - C_j	0	0.2941	0	-1.1176	-0.0098	0.0392	0	Z = 0.029	

Based on Table 12 it can be seen that the Zj - Cj value still has a negative value, namely X4 with a value of -1.1176. Therefore, the next iteration is carried out as in the previous step, where the key column (entering variable) is X4 and the remaining key row taken (leaving variable) is S3 with a ratio value of 0.0241. After determining the key column, key row, and ratio value, the key number is 21.8823. The results of the selection of key variables for the calculation of the 3rd iteration can be seen in Table 13 below.

Table 13. Key Variable Selection Iteration 3

C_b	C_j	1	1	1	1	0	0	0	Index	Ratio
	Base	X_1	X_2	X_3	X_4	S_1	S_2	S_3	(b_j)	
1	X_1	1	0.1764	0	1.3294	0.0274	-0.0098	0	0.0176	-
1	X_3	0	1.1176	1	-1.4470	-0.0372	0.0490	0	0.0117	-
0	S_3	0	7.2941	0	21.8823	0.1568	-0.6274	1	0.5294	0.0241
Z_j - C_j		0	0.2941	0	-1.1176	-0.0098	0.0392	0	Z = 0.0294	

Based on Table 13, the decision variable in the key row, namely S3 is changed to X4 and the value of Cb becomes 1. Next, determine the value of the new key row, and other new rows.

To calculate the value of Zj - Cj and Z is done in the same way as before. The following are the results of calculating the new key row and other rows from the 3rd iteration can be seen in Table 14 below.

Table 14. New Row Calculation Results from 3rd Iteration

C_b	C_j	1	1	1	1	0	0	0	Index	Ratio
	Base	X_1	X_2	X_3	X_4	S_1	S_2	S_3	(b_j)	
1	X_1	1	-0.2667	0	0	0.0179	0.0283	-0.0607	-0.0145	-
1	X_3	0	1.6	1	0	-0.0268	0.0075	0.06612	0.0468	-
1	X_4	0	0.3333	0	1	0.0071	-0.0286	0.0456	0.0241	-
Z_j - C_j		0	0.6667	0	0	-0.0017	0.0071	0.0510	Z = 0.05645	

Because the Zj - Cj values for each selected variable are no longer negative, the iteration stage is complete with the final result of the simplex iteration, namely the 4th iteration as follows at Table 15 below.

3.4. Processing results with linear programming simplex method

The simplex method is used to solve linear programming problems through the iteration stage. The iteration used is based on the dual simplex method. Through the construction of the payoff matrix into linear programming, it is obtained that the minimum problem in KAK is the dual maximum in PJ.

Therefore, the problem can be solved using the simplex method. After several iterations using the simplex method, and the Zj - Cj values for each selected variable are no longer negative, the main variable iteration stage is complete with the final results of the simplex iteration, namely the 4th iteration, which can be seen in Table 15 below.

Table 15. Final Results of the 4th Iteration of Main Variables

C_b	C_j	1	1	1	1	0	0	0	Index (b_j)	Ratio
	Base	X_1	X_2	X_3	X_4	S_1	S_2	S_3		
1	X_1	1	-0.2667	0	0	0.0179	0.0283	-0.0607	-0.0145	-
1	X_3	0	1.6	1	0	-0.0268	0.0075	0.06612	0.0468	-
1	X_4	0	0.3333	0	1	0.0071	-0.0286	0.0456	0.0241	-
Z_j - C_j		0	0.6667	0	0	-0.0017	0.0071	0.0510	Z = 0.0564	

Based on the results of the last iteration, the optimal strategy for KAK is obtained, namely: X1 = -0.0145, X3 = 0.0468, and X4 = 0.0241, with X1 = K1, X3 = K4, and X4 = K5, and the Z value = 0.0564. The optimal strategy opportunities for KAK are as follows.

Probability K1 $= \frac{X_1}{Z} = \frac{-0{,}0145}{0{,}0564} = -0.2570 = -25{,}70\%$; Probability K4 $= \frac{X_3}{Z} = \frac{0{,}0468}{0{,}0564} = 0.8285 = 82{,}85\%$; Probability K5 $= \frac{X_4}{Z} = \frac{0{,}0241}{0{,}0564} = 0.4285 = 42{,}85\%$; with the game value $V = \frac{1}{Z} = \frac{1}{0{,}0564} = 17{,}73$

Meanwhile, the optimal strategy for PJ is the dual of KAK, so that Y1 = − 0.0017 is obtained; Y2 = 0.0071; Y3 = 0.0510; and Z = W = 0.0564 with Y1 = P2, Y2 = P3, Y3 = P5. The optimal strategy opportunity for PJ is as follows.

Probability P2 = $\frac{Y_1}{W} = \frac{-0.0017}{0,0564}$ = -0.0316 = -03,16%; Probability P3 = $\frac{Y_2}{W} = \frac{0,0071}{0,0564}$ = 0.1269 = 12,69%; Probability P5 = $\frac{Y_3}{W} = \frac{0,0510}{0,0564}$ = 0.9047 = 90,47%; with the game value V = $\frac{1}{W}$ = $\frac{1}{0,0564}$ = 17,73

Based on the calculations above, it can be concluded that the game value for KAK and PJ based on the payoff matrix processed using the simplex method, is obtained V = 17.73 which is the balance value (saddle point) between the two players. The optimal strategy for KAK is X3 = K4 or the Payment strategy with a probability of 82.85% to be prioritized in maximizing profits in the next sub-variable strategy. The previous profit, which is 10, can be maximized to 17.73. Meanwhile, the optimal strategy for PJ is Y3 = P5 or the Aftersales strategy with a probability of 90.47% to be prioritized in minimizing losses in the next sub-variable strategy. The previous loss, which is 28, can be minimized to 17.73.

After obtaining the best strategy for the main variables between KAK and PJ, namely KAK with priority strategy K_4 or payment strategy with probability of 82.85%, while PJ with priority strategy P_5 or aftersales strategy with probability of 90.47%, then these two priority strategies are processed again to determine the best strategy sub-variables that will be the most optimal strategy implementation application for each distributor.

The comparative values used in the sub-variables are obtained from the results of the distribution of Comparison Questionnaire B (Sub-Strategy), which can be seen in Appendix 4. The determination of the sub-variables used is obtained from the preparation of indicators and descriptors of the main variables that have gone through the validity and reliability stages through the results of the Actual Assessment Questionnaire, the following sub-variables that are the methods of implementing the KAK payment strategy and the PJ aftersales strategy can be seen in Table 16.

The steps taken are the same as before, data collection is carried out through the distribution of comparative questionnaires B to calculate the sub-variables of the application of the strategy application with game theory, the calculation results show that the saddle point is not achieved with a pure strategy, so domination is carried out where the final result is used for a mixed strategy using linear programming simplex method.

Table 16. Sub-Variables used in Game Strategies

Sub-Variables of Strategy Used			
Payment Strategy Sub-Variables (B) KAK		Aftersales Strategy Sub-Variables (A) PJ	
CBD	B_1	Warranty	A_1
COD	B_2	Sparepart	A_2
CIA	B_3	Manpower	A_3
Net30	B_4	Service Contract	A_4
Net OEMD	B_5	Service Centre	A_5

The results of determining the application of the most optimal strategy using the simplex method, after several iteration tests were carried out, and the Zj - Cj values for each selected variable were no longer negative, then the sub-variable iteration stage was completed with the final results of the simplex iteration, namely the 4th iteration, which can be seen in Table 17 below.

Table 17. Final Results of the 4th Iteration of the Application Sub-Variables

C_b	C_j	1	1	1	0	0	0	Index (b_j)	Ratio
	Base	X_1	X_2	X_3	S_1	S_2	S_3		
1	X_2	0	1	0	0.0291	-0.0154	-0.0037	0.0099	-
1	X_3	0	0	1	-0.0107	0.0271	-0.0060	0.0103	-
1	X_1	1	0	0	-0.0032	0.0002	0.0181	0.0151	-
$Z_j - C_j$		0	0	0	0.0150	0.0119	0.0084	Z = 0.0354	

3.5. Optimal strategy of principal variables

The final iteration result for the main variables, obtained the optimal strategy for KAK, namely: X1 = -0.0145, X3 = 0.0468, and X4 = 0.0241, where X1 = K1 , X3 = K4 , and X4 = K5 , and the value of Z =

0.0564. The optimal strategy for KAK with the highest probability of 82.85% is the K4 strategy or payment strategy. While the optimal strategy for PJ is the dual of KAK, so that Y1 = − 0.0017; Y2 = 0.0071; Y3 = 0.0510; and Z = W = 0.0564 with Y1 = P2, Y2 = P3, Y3 = P5. The optimal strategy for PJ with the highest probability of 90.47% is the P5 strategy or aftersales strategy. The game value for KAK and PJ of the simplex method payoff matrix is V = 17.73, which is the equilibrium value (saddle point) of both players. The previous profit for KAK of 10 can be maximized to 17.73. While the previous loss for PJ of 28 can be minimized to 17.73.

3.6. Optimal strategy of selected sub-variables

The results of the last iteration for the sub-variables of the KAK marketing strategy are: X1 = 0.0151, X2 = 0.0099, and X3 = 0.0103, where X1 = B2, X2 = B3, and X3 = B5, and the value of Z = 0.0354. The optimal strategy for PJ is the dual of KAK, so that Y1 = 0.0150; Y2 = 0.0119; Y3 = 0.0084; and Z = W = 0.0354 where Y1 = A1, Y2 = A3, Y3 = A5. The game value for KAK and PJ of the simplex method payoff matrix is V = 28.18, which is the equilibrium value (saddle point) of both players. The optimal strategy for the KAK payment sub-variable is X1 = B2 or a payment strategy with the application of COD (Cash on Delivery) with opportunity of 42.71%, then X3 = B5 or a Net EOMD (Net End of Month Days) payment strategy with a opportunity of 29.24%, and finally X2 = B3 or a CIA (Cash in Advance) payment strategy with opportunity of 28.03%.

The three strategy implementation applications can be prioritized based on the highest opportunity of maximizing their profits. The game value of the previous profits, namely 18 (COD Strategy), 8 (Net OEMD Strategy) and 4 (CIA Strategy) can be maximized to 28.18. The optimal strategy for the aftersales sub-variable PJ is Y1 = A1 with the application of implementation through warranty with a opportunity of 42.71%, then Y2 = A3 or technician strategy with opportunity of 29.24%, and finally Y3 = A5 with opportunity of 23.78% for the service center strategy, the three strategy implementation applications can be prioritized based on the highest opportunity of minimizing losses. The game value of the previous losses, namely 46 (warranty strategy), 48 (technician strategy) and 58 (service center strategy) can be minimized to 28.18.

3.7. Research novelty

Most previous studies only focus on the main strategy variables obtained from interviews or observations of research objects, and the final result is an optimum strategy for each player based on the calculation of the main variables. While in this study, an update was carried out, namely after the main variables were determined, then actions or applications were designed to support the implementation of the selected strategy.

After the results of the optimum strategy of the main variables are obtained from game theory, the next step is to determine the application of the implementation which is a sub-variable of the selected optimum strategy. The previous sub-variables have been designed and validated through an assessment questionnaire, so that the output of this study is not only in the form of the optimum strategy indicator value of the main variables, but also the actions or applications expected by respondents (consumers) through the distribution of assessment questionnaires and comparison questionnaires.

3.8. Analysis of selected strategy applications at distributors

Game theory is used to find the best strategy and the application of the strategy for each distributor. Each distributor gets opportunity value and game value to then be applications that can be applied by each distributor in their marketing process. Distributors who become row players can maximize profits and distributors who become column players can minimize losses from the application of the selected strategy application.

The results show that the payment strategy is the most optimal strategy to be implemented in KAK distributors, with the most optimal application being COD, Net OEMD, and CIA. The COD (Cash on Delivery) application allows payment to be made when the goods have been received or reached the hands of the buyer, some of the benefits of implementing the COD method include increasing customer trust and security, reducing the potential for loss of goods, payment flexibility, increasing customer satisfaction and expanding the potential market. The Net End of Month Days application gives buyers payment time until the end of the month after the invoice date is issued. This means that if the invoice date is issued on January 10, then payment must be made until the end of January. This method allows buyers to utilize their cash flow for a full month before making payment. Usually, this method is often used in B2B company transactions with a relatively large amount of bills. The CIA (Cash in Advanced) application is a payment method where the buyer must pay the entire purchase amount in advance before the goods are sent by the seller. In this method, the buyer must pay in full before the goods are sent. The CIA method is generally used for high-value business transactions or when the buyer does not have a good credit history, so that the company or distributor can avoid the risk of unfulfilled payments.

The results for PJ distributors show that the aftersales strategy is the most optimal strategy to implement, with the most optimal application being the ease of the warranty claim process by consumers, the availability of technicians for aftersales repair activities, and the availability of service center facilities by the distributor. So far, the warranty claim process by distributors has often experienced obstacles, due to damage to goods that are still under warranty, but warranty claims are difficult to do because of the many and time-consuming procedures, so that the warranty claim process often burdens consumers. The implementation of the warranty claim ease strategy is expected to be implemented by distributors so that consumers do not switch to other products that have an easier warranty claim process if the product is damaged.

The availability of technicians who can assist in aftersales repair activities is one of the strategies that distributors are expected to implement. So far, distributors do not have adequate technicians, so the aftersales repair process often experiences obstacles due to the unavailability of technicians. The technicians available are usually only for ongoing projects but not for aftersales, so through this method, distributors are expected to be able to provide technicians specifically to carry out repairs for aftersales services.

The availability of repair service facilities by distributors or often referred to as service centers is also a way of implementing the expected strategy, where distributors so far only have storage warehouses and panel assembly workshops, but there are no special workshops or service centers for aftersales repair services. Most aftersales services after the warranty claim process is completed, the goods are then sent to Schneider's service center in Jakarta, and this process takes quite a long time. So, through this service center procurement strategy, it is hoped that the distributor's aftersales service coverage can increase and meet consumer needs, and then it can become one of the marketing strategies that can be run by distributors, where distributors have their own service centers.

4. Conclusion

Most previous studies have only focused on the main strategy variables obtained from interviews or observations of the research object, and the final result is the optimum strategy for each player based on the calculation of the main variables. However, in this study, an update was made where after the main variables were determined, actions or applications that support the implementation of the selected strategy were also designed. The optimum marketing strategy in the main variable game between KAK and PJ is payment and aftersales, where the equilibrium value (saddle point) of the game is V = 17.73. KAK can maximize the profit of the payment strategy with an opportunity up to 82.85%, the previous profit indicator value which is 10 can be maximized to 17.73. While PJ can minimize the loss of the aftersales strategy with an opportunity up to 90.47%, where the previous loss value of 28 can be minimized to 17.73.

The application of the optimum marketing strategy implementation on the KAK payment sub-variables is COD, Net OEMD, and CIA, while the PJ aftersales sub-variables are warranty, technician, and service center. The saddle point value of the game is V = 28.18. KAK can maximize the benefits of the payment strategy through the application of the COD, Net OEMD, and CIA strategies with opportunities of 42.72%, 29.24%, and 28.03%, respectively. The previous profit indicator values, namely 18 (COD Strategy), 8 (Net OEMD Strategy) and 4 (CIA Strategy) can be maximized to 28.18. PJ can minimize the loss of the aftersales strategy through the application of the warranty, technician, and service center strategies with opportunities of 41.71%, 29.24% and 23.78%, respectively. The previous loss indicator values, namely 46 (warranty strategy), 48 (technician strategy) and 58 (service center strategy) can be minimized to 28.18. It is expected that KAK distributors can add variations in payment methods through the application of COD (Cash on Delivery), Net OEMD (Net End of Month Days), and CIA (Cash in Advanced) methods. For PJ distributors, they can apply aftersales strategy applications such as facilitating warranty claims made by consumers, providing technicians for aftersales services, and also the availability of service center facilities for aftersales.

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