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# PLAN STRATEGY OF SUPPLY CHAIN BUSINESS PROCESS ON FMCG DISTRIBUTOR PT TIGARAKSA SATRIA TBK IN DIGITAL ERA BASED ON BOCR IN ANALYTICAL NETWORK PROCESS

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**Abstract**

Fast Moving Consumer Goods (FMCG) industry in Indonesia is considered as an attractive industry with a sales value more than 10 billion US dollars with more than 263 million consumers and more than half of them are in productive age, this positive trend is expected to continue in line with the growth spending rate which has reached 11.8% in the period 2010 to 2015 and the average of growth of the FMCG retail industry has reached 10.8% in 2015. The planning of supply chain business process for FMCG distributors PT Tigaraksa Satria Tbk in the digital era should be done, with the inclusion of digital platforms in the FMCG industry as an adaptation,. The study was conducted at one FMCG distributor, PT Tigaraksa Satria Tbk (TGKA) in South Jakarta. The type of research was use a mixed method, qualitative research (exploratory) which was combined with a quantitative approach by distributing and filling out questionnaires to expert respondents and management, interviews (in-depth) with implementing respondents, Tigaraksa's management respondents, and expert respondents, collecting supply chain reports, financial reports, and analyzing. Data analysis was carried out to prepare and select Tigaraksa supply chain strategies with ANP. Determination of the importance weights of the determinants using the finite-super matrix results from the ANP model. The results of the ANP showed that from each of the Benefits, Costs, Opportunities, and Risks criteria, all of the main priorities are economic criteria control and the lowest priority is social criteria control, except for risks criteria where the lowest priority is technology criteria control. The BOCR results of each element of the alternative strategy were calculated to obtain the overall outcomes. The chosen alternative results to forming the FMCG distributor supply chain reengineering model were technology improvements and upgrades in business processes overall.

**Keywords**: Analytical Network Process, BOCR, FMCG, Supply Chain

**GEL classifications:**

## INTRODUCTION

The Fast Moving Consumer Goods (FMCG) industry in Indonesia is considered one of the most attractive industries with a sales value of more than 10 billion US dollars in line with the growth of the middle class of the country. FMCG has long been considered as one of the driving factors of economic movement, and the data showed promising potential with the sales of cheap and fast-selling goods [1]. A total of more than 263 million consumers and more than half of them are in the productive age, this positive trend is expected to continue along with the growing spending growth rate which reached 11.8% in the period 2010-2015 and the average growth of the FMCG retail industry which reached 10.8% in 2015. This positive growth also has been extended to areas outside Java Island and rural areas which were experienced a surge of demand for effective logistics in these areas. Some variations in annual growth for certain

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products, such as the food industry which was posted 38% growth on August 2016 but only 12% growth for the household maintenance equipment industry. FMCG products have successfully contributed 18.5% of the national GDP in 2016. Data was also reinforced by McKinsey, which was estimated that by 2022, the value of the e-commerce market in Indonesia will reach US$65 billion (around Rp. 948 trillion). The advancement of this industry has enabled the FMCG business to reach buyers from all regions of Indonesia on a digital platform, without being hampered by distance and time factors. Every year, the benchmark for e-commerce sales continues to increase significantly. The efficiency obtained also pays attention to a series of processes in the supply chain [2] that are integrated with e-commerce and product advertising methods [3].

Indonesian consumers have many choices for their electronic entertainment, not only television but the internet could be accessed almost all over the places. Many FMCG industries also take advantages of this momentum to communicate with their consumers. The growth of e-commerce was quite significant, although was still small amount. The amount of people who buy via online in Indonesia grew from 2 percent in 2017 to 6 percent in 2018 on FMCG. More and more Indonesian consumers were seeing the benefits and advantages of shopping online especially for baby needs and premium personal care products.

One of the FMCG companies in Indonesia, PT Tigaraksa Satria Tbk (TGKA), which has been established in 1919, was more than 100 years old in 2020. PT Tigaraksa Satria Tbk consumer product division for four consecutive years (2016-2019) did not reach the company's target, with a CAGR (Compound Average Growth Rate) below 5%. Therefore, in 2018 the company took the initiative to collaborate with the marketplace which has given contribution about 18.18%. However, growth in 2019 did not give high amount; it was recorded at only 3.65%.

Currently, the digital platform showed that the supply chain road map has changed. This change was due to changes in consumer lifestyles in purchasing FMCG products lately, where they were used to making purchases via company's online or market place. The reasons for the convenience of both how to buy it, as well as the ease of payment as well as avoiding traffic jams and parking fees when shopping offline, has make consumers now switching to online or market places. The supply chain changes have become more complex, it previously only through modern channels, traditional channels, sub distributors, since 2018 there has been an increase in e-commerce to B2B (B2B here means Tigaraksa selling off to platforms, Lazada, Orami, JD.ID, or e-commerce distributors such as Intrepid, a commerce. The current order-taking process could also be accessed through digital platforms, like Buka and Sinbad, but the delivery to traditional channels was still through Tigaraksa warehouse.

According to Ogunlela [4], the importance of ISCM has an impact on the FMCG manufacturing industry and how ISCM has improved overall business and economic performance in countries that have implemented it, for example the US, Canada, UK, Malaysia, and India. This would give further help to provide insight and to turn it into the application of ISCM in the FMCG industry and to suggest ways in which SCM professionals could improve their competitiveness, customer service, and profitability. This study gives contribution to the practice of supply chain

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theory through the identification of gaps in relation to the implementation and adoption of ISCM in the FMCG manufacturing industry in Nigeria.

According to Insolar (2019) data, Wallmart as one of the largest FMCG companies in the world was changing the shape of the supply chain with blockchain and the adoption of blockchain supply chain was 89% cost savings, 81% increase traceability and 79% increase transparency. Therefore, it was necessary to conduct research on the FMCG distribution company (Tigaraksa Satria Tbk) to be related to changes and the strategies taken to be successful continuously in this 4.0 industrial era.

The purpose of this study was to give recommendation of a supply chain business process model at Tigaraksa Satria Tbk, so that it could achieve the company's targets and be able to compete globally. The tentative hypothesis was to change the supply chain by using ISCM. The research topic was "Planning the FMCG Distributor Supply Chain Business Process at PT Tigaraksa Satria Tbk in the Digital Era".

## RESEARCH METHODS

### A. Sites of research

The study was conducted on FMCG Company which was considered to represent several business models in the FMCG industry in Indonesia, PT Tigaraksa Satria Tbk (TGKA). The research location was at the head office in the Sucofindo Building, Pancoran, and South Jakarta. The research was carried out from early August 2020 to April 2021, with distributed and filled out questionnaires to expert respondents and management, include interview (in-depth) with implementing respondents of Tigaraksa management respondents and expert respondents, and collect supply chain reports, financial reports and conducting analysis.

### B. Types of research

Type of research used a mixed method, qualitative (exploratory) research combined with a quantitative approach. The tools used in this qualitative research were the methods of filling out questionnaires, interviews, and in-depth interviews. Qualitative research was research with business objectives through techniques that allow researchers to elaborate the interpretation of a phenomenon without dependence on numerical measures [5]. Qualitative research design used qualitative data; data was not in numerical form, but in the form of descriptions, explanations, descriptions and reasons [5]. A quantitative approach was used in data processing in Tigaraksa supply chain analysis.

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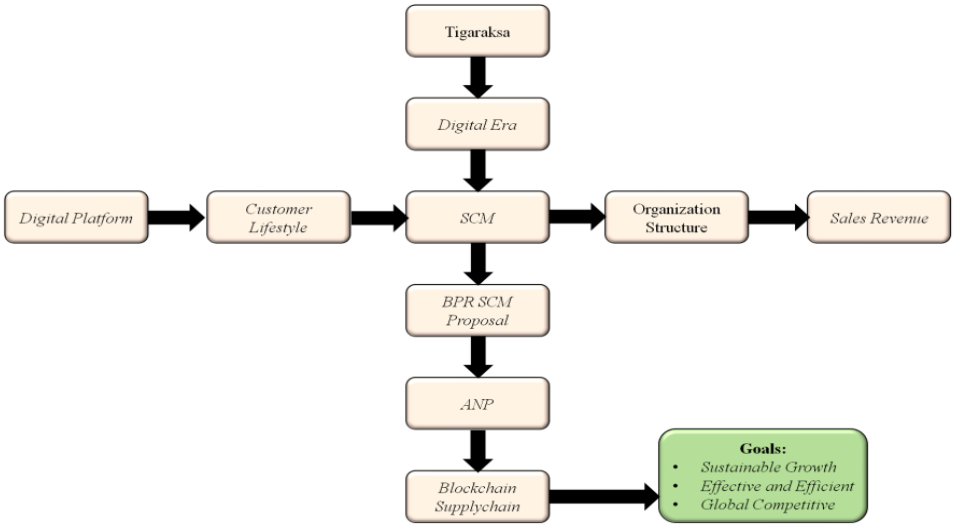
**Figure 1: Research Conceptual Framework**




## C. Method of collecting data

The research was conducted in several stages:

1. The first stage was an interview with 5 managers and a FGD (Forum Group Discussion) with five managers, consisting of the Manager of Sales, Logistics and Finance to determine the required ANP framework by Zoom Meeting which was held on September 2020

2. The second stage was to analyze the secondary data of Tigaraksa's sales & revenue performance which was taken from the data of the Indonesia Stock Exchange at https://www.idx.co.id/usaha-tercatat/laporan-keuangan-dan-tahunan. From 2016 to 2019 Estimates were made on October 2020.

3. The third stage was to interview the managers at competing companies, to gain insight into "Competitior Benchmarking" from the 2 best performing companies in Indonesia today, Unilever Indonesia and Enseval. Estimates were made on February 2020

4. The fourth stage was to interview the CEO and Experts to collect the ANP questionnaire, consisting of the President Director of Tigaraksa, Director of Tigaraksa as well as academic experts and one expert on logistics regulation. Estimates were made on March 2020.

## D. Data Analysis Method

Data analysis was conducted to prepare and select the Tigaraksa supply chain strategy with ANP. Determination of the importance weights of the determinants using the finite-super matrix results from the ANP model. The overall priority of each alternative was calculated through the synthesis process. The results obtained from each sub network were synthesized to obtain the overall priority of the alternatives.

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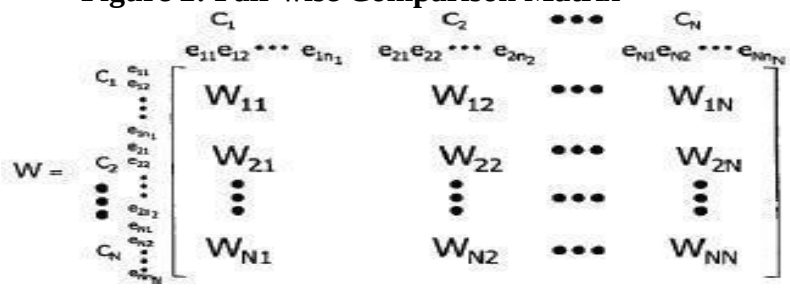
### E. Analytic Network Process (Anp)

ANP relies on alternatives and criteria that exist in the implementation of problem solving. Saaty [6] also explained that the technical analysis of ANP by using pair wise comparisons could be used on alternatives and project criteria. ANP was intended to know the overall effects of all elements. All criteria should be arranged and prioritized in a control hierarchy framework or network, doing comparisons and synthesis to obtain a priority order from this set of criteria. The next step was to reduce the influence of the elements in the feedback system by taking into account each of the criteria. Therefore, the results of this influence were weighted by the importance of the criteria and added to obtain the overall effects of each element [6].

The comparison of the level of importance in each element or cluster was represented in a matrix by providing a ratio scale with pair wise comparisons. Each ratio scale showed a comparison of the importance of elements within a component with elements outside the component (outer dependence) or also within the element to the element itself in the inner component (inner dependence). Each element was not always having an effect on the elements on other components. Elements that had no effect on other elements would return a value of zero. The matrix of the comparison results in pairs was represented in vertical and horizontal forms and in the form of a stochastic matrix which was called a super matrix. The weighting in the ANP required a model that represents the relationship between criteria or sub-criteria or alternatives. The thing that should be considered in this weighting is "control". There were two controls, namely the hierarchical control which showed the relationship between the criteria and sub-criteria and the second was the linkage control, which showed the relationship between the criteria or sub-criteria. The combined weights were obtained through the development of the super matrix.

A system with N components consisting of C elements that interacted with each other, denoted Ch where h = 1, 2, 3 ... N. Elements owned by components would be symbolized by eh1, eh2, ehn. The value of the super matrix was given as a result of the assessment of the priority scale derived from pair wise comparisons such as in AHP. The matrix was structured to describe the flow of interest between components, both independent and outer dependence. The relationship of interest between elements in the network could be represented by following a super matrix, as follows.

**Figure 2: Pair wise Comparison Matrix**



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Each column in Wij was an eigenvector indicating the importance of an element in the ith component of the network to an element in the jth component. The value of Wijj which showed = 0 means that there was no interest in that element. If this happened, the element was not used in pair wise comparisons to derive the eigenvector, so the element that produces non-zero importance was used.

The stages applied to the research using the attached ANP were based on Figure 2, then the explanation of the research steps with the ANP were:

1) Literature study, questionnaires and in-depth interviews with experts to find out the problem comprehensively
2) Decomposition (identification, analysis, structuring complex problems into ANP structures)
3) Validate the ANP model to the expert
4) Develop a pair wise questionnaire according to the ANP network/structure model
5) Test/validation of questionnaires to experts
6) In depth interview/filling out ANP questionnaire by experts
7) Synthesize and process data using ANP super decision software. Analysis of results and policy recommendations

This study used a pair wise questionnaire that has been modified as Saaty [7] states that the modified pair wise questionnaire was used in order to simplify the complex initial pair wise questionnaire and to maintain respondent consistency. Modification of the questionnaire also could shorten the interview time.

## DISCUSSION

The synthesis of pair wised comparisons was obtained through data processing which was carried out one by one by each expert respondent first. Super Decisions software was used to process data per expert respondent to produce a super matrix. The super matrix displayed the priority order of the most important clusters of factors related to the supply chain engineering strategy of FMCG distributors at PT Tigaraksa Satria Tbk in the digital era. Then the output of the Super Decisions 2.0 software had two values, namely the normalized by cluster value and the limiting value as shown in table 1. The normalized by cluster value was the priority value in each cluster which had a total value of one or 100% if added up in one cluster, while the Limiting value was the priority value for all priority nodes (attributes) between clusters. The following figure was the ANP hierarchy used in this study:

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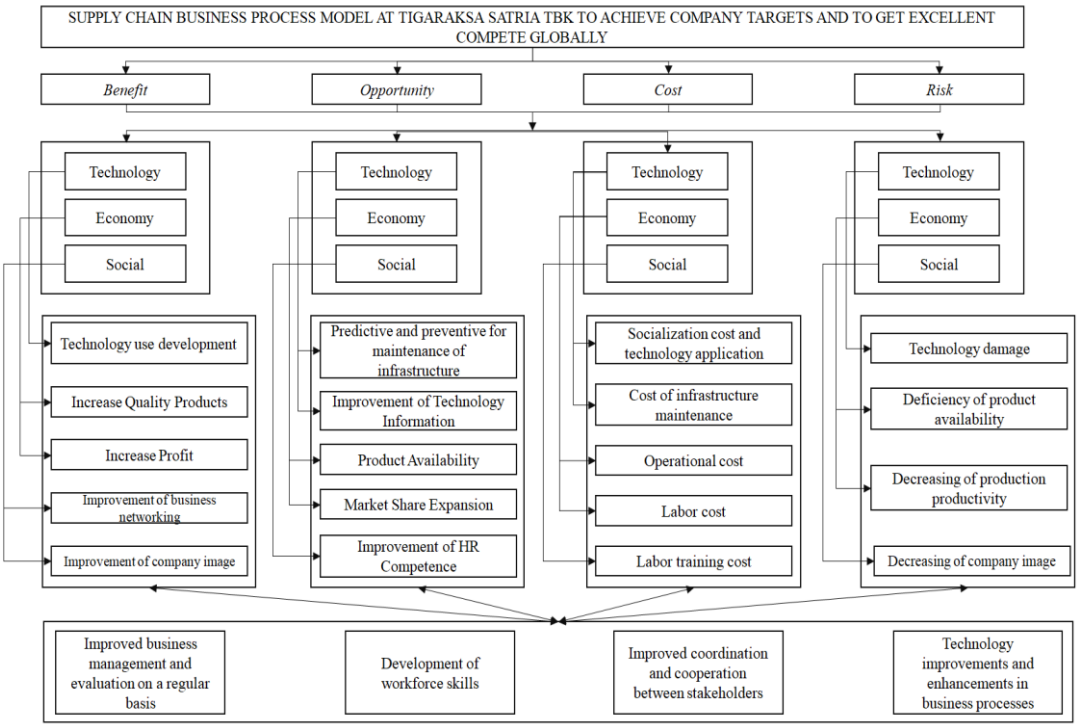
**Figure 3: ANP Hierarchy of Supply Chain Business Process Models at PT Tigaraksa Satria Tbkto Achieve Company Targets and Be Able To Compete Globally**




## DISCUSSION

### A. Analysis and Synthesis of ANP BOCR

The analysis per criteria used a limiting value because basically the priority order of alternative choices in one cluster would produce the same order using either the normalized value by Cluster or using the limiting value. The results of the synthesis and overall priorities based on the combined opinion of the respondents which could be seen in Table 1.

**Table1: Order of Priority Factors for ANP BOCR Results**

| No | Aspects | Normal | Limiting | Ranking |
|---|---|---|---|---|
| 1 | Benefits | 0.38465 | 0.384649 | 1 |
| 2 | Costs | 0.24478 | 0.244778 | 2 |
| 3 | Opportunities | 0.18914 | 0.189139 | 3 |
| 4 | Risks | 0.18143 | 0.181433 | 4 |

Analysis of BOCR was consisted of four criteria; they were Benefits, Costs, Opportunities, and Risks. Figure 3 showed the results of the ANP BOCR output on the BOCR criteria which could be seen that the main priority or first rank using the normalized value was the Benefits criteria; the normalized value generated was 0.38465. Meanwhile, the lowest rank with a normalized value was 0.18143, it was the Risks element.

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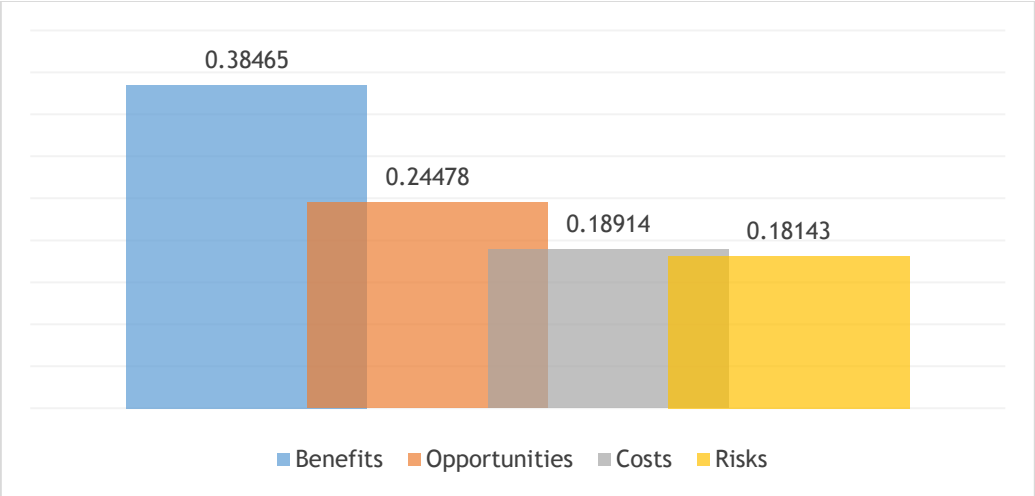
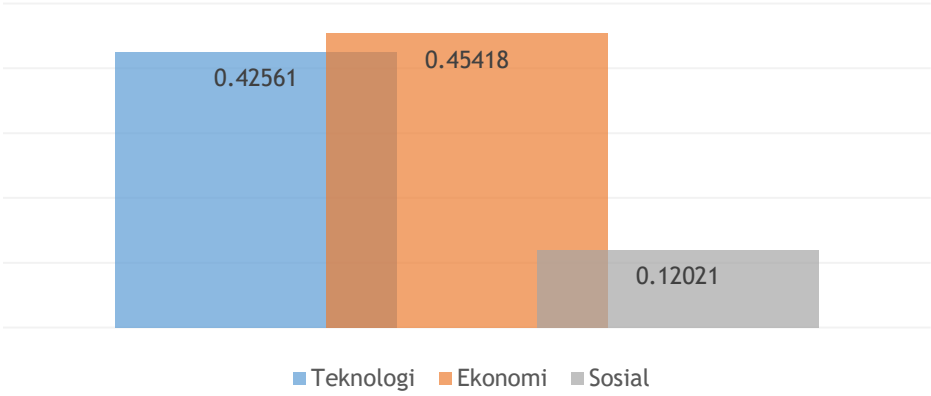
**Figure 3: Value Normalized by Cluster ANP for Overall BOCR**




The benefits criteria consisted of three control criteria; they were Technological, Economic, and Social. Figure 4 showed the normalized by cluster value of the Benefits. Based on the results of the ANP BOCR output on the Benefits criteria, it showed that the main priority was the control of the Economic criteria with composite weight of 0.45418. Meanwhile, for the lowest ranking with the composite weight of 0.12021, it was the Social element.

**Figure 4: Value Normalized by Cluster ANP for Benefits Subnet**




The Opportunities criteria consisted of three control criteria; they were Technology, Economics, and Social. Figure 5 showed the normalized by cluster value of the Opportunities. Based on the results of the ANP BOCR output on the Opportunities criteria, it showed that the main priority using the normalized value is the "Economy" criterion control, which is 0.52954. Meanwhile, the lowest ranking with value of 0.18636 was on the "Social" element.

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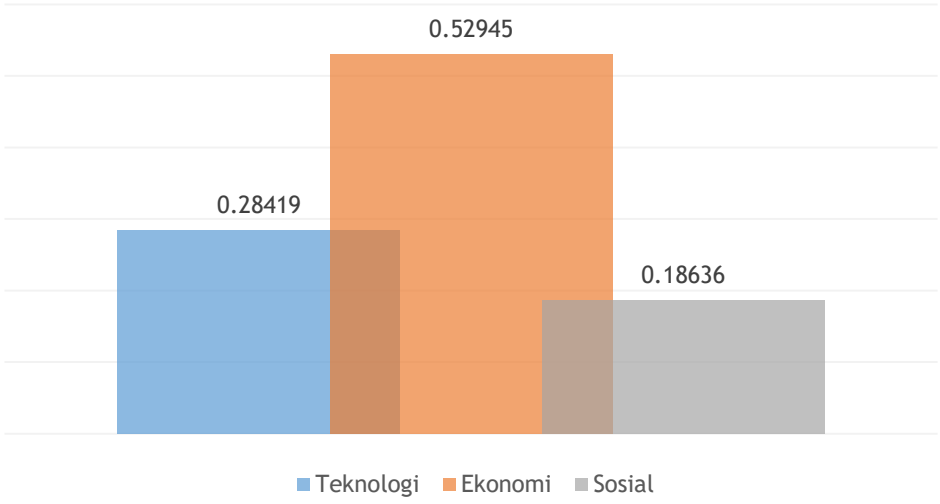
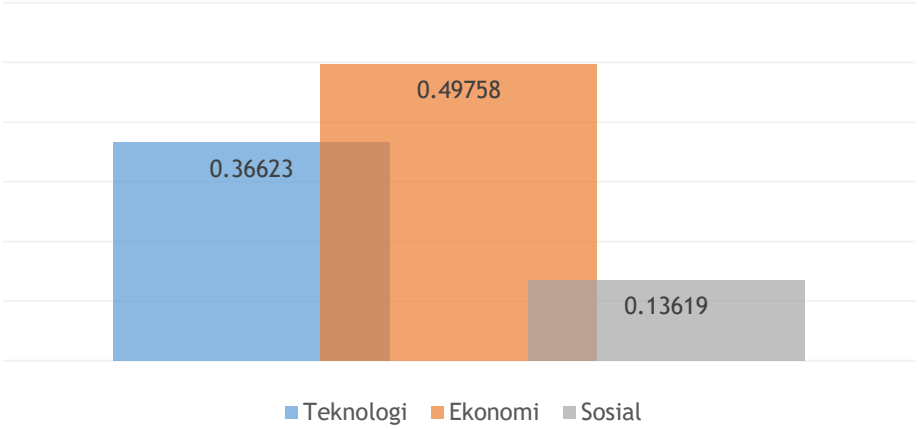
**Figure 5: Value Normalized by Cluster ANP for Opportunities Subnet**




The Costs criteria consisted of three control criteria; they were Technological, Economic, and Social. Figure 6 showed the normalized by cluster value of these Costs. Based on the results of the ANP BOCR output on the Costs criteria, it showed that the main priority by using the normalized value is the control criterion "Economy" which is 0.49758. Meanwhile, the lowest ranking generated is 0.13619; it was the "Social" element.

**Figure 6: Value Normalized by Cluster ANP for Costs Subnet**




The Risks criteria consisted of three control criteria; they were Technology, Economics, and Social. Figure 7 showed the normalized by cluster value of the Opportunities. Based on the results of the ANP BOCR output on the risks criteria, it showed that the main priority using the normalized value was the "Economy" control criterion, which was 0.50434. Meanwhile, the lowest ranking generated was 0.17591; it was the "Technology" element.

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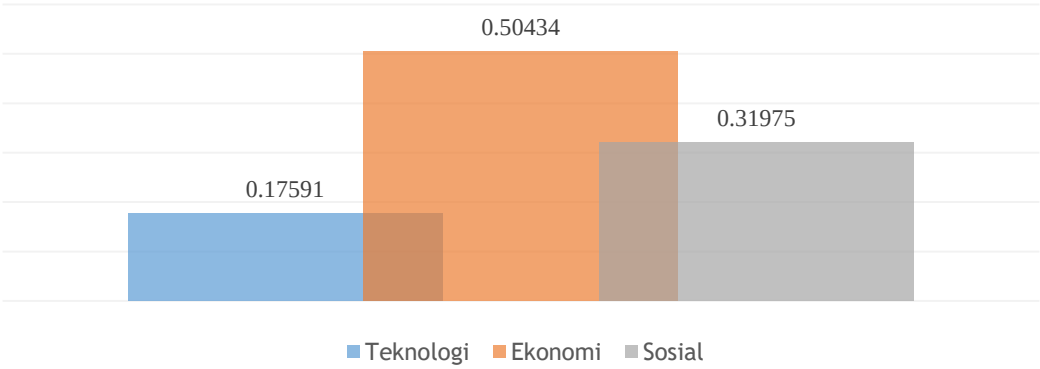
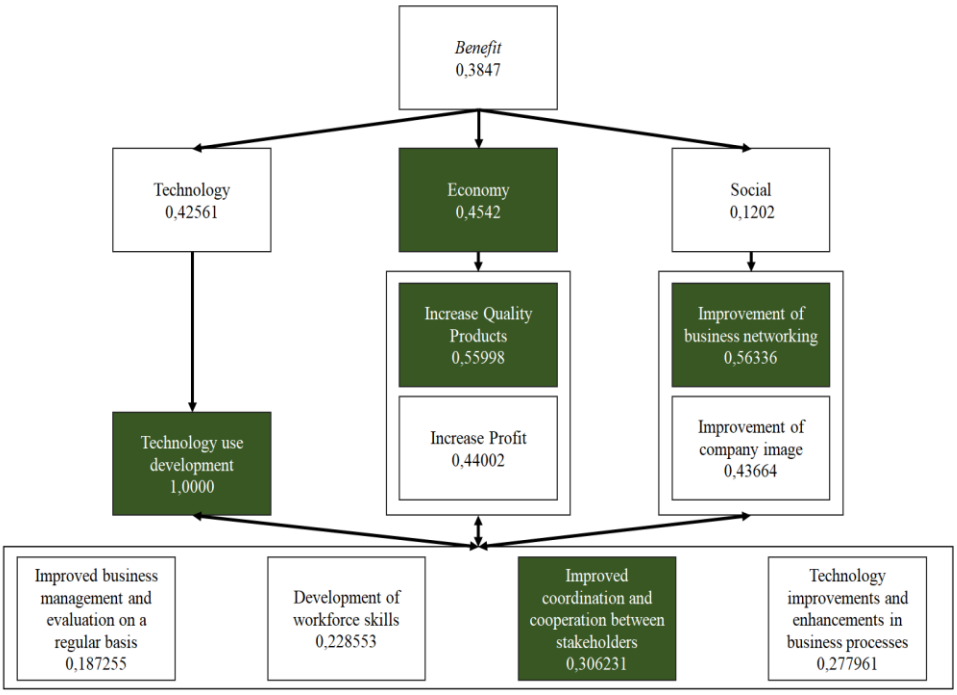
**Figure 7: Value Normalized by Cluster ANP for Risks Subnet**




## B. AnalysisandSynthesisofResultsof ANP SubnetBenefits

As explained earlier, the control criteria for Benefits consist of three elements, they were Technology, Economics, and Social. Figure 8 showed the normalized by cluster value of the Benefits based on the ANP results. The Benefits criteria showed that the main priority was the control criteria "Economy" with a weight value of 0.45418, then followed by the control criteria Technology of 0.42561. The lowest ranking with value of 0.12021 was on the "Social" criterion control.

**Figure 8: Weighted ANP Value on Benefits Subnet**



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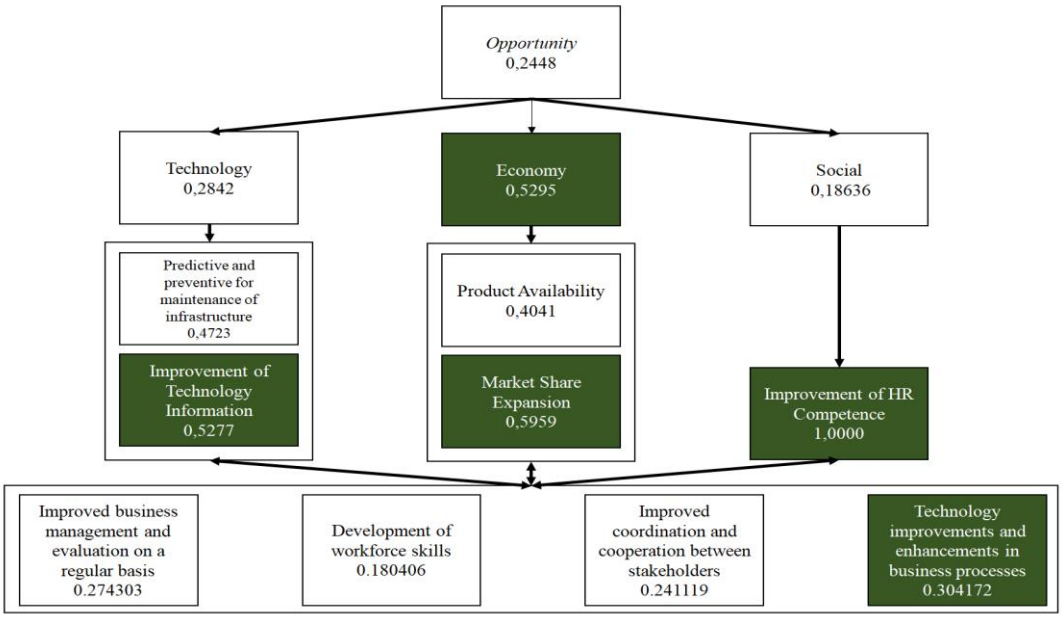
This means that in Benefits, the main criteria that experts see were advantages from the economic side, then the advantages from the technological side and the next priority was the benefits from the social side. This was reasonable, because the industry was completely referring to the goal of making profit as well as other goals that was needed to be achieved the profit goal, which was including, customer creation, regular innovation, and the best possible use of available resources. While in the control of technology criteria, the concern was the development of the use of technology to improve the distributor's supply chain. The control of economic criteria showed that the priority and important concern was in terms of improving product quality (0.55998), and then the next priority was increasing profits (0.44002). Profits based on social criteria were seen from the aspect of improving business networks (0.56336) and then from the company's point of view was the corporate image that should be improved (0.43664). After considering the benefits aspect and its sub-criteria, the alternative strategy for supply chain engineering planning was increasing coordination and cooperation between stakeholders with a weight of (0.306231) and then followed by improvement and improvement of technology in business processes with a weight of (0.277961).

### C. Analysis and Synthesis of ANP Subnet Opportunities Results

The Opportunities criteria consisted of three control criteria; they were Technology, Economics, and Social. Based on the results of the ANP BOCR output on the Opportunities criteria, it showed that the main priority was the control of the Economic criteria with the weight of 0.5295, followed by the control of the Technology criteria with a weight of 0.2842. While the lowest weight was Social criteria control with weight of 0.18636.

**Figure 9: Weighted ANP Valueon Oopportunity Subnet**




Based on these results, it could be concluded that if based on business opportunities (Opportunities) economically potential and profitable, FMCG was a daily business that will

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continue to grow, but according to Gupta and Mittal [8] with increasing levels of publicliteracy exposure to the media, people were becoming aware of purchasing decisions and more picky for demanding than ever before. Therefore, this would increase demand business competition in the fast moving consumer goods industry.

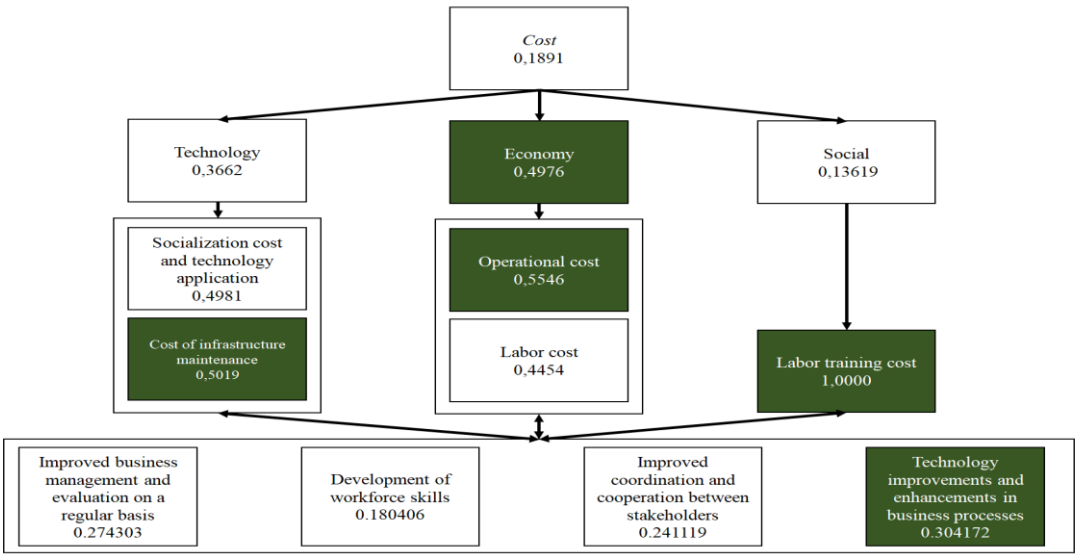
In the control of technology criteria, the concern in taking advantage of opportunities was to increase the ability of technology and information in the company (0.5277) and continue to carry out predictive and preventive maintenance of infrastructure (0.4723). The control of economic criteria showed that the priority and important concern was in terms of market share expansion (0.5959), then the next priority was to maintainstable product availability (0.4041).

Based on the control of social criteria, it was be able to takead vantage of business opportunities with concering to increase the competence of HR it self. After considering the opportunities and sub-criteria aspects, the mostsuitable alternativestrategy was the improvement and improvement of technology in business processes (0.304172) and then followed by improvement in business management and periodice valuation of improvements and improvements in technology in business processes with a weight 0.27430.

**D. AnalysisandSynthesisof ANP SubnetCostsResults**

Costscriteriacontrolconsistedofthreeelements, they wereTechnological, Economic, andSocial. Basedontheresultsofthe ANP BOCR outputontheCostscriteria, itshowedthatthe main prioritywastheEconomiccriteriawiththeweightof 0.4976, followedbythe Technology criteriawiththeweightof 0.3662. WhilethelowestweightisSocialcriteria with 0.13619.

**Figure 10: Weighted ANP Valueon Costs Subnet**




Based on these results, it showed a high awareness in the development of the FMCG industry, it should not only prioritize the excessive economic side, from an economic perspective that companies basically should be able to give effective and efficient in using of costs, ranging

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from production costs, delivery, and resource costs to achieve maximum profit. However, technology and social costs also should be carefully considered because they were mandatory elements that should be taken into account for the company's sustainability.

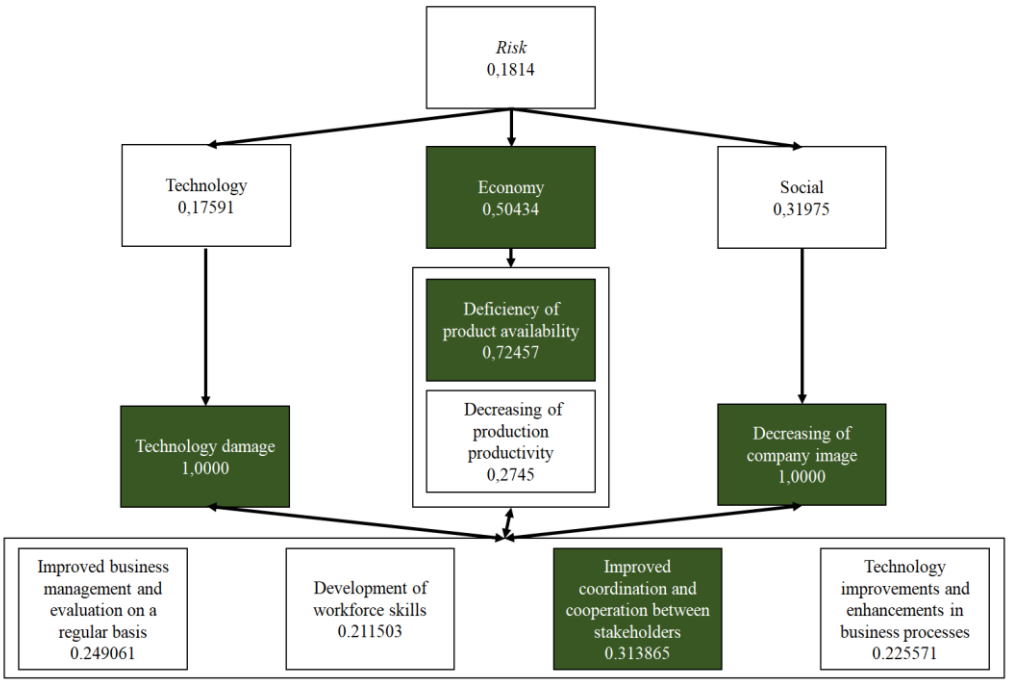
In the technology cluster, the concern was the cost of maintaining technological infrastructure facilities and infrastructure with a weight of 0.5019, followed by the cost of socialization and technology application with a weight of 0.4981. Furthermore, the criteria for economic costs that should be prioritized were operational costs (0.5546) and labor costs (0.4454).

In the social cluster, the company should pay attention to the cost of training workers. After considering the aspects of costs and its sub-criteria, the most suitable alternative strategy was to increase coordination and cooperation between stakeholders (0.333245) and then followed by improvement and improvement of technology in business processes with a weight of 0.283113.

### E. Analysis and Synthesis of ANP Subnet Risks Results

The Risks criteria consisted of three elements, the control criteria for Technology, Economics, and Social. Based on the results of the ANP BOCR output on the Risk criteria, it showed that the main priority was the control of the Economic criteria with a weight of 0.50434.

**Figure 11: Weighted ANP Value on Risks Subnet**




The control of social criteria with a weight of 0.3197 and the lowest weight was the control of the Technology criteria with a weight of 0.17591. Based on these results, it could be concluded that the biggest risk in the supply chain business process at PT Tigaraksa Satria Tbk was the

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economic risk, especially related to the shortage of supply availability (0.72457) and the next priority was the decline in production productivity (0.2745).

The risk itself was not only arise from economic factors but from technological and social clusters, in the technology cluster the risk that should be a concern was technological damage and from social in declining the company's image. After considering the risk aspect and its sub-criteria, the most suitable alternative strategy was the improvement of coordination and cooperation between stakeholders (0.313865) and then followed by the improvement of business management and periodic evaluation with weights 0.249061.

### F. Overall Alternative Strategy of Outcome

The BOCR results of each element of the alternative strategy were calculated to obtain the overall outcome. Overall, the results of the selected alternatives from the strategy could be seen in Table 2.

**Table 2: Outcome of FMCG Distributor Supply Chain Engineering Model**

| Alternatives | BOCR Weighted | | | | Outcome | | | |
|---|---|---|---|---|---|---|---|---|
| | Benefit | Opportunity | Cost | Risk | Standard | Optimistic | Realistic | Pessimistic |
| | 0,3847 | 0,2448 | 0,1891 | 0,1814 | B/C | BO/CR | bB+oO-cC-rR | B/(CxR) |
| PMBE | 0,1873 | 0,2743 | 0,2085 | 0,2491 | 0,8981 | 0,9891 | 0,0545 | 3,6060 |
| PKTK | 0,2286 | 0,1804 | 0,1751 | 0,2115 | 1,3050 | 1,1131 | 0,0606 | 6,1699 |
| PKKS | 0,3062 | 0,2411 | 0,3332 | 0,3139 | 0,9189 | 0,7060 | 0,0568 | 2,9278 |
| PPTP | 0,2780 | 0,3042 | 0,2831 | 0,2256 | 0,9818 | 1,3239 | 0,0869 | 4,3525 |

Based on the table, it could be seen that the chosen strategy after considering the BOCR along with various criteria and elements, consisted with: 1) Under standard conditions was the development of workforce skills, 2) While in optimistic conditions was improvement and improvement of technology in business processes. 3) While in realistic conditions, the best alternative strategy to use was improvement and improvement of technology in business processes. 4) Then in a pessimistic condition, an alternative strategy that could be applied was the development of workforce skills. Thus, it could be concluded that to form an FMCG distributor supply chain reengineering model, the best strategy was taken on a realistic scheme with improvement and technology improvement in business processes.

## CONCLUSION

Digitalization was still the key in adapting to normal post-pandemic life, so any company needs to hone new competencies to be able to align company needs. Based on the results of the BOCR analysis using the ANP method, to form a reengineering model of the FMCG distributor supply chain, the best strategy was taken on a realistic scheme, namely improvement and improvement of technology in business processes. Blockchain itself was basically a very good technology to integrate in the logistics industry and supply chain management. As a tracing function (from manufacture to consumer), the data collected at each stage could be permanently viewed

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historically [9]. According to Shakhbulatov [10] blockchain should encounter the following challenges to be implemented in a supply chain management system:

1) Immutability which supported transparency, traceability, inventory verification,
2) Reliable tracking accuracy, the challenge lied in the amount of storage required to accommodate the distributed ledger. As the number of transactions increases, the size of the ledge also should increase.
3) Provenance which was mean blockchain requiring record of product ownership through the supply chain. Blockchain should allow chronological record of a product from origin to final stage,
4) New supply chain management models where supply chain reliability was an important issue under catastrophic events that could disrupt one or more stages of the supply chain. New supply chain and blockchain models needed to be developed to address this problem, recently the application of artificial intelligence had started to be developed to improve the efficiency of the supply chain;
5) Cost and complexity: Although blockchain supports supply chain management by solving some of the existing issues, such as origin and quality assurance, this would certainly create additional costs for implementation and maintenance.

The managerial implications that can be done to form an FMCG distributor supply chain engineering model are

1) Digitalization is still the key in adapting to normal post-pandemic life, so any company needs to hone new competencies to be able to align company needs.
2) To form an engineering model for the supply chain of FMCG distributors, the best strategy is taken on a realistic scheme, namely improvement and improvement of technology in business processes.
3) To be able to take advantage of opportunities in the digital era and make cost efficiency for the company by improving and improving technology in business processes.
4) Blockchain implementation is a very good technology to be implemented in the logistics industry and supply chain management as a tracing function (from manufacturing to consumers).
5) The adoption of technology in the context of blockchain is currently still experiencing some dilemmas and challenges if you look at the complexity of the blockchain.

Blockchain adoption will require infrastructure for computing, communications, data collection, and integration into existing supply chain management. The complex nature of blockchain will be difficult to adopt and different supply chain requirements will certainly determine the amount of infrastructure required. Another thing that is still a challenge is starting from the absence of clear regulations related to blockchain and the lack of support and adoption from the regulators and according to Leveling [11] the complex characteristics of blockchain will be difficult to adopt and different supply chain requirements will certainly determine amount of infrastructure required.

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