



Supply Chain Risk Management based on ISO 31000:2018 – Balanced Scorecard to Improve Company Performance: Case Study on UD INTR Yogyakarta

Septhivia Marhaditha; Perminas Pangeran

Master of Management, Faculty of Business, Duta Wacana Christian University, Indonesia

E-mail: perminas@staff.ukdw.ac.id

<http://dx.doi.org/10.47814/ijssrr.v5i11.705>

Abstract

This study aims to conduct a risk assessment with the application of Enterprise Risk Management (ERM) based on ISO 31000: 2018 and integrated with the Balanced Scorecard (BSC) at UD INTR Yogyakarta to improve performance and optimize the achievement of company goals. The stages of the risk management process refer to the ISO 31000: 2018 standard which includes risk identification, risk analysis, and risk evaluation using Fishbone diagrams. The study was conducted by interviewing and filling out questionnaires by the owners. The research focuses on identified supply chain risks consisting of 8 risks, namely operational risk, financial risk, information risk, organizational risk, planning risk, market and competition risk, supply risk, and legal risk. The results showed that supply risk is the highest risk faced by the company. Preventive action efforts are expected to reduce other risks to a lower level.

Keywords: *Risk; Risk Management; Supply Chain Risk; ISO 31000: 2018; Balanced Scorecard*

Introduction

The existence of cooking oil is like a "pearl" whose existence becomes very valuable for the people of Indonesia. From November 2011 to March 2022 the price of cooking oil in Indonesia has continued to increase. PIHPS Data (National Strategic Food Price Information Centre) states that the price of cooking oil in Indonesia as of January 1, 2022, on average it reaches a price of IDR 20.000 per litre.

The rising trend of cooking oil price in Indonesia due to the increase in the price of CPO (Crude Palm Oil) becomes the result of declining productivity of fresh palm fruit in Malaysia and Indonesia as the largest palm oil producer in the world. In addition, the rise is also due to the increase in fertilizer prices, and the use of crude palm oil as raw material in producing biodiesel (B30).

On January 19th, 2022, the government implemented a HET (highest retail price) of cooking oil of IDR 14,000 per litre. This policy caused panic buying in the community because of the fear if the price of cooking oil skyrocketed again. Thus, these conditions cause cooking oil stocks run out in many regions in Indonesia.

The increase in the price of cooking oil which is then followed by a shortage of stock of goods causes the flow of supply chain of cooking oil which is disrupted. Supply chain is an integrated system from the procurement process of raw products to the final product distribution process involving several parties such as suppliers, manufacturers (factories), distributors, retail until the product reaches the hands of customers or the general public (Beamon, 1998: 281). The bottleneck supply chain in the cooking oil supply chain is caused by the top layer of suppliers (palm oil farmers) experiencing a decrease in the productivity of oil palm fruit or fresh fruit bunches used as the main raw material in the cooking oil processing process. The limited number of fresh fruit bunches causes the production process of raw materials to finished products to be disrupted and has an impact on the inhibition of the product distribution process to various parties such as distributors, retailers to customers. Parties that sell cooking oil as their main sales will certainly be very high-risk of losses due to the unavailability of merchandise stocks.

UD INTR is one of the major distributors in Yogyakarta who sell packaged cooking oil products as their main sales. UD INTR is a very high-risk party for losses due to increased price and scarcity of cooking oil stocks. UD INTR as an authorized distributor obtains packaged cooking oil products directly from the factory (manufacturer) and will be resold to wholesalers, traveling traders, supermarkets, minimarkets, retail and grocery stores without changes to these products. UD INTR customers certainly also feel the impact of rising prices and scarcity of cooking oil stocks. Customers must experience delays in the distribution of goods due to limited stock of goods in the UD INTR warehouse. The limited stock of products will certainly be very risky for UD INTR which has been selling cooking oil as their main product. The risk of financial loss, loss of company reputation, loss of customers and even the risk of bankruptcy may occur if the company is not prepared to face the existing conditions. Damage to company value (value decreation) can also be experienced by companies if they are not ready to face risks (Asmarawati & Pangeran, 2021: 376). Therefore, the risks that may occur in UD INTR must be managed properly so that the company's goals can be achieved.

ISO 31000: 2018 states that risk is the effect of uncertainty on certain objectives that can be positive, negative or even both that can be an opportunity or even a threat to a company or organization. This uncertainty causes the company's goals not to be achieved. Therefore, there is need for risk management. Risk management can be done with the implementation of Enterprise Risk Management (ERM) in the company. The international standard used in the management of risk management refers to ISO 31000 and is collaborated with the Balanced Scorecard (BSC). CRMS Indonesia (2011) stated that BSC can assist management in determining strategies that are implemented well, intact and balanced from the financial and non-financial side as well as from the present and past sides. Risk mapping through ERM and strategy mapping through BSC can help enterprises in aligning tasks and responsibilities for the achievement of common goals. This collaboration is expected to help UD INTR in dealing with every risk and creating new strategies to achieve maximum profits.

Literature Review

Stakeholders Theory

Stakeholders are entities consisting of individuals or organizations that can influence or be influenced by organizational policies, organizational operations, organizational decisions and actions (Susilo & Kaho, 2018). Kaplan (2009: 1258-1259) argues that stakeholder theory generally divides stakeholder groups into five parts. Three external groups (customers, community and shareholders) have expectations or expectations of the company's performance. Two internal groups (supplier and employees) are the parties who necessarily participate in the process of planning, implementing, and delivering products and services owned by the company to external parties.

Resource Dependence Theory (RDT)

The book entitled “The External Control of Organizations: A Resource Dependence Perspective” written by Pfeffer and Salancik in 1978 describes the application of resource dependency theory (RDT) or the theory of dependence on resources. This theory explains that every organization is an open system and has a dependence on the contingency of external environmental factors. The external environment itself is something that has an element of uncertainty. This uncertainty can eventually become a risk for the organization or company. Therefore, an organization needs to reduce the uncertainty that comes from the external environment in order to minimize the risks that arise.

Perspective of resource dependence and inter-organizational relationships (Pfeffer, 1987:26-27 in Hillman et al, 2009) (1) the organization is the basic unit to understand the relationship between companies and society, (2) the organizations are limited by a network of interdependence with other organizations, so that these organizations do not stand alone (autonomous), (3) the existence of dependence due to uncertainty about what actions will be carried out by the organization, where this also leads to uncertainty of the conditions of survival and sustainable success, therefore (4) the organization takes action steps to manage external dependence, although this process is not entirely successful and will produce patterns and new conditions of interdependence, and (5) the pattern of dependence that is formed will produce inter-organizational and intra-organizational strength. This power will affect organizational behaviour.

The dependence of resources on external parties is also shown in the business processes taking place at UD INTR. Resources owned by UD INTR comes from only one supplier, namely the factory which acts as a supplier of cooking oil to UD INTR. This dependence on one party certainly causes problems for UD INTR. Production processes are sometimes disrupted and the distribution process is not smooth cause problems in the process of flow of goods from suppliers to UD INTR.

Enterprise Risk Management (ERM)

Enterprise Risk Management (ERM) is a process influenced by the entity's Board of Directors, management, and other members implemented in strategic settings and across the enterprise, designed to identify possible events that may affect the entity, and manage risks that are within its risk appetite, to provide reasonable assurance regarding the achievement of the entity's objectives (Executive Summary COSO, 2004).

Enterprise Risk Management (ERM) and Strategy

COSO (2017) states that corporate strategy selection is about making choices and accepting trade-offs. Trade-off is a condition that requires a person to make a decision on two or more things and must sacrifice or lose an aspect for a certain reason to obtain another spec with a different quality (Elistia, 2017:1). The application of ERM to corporate strategy is the best approach to outlining the art and science of making informed choices that will be delivered well. The selection of corporate strategy must be in accordance with the mission, vision and main values owned by the company (COSO Executive Summary, 2017: 4-5 – 5).

ISO 31000: 2018

ISO 31000: 2018 states that risk management processes should be an integral part of management and decision making and should be integrated into organizational structures and processes. The risk management process begins with the understanding of risk by stakeholders through the process of communication and consultation, setting the context, risk assessment (risk identification, risk analysis, risk evaluation), provision of risk treatment, monitoring and reviewing and reporting to interested parties.

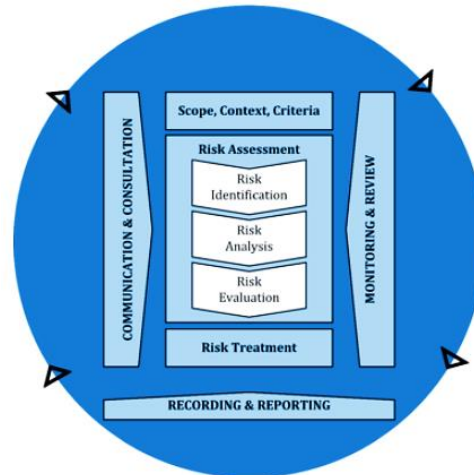


Figure 1. Risk Management Process
Source: ISO 31000: 2018

Type of Supply Chain Risks

Table 1. Type of Supply Chain Risks

Risks Type		Risks Indicators	
Internal Risk	Operational Risk	Safety (worker accidents) Overtime delivery Quality	
	Financial Risk	Price and cost risk Financial handling and practice	
	Information Risk	Information accuracy Information visibility Information security Data accuracy	
	Organizational Risk	Labor risk Structural risk Target conflict	
	Planning Risk	Incorrect forecasting Manual adjustment Marketing strategy	
External Risk	Competitor and Market Risk	Price fluctuation Economic downturn Exchange rate risk Consumer demand volatility Customer payment New technology Competitive advantage Substitution alternative	
		Supply Risk	Time risk Quality risk Cost risk Supplier selection risk Availability risk Price volatility of commodity/ alternative energy

Risks Type	Risks Indicators
	Supply chain partners relationship
Legal Risk	Export Import restriction Tax

Source: Kumar et al (2010); Olson & Wu (2010); Tang & Musa (2011); Lin & Zhou (2011); Samvedi et al (2013); Waqas et al (2019)

Balanced Scorecard (BSC)

BSC becomes a tool for management in the process of describing, communicating and implementing existing strategies in the company to determine future opportunities (Kaplan, 2009: 1253). The company's vision and strategy can be described in the four perspectives of the BSC, namely finance, internal business processes, learning and growth, and customers.

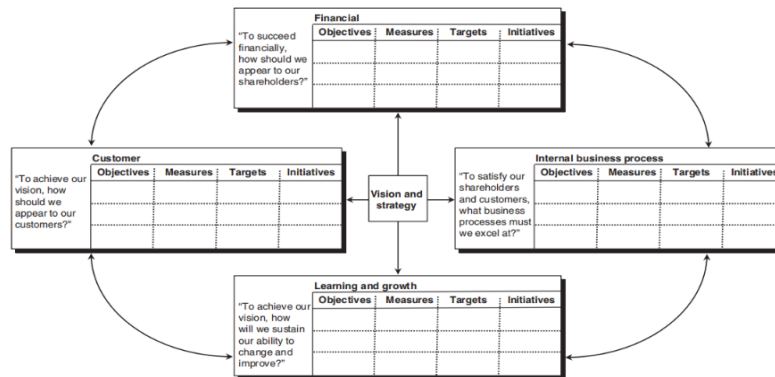


Figure 2. Balanced Scorecard
Source: Kaplan (2009)

Enterprise Risk Management and Balanced Scorecard

The collaboration between ERM and BSC provides a good synergy for the company, because BSC can help the company in determining the strategies that need to be implemented by the company. Meanwhile, ERM can assist the company in realizing the strategic plan into real execution.

Research Methods

This research uses case study method with qualitative and quantitative analysis. The study was conducted at the distributor of UD INTR Yogyakarta which sells packaged cooking oil products. The process of collecting data is carried out through interviews and filling out questionnaires by owners who master the entire business process that takes place in the company. The interview process and questionnaire filling were conducted to collect information related to the profile, vision, mission, company values, business processes, SWOT, Balanced Scorecard, risk identification, risk analysis, risk evaluation, and risk management.

The initial stage of the study was carried out by determining the goals and objectives to be achieved by the company through four Balanced Scorecard perspectives, namely finance, learning and

growth, internal business processes, and customers. The next stage is to compile risk list or a risk register through the process of identifying risks that are likely to endanger the company and are not in accordance with the company's goals and objectives. Through the list of existing risks, these risks are analysed by determining the level of impact (Table 2) and the level of probability (Table 3) according to the level of occurrence.

Table 2. The Level of Severity

Impact Area	1	2	3	4	5
	Not Significant	Low	Medium	High	Catastrophic
Financial (in year)	Loss 0 - 10% of Profit	Loss 11% - 20% of Profit	Loss 21% - 30% of Profit	Loss 31% - 40% of Profit	Loss >40% of Profit
Service (day)	Delayed 0 – 1 day	Delayed 2 – 3 days	Delayed 4 – 5 days	Delayed 6 – 7 days	Delayed > 7 days

Source: Survey Data, 2022

Table 3. The Level of Probability

Probability Level		Probability Criteria (frequency likely to occur in 1 year)	
Almost never occurs	1	0 – 1 time in year	Very rarely
Rarely occurs	2	2 – 3 times in year	Rarely
Sometimes occurs	3	4 – 5 times in year	Quite often
Often occurs	4	6 – 8 times in year	Often
Almost ever occurs	5	>8 times in year	Very often

Source: Survey Data, 2022

The next stage of research for risk analysis is calculated between the level of impact (severity) with the level of probability (probability) to determine the level of ranking in each risk (Table 4). The risk level is used to determine which risks have a harmful impact and which risks have a low impact. Determination of the level also helps the company in determining the appropriate response in dealing with risk.

Table 4. Determining Risk Level

Color	Level	Matrix Level	Description	Performance	Risk Responses
Red	5	20 – 25	Extreme	Unacceptable risk. Take immediate control measures	Risk Sharing/ Risk Mitigation
Orange	4	16 – 19	High	Unacceptable risk. Take control action	Risk Mitigation
Yellow	3	12 – 15	Medium	Unacceptable risk. Take precautions	Risk Mitigation
Dark Green	2	6 – 11	Low	Unacceptable risk. Act if the benefits outweigh the costs	Risk Mitigation/ Risk Acceptance
Light Green	1	1 – 5	Very Low	No action was taken. Carry out monitoring by risk owner	Risk Acceptance

Source: Survey Data, 2022

Result and Discussion

Strategy Map

The strategy map is an instrument panel that maps the company's strategic goals into a relationship framework that is able to describe the entire company's strategy (Alimudin, 2017: 197). Strategy maps can also help companies in describing and explaining goals, targets and initiatives into a clear and common language (Kaplan & Norton, 2000: 52).

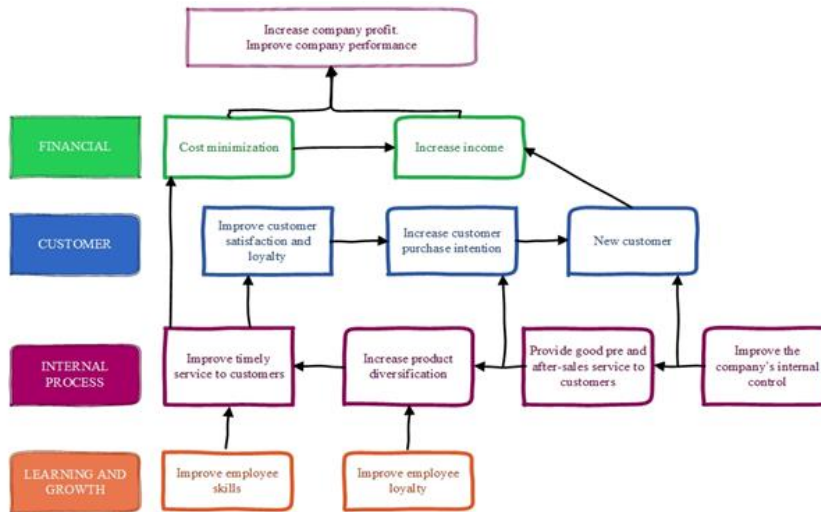


Figure 3. Strategy Map
Source: Survey Data, 2022

Risk Identification

Risk identification is carried out in order to find and describe any risks whose occurrence can hinder or support the company in achieving its strategic goals (Susilo & Kaho, 2018: 201). Risk identification is also assisted by Fishbone diagram or Ishikawa diagram which is used to describe and show the relationship between each risk with its respective causes (Lin & Zhou, 2011: 176).

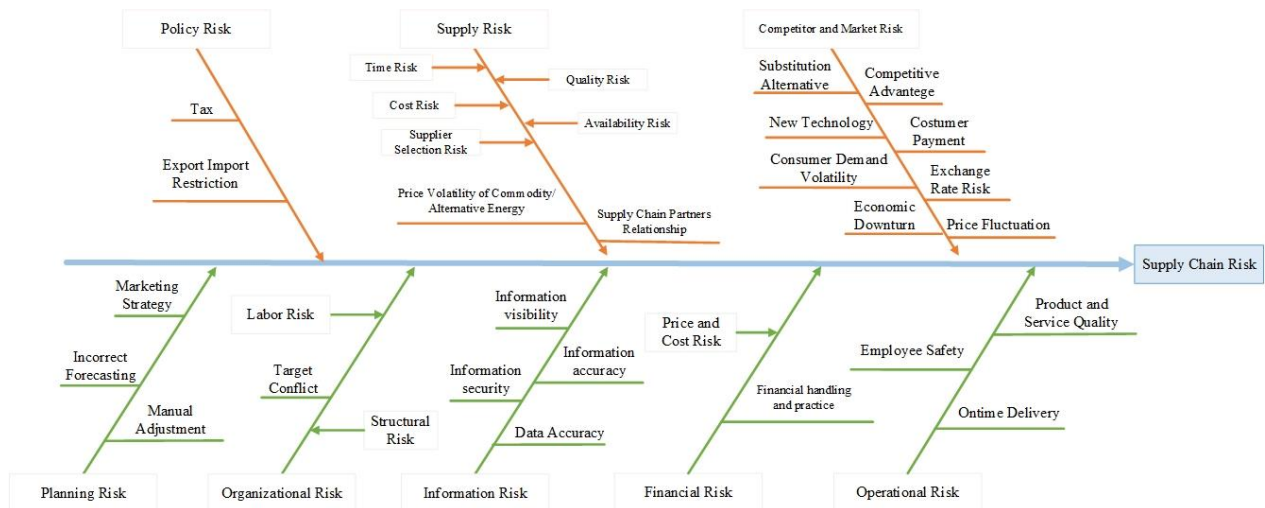


Figure 4. Fishbone Diagram
Source: Survey Data, 2022

Table 5. Risk Identification

Risk Type	Code	BSC Perspective	Risk Events
Operational Risk	Ope1	Internal Business Process	Employees experience illness or accident while at work
	Ope2	Internal Business Process	Supplier is late to deliver goods
	Ope3	Customer	The company is late in delivering goods to customers
	Ope4	Internal Business Process	The quality of products sold to customers is poor
	Ope5	Customer	Bad customer service company
Financial Risk	Fin1	Financial	The company is wrong in estimating costs
	Fin2	Financial	Inability of the company to pay supplier
Information Risk	Inf1	Internal Business Process	Information is not delivered to the right party (miscommunication), errors in data input
	Inf2	Internal Business Process	Company data leak occurred
Organizational Risk	Org1	Learning and Growth	Inadequate workforce trained in their field
	Org2	Growth	The existence of incompatibility (dispute) between employees
	Org3	Learning and Growth	Employees on strike
	Org4	Growth	Employees commit fraud (theft of goods)
Planning Risk	Pla	Customer	Wrong in determining the business strategy (marketing strategy)
Competitor and Market Risk	Co1	Financial	Rising prices of basic commodities, rising prices of palm oil
	Co2	Financial	Customers are unable to pay overdue bills
	Co3	Learning and Growth	Companies are not able to follow the development of technology (buying and selling online)
	Co4	Internal Business Process	The company has no substitute goods (substitute goods) other
Supply Risk	Su1	Internal Business Process	Supplier difficulty in meeting the needs of the order (ability/ production capacity)
	Su2	Internal Business Process	Quality control of services and products: if there is a sudden order, the supplier is unable to fulfil it. Suppliers are unable to maintain product quality
	Su3		Supplier goes bankrupt
	Su4		Conflict between companies and suppliers
Legal Risk	Leg1	Internal Business Process	Crude palm oil exports increase
	Leg2	Financial	Subject to tax penalties

Source: Survey Data, 2022

Risk Analysis

Risk analysis aims to understand the nature and behaviour of risk (Susilo & Kaho, 2018: 198). The results of the risk analysis obtained from the multiplication of the impact value (severity) and the value of the possibility (probability) which then the results are used to rank the level of risk (Table 4).

Risks that fall into the red (extreme), orange (high) and yellow (medium) levels become intolerable risks and need to be aware of by the company. These risks need to be handled so that the company's business processes continue to run well without any interference from these risks.

Table 6. Inherent Risk Map

PROBABILITY	5	Almost ever occurs	Ope5; Pla; Co1				Fin2; Su3; Su4
	4	Often occurs	Fin1; Org2; Org3; Leg1	Ope4	Org4; Co2; Co3; Co4; Su1; Su2; Leg2		
	3	Sometimes occurs	Ope1; Inf2; Org1				
	2	Rarely occurs					
	1	Almost never occurs				Inf1	Ope2; Ope3
			Not Significant	Low	Medium	High	Catastrophic
			1	2	3	4	5
			IMPACT				

Source : Survey Data, 2022

Notes : Ope (Operational Risk); Fin (Financial Risk); Inf (Information Risk); Org (Organizational Risk); Pla (Planning Risk); Co (Competitor and Market Risk); Su (Supply Risk); Leg (Legal Risk)

Risk Evaluation

The risk evaluation process is carried out to determine which risks need to be taken further action. There are risk priority decisions and risk management for risks that fall into the red (extreme), orange (high) and yellow (medium) levels.

Tabel 7. Keputusan Prioritas dan Penanganan Risiko

Code	Risk Events	Risk Priority	Risk Treatment Planning
Ope2	Supplier is late to deliver goods	Urgent	Risk Mitigation
Ope3	The company is late in delivering goods to customers	Urgent	Risk Mitigation
Ope4	The quality of products sold to customers is poor	Urgent	Risk Mitigation
Fin2	Inability of the company to pay suppliers	Urgent	Risk Mitigation
Org4	Employees commit fraud (theft of goods)	Urgent	Risk Mitigation
Co2	Customers are unable to pay overdue bills	Urgent	Risk Mitigation
Co3	Companies are not able to follow the development of technology (buying and selling online)	Not Urgent	Risk Mitigation
Co4	The company has no substitute goods (substitute goods) other	Not Urgent	Risk Mitigation
Su1	Supplier difficulty in meeting the needs of the order (ability/production capacity)	Urgent	Risk Mitigation
Su2	Quality control of services and products: if there is a sudden order, the supplier is unable to fulfil it. Suppliers are unable to maintain product quality	Urgent	Risk Mitigation
Su3	Supplier goes bankrupt	Urgent	Risk Mitigation
Su4	Conflict between companies and supplier	Urgent	Risk Mitigation
Leg2	Subject to tax penalties	Urgent	Risk Mitigation

Source: Survey Data, 2022

Risks that fall into the extreme, high, and medium levels need to be prevented and controlled by mitigating risks. There are risks that are urgent and must be controlled immediately, but there are some risks that need to be mitigated but not urgent because the control process takes time and a longer process.

Treatment (Handling) Risk

The process of treatment or risk management is carried out in order to overcome or minimize the risks that occur in the company. Treatment is carried out by determining an action plan or action plan to deal with these risks. The action plan in dealing with this risk has been adjusted to the objectives, capabilities and resources owned by the company.

Tabel 8. Action Planning and Outcome

Code	Action Planning	Outcome
Ope2	<ul style="list-style-type: none"> * Every day coordinate with the <i>supplier</i> associated with the delivery of goods * Routine inventory taking of goods in the warehouse in order to determine the number of items available 	<ul style="list-style-type: none"> ✓ Good communication between the two parties ✓ <i>Real time</i> data related to the stock of goods in the warehouse
Ope3	<ul style="list-style-type: none"> * To confirm to the customer for late delivery of the order * Process, the delivery of goods is sorted according to the list order of the order so the entire order can be fulfilled and nothing is missed (not delivered) * Give a discount or bonus extra items to increase customer loyalty 	<ul style="list-style-type: none"> ✓ Trust and customer loyalty increase ✓ Customer often do repeat orders Groove delivery of the goods to be regularly
Ope4	<ul style="list-style-type: none"> * Employees to check the goods shipment from the supplier to ensure the goods are received in good condition (does not leak, do not tear) * During the process of delivery of goods to customers, employees ensure the goods are delivered in good condition (does not leak, do not tear) * Accept returns of damaged goods from the customer and replace with a new one or replace with money 	<ul style="list-style-type: none"> ✓ Goods of good quality ✓ Customer loyalty increases
Fin2	<ul style="list-style-type: none"> * Perform cost management with the right * Minimize the cost and expenses of the company * Increase revenue by increasing sales 	<ul style="list-style-type: none"> ✓ Cost of the controlled company ✓ Increased revenue
Org4	<ul style="list-style-type: none"> * Give punishment to the offender requiring the offender to pay compensation for goods that have been stolen * Do layoffs * Increase system security by increasing the installation of CCTV in various corners of the room or employ workers of the security 	<ul style="list-style-type: none"> ✓ Employees to be honest in the work ✓ The level of security in the company increases ✓ Fraud is reduced
Co2	<ul style="list-style-type: none"> * Increase alertness and accuracy for the employees, especially the sales in view of the health of the customer's business * Make an agreement at the earliest with the customer related to "the ability of payment" and the consequences if it is not able to make payment * Draw the remaining oil fry the customers who are not able to pay and continue to come to the customer for the certainty 	<ul style="list-style-type: none"> ✓ Losses of the company dropped ✓ The increase in income

	of payment	
Co3	<ul style="list-style-type: none"> * Invite professional instructors * Provide training to employees to develop skills in digital selling and digital marketing 	<ul style="list-style-type: none"> ✓ Skill of digital selling and digital marketing to increase employee ✓ The number of customer increases ✓ Reach sales become more widespread ✓ Sale and purchase transactions to be faster and cheaper

Tabel 8. *Cont.*

Code	Action Planning	Outcome
	<ul style="list-style-type: none"> * Perform the upgrade hardware and software to support the process of buying and selling online * Leveraging technology and existing devices for data management processes of the company 	<ul style="list-style-type: none"> ✓ Operational costs down
Co4	<ul style="list-style-type: none"> * Perform planning in the development of the company's business * Analyse competitors business * Analyse and understand the business risks that may occur 	<ul style="list-style-type: none"> ✓ Objectives and business priorities of the company become more clear ✓ To minimize the risk of business ✓ Process monitoring business become more easily ✓ Business process to be more effective and efficient
Su1	<ul style="list-style-type: none"> * Regular coordination with the supplier associated with the ordering of cooking oil * Regular stock recording to ensure that the amount of goods available in a warehouse 	<ul style="list-style-type: none"> ✓ The process of ordering goods is easy and clear ✓ A stock of goods in the warehouse safely ✓ Not out of stock or overload
Su2	<ul style="list-style-type: none"> * Regular coordination with the supplier associated with the ordering of cooking oil * Try not to do the ordering of goods by the sudden order to anticipate the limitations of the goods at the supplier 	<ul style="list-style-type: none"> ✓ Established clear communication with a supplier ✓ Stock items in the warehouse safe ✓ Not out of stock or overload
Su3	<ul style="list-style-type: none"> * Keep in collaboration with the supplier in accordance with the contract existing business * Routinely monitor the health conditions of business supplier * Do planning in the development of the business of the company 	<ul style="list-style-type: none"> ✓ Results of the analysis become a reference in the development of the company's business ✓ Development objectives of the business to be clearer
Su4	<ul style="list-style-type: none"> * Seeks to continue to build the relationship and good communication with the supplier 	<ul style="list-style-type: none"> ✓ Relationship and good communication with suppliers

* Always make payments in a timely manner to the supplier

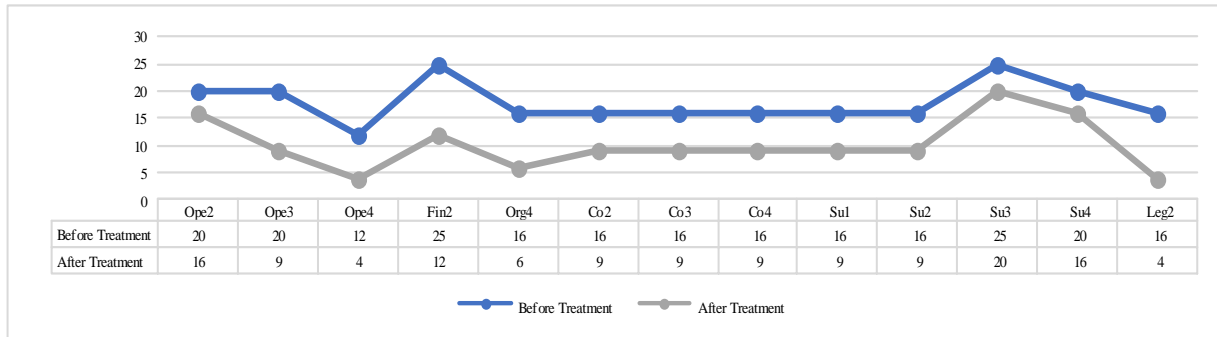
✓ To be a company that can be trusted by the supplier in terms of financial health

Leg2 * The right time in the process of tax payment
* Complete all documents required in the process of tax payment
* Report the entire condition of the company in an honest and transparent

✓ Tax penalties reduced
✓ To the taxpayer that an orderly manner
✓ To create a company that is transparent and honest

Source: Survey Data, 2022

Chart 1. Risk Treatment



Source: Survey Data, 2022

Notes: Ope (Operational Risk); Fin (Financial Risk); Inf (Information Risk); Org (Organizational Risk); Pla (Planning Risk); Co (Competitor and Market Risk); Su (Supply Risk); Leg (Legal Risk)

Residual Risk Mapping

The process of handling risk through an action plan is expected to reduce the level of each existing risk. Residual risk mapping is carried out after the risk management process which results in a decrease in risk levels.

Table 9. Residual Risk Mapping

PROBABILITY	5	Almost ever occurs	Ope3; Co2; Co3; Co4; Su1; Su2				
	4	Often occurs	Org4	Fin2	Ope2; Su4		
	3	Sometimes occurs	Ope4; Pla; Co1; Leg2				
	2	Rarely occurs	Ope1; Ope5; Fin1; Inf1; Org2; Leg1				
	1	Almost never occurs	Inf2; Org1; Org3				Su3
			Not Significant	Low	Medium	High	Catastrophic
			1	2	3	4	5
			IMPACT				

█ = Risk Appetite

Source: Survey Data, 2022

Notes: Ope (Operational Risk); Fin (Financial Risk); Inf (Information Risk); Org (Organizational Risk); Pla (Planning Risk); Co (Competitor and Market Risk); Su (Supply Risk); Leg (Legal Risk)

Risks that previously entered the red level (extreme) after handling the risk dropped to the level of orange (high), yellow (medium) to green (low). Only the “Su3” risk still remains at the red (extreme)

level. This risk is the risk of "supplier bankruptcy" and a dangerous risk that must be faced by UD INTR. If the supplier (factory) goes bankrupt, UD INTR will certainly lose its resources and the company's business processes will experience disruption. Business processes that cannot run result in large losses for UD INTR. The action plan has not been able to reduce the level of risk. The existence of a work agreement with a supplier that states that only one supplier can work with supplier makes UD INTR fully dependent on that supplier.

Conclusion

The implementation of Enterprise Risk Management (ERM) based on ISO 31000:2018 and collaborated with Balanced Scorecard (BSC) is an important part for UD INTR Yogyakarta in running its business processes.

Based on the results of the study, it is known that the risk treatment process with an action plan is able to reduce the risk to a lower level. Risks that previously entered the red level (extreme) can drop to the orange level (high), yellow (medium), even to the Green level (low). Risks that remain at extreme levels are indicated by "Su3".

References

- Alimudin, Arasy. 2017. Analisis Pencapaian Strategi Menggunakan Balanced Scorecard. *Jurnal Pendidikan Ekonomi & Bisnis*, 5 (2):194 – 205.
- Asmarawati, S.G., & Pangeran, P. 2021. ISO 31000 – Based Risk Management and Balanced Scorecard to Improve Company Performance: A Case Study at Indonesian YNK Tour and Travel Company. *International Journal of Multicultural and Multireligious Understanding*, 8 (3):376 – 388
- Beamon, Benita S. 1998. Supply Chain Design and Analysis: Model and Methods. *International Journal Production Economics*, 55: 281 – 294.
- Center for Risk Management & Sustainability (CRMS). 2011. *Memadukan Balanced Scorecard (BSC) dan Enterprise Risk Management (ERM)*. (<https://crmsindonesia.org/>)
- COSO. 2004. *Enterprise Risk Management: Integrated Framework (Executive Summary)*. USA: Committee of Sponsoring Organization of the Treadway Commission
- COSO. 2017. *Enterprise Risk Management: Integrating with Strategy and Performance (Executive Summary)*. USA: Committee of Sponsoring Organizations of the Treadway Commission
- Elistia. 2017. *Ekonomi Mikro: Hubungan Pelaku Ekonomi dalam Perekonomian*. Jakarta: Universitas Esa Unggul
- Hillman, A. J., Withers, M. C., & Collins, B. J. 2009. Recourse Dependence Theory: A Review. *Journal of Management*, 35 (6): 1404 – 1427
- ISO 31000: 2018 Risk Management. (<https://www.iso.org/>)
- Kaplan, Robert S. 2009. Conceptual Foundations of the Balanced Scorecard. *Handbook of Management Accounting Research*, 3:1253 – 1269.
- Kaplan, Robert S., & Norton, David P. 2000. *Having Trouble with Your Strategy? Then Map It*. Cambridge: Harvard Business School Publishing Corporation

- Kumar, S. K., Tiwari, M. K., & Babiceanu, R. F. 2010. Minimisation of Supply Chain Cost with Embedded Risk using Computational Intelligence Approaches. *International Journal of Production Research*, 48 (13): 3717 – 3739.
- Lin, Yong., & Zhou, Li. 2011. The Impacts of Product Design Changes on Supply Chain Risk: A Case Study. *International Journal of Physical Distribution & Logistics Management*, 41(2):162 – 186
- Olson, David L., & Wu, Desheng Dash. 2010. A Review of Enterprise Risk Management in Supply Chain. *Kybernetes*, 39 (5): 694 – 706
- Pusat Informasi Harga Pangan Strategis Nasional (PIHPS) Bank Indonesia. 2022. (<https://hargapangan.id/>)
- Samvedi, A., Jain, V., & Chan, F. T. S. 2013. Quantifying Risks in A Supply Chain Through Intergration of Fuzzy AHP and Fuzzy TOPSIS. *International Journal of Production Research*, 51 (8): 2433 – 2442
- Susilo, L. J., & Kaho, V. R. 2018. *Manajemen Risiko ISO 31000:2018 Panduan untuk Risk Leaders dan Risk Practitioners*. Jakarta: PT Gramedia Widiasarana Indonesia
- Tang, Ou., & Musa S. N. 2011. Identifying Risk Issues and Research Advancements in Supply Chain Risk Management. *International Journal Production Economics*, 133:25 – 34.
- Waqas, Umair., Rahman, A., Ismail, N.W., Basha, N.K. & Umar, S. 2019. Conceptualising the Moderating Role of Knowledge Management within Supply Chain Risks and Supply Chain Risk Management. *Forest and Society Journal*, 3 (2):209 – 226.

Corresponding Author

Perminas Pangeran can be contacted at: perminas@staff.ukdw.ac.id

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).