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ANALISIS DAN MITIGASI MANAJEMEN RISIKO RANTAI PASOK DENCAN MODEL SUPPLY CHAIN OPERATION REFERENCE (SCOR) DAN METODE HOUSE OF RISK (HOR) (Studi Kasus: PT. Perkasa Beton Readymix) TUGAS AKHIR Diajukan Sebagai Salah Satu Syarat Untuk Memperoleh Columnia 0 a 0 Dilarang mengutip sebagian atau seluruh karya tulis ini tanpa mencantumkan dan menyebutkan sumber: Pengutipan tidak merugikan kepentingan yang wajar UIN Suska Riau. Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah. S Untuk Memperoleh Gelar Sarjana Teknik Pada Sn Program Studi Teknik Industri ka J a Disusun Oleh: **MUHAMMAD HAKIM AZIZAN** NIM. 11950214882 State Islamic University **UIN SUSKA RIAU**

PROGRAM STUDI TEKNIK INDUSTRI FAKULTAS SAINS DAN TEKNOLOGI **B**NIVERSITAS ISLAM NEGERI SULTAN SYARIF KASIM RIAU Sultan Syarif Kasim Riau PEKANBARU 2023

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ANALISIS DAN MITIGASI MANAJEMEN RISIKO RANTAI PASOK DENGAN MODEL SUPPLY CHAIN OPERATION **REFERENCE (SCOR) DAN METODE HOUSE OF RISK (HOR)** (STUDI KASUS: PT. PERKASA BETON READYMIX)

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	Dengan Model Supply Chain Operation Reference (SC
	dan Metode House of Risk (HOR) (Studi Kasus:
	Perkasa Beton Readymix)

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LEMBAR HAK ATAS KEKAYAAN INTELEKTUAL

 Image: Construction of the construc Diaron Cines and a pada penulis. Referensi kepustakaan diperkenankan dicatat, The second secon

Sultan Syarif Kasim Riau. Perpustakaan dapat meminjamkan Tugas Akhir ini untuk anggotanya dengan mengisi nama, tanda peminjaman dan tanggal pinjam pada form Epeminjaman.

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 Image: Sesuatu, padahal itu tidak menyenangi sesuatu, padahal itu baik bagimu, dan boleh jadi kamu menyukai sesuatu, padahal itu baik bagimu, dan boleh jadi kamu menyukai Baqarah:216)

Dengan rahmat Allah yang Maha Pengasih lagi Maha Penyayang

Dengan ini ku persembahkan sebuah karya untuk Orang Tuaku tercinta

Yang telah meendo'a kan dan memberikan semangat kepada ku untuk menuntut ilmu

Dengan ridho dan do'a mu lah aku bisa menyelesaikan perkuliahan ini

Terimakasih selalu memberi semangat dan motivasi hingga aku bisa mencapai titik ini

Aku akan selalu berusaha untuk membuat Orang Tuaku bangga

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KATA PENGANTAR



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- IbuoFitriani Surayya Lubis, S.T., M.Sc. dan Ibu Dr. Rika, S.Si., M.Sc., yang telah memberikan masukan dan saran yang membangun dalam penulisan Laporan Tugas Akhir ini.
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Pengutipan hanya untuk kepentingan pendidikan, penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah 13. Abang-abang dan Adik-adik terdekat yang selalu mengingatkan, memberi semangat, dan doa serta dukungan agar penulis dapat menyelesaikan laporan ini dengan baik.
 Dalam penulisan laporan ini, penulis menyadari bahwa laporan ini jauh dari kesempurnaan, untuk itu penulis mengharap kritik serta saran yang bersifat membangun dari semua pihak untuk kesempurnaan laporan ini dan agar lebih baik di masa yang akan datang. menyebutkan sumber:

Pekanbaru, 06 Juli 2023 Penulis

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-ANALYSIS AND MITIGATION OF SUPPLY CHAIN RISK MANAGEMENT WITH 0 a SUPPLY CHAIN OPERATION REFERENCE (SCOR) MODEL AND HOUSE OF Pengutipan RESK (HOR) METHOD

Aman and Hakim Azizan^{1*}, Muhammad Rizki², Misra Hartati³, Fitriani Surayya Lubis⁴, Rika⁵

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untu bagi Abstract: One of the most important problems faced by companies is how to manage the right supply chain in order to minimize the risks that exist so as to have competitiveness in the industrial era 4.0. The company's problem in managing its zupplychain is that it has not maximized the identification of risk sources for suppliers, raw materials, manufacturers, distributors, and consumers. Especially in the concrete production process that experiences risks such as the number of reject products. So that the predetermined production amount is not achieved. This research integrates the SCOR model used for குறை குறையில் குறையில் குறையில் குறையில் குறையில் குறையில் குறையில் குறையில் கிறையில் குறையில் குறையில் குறைய mitigating these risks. The tools used include pareto diagrams, fishbone, and Probability Impact Matrix. The results of the Teseach are 23 handling strategies for 15 dominant risk agents in the 5 main components of the Supply Chain Operation Reference Model so that the position of the danger level of the 15 dominant risk agents has decreased. an, ulis

a.1.0 Introduction

 $\vec{\Phi}$ The business competition is indicated by rapid Jean agogical developments, short product life cycles, and Fintensified global competitiveness. So that the development Tof supply chain management in the industrial world is Ture ally very calculated. Good and correct supply chain Dimanagement is one of the main focuses of the company to increase competitive selling power so that it can compete in Industry 4.0. Every company wants to make a product that is usefuland well received by consumers. One of the indicators that can be used by companies in increasing competitive advantage is by creating an effective supply chain [1].

Perkasa Beton Readymix is a company engaged in concrete manufacturing that produces concrete electric poles, concrete piles, sheet piles, u ditches, box culverts, and other concrete products. The supply chain of Perkasa Beton Readynix Company has 3 flows, namely information flow, material flow, and financial flow. The supply chain of PT Perkasa Beton Readymix starts from the entry of customer putchese orders until the packaging of marketable products is cafried out and reaches the customer.

Perkasa Beton Readymix Company has a problem in managing its supply chain. The long supply chain process can cause the company to suffer losses. One of the risks that occur at Perkasa Beton Readymix Company is the lack of identification of risk sources for suppliers, raw materials, manufacturers, distributors, and consumers. Especially in the concrete production process that experiences risks such as the number of reject products. To overcome this problem, Perkasa Beton Readymix Company has provided a tolerance limit of 2%. However, reject products often exceed the to France limit. So that the predetermined production amount is not achieved. There are several factors that can affect this, including problems with production machinery, employees who do not perform their duties optimally to various discrepancies contained in the date of production of poles with the facts that occur in the field. sim

Based on this, this study aims to analyze what things can pose a risk to the company in managing the supply chain by using the SCOR and HOR models these methods can be used to analyze what risks are caused by the supply chain process and can provide prevention efforts against the risks arising from the supply chain process.

Previous research on The results show that there are 36 risk events and 35 risk agents. 19 risk agents are categorized as priority risks and 11 preventive actions are proposed to be implemented by palm oil company. Three mitigation actions include improving the condition of the main garden road, expanding the current warehouse/building a new warehouse, and conducting routine checks on certain periods of the transportation/machinery unit. [2]. Research on there are 9 risk agents chosen from HOR1 and 8 preventive actions for the mitigation. Additionally, this research develop a monitoring system that may assist to monitor the occurring risks [3].

Previous research on the risks and causes of risks will facilitate handling so that supply chain performance can be improved. It is necessary to study appropriate risk mitigation actions so that risk events can be reduced [4].

Using SCOR, HOR and Pareto analysis, 16 mitigation actions were recommended. mitigation actions that are expected to mitigate the supply chain risk of coal hauling equipment trailer products [5]. Research on there are 29 risk events that occur and have the potential to occur which disrupt supply chain activities in the furniture industry. Based on the aggregate risk potential (ARP) value, there are 2 categories of risk sources (risk agents), namely priority risk sources (A) totaling 11 and non-priority risk sources (B) totaling 13 [6].

Previous research on the results of the study found 11 risk agents that became 80% of the problems in operational activities based on the Pareto Diagram. HOR 2 deals with determining the handling strategy of the selected risk sources. of the selected risks [7]. Research Of the 19 identified risk

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agents, there are 6 (six) risk-causing agents that cover 80% of the company's risk impact [8].

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2.1. Supply Chain Management σ

ngutipan The supply chain is a network consisting of a series of afacilities and distribution that carry out the functions of Procuring materials, processing materials into semi-finished goods and final products, and allocating final products to

Consumers [9]. ⊼ Supply chain management is an integrated network that provides information system support to management in terms sof procuring goods and services for a company, as well as managing relationships between partners, to maintain an Goptimal level of availability of products and services needed By the company [10].

B Managing supply chains involves balancing several different paradoxical tensions, such as those in performance goals, and organization of the supply chain structure and ©relationships[11]?

lis, 2.2. SCOR (Supply Chain Operation Reference)

UIN heliti SCOR is used to measure and improve the Uperformance of the total supply chain in a company. The aspects that are included in this model are the assessment of adelivery and performance carried out to fulfill demand, Zproduction flexibility, assurance, process costs, and other aspects that are influential in assessing the performance of the entire supply chain [12].

â SCOR divides the supply chain processes into 5 core processes is plan, source, make, deliver, and return [13]. The explanation of the functions of the five processes in SCOR is:

Mah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah. Plan is a process that balances demand and supply to determine the best course of action to meet procurement, production, and delivery needs. Plan includes the process of estimating production needs, inventory planning and control, production planning, material planning, capacity planning, and adjusting the supply chain plan with the financial plan [14]. Source 🚬

Source is the process of procuring goods or services to fulfill demand. The processes contained in this section are scheduling, shipping from suppliers, receiving, checking, authorizing payment for goods delivered by suppliers, selecting suppliers, evaluating supplier performance, etc. The type of process will differ based on whether the goods purchased are stocked, make-to-order, or engineerto-order-products [15].

Make 📻

Riau

Make is the process that transforms raw materials into products desired by customers. Make activities can be done based on forecast results to meet stock targets (make-to-stock), based on orders (make-toorder), or engineer-to-order. The processes that occur in this section can be in the form of production scheduling, performing production activities, sim

conducting quality testing, managing work-inprocess, maintaining production facilities, etc [16].

4. Deliver

Deliver is the process of fulfilling demand for goods or services. Activities that usually occur such as order management, transportation, and distribution. The processes that occur include handling orders from customers, selecting companies, handling finished product warehousing activities, and sending invoices to customers [17].

Return 5.

> Return is the process of returning or accepting the return of products for various reasons. Activities that occur such as identifying product conditions, requesting a defect return authorization, scheduling returns, and making returns [18].

2.3 HOR (House of Risk)

House of risk is a model used as a framework that serves to proactively manage supply chain risks that are integrated between the FMEA model to analyze the level of risk from the calculation of the Risk Potential Number (RPN) with the HOQ model in the process of designing a product strategy to prioritize risk agents and determine the most effective actions against the risks that occur [19].

The models included in the House of Risk (HOR) are divided into 2 is:

2.3.1 HOR (House of Risk) Phase 1

House of Risk 1 serves to determine the priority level of risk agents or causes of risk so that preventive action can be taken [20]. HOR phase 1 can be done by going through the following steps:

- Identify risk events that can occur in each business 1. process using supply chain process mapping (plan, source, make, deliver, and return) and then identify what is missing or wrong in each process. There is a systematic way to identify and assess risks [21].
- 2. Assess the impact of several possible risk events (Si) using a scale of 1-10 where a value of 10 indicates extreme impact.
- 3. Identify the risk agent (Oj) a likelihood value to each risk agent (Oj). The scale set for this is 1-10, where 1 means it almost never happens and 10 means it happens frequently.
- 4. Develop a relationship matrix, i.e. the relationship between each risk source and each risk event, Rij (0, 1, 3, 9) where 0 indicates no correlation, and 1, 3, 9 represent low, medium, and high correlation respectively.
- 5. Calculate the risk potential (Aggregate Risk Potential of agent j = ARPj). ARPj is determined as the result of the likelihood of the occurrence of events from risk source j and the collection of causal impacts from each risk source caused by risk source j as in the following equation [22]:

$$ARP_{j} = O_{j} \sum S_{i}R_{ij} (1)$$



Ranking risk sources based on the set of potential risks in order from greatest to lowest value. Details of Models of HOR Phase 1 can be seen in Table 1.

Busines	SI (E)		Risł	c Agent	(Aj)		C :
process		A_1	A_2	A ₃	A4	A ₅	51
Plan	a E1	$\mathbf{r}_{R_{11}}$	R ₁₂	R ₃₁			S_1
n t n	S E2	R 21	R ₂₂	R32			S_2
Source	E3	R 31	R32				S_3
Make	C E4	$\exists R_{41}$	R33				S_4
al	a E5	$= R_{51}$					S_5
Deliver	an E6	×					S_6
<u> </u>	<u>φ</u> E7	-					S_7
Return	5 E8	<u> </u>	_	_	_	_	S_8
Oja	da	$Z_{1}^{O_1}$	O_2	O ₃	O ₄	O ₅	
ARPj	ŋg	ARP ₁	ARP_2	ARP ₃	ARP_4	ARP ₅	
Rank	-	20					
inder 1		-			_		
· 🛎 2.3	.2 HO	R (Hous	e of Ri	sk) Ph	ase 2		
~ 7		0)					

making. Steps of HOR Phase 2 is [23]: wajar UIN Suska Riau. Ē, ₹.

Select a number of risk sources with the highest priority ranking, which may be using Pareto diagram analysis of ARPj, stated in HOR phase 2. Identify actions deemed relevant to prevent the source of the risk.

relationship between Determine the each countermeasure and each risk source, Ejk. This relationship is expressed by a value of (0, 1, 3, 9)which indicates, respectively, no correlation, lowmedium, and high correlation between measure k and source j.

Calculate the total effectiveness (TEk) of each action is:

$$TE_k = \sum ARP_j E_{jk}$$
(2)

Estimate the degree of difficulty (Dk) in performing each action. The degree of difficulty is indicated by a value scale of 1 representing very easy and 5 representing very difficult.

The total value of the effectiveness to difficulty ratio (ETDk) is calculated:

$$ETD_k = \frac{TE_k}{D_k} (3)$$

penelitian, penulisan karya ilmiah, penyusunan laporan, penulisan kritik atai Assign the highest priority rank to each action (Rk) 7. where rank 1 indicates the highest ETDk action. Details of Models of HOR Phase 2 can be seen in Table 2.

Fable 2 Models of HOR Phase	: 2
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14010 -							
njä	_	5	Preve	entive Acti	on (PA _k)		;
C AJ	PA_1	Y	PA ₂	PA ₃	PA ₄	PA ₅	51
A_1	E11	ar					S_1
A_2		if	E22				S_2
A3_		-		E33			S_3
A4		5			E44		S_4
A ₅		S				E55	S_5
ss		E					
		1					
Ĩ,		2					
		2					
		-					

TEk	TE_1	TE_2	TE ₃	TE ₄	TE5
Dk	D_1	D_2	D_3	D_4	D_5
ETDk	ETD_1	ETD_2	ETD ₃	ETD ₄	ETD5
Rank					

Severity is used to analyze and calculate the risk of how likely the impact arising from a failure that results in a failure effect [24]. Occurance is the level of frequency occurrence of damage or failure that calculates the chance level occurrence of a risk agent (A) [25].

The real impact of the risk can be measured quantitatively in lost revenue, the cost to repair the system, or the level of effort required to fix the problem caused by a successful threat action [26].

2.4 Probability Impact Matrix

Probability impact matrix is a method used to qualitatively analyze the likelihood of a risk occurring. The assessment of risk is based on the opportunity or probability and the consequences or benefits obtained [27].

Table 3 Risk Assessment Level

Level	(Severity)	(Occurrence)	Conversion Scale
1-Very Low (VL)	1-4	1-4	0-20%
2-Low (L)	5	5	20-40%
3-Moderate (M)	6	6	40-60%
4-High (H)	7-8	7-8	60-80%
5-Very High (VH)	9-10	9-10	80-100%

Table 4 Probability impact matrix



Methods 3.

This research is descriptive research with survey techniques and uses quantitative and qualitative approaches [28]. The research used the stages of risk identification, risk analysis, risk evaluation, and risk mitigation [29]. The identification stage to the evaluation stage uses the House of Risk 1 model (HOR 1), while the mitigation stage uses the HOR 2 model [30].

The quantitative approach in this study is used for the calculation of ARP on risk sources, the calculation of Total Effectiveness of Action (TEk), and the calculation of Effectiveness to Difficulty Ratio (ETDk) on supply chain risk mitigation (HOR 2) in The Company of Perkasa Beton Readymix.

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4. **Results and Discussion**

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The first step in determining what risks exist in the supply chain activities at Perkasa Beton Readymix Company to sto map the supply chain activities that have been obtained based on the risk identification of each business process in the form of plan, source, make, deliver, and return processes. SAfter Sonstucting the mapping stage using the SCOR model Fisks activities in Table 5 and risk agents in Table 6 of each business process phase 1 house of risk data processing is =catrie out in each business process. This is followed by data Oprecessing of the house of risk phase 2 which aims to Edeterifing the best strategy for handling the risks in each Touriness Frocess at Perkasa Beton Readymix Company. epentingan

4 Supply Chain Activity Mapping to Risk Event and Risk Agent Identification 5 Key Components of SCOR

per Adentification of risk sources in the 5 main components of the SCOR model begins with mapping supply Schein activities and identifying risks in business processes. There are 2 stages carried out to identify the 5 main and filling out questionnaires by experts. The selected experts \mathbf{z}

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ភិតាឡឹង S	COR Mapping a	and Risk Identi	fication	in the Plan,			Unexpected		
Barce M	ake, Deliver, an	d Return Proce Risk Event	sses Code	Severity			demand from	E13	7
lisa	i loti i log			(Si)		D 1	customers		
ımkan da an karya	Raw	Delayed arrival of raw materials	E1	7		Production is carried out according to	Lack of raw material stock	E14	6
an mer ilmiah	Material Procurement Planning	Gap between					production process	E15	7
nyebi , pen	tate	available raw	E2	7			Production defects	E16	7
utkan Iyusu	Isla	materials			Make	Production process	Worker indiscipline	E17	6
sumber: nan laporan	Machine maintenance plan	Machine maintenance scheduling error Production	E3	6			Worker's hand was pinched during the installation	E18	8
ı, penulis	Production	quantity planning error	E4	8	SUS	SKA	of the stressing tool	T	
an kritik ata	planning of Su	Sudden change in production plan	E5	7		Quality inspection of finished products	Inspection of products is not thorough enough	E19	7
au tinjaua	Distribution Planning	the supply of finished products	E6	7		Raw material arrival	Delayed arrival of raw	E20	7
in sugurce	Procurement process	Suppliers cannot fulfill raw material needs	E7	7	Deliver	Product Delivery	materials Product damage during the product	E21	7
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Logistics department

mistakes in

inspecting

materials

Delayed

arrival of

materials

Mismatch in

the number

of requests

to suppliers

Difficulty in

obtaining

materials

standards

Low

raw

according to

capability of

suppliers in

meeting the

quality of

raw

raw

raw

Supplier

selection and

contract

Selection of

raw

materials

according to

standards

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E8

E9

E10

E11

E12



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T P	nulisan kaayaailmiah, penyusunan laporan, penulisan kritik atau tinjauan suatu masalah	antumkan dang menyebutkan sumber: Pi	Lis urce ness ess	st or e, N s 	f Rise Costate IslamiaUniversity of Saltar Syarifakasim R	k A , De le	ger live Flu of cor Sho ma bin G Hu Pri Suj Pri Suj Suj Suj Suj Suj Suj Suj Suj Suj Suj	cust cust cust ats an <u>rer, an</u> <u>Ris</u> <u>retuan</u> <u>produ</u> e ur <u>deliv</u> <u>ortag</u> teria <u>ortag</u> teria <u>ortag</u> <u>teria</u> <u>ortag</u> <u>teria</u> <u>ortag</u> <u>teria</u> <u>ortag</u> <u>polie</u> <u>chin</u> <u>inten</u> <u>nnin</u> <u>pplie</u> <u>teria</u> <u>covide</u> <u>quan</u> <u>man</u> <u>ce m</u> <u>v mal</u> <u>pplie</u> <u>stacle</u> tribu	omer ad Oc ad Re sk Ag ting uct re pred very ions e C l stoc use inicati rs e c ance g error r's ina raw 1 tity error issa terrial rs ex ss ting ls	ccurr turn gent nur eques ictab time of ck in inten ion ors abilit mate	ence Proce			men rren 7 6 5 6 7 7 6 7 6 7 6 7 6	

process	Code	Risk Agent	Occurrence
nyeb		Fluctuating number of product requests	7
utkan s	Isa ar	The unpredictability of delivery time by expeditions	6
mercess Plan Source		Shortage of raw material stock in the warehouse	5
Plan	niver	Less intensive communication with suppliers	6
	sity o	Machine maintenance planning errors	U _7
	f Salt	Supplier's inability to provide raw materials in quantity	6
	A 7	Human error	7
	SP8	Price mismatch with raw material quality	7
Source	arifeka	Suppliers experience obstacles when distributing raw materials	6
	sim		

Riau

	A10	Raw materials below standard quality	7
	A11	Quality inspection errors during the raw material loading process	6
	A12	Poor warehouse management	6
	A13	Worker fatigue	8
	A14	Workers do not care about OHS	8
Make	A15	Delayed production process	7
	A16	Lack of coordination between the production department and the	6
		administration department	
	A17	Quality Control of products is not good	7
	A18	Finished products are not in accordance with the order	6
	A19	The machine does not work optimally	7
	A20	Less capable workers	6
ALL COMES	A21	Bad weather	7
	A22	Poor road conditions	5
Deliver	A23	There is a shortage of raw materials	7
	A24	Product packaging is not good	7
	A25	Communication with customers is less intensive	8
Return	A26	Products that do not meet quality standards quality standards	7
	A27	Replacement of	7

4.2 Potential Risk-Causing Events 5 Key Components of the SCOR Model With HOR Phase 1

Based on the calculations in HOR phase 1, 15 dominant risk agents were obtained from the 5 main components of the SCOR model. The recapitulation of the dominant risk agents of the 5 main components of the SCOR model before handling in Table 7.

Table 7 Summary Dominant Risk Agent 5 Main Components SCOR Model

Business Process	R	С	Risk Agent	ARP	0	S
	1	A7	human error	1911	7	8
Plan	2	A1	Fluctuating number of product requests	1827	7	7



Ļ					Uncert	aintv	time			
2. [Hal	3	₫ ²	deliver	y tion	by	882	6	7
Dilarang m	a. Pengutip	Cipta Dili	1	на 7А11 С.	Error quality loading raw	inspe durii g pr	ection ng the rocess	1. 134	6	7
engumu	engutip ban hany ban tidak	ndungi l	2	pta ₈	No a price w materia	ccord vith q al raw	lingly uality v	882	7	7
ımkan d	sebagia /a untuk (merug	Jndang-	1	<u>−</u> <u>−</u> <u>−</u> <u>−</u> <u>−</u> <u>−</u> <u>−</u> <u>−</u> <u>−</u> <u>−</u>	Worke enough compet	r 1 tent	not	1. 512	6	7
an men	ikan kep	Undang	2		Quality of pro enough	7 Co oduct 1 Goc	ontrol not od	1.470	7	7
nperbar	seluruh tingan p pentinga		3		Worke enough against	r 1 K3	not care	1.176	8	6
SVI	n @Mat	te	4	A13	Worke	r fati	gue	1080	8	7
ak sebagian	arya tulis ini ndidikan, pe yang wajar		5	Ria A16	Lack coordin betwee produc	nation n tion	of part with	1080	6	7
atau selui	nelitian, pe UIN Susk		6	A19	admini The does optima	<u>strati</u> ma not llv	on Ichine work	882	7	7
ruh karya	a Riau.	/er _	1	A24	Produc packag enough	t ing Goc	not od	1. 134	6	7
tuli	kary		2	A22	Condit not end	ion ough	road Good	882	7	7
s ini dalam	dan menye a ilmiah, p		1	A25	Comm with not intensiv	unica cus ⁻ er ve	ition tomer nough	1080	8	6
þ	Rem	rn		te	Produc	ts th	at are			
entuk a	utkan s yusuna	•	2	SA26	not standar specific	d ed q	fulfil uality	744	8	7
papu	in lap		-	nic	-	-	•			
in t	on on	Tabl	le	8 Shows	the resu	ilts of	f the re	capitulati	on of	the
an	rista ma	p bef	ore	handlin	ng of th	ne 5 i	main c	componen	ts of	the
oa	SCOR.			ve						
izir	"nu"			rs	00.1		D (TT.	T	T
U L	Tatble 8	S Reca	pi	tulation	of Risk	Map	s Befo	re Handli	ng of	the
Z		Comp	001	conts of	ine SCC	<u>אר N</u> כ	iodel	~		
Su	<u> A</u> ccu	rrence	2	I-VI	2_L	3_	M	4–H	5_V	Ή
ska	5 VH		-		2 L	5-		1 11	J - V	11
R	ata							A7,		
iau	L tir							A1,A8,		
	<u> </u>							Δ17		

Tiple 8 Recapitulation of Risk Maps Before Handling of the 5 Main Components of the SCOR Model

<u>Б</u> алитанаа	ţ0		Severi	ty	
Beccurrence	J-VL	2–L	3-М	4–H	5–VH
bti Satau tinjauan suatu	_t i VL	2–L	3–M A14, A25	4–H A7, A1,A8, A17, A19, A16, A13, A22, A26	5–VH
masalah.	sim Ri			A20	

iau



Table 9 describes the description of the risk matrix of the 15 selected dominant risk sources before handling and the recapitulation of HOR phase 1 can be found in table 10.

Table	9	Summary	Matrix	Risk	Dominant	5	Main
Compo	ner	ts SCOR M	odel				

շտոր						
No	Risk Agent	С	S	0	Matrix Zone	R
1	Human error	A7				1
	Fluctuating					
2	number of product	A1				2
	requests					
2	Workers not	120				2
3	enough competent	A20				3
	Quality Control of					
4	product not	A17				4
	enough Good					
	Workers do not					
5	care enough about	A14				5
	OHS					
	Error inspection					
6	quality during the	A 1 1				6
0	loading process	AII				0
	raw					
7	Worker fatigue	A13				7
	Lack of					
	coordination					
8	between part	A16				8
0	production with	AIU				0
	part					
	administration					
	Communication					
9	with customers is	Δ25				9
	not intensive	A25)
	enough					
	Product					
10	packaging is not	A24				10
	enough Good					
11	Condition road	A22				11
ι τ	not enough Good	1122				
	Uncertainty time	K				
12	delivery by	A2				12
	expedition					
1.0	No accordingly					10
13	price with quality	A8				13
	material raw					
1.4	The machine does	. 10				14
14	not work	A19				14
	optimally					
1.7	Products that do	100				1.7
15	not fulfil standard	A26				15
	specified quality					

		tipan tid mengur	ilindung mengut tipan ha		cipta																						
Table 10 HOR	Phas	lak me	i Und ip seb inva u		mili																						
Risk Agent (A)	1	an 6	nt⊌lagia	5		7	8	9	10	11	12	Risk Ev 13	vent (E 14	.) 15	16	17	18	19	20	21	22	23	24	25	26	ARP	Rank
A1	-	likan lan		9	<u><u> </u></u>	,	0	-	10			10		10	10		10		20			20		20	20	1.827	2
A2	9	י אר ח ke	itau ber		Z_3																					882	10
A3	9	mpe	g se		D L																					630	13
A4	9	ntin	luru		N S																					378	19
A5		gan anya	be h k		3 نو									1												525	16
A6	3	a Ya	arya	1	R																					294	20
A7		ng		3	a 9																					1.911	1
A8		waji	in lisi		-					9	9															882	10
A9		ar (ni ta			3		3	9																	594	14
A10		JIN	anp eliti				9																			441	18
A11		Su	an.				9			9	9															1.134	6
A12		ska	nen										9	9												702	12
A13		Ih k	can									9					9									1.080	7
A14		arya	tum san												3	9	9									1.176	5
A15		a tu	ıkar ka									3		9	3											693	12
A16		lis	n da									9	9	9					-							1.080	7
A17		ni o	iimi n									3		9	9			9								1.470	4
A18		lala	nen ah.		St							3		3	3			3								504	17
A19		mt	yek		at									9	9											882	10
A20		ben.	nvu		e I										9	9	9	9								1.512	3
A21		ti k	an		sla														9		3					567	15
A22		apa	sun		B														9	9	9					900	9
A23		Indt	nbe		ic l														9							441	18
A24		n ta	oral		Un															9		3	9			1.008	8
A25		npa	n. o		iv																			9	9	1.080	7
A26		IZI E	ienu		ers						n n		0		O		- 1		n i			T		9	3	744	11
A27		n C	lis		ity												A			I A					9	441	18
		IN Suska Riau.	an kritik atau tiniaua		of Sultan Sy																						



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4.3 Improvement Recommendations for Handling Risk Sources 5 Main Components of the SCOR Model with HOR phase 2

C Recommendations for improving the handling of Grisse sources for the 5 main components of the SCOR model are made by creating a phase 2 HOR table for each Compenent. The recommendations for improvement handling strategy can be seen in Table 11. The recapitulation of the Belected Cominant risk agents along with the handling strategy for each business process presented in Table 12.

Table Handling Strategy and Difficulty Rating Scale for the 5 Main Components of the SCOR Model Business Process

omponer	its of the SCOR Model	
Code	Handling Strategy	Dk
PA1	Make plan production period long (MRP)	3
DA2	Handling <i>demand</i> and	2
r di z	forecasts for orders	3
PA3	Update customer requests	3
B	Provide an additional fee for	
PA4	each order change	4
	More intense communication	
PA5	between production and	3
	administration	
	Confirm the agreement that	
PA6	has been made with the	4
	parties expedition	
PA7	Make stock additions	3
PA8	Looking for new <i>suppliers</i>	3
D. L.O.	Make agreements with	
PA9	suppliers regarding the	4
	quality of raw materials	
	improving performance	
PA10	coordination related to raw	3
ta	materials	
te	Create a <i>maintenance</i>	
PA11	schedule	3
la	Make <i>a check sheet</i> at each	
PA12	workstation	4
DC 12	Perform regular and periodic	4
PAIS	maintenance	4
P214	Affirmation and refinement of	5
	work SOPs	5
PA15	Conduct regular <i>training in</i>	4
it	the production department	
PA16	Employee performance	3
of	Presiding and and	
PA17	punishments to workers	3
E	Assessing the effectiveness of	
PA18	nroduction machines	3
n	Look for alternative material	-
PA19	delivery routes	4
a	Increase the durability and	2
PA20	strength of packaging	3
	Strengthening the	2
	memorandum of	3
S		

	understanding with	
	consumers	
PA22	Tighten QC system	3
DA 22	More intense communication	2
rA23	with consumers	3

Table 12 Recapitulation Dominant Risk Agent and Strategy Handling

Thankaining							
BP	R	Risk Agent	ARP	Oj	Si	Strategy Handling	Dk
	1		1011		~	PA2	3
	I	A7	1911	4	5	PA5	3
						PA1	3
Plan	2	A1	1827	6	5	PA3	3
						PA4	4
	3	A2	882	3	3	PA6	4
	1	112	002	5	5	PA7	3
-	1	A11	1. 134	3	2	PA10	3
Source	2	4.0	002	2	2	PA8	3
	2	Að	882	2	2	PA9	4
	1	A20	1. 512	3	2	PA15	4
	2	A17	1,470	3	4	PA12	4
	3	A14	1.176	6	4	PA14	5
Make	4	A13	1080	4	5	PA17	3
	5	A16	1080	2	3	PA16	3
						PA11	3
	6	A19	882	5	5	PA13	4
						PA18	3
Deliver	1	A24	1. 134	2	2	PA20	3
	2	A22	882	3	4	PA19	4
	1	125	1080	2	4	PA21	3
Return	1	ALS	1080	3	4	PA23	3
	2	A26	744	4	5	PA22	3

The results of the recapitulation of the risk map of the 5 main components of the SCOR model after the handling strategy can be seen in Table 13 and the recapitulation of HOR phase 2 is displayed in Table 14. Describes about the description of the risk matrix of the 15 selected dominant risk sources after handling can be seen in Table 15.

Table 13 Recapitulation of Risk Maps After Handling of the 5 Main Components of the SCOR Model

Occurrence		S	Severity		
Occurrence	1-VL	2–L	3-M	4–H	5–VH
5–VH					
4 – H					
3–M	Al4	Al			
2–L		A19			
1–VL	A2, A11, A8, A20, A17, A16, A24, A22, A25,	A7, A13, A26			

ع seluruh karya tuliﷺini tanpa mencantumkan d∰n menyebutkan sumber: لله htingan pendidikan, penelitian, penulisan karya″ilmiah, penyusunan laporan, penulisan kritik atau tinja⊕an suatu masalah.

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Dilindur y mengu utipan h utipan t y mengu	cipta															
idak umu	В															
Jinda seb Imk	Ξ															
Table 14 HOR Phase 2 In an	×															
Managementan di Kan				Ri	sk Agent ((A)							TEV	ETD	Donk	Dk
(PA) The population of the pop	Z 2	11	8	20 17	14	13	16	19	24	22	25	26	IEK	EID	Kalik	Dĸ
PA1 pe nti se 9	S 3												19.089	6.363	8	3
PA2 erb ar ga 3 un 9	S 3												24.822	8.274	5	3
PA3 nga pp p	Ka												16.443	5.481	11	3
PA4 kar 9	R												16.443	4.110,75	15	4
PA5 Se ng di 9 4 9	<u>a</u> 9												41.58	13.86	2	3
PA6 bag wan ulis	C 9												7.938	1.984,5	20	4
PA7 an Jar po D: 9	9												24.381	8.127	6	3
PA8 at U nel tar		3	9										11.34	3.78	16	3
PA9 a Z Itia		9	9										18.144	4.536	14	4
		9	9										18.144	6.048	9	3
PA11 IT a po				9				9					21.168	7.056	7	3
PA12 Ka la list				9									13.23	8.274	5	4
PA13 Ya . an um				9				9					21.168	5.292	13	4
PA14 ± A A				3 9	9								28.35	5.67	10	5
PA15 Isi ya da				9 9		9				5.			36.558	9.139,5	4	4
PA16 E.				9 9	9	9	9						56.862	18.954	1	3
PA17 de la ner	S			9 3	9	9	3						41.562	13.854	3	3
PA18 To be	tat							9					7.938	2.646	18	3
PA19 ber ny	el								1	9			7.938	1.984,5	20	4
PA20 E La La	sl								9	9			18.144	6.048	9	3
PA21 ap na s	an										9	9	16.416	5.472	12	3
PA22 ap la mb	lic											9	6.696	2.232	19	3
PA23 E D E	C										9		9.72	3.24	17	3
ARP & 911 1.82	7 2.88	2 1.134	882 1	.512 1.470) 1.176	1.080	1.080	882	1.134	882	1.080	744				
pa pe	ve															
izin nul	rsi			TT	INT	CT	TC	TZ -	A		Γ Λ	TT				
	ty			υ.		DL	10			N	LA	U.				
	of															
us iik	S															17
ía f	ult															
Riau ti	an															
ı. nja	S															



Fable 15 Recapitulation of Risk Matrix After Handling of the
5 Main Components of the SCOR Model

N	<u>5 Main Components of the</u>	SCOR	Mod	lei			apj
	P No D. Risk Agent	С	S	0	Matrix Zone	R	car ma
aran	en gan and anna error	A7				1	risl
g mer	Litip a e requests	Al				2	bus res
Igumu	tid an Jenevy de la competent	A20				3	Be ^r ma
ımkan	a sequality Control of aproduct not	A17				4	per cha
dan mem	Gikan kep en acade enough about OHS OHS	A14				5	ma aris car
perbar	enting of Lino inspection	A11				6	sig ma
ıyak se	an yan di karya Karya Lack of	A13		l		7	fac 6.
ebagian at	Q kan, between part wajar U is production with part	A16				8	[1]
au seluruh	N iti and Communication Suska B on the with customers is not intensive Right Communication	A25				9	[2]
karya tuli	Product packaging is not	A24				10	[2]
s ini d	a Condition road not enough Good	A22				11	[3]
alam b	12 n delivery by expedition	A2				12	
entuk a	material raw	A8				13	[4]
apapun ti	The machine does to not work ork optimally Product that do	A19				14	
anpa i	F 5 not fulfil standard specifie@quality	A26				15	[5]
zin UIN	5.n Conclusion				UI	Ν	[6]
Suska R	The findings of recommendation of 23 dominant risk agents acro	f the handlin oss the f	rese g st 5 mai	earch rategi in coi	revealed es for th nponents	l the he 15 of the	[7 1
liau	Supply Chain Operation	Refere	nce	Mode	el. Throug	gh the	[/]

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The findings of the research revealed the recommendation of 23 handling strategies for the 15 dominant risk agents across the 5 main components of the Supply Chain Operation Reference Model. Through the inplementation of these strategies, the level of danger associated with the 15 dominant risk agents was observed to decrease. This outcome indicates the effective utilization of the SCOR model and House of Risk methodology in identifying and mitigating risks within the supply chain of Perkasa Beton Readymix Company. masalah sim

The conclusion is this research demonstrates that the application of the SCOR model and the House of Risk method can serve as effective approaches in supply chain risk management. By identifying risk sources, analyzing potential risk-causing events, and designing appropriate handling strategies, companies can reduce risks associated with their business processes. The improvement recommendations resulting from this study can serve as guidance for Perkasa Beton Readymix Company in enhancing their risk management practices and optimizing their supply chain performance.

In facing the diverse challenges within the supply chain, it is crucial for companies to prioritize risk management. By understanding and addressing risks that arise in each main component of the supply chain, companies can enhance efficiency, minimize losses, and achieve competitive advantages. Therefore, this research makes a significant contribution to the field of supply chain risk management and can serve as a reference for other companies facing similar challenges.

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Letter of Acceptanced

Dear Mr. Muhammad Hakim Azizan:

Congratulations - your paper #1570918823 "Analysis and Mitigation of Supply Chain Risk Management with Supply Chain Operation Reference (SCOR) Model and House of Risk (HOR) Method" has been accepted for presentation at 2023 International Conference on Green Energy, Computing and Intelligent Technology, which will be held in hybrid mode from the 10th to the 12th of July, 2023.

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