The Assignment of Risk Mitigation Tasks Based on The RACI Matrix and Key Risk Indicator

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Abstract. *Risk management can be applied to process risks in the organization by identifying, mitigating and monitoring risks. Risk management activities cannot be executed without the participation of risk owners. Risk owners are the main key to the successful implementation of risk management. Therefore, risk management suppose to be well distributed to risk owners. Te Aming x Auntie has carried out risk calculations and evaluations using risk houses and key risk indicators, it is known that the risk agents who are the source of problems in Te Aming x Auntie operations are employees who didn't carry out inspections and didn't have supervision. Based on these calculations, risk mitigation activities are accomplished which include activities to increase supervision, implement rewards and punishments, and assess employee performance. To ensure risk mitigation activities are carried out well, a RACI matrix is created to organize and distribute risk management activities to all related parties.*

Keywords: *house of risk; key risk indicator; RACI; risk management.*

I. INTRODUCTION

One of the government's program is to establish an independent economy taken from strategic sectors such as food and beverage industry in Indonesia (Permana & Hariyanti, 2016). Prakoso, (2020) explained that the growth of the food and beverage industry sector in the periode of the Covid-19 pandemic was only 4 - 5%. Another problem is national and international competition. Ashraf et al., (2017) stated that competing with these challenges are necessary to continuously improve increasing effectiveness, productivity and minimising costs. Risk management in organizational operations appears to be the solution to this problem.

Te Aming x Auntie cafe is one of the MSMEs that is being operated in some cafe and restaurant sectors, but operational activities are still carried out conventionally which causes few problems resulting in increased operational costs

or decreased working productivity. This problem arises because risks impacted on operational activities have not been identified, as a result, risk management is not carried out properly. Risk can be defined as an event that may occur and have an impact on the target to be achieved (Nadhira et al., 2019). As Sajjad et al., (2020) explained that risk management enables to identify all potential risks and their sources, apart from that risks which can be assessed as to the size of impact as well as be able to create risk mitigation plans for all risks that will arise internally and externally. Apart from that, risk management is carried out to ensure the success of a production process, due to its ability to analyze every aspects of risk and minimize the occurrence of risks in a production (Prasetiyo et al., 2017). Not only risk management activities are carried out to monitor and evaluate the continuity of the company's business or activities. Supervision is also carried out to protect assets from losses raised due to risk factor (Tobing & Puspa, 2015). Therefore, to reduce company losses due to inappropriate risk management, risk management must be handled in the company's operational activities.

Defriyanti dan Ernawati, (2021) explain that risk management carried out incorrectly can threaten business continuity, hence, risk management must be carried out correctly to develop steps to prevent risks from occurring. One method used for risk management is a house of risk. House of risk is an approach used to

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identify risks and plan risk management activities based on the risk assessment carried out (Hadi et al., 2020). Purwaningsih et al., (2021) explained that the house of risk method can be used to determine priority risk prevention actions. Magdalena & Vannie, (2019) organizing risk identification mapping carried out in operational supply chain activities at PT. Tatalogam Lestari and succeeded in identifying 21 risk events and 20 risk agents. Based on this identification, 8 risk prevention activities were obtained. Not only the house of risk method approach is also able to provide solutions to resolve problems related to risk events, risks and causes of risk, as well as risk mitigation actions that will be carried out in the procurement division at PT XYZ (Trenggonowati & Pertiwi, 2017). Purwaningsih et al., (2021) explained that the house of risk method can be used to determine priority risk prevention actions in production material procurement activities by carrying out refresher training activities for employees. Firthermre, to ensure management is carried out well, there must be risk management monitoring activities.

Monitoring risks can be established by implementing an early warning system using key risk indicators (Herdianzah, 2020). The aim of implementing key risk indicators is to provide an initial signal when risk activity appears in various areas of the company (Zamora et al., 2013 as stated in Kurniawan, 2022). The implementation of key risk indicators will not run well without socializing them to related parties. Distribution and socialization of risk management activities to all related parties is the key to success in implementing risk management in an organization. Pamungkas & Prasetyo, (2022) explain that the RACI (responsible, accountable, consulted, informed) matrix can be used as the first step for companies to carry out risk management.

RACI (responsible, accountable, consulted, and informed) is a tool used to accumulate the roles and responsibilities of members in a task within the organization, so that it can help in working effectiveness because work will be divided among users according to their respective capabilities (Pamungkas & Prasetyo, 2022).

Another one is that RACI can also be used as a tool to help mapping the involvement of each division in an organization to help simplify data collection and the evaluation process (Lamato et al., 2019). Therefore, the RACI matrix can be used as a medium to map the involvement of all parties in implementing risk management.

In previous studies, it was discovered that preventive measures can be taken by implementing risk management, one of which is the house of risk method. However, in previous research was only limited to creating risk management, whether in the form of risk mitigation or key risk indicators. The main tasks and roles of each division in the implementation of risk management have not been clearly mapped out and well distributed among the risk owners. This research focuses on how to design the right strategy to be able to distribute and disseminate risk management to all related parties at Auntie cafe, so that all risks and mitigation activities can be conveyed well to the risk owner. Risk assessment is carried out using the house of risk method to identify risks and determine risk agents, risk events and risk prevention plans. After that, a key risk indicator will be created to monitor risk events that have the potential to cause major failures in operational activities at the Te Aming x Auntie cafe. For further, risk mitigation activities will be distributed to all related parties by mapping tasks and responsibilities using the RACI (responsible, accountable, consulted, informed) method so that each risk mitigation can be carried out appropriately and by the right people. The expected goal is to be able to carry out risk management and monitoring activities efficiently, and risk management activities can be distributed and socialized to risk owners for them to carry out risk management activities effectively and efficiently.

The research on combining The RACI Matrix and Key Risk Indikator in assigning the task of risk mitigation has not been found. It appears from the result of literature review based the SLR Diagram (Cahyo, 2021a, 2021b) The diagram shown in Figure 1 is the design on the SLR Process using a particular search term. The search
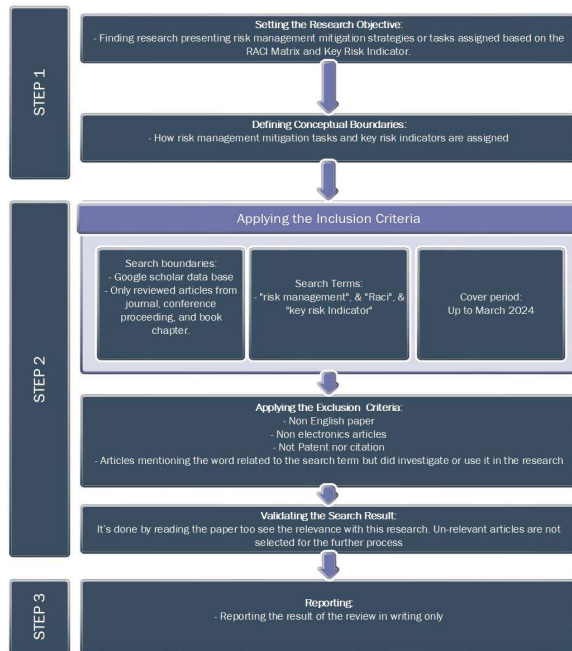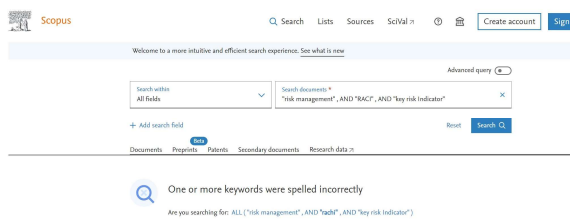
Figure 1. SLR Protocol

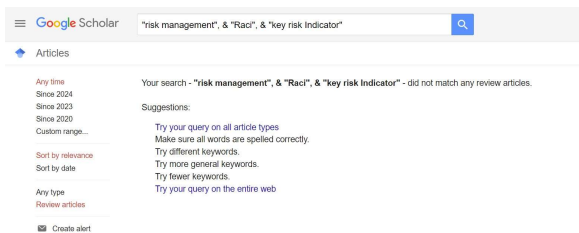**Figure 2**. SLR Protocol result in Google Scholar

Figure 3. SLR Protocol result in Scopus database

term used is "risk management", & "RACI", & "Key Risk Indicator". The purpose of this term is to find an article about risk management and implementing RACI dan Key Risk Indicator.

The application of the three steps of SLR Protocol in Figure 1 show that there in no publication in google scholar nor in scopus database that satisfy the key term as shown in Figure 2 dan Figure 3.

Based on the result of the SLR Protocol, it can be referred that the is no research on combining The RACI Matrix and Key Risk Indikator in assigning the task of risk mitigation.

II. RESEARCH METHOD

The subject of this research is risk management activities identification, evaluation, assesement, and monitoring operational risk by risk method, key risk indicators, and RACI (responsible, accountable, consulted, informed). The research object is the work operational activities at the Te Aming Purwokerto cafe.

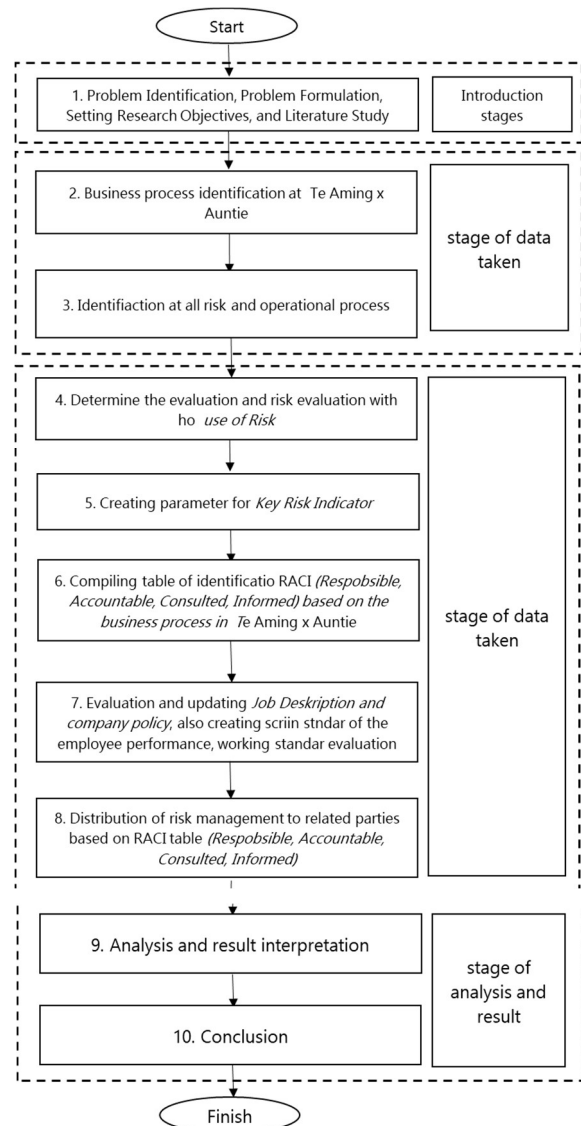In the research conducted at the Auntie cafe

Figure 4. Research Procedures

, the research instruments used to collect data were direct observation and interviews. The interview used was an incidental interview technique providing tht the researcher did not prepare for the interview in the form of a list of questions or determining sources. The interview was conducted when a problem or report from an employee occurred, which was followed up by the researcher using interviews to obtain more detailed information.

The stages carried out in conducting this research are shown in Figure 4, which shows the research procedures.

III. RESULT AND DISCUSSION

House of Risk

Based on risk management calculations using the house of risk at Te Aming X Auntie cafe shown in table 1, the results obtained in the

house of risk 1 calculation based on the accumulated value of the Pareto diagram obtained a total percentage of 23.708% for risk agents A17 and 18 with respectively. The respective percentages are A18 at 11.97% and A17 at 11.73%. This figure shows that risk agents A17 and A18 are the main risk agents problem at Auntie cafe.

A17 is a risk agent of employees for not checking and A18 is a risk agent for no supervision. Based on the evaluation at the risk agents, unchecking employees (A17), a mitigation plan is created as follows:
1. Evaluation and supervision from supervisor.
2. Giving rewards and punishments in accordance with the results of performance evaluation.
3. Making job checklists.
4. Briefing and performance evaluation before starting to work.

Table 1. House of Risk Calculation 1

No	Code	ARP	Cumul. ARP	% ARP	Cumul. % ARP	No	Code	ARP	Cumul. ARP	% ARP	Cumul. % ARP
1	A18	6800	6800	11.974%	11.974%	30	A51	624	46716	1.099%	82.258%
2	A17	6664	13464	11.734%	23.708%	31	A32	612	47328	1.078%	83.336%
3	A53	3843	17307	6.767%	30.474%	32	A38	615	47943	1.083%	84.419%
4	A21	2702	20009	4.758%	35.232%	33	A36	612	48555	1.078%	85.496%
5	A24	2492	22501	4.388%	39.620%	34	A5	576	49131	1.014%	86.510%
6	A40	1968	24469	3.465%	43.085%	35	A30	515	49646	0.907%	87.417%
7	A1	1446	25915	2.546%	45.631%	36	A55	528	50174	0.930%	88.347%
8	A41	1575	27490	2.773%	48.405%	37	A43	520	50694	0.916%	89.263%
9	A52	1320	28810	2.324%	50.729%	38	A6	504	51198	0.887%	90.150%
10	A23	1440	30250	2.536%	53.265%	39	A48	504	51702	0.887%	91.037%
11	A42	1386	31636	2.440%	55.705%	40	A13	495	52197	0.872%	91.909%
12	A39	1335	32971	2.351%	58.056%	41	A3	480	52677	0.845%	92.754%
13	A19	1285	34256	2.263%	60.318%	42	A44	440	53117	0.775%	93.529%
14	A9	705	34961	1.241%	61.560%	43	A8	400	53517	0.704%	94.233%
15	A20	970	35931	1.708%	63.268%	44	A37	372	53889	0.655%	94.888%
16	A46	1008	36939	1.775%	65.043%	45	A33	360	54249	0.634%	95.522%
17	A35	885	37824	1.558%	66.601%	46	A49	360	54609	0.634%	96.156%
18	A45	812	38636	1.430%	68.031%	47	A2	288	54897	0.507%	96.663%
19	A29	805	39441	1.417%	69.448%	48	A58	288	55185	0.507%	97.170%
20	A16	760	40201	1.338%	70.786%	49	A50	252	55437	0.444%	97.614%
21	A28	756	40957	1.331%	72.118%	50	A31	228	55665	0.401%	98.016%
22	A34	738	41695	1.299%	73.417%	51	A22	225	55890	0.396%	98.412%
23	A54	720	42415	1.268%	74.685%	52	A4	224	56114	0.394%	98.806%
24	A56	720	43135	1.268%	75.953%	53	A15	192	56306	0.338%	99.144%
25	A27	416	43551	0.732%	76.685%	54	A47	135	56441	0.238%	99.382%
26	A14	555	44106	0.977%	77.662%	55	A26	132	56573	0.232%	99.614%
27	A7	672	44778	1.183%	78.846%	56	A25	93	56666	0.164%	99.778%
28	A57	660	45438	1.162%	80.008%	57	A11	63	56729	0.111%	99.889%
29	A10	654	46092	1.152%	81.159%	58	A12	63	56792	0.111%	100.000%

To overcome the risk problem of risk agents without supervision (A18), the following risk mitigation activities are carried out:

1. Evaluate the job description for Supervisor.
2. Regularly evaluate employee performance.
3. Implementation of rewards and punishments in accordance with the results of performance evaluation.
4. Appoint a responsible supervisor for each shift.

Based on house of risk 1 calculations, the output in the form of a mitigation plan to overcome the problems of risk agent A17 (employees without checking) and risk agent A18 (no supervision), will then be processed in house of risk calculations which are shown in table 2 and table 3, with the aim to determine which mitigation plans are most effective and efficient in Te Aming cafe. Risk mitigation will be calculated by ETD and the largest value will be selected to see the effectiveness of the ease with which risk mitigation can be conducted.

Table 2. Calculation of ETD Value for Risk Agent of Employee Without Supervision (A18)

Risk	Risk Mitigation Action				ARP
Agent	PA1	PA2	PA3	PA4	6800
A18	3	9	9	9	
Tk	20400	61200	61200	61200	
Dk	3	3	3	4	
ETD	6800	20400	20400	15300	
Priority	3	1	1	2	

Tabel 3. Calculation of ETD Value for Risk Agent of Employee Without Cheecking (A17)

Risk	Risk Mitigation Action				ARP
Agent	PA5	PA6	PA7	PA8	6664
A17	9	3	9	3	
Tk	61200	20400	61200	20400	
Dk	3	3	3	3	
ETD	20400	6800	20400	6800	
Priority	1	2	1	2	

In risk mitigation for risk agent A18 (no supervision), the results of risk mitigation plan activities with codes PA2 and PA3 obtained an ETD value of 20,400, PA4 obtained an ETD value of 15,300 and PA1 obtained an ETD value of 6,800. Based on these calculations, the priority data obtained is as follows:

1. By carrying out mitigation actions PA (Periodic employee performance evaluation) and PA 3 (Implementation of rewards and punishments in accordance with performance evaluation results).
2. By carrying out mitigation action PA 4 (appointing a supervisor responsible for each shift).
3. By carrying out mitigation action PA 1 (Evaluation of job descriptions for supervisors).

In risk mitigation for risk agent A17 (employees checking), the results of risk mitigation plan activities with codes PA5 and PA7 obtained an ETD value of 20,400 and PA6 and PA8 obtained an ETD value of 6,800. Based on these calculations, the priority data obtained are as follows:

1. By carrying out mitigation actions PA 5 (Evaluation and supervision from supervisors) and PA 7 (Creation of work checklists).
2. By carrying out mitigation actions PA 6 (Implementation of rewards and punishments in accordance with performance evaluation results) and PA 8 (Briefing and performance evaluation before starting to work).

Key Risk Indicator

In calculations using key risk indicators managed at Auntie cafe, a total of 64 risk causes were invented in Auntie cafe's operational activities. By using the Pareto diagram, the results obtained were 21.43% from the accumulation of 2 risk causes which became the main cause of the problems at Teh Aming cafe at 16%. So these two factors that cause risk will be used as a reference in solving problems at Auntie cafe. Next, the two risk factors were analyzed again using fishbone diagrams (see Figure 5 and Figure 6). This activity is carried out to find out the root of the problem that blinds the risk factors that can occur in operational activities.

Based on the results of analysis and calculations using a fishbone diagram, it was found that the root of the problem of no
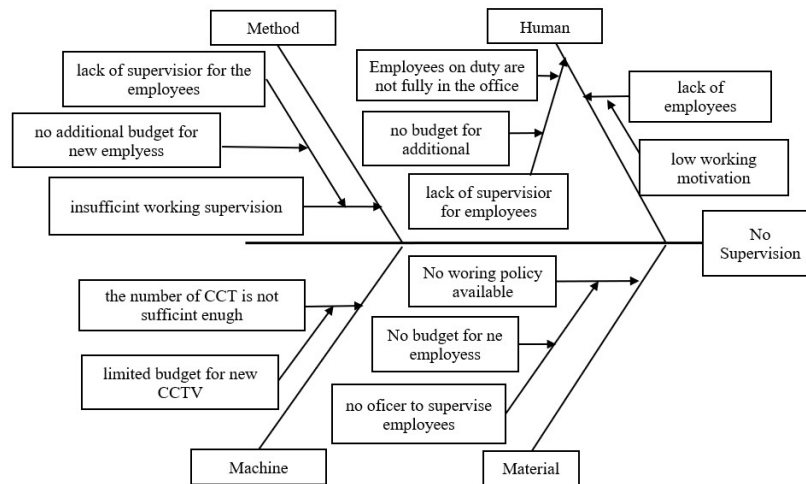
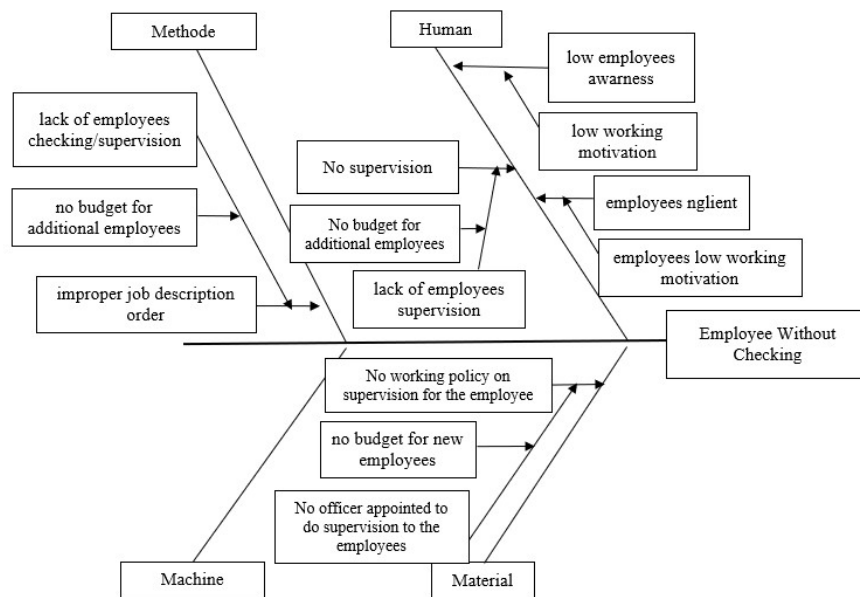**Figure 5.** Fishbone Diagram of No Supervision

**Figure 6.** Fishbone Diagram of Employee Without Checking

supervision occurred due to the following factors, there are no budget for additional employees and a limited budget for CCTV procurement, so that monitoring could not be carried out comprehensively and compulsory. Meanwhile, based on the results of analysis and calculations using a fishbone diagram, it was found that the root of the problem was that employees did not carry out checks, which occurred due to the following factors, such as low employee motivation and lack of work supervision due to

the lack of budget for additional employees. Therefore, based on the results of this evaluation, a mitigation plan was created which is expected to be able to overcome the problem of no supervision and employees not carrying out checks. The following is the mitigation plan carried out, explained in Table 4.

For CCTV procurement mitigation activities, because there was no budget to procure new equipment, supervision was shifted to conventional activities with supervisors. By

Table 4. Risk Mitigation Plan

No	Risk factor effect	Mitigation plan
1	Low woking motivation	Implementation reward and punishment to gain working motivation
		Implementation of employees gathering for working motivation
2	Insufficient budget for new employees/ supervisior	Assignment of supervisory duties to one employee who is deemed competent
3	Limited employee budget for CCTV	Increase awareness for the implementation of job descriptions and compliance with company working policy
		Creating detailed work supervision standards and disseminate them to supervisors
		Tighten work supervision and implementation of work procedures
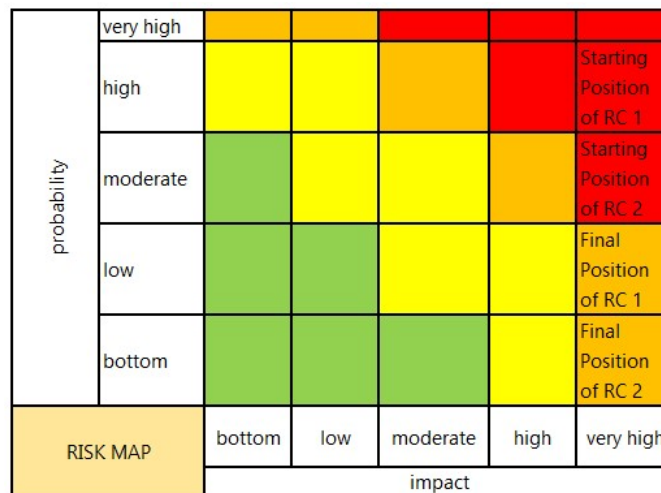
Figure 7. Risk Map After Mitigation

Tabel 5. Parameter Key Risk Indicator

Key Risk Indicator Events	Parameter		Measurements
	Lower Threshold	Upper Threshold	
No supervision	2	5	How many times have errors been caused by a lack of working supervision?
Employees without checking	1	3	How many times have mistakes been made because employees have not re-checked their work?

planning risk mitigation activities for the 2 factors that cause the risk after they have been carried out and recalculated using the risk map after mitigation which is shown in Figure 7.

Based on analytical calculations using the risk map after mitigation, a comparison was obtained that initially the risk factors which were not monitored had a high risk score after the risk mitigation carried out and changed to a medium risk level, the mitigation carried out was able to reduce the probability level of risk occurring from initially high to low. Meanwhile, for risk factors,

employees who did not carry out checks initially had a high risk score and changed their position to a medium risk level. Afterward, by carrying out risk mitigation, it is able to reduce the probability level of risk occurring from initially moderate to very low, even though the impact that occurs is still in the very high category. To avoid serious problems, monitoring parameters with key risk indicators are cterated based on Table 5.

Risk management activities are prepared using the RACI method to be able to map and distribute risk management activities to related

Table 6. RACI Matrik (Responsible, Accountable, Consulted, Informed)

Mitigation plan	Detail Activities	Responsible (R)	Accountable (A)	Consulted (C)	Informed (I)
Making key performance indicator	Making key performance indicator	Operational Manager	Operational manager	Owner	Owner
Implementation of reward dan punishment to gain working motivation	Determine employee performance assessment criteria	Operational Manager	Operational Manager	Owner	Owner
	Selection of outstanding employees and employees who need development	Operational Admin	Operational Manager	Operational Manager	Owner
	Giving awards to the best employees	Operational Admin	Operational Manager	Operational Manager	Owner
	Strict action is taken for work violations/negligence by issuing warning letters up to termination of employment	Operational Manager	Operational Manager	Owner	Owner
Implementation of employee gatherings to increase work motivation and team cohesion	Empoyees athering	Operational Admin	Operational Manager	Operational Manager	Owner
Determine the pic (person in charge) as daily executor	Assign one of the employees as pic (person in charge) whose job is to supervise daily operations which are not permanent according to needs and can be rotated at any time	Operational Manager	Operational Manager	Owner	Owner
	Update job descriptions for employees assigned to be supervisors	Operational Admin	Operational Manager	Operational Manager	Owner
Carrying out training and outreach related to work procedures and job descriptions for each job	Socialization and education of job descriptions and work procedures to new employees	Operational Admin	Operational Admin	Operational Manager	Owner
Create detailed work supervision procedures and disseminate them to supervisors	Making work supervision procedures	Operational Manager	Operational Manager	Operational Manager	Owner
Tighten work supervision and implementation of work procedures	Implementation of employee performance monitoring	Operational Admin	Operational Manager	Operational manager	Owner
Routine evaluation of risk management implementation	Routine evaluation of risk management implementation	Operational Admin	Operational Manager	Operational Manager	Owner

parties appropriately. Table 6 shows the RACI table carried out at Te Aming x Auntie cafe, showing all risk handling and mitigation activities along with all parties who must contribute to the implementation of risk management.

In the Table 6 is shown the distribution of risk management conductd by dividing the tasks

between administration office and operational manager as the daily procecutors, on the other hand, those activities, then reported to the owner of the cafe and receive feedback related to risk managemenr activities.

IV. CONCLUSION

The following are conclusions obtained from research conducted at Te Aming x Auntie cafe regarding design risk management :

1. Risk management activities at Te Aming x Auntie cafe are carried out by considering calculations using the house of risk method and key risk indicators. Based on the house of risk method and key risk indicators, it is known that the risk agent / risk is the main cause of the problem at Auntie cafe, they are the factor of no supervision and the factor of employees of no checking. Therefore, risk mitigation activities focus on these two risk agent factors by carrying out several activities, those are by appointing a daily supervisor, conducting employee performance assessments, creating KPI-based work assessment standards, creating work supervision procedures, and increasing employee work motivation by conducting gathering activities, and providing rewards & punishments based on employee performance assessments. As for supervision carried out based on key risk indicators, a measurement parameter is created for risk agents without supervision with a lower limit of 2 and an upper limit of 5, while for risk agents employees who do not make any checking with a lower limit of 1 and an upper limit of 3.

2. The RACI matrix design was created by considering risk mitigation activities using the house of risk method and key risk indicators. The activities are composed by distributing to risk owners, namely to operational admins as daily operational supervisors and operational managers as those responsible for operational activities. The distribution of this activity has been carried out in consultation with experts in the field of human resource consulting.

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