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Implementation of Operational Risk Management in Teller Units at Bank BCA KCU X

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Operational Risk Management; Unit Teller

ABSTRACT
This research aims to determine how to implement operational risk management of teller units at PT Bank Central Asia KCU X in East Jakarta. Bank operational risks continue to evolve and require good risk management to reduce the emergence of other risks. The type of research used in this study is a quantitative method used to collect data and measure risk with the formula R = P X D. In collecting data, there are several methods used by the author, namely using participatory observation, interviews, document studies and also questionnaires involving tellers in BCA KCU X. The application of operational risk management takes place starting from the business process of the teller unit which starts from morning to evening. The business process starts with preparing the teller area, then the call to the queue for customers to transact to the end-of-day process, namely teller balancing and checking teller activity reports. The study results show that BCA has implemented operational risk management in accordance with Bank Indonesia regulations and has mitigation measures in place for the risks that occur. The benefit of this research is that it will increase insight for similar agencies in implementing reliable operational risks.

1. Introduction

Today, the banking world still plays an essential role in a nation's economy (Wade, 2018). Although it can be said that banks only carry out distribution tasks as intermediaries in distributing credit, broadly speaking, banks can be considered the heart of a complex economic structure.

A bank is a public trust institution that stores money and entrusts banks to manage their finances (Choudhry, 2022). Banks are operationally divided into two, including conventional banks and Islamic banks (Khan et al., 2017). A conventional bank is a bank that carries out its business activities conventionally and based on procedures or provisions that have been set. As is known, banking is one of the sectors that can help improve the Indonesian economy. Banking boosts Indonesia's growth with the source of income banks earn. The source of bank income can be margin from banking interest, fee-based income, and others.

To provide satisfaction to its customers, banks are required to provide quality services. One of them is the quality of frontline service to customers. One part of the frontline is the teller. Tellers are considered frontlines because they are one of the first personnel customers see when entering a bank.

All financial transactions, whether cash (deposits, withdrawals, payments, etc.) or non-cash transactions (clearing, RTGS, etc.), are carried out through *tellers.* In this case, tellers have a significant risk and affect a bank's performance. Tellers are also the front line to detect and stop fraudulent transactions to prevent losses to a bank (counterfeit money and checks, identity forgery, money laundering, etc.). Tellers are required to be friendly and interact with customers to provide information about banking needed by customers to provide satisfaction with service to customers (Ozatac et al., 2016).

Customer dissatisfaction stems from poor service, such as unfriendly service, long transaction processes, errors, and long queues. Tellers are required to work quickly, accurately, and carefully in each transaction. If these three components are not implemented, customer dissatisfaction will result, which can create a bad image for the company (Hanggraeni, 2014).

Operational risks that must be a concern and have a direct influence are human resources working in a bank, one of which is a teller. Tellers are responsible for cash transactions, especially for receipts and payments. There are several negligences of a teller in carrying out a transaction process, such as errors in entering the customer's account number, errors in entering the nominal amount to be debited, errors in entering the account number to be transferred to the bank, errors in receiving or giving money to customers, errors in entering the amount of fees, errors in entering the account number of the clearing destination, etc. Therefore, Bank BCA implements several management risks to overcome risks that occur to *tellers*. Implementing risk management is necessary to avoid the possibility of losses due to the risks.

2. Materials and Methods

Research Methods and Design

The research method that the author will take is quantitative research using data obtained from parties involved in the Teller business process at BCA KCU X

Place and Time of Research

Location:

This research will be conducted at PT Bank Central Asia Tbk KCU X, in the city of East Jakarta, DKI Jakarta.

Research Time:

The time of the research was carried out from September 2022 to January 2023.

Research Data

In the research carried out, there are several necessary data, including:

1. Business process of transactions carried out by tellers
2. Data on mistakes made by tellers in transactions
3. KTD that often occurs in the process of teller activities
4. The opportunity for a KTD to occur often will have an impact
5. The impact of KTD
6. Mitigation that has been put in place and prepared and implemented by BCA management in each BCA unit

Data Collection Techniques

Data collection is necessary to obtain the necessary information to achieve the research objectives. The techniques used in data collection in this study include:

1. Participatory Observation, in this participatory observation, the researcher observes what the research subjects are doing, listens and participates in operational activities, and also discusses with other tellers to obtain data and information directly in the application of operational risk management in the teller unit at BCA KCU X. In this case, the researcher observes the mistakes made by tellers in transaction activities. In this observation, the author obtained data on KTD opportunities, the impact of KTD, and mitigation that have been installed in BCA KCU X.
2. Interview, the interview technique is a data collection technique through the submission of a number of questions orally to the interviewed subjects or can also be done to obtain data by asking direct or face-to-face questions to informants related to the research (Rahmadi, 2017). This study conducted a semi-structured interview with the BCA KCU X Teller as research data. Semi-structured interviews are interviews that are directed by several non-closed questions, which are likely to raise new questions whose ideas arise spontaneously according to the content of a conversation that is carried out. The results of the interview will be a brief explanation of the identity, subject matter, identification of the problem, and the emergence of the theme (Hasibuan & Astutik, 2018). In this interview, the author interviewed tellers who are active at BCA KCU X so that data on how often KTD occurs, the causes and impacts caused by both internal and external companies.
3. Document Study, the researcher carries out document analysis by finding and studying written data such as documents, archives, daily reports, or photos related to the implementation of operational risks in the teller unit at BCA KCU X. In this case, the researcher finds out through the company's official website and documents in handling KTD contained in the company's risk management that has been implemented.
4. Questionnaire, it is used as a tool to measure how much operational risk occurs in the teller unit at BCA KCU X. This questionnaire will be used to know what risks occur in transactions, how often risks occur in scale, and how opportunities and impacts are mitigated. From the results of this questionnaire, the value of opportunities and impacts caused by these unwanted events can be obtained.

The formula for Calculating Risk

Based on the results of the distribution of the meal questionnaire, it will be known how much operational risk the teller unit occurs in BCA KCU X. Which will be calculated with the following formula:

$$R = P \times D$$

Information:
R = Risk of KTD
P = KTD Opportunities
D = Impact of KTD

Measuring Opportunities and Impact

Opportunities: Based on data obtained from the observation process conducted by the author, interviews with tellers and parties involved in the teller's business process, study of documents and literacy about BCA, which are widely available on the BCA website and also the distribution of questionnaires or questionnaires to tellers at BCA KCU X.

Impact: Impact is measured by the magnitude of the impact of unintended events on BCA in terms of customer satisfaction

The scale to make these measurements consists of:

Scale 1-5, probability of desired event

Table 1 List of Opportunity Scales,

Opportunity	Skala	Opportunity Value
Never	1	Very rare
1-3 kali	2	Small likelihood
4-6 kali	3	Maybe
7-9 kali	4	Likely
Lebih dari 10 kali	5	Very often

Scale 1-5, determines the impact on customer satisfaction contained in Branch KPIs in the *service excellence segment*:

Table 2 KPI BCA KCU X per Januari 2023

Key Performance Index	Points	Achievement Target
Financial	450	
Profitability	350	13.000.000.000
Casa	100	17.000.000.000
Customer Relationship	300	
Customer Engagement	150	
C.E Aktif	100	4,7
C.E Pasif	50	4,6
Soldex Individu	100	54
Growth Customer Individu	50	1850
Service Excellence	250	
Branch Service Quality	150	4,7
Awareness ATM	50	99%
Continuous Improvement Kaizen	50	optimization and validity of K1 data
Total	1000	

Table 3 Impact Scale

Impact	Scale	Impact Assessment
Neutral	1	Very small
Satisfied	2	Small
Quite satisfied	3	Keep
Dissatisfied	4	Large
dissatisfied	5	Very large

Analysis Model Heat Map

	Probability					
Impact	**Scale**	**1 Very rare**	**2 small Likelihood**	**3 Maybe**	**4 Large Likelihood**	**5 Very often happen**
	5 Very large	**5**	**10**	**15**	**20**	**25**

	4 Large	**4**	**8**	**12**	**16**	**20**
	3 Keep	**3**	**6**	**9**	**12**	**15**
	2 Small	**2**	**4**	**6**	**8**	**10**
	1 Very small	**1**	**2**	**3**	**4**	**5**

Figure 1 Heat Map Analysis Model

Risk Weight

	Small
	Keep
	High
	Very high

Analysis Techniques

After analyzing the KTD, the author will use bow-tie analysis to analyze each KTD's opportunity and impact mitigation.

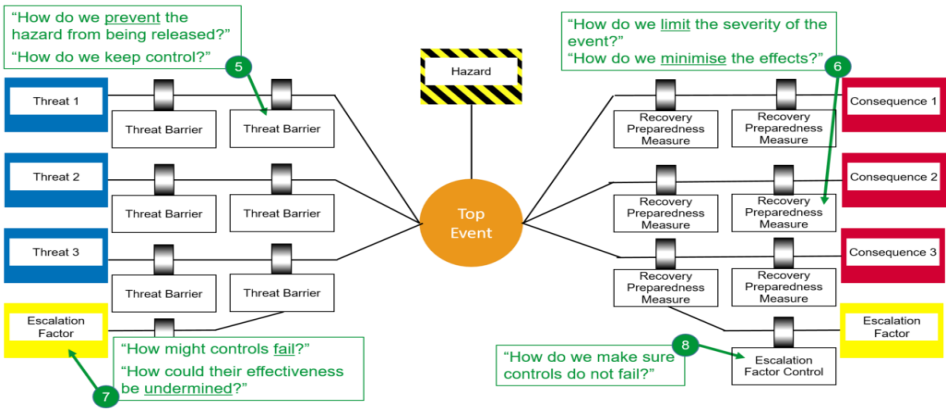

Figure 2 Bow-tie Analysis

So, the analysis techniques used in this study are as follows:

1. Identifying events
2. Analyze the cause of the incident
3. Analyzing the impact (*affect*)
4. Evaluate the risks that will occur
5. Mitigating risks

3. Result and Discussion

Research Results

1. BCA KCU X Teller Operational Business Process

Tellers at BCA KCU X have several business processes, namely, the beginning of the day, the rest, and the end of the day.

The process, at the beginning of the day, it began with preparing the teller area by tidying up the area and applying the principles of KAIZEN 5R in daily operations, including Compact, Neat, Clean, Treat, and Diligent. Implementing 5R makes it easier for the operational team in the operational process. Then, we continued with log ID and teller cash balancing to prepare to serve customers. Services began with a queue call based on the queue number that the customer had gotten.

In this transaction process, tellers serve various transactions, including cash deposit transactions, cash withdrawals, book transfers, clearing processes, LLG/RTGS (interbank money transfers, checking and checking services, and other payments (virtual accounts, credit cards, and *overseas transfers*).

When leaving the desk during a break, each teller must carry out a balancing process to avoid the difference between the system and the physical money in the teller's drawer. Then, print the teller's activity to be checked by the Head of the Teller Section to avoid transaction errors from morning to noon. While leaving the desk, each teller must log out the ID either during breaks or when allowed to leave the desk.

Moreover, at the end of the day, each teller does the final balancing, which aims to equalize the amount of money between the system and the physical money that exists and also prints all teller activities from morning to evening to be checked by the Head of the Teller Section.

2. Operational Risk Identification,

Risk identification is an effort to discover unwanted events that may arise in a company's business activities and cause financial and non-financial losses. In this case, the KTDs discussed the impact of customer satisfaction in BCA KCU X, where customer satisfaction plays an important role in banking services.

Identifying risks from the business process of BCA KCP U tellers aims to explain some of the risks that occur in the daily business process of tellers and how to mitigate the existing risks. The following table exposes some of the undesirable events in the business process of BCA KCU X teller.

Table 1 KTD Table,

No KTD	Unwanted Events
1	Nominal input error and destination account
2	Server error that causes the system to go offline
3	Long queues that cause customer dissatisfaction with service
4	Cash difference
5	The money counting machine breaks down during operation, slowing down performance
6	Teller forgot to log out ID when leaving his desk, causing an audit reprimand that affected the branch's KPIs
7	There is suspicious money that escaped after the cash deposit process

In this study, measurements and assessments will be carried out on all KTDs that may occur in the teller operational business process. The researcher used primary data in the form of questionnaire results for tellers at BCA KCU X and also the researcher's observations while working at BCA KCU X.

3. Errors in nominal input and destination accounts. Errors in entering nominal and destination accounts are the most frequent KTD carried out by tellers based on the results of interviews

with tellers. This usually happens due to the teller's lack of thoroughness in the transaction process.

4. A system error that causes the system *to go offline.* In service and service, customer satisfaction is the most prioritized business process. System errors that cause the offline system can cause customer dissatisfaction because customers who have come cannot continue their transactions because of the offline system. In this case, the customer must wait or switch to another branch that is not offline to continue the transaction.
5. Long queues that cause customer dissatisfaction with service,
   Customer satisfaction is the main goal of service. The frequent queues that pile up make customers uneasy about the services provided, which can impact the assessment of customer surveys for BCA KCU X.
6. **Cash Difference.** One of the other KTDs that often occurs is the cash difference. This cash difference is divided into 2 types: the difference in less cash and the difference in excess cash. In these two types of differences, the teller operational team must report if there is a difference of less or more. In the event of a difference, it is the responsibility of the teller to compensate for the difference. Meanwhile, further investigation was carried out for the discrepancy by looking at CCTV footage and teller transaction history.
7. **The money counting machine is damaged during operation, slowing down performance.** Money counting machines are one of the supporting facilities in the teller's operational transaction process. If the money counting machine is damaged during operations, it will cause transactions to be hampered, which will lead to queue buildup.
8. ***The teller* forgot *to log out* the ID when leaving the desk.** User IDs and passwords are very protected from access by people other than the ID owner. This is very important for audits because it is hazardous if misused by irresponsible people.
9. **There was suspicious money that escaped during the cash deposit process.** The rampant circulation of counterfeit money in the community also impacts the work process of tellers at BCA KCU X because the discovery of counterfeit money during the money calculation process in a third party is the responsibility of the teller who owns the ID.

Measurement Results

The survey was conducted by distributing questionnaires to tellers who have and are working at BCA KCU X to measure each existing KTD risk. The survey was conducted on 15 (fifteen) respondents.

1. Risk Analysis,
   The researcher used the Heat Map and Bow Tie methods to conduct an existing risk analysis. The Heat Map assesses the risk's weight, and the Bow tie finds mitigation for each existing KTD.
2. Heat Map Analysis
   After taking primary data from the respondents in questionnaires, the results of measuring the opportunity and impact scales were obtained. The opportunity formula is multiplied by the impact on each KTD in a risk assessment. The following are the results of the risk assessment on each KTD using the formula $R = P \times D$

No	KTD	Opportunity Scale	Impact Scale	Risk Weight	Risk Status
1	Nominal input error and destination account	2	5	10	High
2	Server error that causes the system to go	2	4	8	Keep

	offline				
3	Long queues that cause customer dissatisfaction with service	2	4	8	Keep
4	Cash difference	2	1	2	Small
5	The money counting machine breaks down during operation, slowing down performance	2	4	8	Keep
6	The teller forgot to log out ID when leaving the desk	2	1	2	Small
7	The existence of counterfeit money that escaped during the cash deposit process	2	1	2	Small

	Probability					
Impact	**Scale**	**1 Very rare**	**2 small Likelihood**	**3 Maybe**	**4 Large Likelihood**	**5 Very often happen**
	5 Very large		**KTD 1 (WEIGHT 10)**			
	4 Large		**KTD 2, 3, 5 (WEIGHT 8)**			
	3 Keep					
	2 Small					
	1 Very small		**KTD 4, 6, 7 (WEIGHT 2)**			

Risk Weight

	Small
	Keep
	High
	Very high

Picture... Heatmap of existing KTDs

Analysis Bow Tie

Bow Tie Analysis is used to present undesirable events in the form of Bow Tie Analysis to seek opportunity mitigation and mitigate their impact.

1. Nominal input error or destination account

There are several things that are the cause of KTD incorrect nominal input or destination account, including:

1. The teller was negligent because he did not recheck the transaction input, so there was an error in the nominal input or destination account.

During the teller transaction process, when entering the nominal or destination account, the teller is obliged to recheck whether the nominal or destination account entered is in accordance with the slip provided by the customer. Mitigating the opportunity for tellers' negligence is the imposition of punishment in the form of fines to provide a deterrent effect and caution from the teller.

2. Kelalaian Kepala Bagian Teller, hal ini berlaku untuk jumlah setoran yang memerlukan dual control dalam menjalankan transaksi.

Each teller in the branch has a different level of experience and working period, so each level has a different limit. For example, tellers who are still in the on-the-job training stage only have a deposit limit of IDR 10,000,000, while tellers with a two-year working period have a deposit limit of IDR 30,000,000.

This authorization supervisor is carried out by the Head of the Teller Section to approve the running of the transaction. The authorization process includes checking the compatibility between the transaction slip and the input on the teller system, then checking the nominal amount of cash received or handed over, as well as the validity of the transaction perpetrator. If the entire transaction process carried out by the teller is appropriate, the transaction can be carried out using the fingerprint authorization of the Head of the Teller Section.

This dual control aims to minimize transaction errors, but sometimes, the Teller and the Head of the Teller Section are not careful, and transaction errors occur.

Reducing the individual KPI value of the Head of Teller Section can mitigate the opportunity for negligence of the Head of Teller Section.

3. The teller does not reconfirm after entering the nominal amount and account to be transacted,

In the transaction process's SOP, after the teller enters the nominal data or records the transaction destination, the teller must reconfirm the transaction to the customer. If the customer confirms that the transaction made is appropriate, the transaction can be carried out. Mitigating the opportunity is to routinely socialize the Standard Operation Procedure, which applies to all teller units.

4. The customer incorrectly informs the amount or number of the destination account.

This can happen when the customer writes the wrong nominal or destination account number. Therefore, the seller must reconfirm the nominal and destination account of the transfer to the customer. BCA has installed a mitigation by implementing the branch application, which requires customers to self-service for cash deposits, withdrawals, and clearing transactions to reduce the risk of nominal input errors or destination accounts.

This incorrect input of nominal or destination account number has an impact on the following:

1. Cash discrepancy can occur if the nominal input error is not immediately known.

When the teller enters the wrong transfer amount while the cash nominal received or handed over is not by the nominal entered by the teller, there will be a cash difference. This cash difference can occur if, immediately after the transaction, it is not immediately known that there is an error in the nominal input of the transaction.

If the cash difference is less, it will be the teller's responsibility. If there is a surplus difference, a report will be made, and another report will be made until a customer claims with proper evidence that the surplus money belongs to the customer.

In addition, if transaction errors are known on the same day, mitigating cash differences due to transaction input errors can be corrected.

2. Service survey assessment is not satisfactory.

The impact of incorrectly entering the nominal or destination account during a transaction can impact complaints, leading to customer dissatisfaction. The customer can directly convey this customer dissatisfaction through the BCA channel on Halo BCA or when the service survey team conducts a periodic service survey assessment. This customer dissatisfaction impacts the branch's assessment in fulfilling the branch's KPI value in the Service Excellence segment.

To mitigate this customer dissatisfaction, we apologize to the customer concerned and recommit to providing the best service in the future.

3. Reputational risk arising from nominal input errors or destination accounts,
   Based on the incident in March 2020, quoted from the CNN Indonesia page:

"Surabaya, CNN Indonesia - The defendant in the case of wrongly transferring BCA Rp51 million, Ardi Pratama, was sentenced to 1 year in prison after being found guilty of using the wrong transfer money that entered his account. The Chairman of the Panel of Judges, Ni Putu Purnami, said, Ardi was proven to have violated Article 85 of Law Number 3 of 2011 concerning Fund Transfer."

The incident stemmed from an error in entering the destination account number and weak supervision by the supervisor. The incident was only known ten days after a complaint from a customer who was supposed to receive the transfer. In this case, even though the defendant is proven guilty of using money that does not belong to him, this can reduce the customer's trust in BCA.

Maximizing the existing dual control system is key to mitigating the impact of other risks because if this dual control is missed, the next risk that occurs will inevitably be the responsibility of the individual, as in the case above.

	Probability					
Impact	**Scale**	**1 Very rare**	**2 small Likelihood**	**3 Maybe**	**4 Large Likelihood**	**5 Very often happen**
	5 Very large		**KTD 1 (WEIGHT 10)**			
	4 Large					
	3 Keep					
	2 Small		**KTD ↓ 1 After mitigasion (WEIGHT 4)**			
	1 Very small					

Risk Weight:

	Small
	Keep
	High
	Very high

Picture... Heatmap after mitigation from KTD 1

Server error that causes the system *to go offline*

Some of the things that can cause server errors include:

1. KThe need for periodic server maintenance that causes server errors
   Each branch has a special server room that has a special maintenance system. Only people who have access can enter the room. To mitigate this lack of maintenance, a regular server maintenance schedule must be created to avoid server errors.
2. Sudden network errors,
   Servers that crash more often occur due to network errors, this requires a responsive and reliable IT team to handle the problem. If a server error occurs, the service is temporarily

stopped, and the branch that is in the server error seeks information related to the nearest branch that can serve customers and then advises customers to go to the nearest branch to continue the transaction. Mitigating the opportunity when a network error occurs suddenly is by having a reliable IT team solve the problem

The server error that causes this offline system causes several things, including:

1. Queue buildup that leads to customer complaints.
   When the server fails, the branch cannot make any transactions; therefore, inform the customer that the system is offline. Many of the customers who have been queuing for a long time have complained about this because customers have felt that they have been queuing for a long time but cannot continue their transactions. Mitigation of queue buildup due to this offline system is done by advising customers to continue transactions at branches that are not offline or make transactions through other channels such as mobile banking, internet banking, or ATMs.
2. Customer complaints, this is because customers who have received a queue number and have queued have to wait longer or switch to another branch to complete their transactions. The mitigation of this customer complaint is to apologize to all customers and be committed to being able to provide the best service.
3. Affects the value of branch KPIs in service surveys if this happens frequently. In the branch KPI there is a service excellence segment where the results of the calculation are obtained from the survey results, if server errors occur frequently, it is possible that the service excellence value will decrease. The mitigation of this is to improve service to customers so that the value of the next KPI will be better.

	Probability					
Impact	**Scale**	**1 Very rare**	**2 small Likelihood**	**3 Maybe**	**4 Large Likelihood**	**5 Very often happen**
	5 Very large					
	4 Large		**KTD 2 (WEIGHT 8)**			
	3 Keep	**KTD 2 After mitigation (WEIGHT 3)**				
	2 Small					
	1 Very small					

Risk Weight:

	Small
	Keep
	High
	Very high

Picture... Heatmap after mitigation from KTD 2

1. Long queues that cause customer dissatisfaction in service

Things that can cause long queues include: (Dubosson et al., 2018)

1. There are deposits or cash withdrawals with large nominations that cause the queue to be hampered. The mitigation of this queue is to break down the queue using BCA's self-service service, for example, the branch application self-service, which functions as an application to make it easier for customers to fill in cash deposit slips, cash withdrawal slips, and clear slips.

Then, the self-service machine guided by the teller is the star teller machine, which automatically calculates customer money and allows customers to make transactions through the machine.

2. There has been a change of personnel from experienced to personnel who have just passed OJT, so the transaction process is not as fast as it is for personnel who are used to making transactions. The mitigation of this is to routinely role-play every afternoon to facilitate the transaction process carried out by colleagues who have just joined.
3. many customers have not been able to make transactions digitally, so they have to make transactions at branches. Mitigation that can be done is to continue to socialize how easy it is to transact digitally to customers, then socialize to all branch personnel so that each branch personnel can help customers in transacting digitally.

The impact of long queues includes:

1. Complain to customers because they have waited too long to transact. You can mitigate this by apologizing to customers and providing alternative transaction solutions, such as mobile banking, internet banking, or ATMs.
2. Branch KPIs in customer surveys decreased. The Gallup survey team carries out the service excellence assessment system for customers who transact at branches randomly. If the queue is long and makes customers feel dissatisfied with the old service, the branch assessment may decrease. Mitigating the impact of this long queue is to apologize to customers and ensure that the teller will make the transaction as much as possible to avoid piling up queues.
3. The transaction process becomes rushed and can lead to input errors because the teller team feels the need to complete the queue as soon as possible. The mitigation of this is to continue to carry out transactions calmly and focus in accordance with the existing SOPs. If there has been a transaction input error, then inform the Head of the Teller Section as soon as possible to make transaction corrections.

	Probability					
Impact	**Scale**	**1 Very rare**	**2 small Likelihood**	**3 Maybe**	**4 Large Likelihood**	**5 Very often happen**
	5 Very large					
	4 Large		**KTD 3 (WEIGHT 8)**			
	3 Keep		↓			
	2 Small		**KTD 3 After mitigasion (WEIGHT 4)**			
	1 Very small					

Risk Weight:

	Small
	Keep
	High
	Very high

Picture... Heatmap after mitigation from KTD 3

2. Money counting machine breaks down during operation slowing down performance,

A broken money counting machine can be caused by several things below: (Gunawi et al., 2018)

1. Lack of maintenance from money counting machine technicians. The money-counting machines in some branches are machines from vendors that are rented to BCA. Lack of machine maintenance can lead to reduced functionality or damage that cannot be repaired by the branch team. To mitigate this, a routine maintenance schedule for the machine is made, which is discussed with the counting machine vendor.
2. The age of the money-counting machine is old and no longer suitable for use, so it must be replaced with a more adequate money-counting machine. Mitigation of this is to propose a replacement of the money counting machine to the relevant party in order to facilitate transactions at the branch.
3. The cleanliness of the money machine is not maintained. Machine cleanliness is a shared responsibility, so after finishing service hours to customers, the teller is obliged to clean the machine every day. The mitigation of this is by holding a picket schedule carried out by the teller every afternoon after the end of service hours.

The impact caused by the existence of this damaged money-counting machine includes:

1. SLA (Service Level Agreement) transactions become longer,
   The teller transaction process has a predetermined SLA; for example, the cash withdrawal process has a maximum SLA of only 1.5 minutes with a low nominal and the cash deposit process has a maximum SLA of only 2 minutes. If the machine breaks down, the transaction process will take longer and can extend the existing queue.
   For the money counting machine to be used in cash deposit and cash withdrawal transactions, the impact of this risk can be mitigated by directing customers to use a star teller machine, a self-service calculation machine that can speed up customer cash deposit transactions. Then, directing customers to withdraw cash with a small nominal can be done at the ATM.
2. There is a buildup of queues,
   As explained in the point related to SLA in the transaction process, queue accumulation can occur because the teller transaction process is not in accordance with the SLA determined due to damage to the money counting machine. This queue accumulation is mitigated by directing customers to make transactions through other channels such as mobile banking, internet banking, and ATMs.
3. The existence of money is doubtful due to a broken money-counting machine
   Some types of money-counting machines have an automatic suspicious money detection feature. However, if the machine is damaged, suspicious money may not be detected, and the teller may suffer losses due to the presence of doubtful money. One way to mitigate the escape of counterfeit money is to replace the dubious difference in money with the teller's personal funds.

	Probability					
Impact	**Scale**	**1 Very rare**	**2 small Likelihood**	**3 Maybe**	**4 Large Likelihood**	**5 Very often happen**
	5 Very large					
	4 Large					

	3 Keep					
	2 Small					
	1 Very small	**KTD 4 After mitigasion (WEIGHT 1)**	**KTD 4 (WEIGHT 2)**			

Risk Weight:

	Small
	Keep
	High
	Very high

Picture... Heatmap after mitigation from KTD 4

3. Cash Difference,

Some of the causes of cash differences, both more and less, include the following: (Amess et al., 2015)

1. Tellers are not focused and not thorough in making transactions. Cash discrepancies can occur because there are transaction steps that the teller misses. For example, during the cash deposit process, the first step taken by the teller is to ensure that cash is received first before entering the transaction into the system if the cash received is appropriate, UV irradiation is carried out to ensure the authenticity of the money, then then process the transaction by reconfirming the nominal amount of money and the account to which the transaction is being made. Likewise, when conducting a cash withdrawal transaction process, the teller is obliged to ensure that the amount of cash given to the customer is in accordance with the nominal amount debited from the customer's account. Mitigating the above opportunity is by routinely roleplaying in the afternoon after the service is completed to refresh knowledge and remind about transaction SOPs so that tellers can focus more on carrying out transactions.
2. The suspicious money was only discovered after all the money was deposited with the cash management vendor. There is a continuity between the risks that exist in the teller transaction process in the event that doubtful money escapes can occur due to the negligence of the teller or the damage of the money machine. In this case, if the vendor finds doubtful money in the deposit of the money bundle, then the difference is the responsibility of the teller. The mitigation of the discovery of doubtful money is to apply more knowledge about doubtful money, where the teller refreshes the characteristics of doubtful money so as to avoid it.

The impact of the excess cash difference or low cash difference includes:

1. Losses experienced by tellers because they have to compensate for the difference, BCA does not provide insurance protection for cash discrepancy cases caused by human negligence. If the cash difference is less, then it becomes an insurance burden, and it will cause a *Moral Hazard,* where the teller becomes unconcerned about the thoroughness and honesty in transactions. So, for the difference that occurs less, it is the full responsibility of the teller. However, BCA specifically provides IDR 350,000 per person every month, specifically for teller units that can be used to pay the difference. However, if the difference exceeds the teller's difference allowance, it is the teller's responsibility.

2. Customer complaints that have an impact on customer satisfaction in service at BCA KCU X branches. In the process of finding the difference in cash, whether more or less, it is not uncommon for the branch team to involve the customer to ascertain whether the money is less or whether it has anything to do with the transaction made by the customer.
   In this process, some customers tend to feel uncomfortable causing complaints and a sense of customer insecurity in the branch in transacting. Mitigation, in this case, is to ask the customer for permission before confirming whether there is an error in the handover of money and then apologize for the inconvenience

	Probability					
Impact	**Scale**	**1 Very rare**	**2 small Likelihood**	**3 Maybe**	**4 Large Likelihood**	**5 Very often happen**
	5 Very large					
	4 Large		**KTD 5 (WEIGHT 8)**			
	3 Keep	**KTD 5 After Mitigation (WEIGHT 3)**				
	2 Small					
	1 Very small					

Risk Weight:

	Small
	Keep
	High
	Very high

Picture... Heatmap after mitigation from KTD 5

1. **Teller forgot to log out ID when leaving the desk**

The occurrence of forgetting to log out ID when leaving the teller's desk can be caused by the following: (Shi et al., 2022)

1. Teller Negligence. To mitigate this, a punishment or fine is given for each teller who forgets to log out of the ID, followed by a warning letter to the teller concerned.
2. Lack of sense of responsibility of the teller ID owner.
   The mitigation of this is by regularly holding training for all teller teams.

The impact of forgetting to log out of ID includes:

1. Become an audit finding
   CCTV in the teller's work environment so that there is not the slightest blind spot from the audit team who pays attention to CCTV can cause forgetting to log out ID as an audit finding. If that happens, this incident can cause the branch audit to be bad and also the teller concerned to be subject to a warning letter. Mitigating the impact of this audit finding is to provide a warning letter to the teller concerned so that it can provide a deterrent effect in the future.
2. Providing opportunities for fraud by irresponsible parties

If the ID is still logged in, the irresponsible party may commit fraud, such as making fictitious transactions that can harm both the teller and BCA. To mitigate this fraud opportunity, a maximum timer for the login ID is provided if there is no transaction, so the ID will automatically log out if there is no activity on the computer teller.

	Probability					
Impact	**Scale**	**1 Very rare**	**2 small Likelihood**	**3 Maybe**	**4 Large Likelihood**	**5 Very often happen**
	5 Very large					
	4 Large					
	3 Keep					
	2 Small					
	1 Very small	**KTD 6 (WEIGHT 1)**	**KTD 6 (WEIGHT 2)**			

Risk Weight:

	Small
	Keep
	High
	Very high

Picture... Heatmap after mitigation from KTD 6

2. There is suspicious money that escaped after the cash deposit process

Suspicious money that passes during the cash deposit process can occur due to the following things: (Mann, 2023)

1. Broken money counting machine
   The existing KTDs are very sustainable; a broken money-counting machine can cause the passage of dubious money where it is the responsibility of the teller to pay the difference in cash because of the dubious money. The mitigation of this is by holding routine maintenance of the money counting machine by discussing it with the vendor.
2. Teller negligence
   Inexperienced tellers often get reports of suspicious money on deposits to vendors, this is usually due to the lack of accuracy of tellers in detecting suspicious money. Doubtful money can be detected by going through several stages, namely: (Joveda et al., 2019)
   a) Look at the money you have, whether it is faded, dull, pale, faded, broken, or other problems. Make sure that the money checked earlier has a good color, pattern, and image and has signs of real money, such as watermarks depicting national heroes, paper materials, and safety rope threads in the money. Large denominations usually have other signs of authenticity, such as the pattern of the image with striking colors, and are difficult for criminals to imitate. Make sure the money is really genuine.

b) Touch and rub the money, whether rough or soft. The original money is usually a bit stiff and thick on paper. In addition, money is usually deliberately printed on numbers or pictures, somewhat prominently, and will be felt if you rub it. Feel your money, whether it is genuine or not.
c) The last step is to cast it into a strong light source, such as the sun or light. After being swept away, look at the safety rope and the spring sign to see if they are in good condition.

The mitigation of this is the frequent afternoon refreshments about the latest sciences and other training that can increase tellers' insight and awareness of doubtful money circulation.

The impact of the passage of dubious money includes:

1. The teller had to pay a dubious amount of money difference that was found. The mitigation of this is that the teller is responsible for this and pays the difference in the undercast.
2. Customer complaints if the customer has paid the doubtful money.

If, during the cash deposit transaction process, the doubtful money passes and the teller continues to receive the doubtful money, then the teller may use the money accidentally to give cash withdrawals to customers. If the customer realizes that after the cash receipt process, the customer receives a complaint outside because of the doubtful money, then usually the customer will complain to the relevant branch, which can reduce the customer's trust to transact at the branch (Maister et al., 2021; Martenson, 2023).

The mitigation of this is always to give customers money that has passed through a money sorting machine that can detect suspicious money and also do dual control by irradiating UV to every money given to customers.

	Probability					
Impact	**Scale**	**1 Very rare**	**2 small Likelihood**	**3 Maybe**	**4 Large Likelihood**	**5 Very often happen**
	5 Very large					
	4 Large					
	3 Keep					
	2 Small					
	1 Very small	**KTD 7 (BOBOT 1)**	**KTD 7 (BOBOT 2)**			

Risk Weight:

	Small
	Keep
	High
	Very high

Picture... Heatmap after mitigation from KTD 7

4. Conclusion

The business process at BCA KCU X is divided into three parts, namely the beginning of the day, the rest, and the end of the day. The process at the beginning of the day begins by preparing the

teller area, then logging in to the ID, and starting to call the customer queue to start the transaction service. During breaks, the teller must balance cash and print the teller's activity report to be checked by the Head of the Teller Section. Then at the end of the day, the teller is also required to carry out the existing cash balancing process in the system and physical, then print all teller transaction activities from morning to evening to be checked by the Head of the Teller Section. From several of these business processes, there are several KTDs that appear, namely KTDs with the greatest risk being an error in the nominal input or destination account number in the transaction process. Then with medium risks, namely server errors that cause offline systems, long queues that cause customer dissatisfaction in service, money counting machines that are damaged during operations, slowing down performance. And KTD with a small risk, namely the cash difference, the teller forgot to log out the ID when leaving the desk, causing an audit reprimand that affected the branch KPI, the existence of doubtful money that passed after the cash deposit process. Mitigation that has been attached to high risk, namely the error of nominal input or destination account number in the transaction process, is to correct the transaction that has been made. Then, the mitigation that has been installed at medium risk, namely server errors that cause the system to go offline, is the existence of routine maintenance on the server by reliable IT. Then long queues that cause customer dissatisfaction in service are mitigated by redirecting customers to applications or self-service machines and directing transactions digitally. And KTD money counting machines are damaged during operations so that slowing down performance can be mitigated by regular maintenance of money counting machines.

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