INTEGRATED RISK MANAGEMENT IN THE ERA OF IR4.0: LEVERAGING ON BUSINESS MODEL CANVAS FOR THE "ROYAL MALAYSIAN POLICE OF THE FUTURE"

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Abstract: **To ensure the need and sustainability of the delivery system, risk management is an important aspect of management in ensuring the continuity of public sector services, particularly the public safety and security sector. For National Public Sector, the Risk Management Master Plan, the policy that is the main reference is the General Circular Letter No. 6 Year 2005: Public Sector Information Security Risk Assessment Guidelines [1], YAB Prime Minister's Order No.1 of 2009: The Integrity Management System of the Malaysian Government's Management System [2] and the Malaysian Public Sector Management of Information & Communications Technology Security Handbook (MyMIS)[3]. Therefore, the Royal Malaysian Police (RMP) formulated and designed the RMP Risk Management Plan (RMPRMP) in line with the department's strategic direction to ensure an efficient, transparent and friendly delivery system. The aim of this paper is to review the risk management in RMP and subsequently making RMP continuously relevance in the digital era. Disruptive forces such as IR4.0 and new business models can pave the way for explosive growth or take down reputable giants. Having a strategy in place to identify, address and harnessing on these emerging and disruptive forces, analyze and prioritize their importance, understand their long-term implications, highlight and plan for action with enterprise risks management is imperative for RMP to thrive in the digital era. This paper will discuss on the business model options of the RMP-of-the-Future by utilizing the business model canvas (BMC) framework, together with its associate new risks and challenges. This BMC may facilitate and help RMP-of-the-Future in identifying the key assets, thus as an enabler for the formulation of an effective enterprise risk management system.**

Keywords: **Royal Malaysian Police Risk Management Plan (RMPRMP), Strategic Core, Risk Management Framework MS ISO 31000: 2010, IR4.0, Integrated Risk Management, Business Model Canvas.**

I. INTRODUCTION

The rapid change of globalization and the high expectations of the people towards the delivery of Royal Malaysian Police (RMP) services are the catalyst for RMP's strategic planning of the best service delivery system. It is in line with the aspirations of national leaders and stakeholders in an effort to meet the expectations and aspirations of the people and customers for easier and faster service delivery.

In realizing these efforts, the effective and efficient RMP service delivery system is very critical. The effectiveness of this system should be ensured that it is not vulnerable to any form of interference, whether external or internal. As such, the

RMP found that there was a strong justification for establishing the Royal Malaysian Police Risk Management Plan (RMPRMP) as a key reference in addressing any potential risks, which would be met to ensure the viability and availability of service planning was not compromised under any circumstances.

The Risk Management Plan 2017 is an update of the Risk Management Plan published on February 12, 2015. Unlike the previous risk management plan, the focus is more on raising the overall awareness of the organization about the risk of carrying out daily tasks towards performing daily tasks. Reducing the frequency of interruptions and minimizing the impact of such interruptions on RMP service delivery and operations. This risk management plan introduces measures that can minimize the impact of risk on the implementation of a program to achieve its objectives and enhance the efficiency and effectiveness of RMP risk management. This plan helps RMP realize the RMPRMP 's vision, mission and objectives. This paper not only discusses examples of risk management plans for RMPs but also discusses how RMPs manage risk and blended in line with the IR4.0 revolution.

Meanwhile, the latest plan is a restructuring of the risk management that focuses on the implementation and objectives of the Royal Malaysian Strategic Plan (RMPRMP) 2015 to year 2020. There are 6 of Strategic Core in this RMPRMP which are: *law enforcement, Peaceful and Security, Crime prevention, Investigation and Prosecution, Security Intelligence and Organizational Strengthening*. According to the Strategic Core, the RMPRMP's programs/projects identified that have risk probability of high risk level programs and extreme risk programs as defined in the Risk Management Plan. It is a process for identifying, evaluating and controlling risk and is one of the critical components of establishing an excellent organization?

The organizations need to respond positively to potential risks as well as understand and seek to control for any potential risks that may affect an agency's service delivery plan. The main objective of this risk management is to increase the overall awareness of the organization about the existence of any risk in implementing the planned program / project and to reduce the frequency of interruptions and minimize the impact of such interruptions on the implementation of the planned program / project if applicable. Through the implementation of risk management, agencies can address existing risk threats through precautionary measures and mitigation measures outlined. Emphasis on the importance of risk management in the public sector was expressed through the Prime Minister's Order No.1 of 2009: The Integrity Management System of the Malaysian Government's Management System dated November 20, 2009, which emphasized that ministries, departments and government agencies should adopt risk management techniques before implement a project or program that is particularly high risk to minimize risk during implementation.

II.   LITERATURE REVIEW

A. *Risk Definition and Risk Management*

The concept of risk management in the sphere of policing, risk management initiatives seek to address some long-standing inefficiency in police practice. As such, it is an umbrella concept that subsumes both a new orientation to the job of policing as well as a number of specific policing projects.
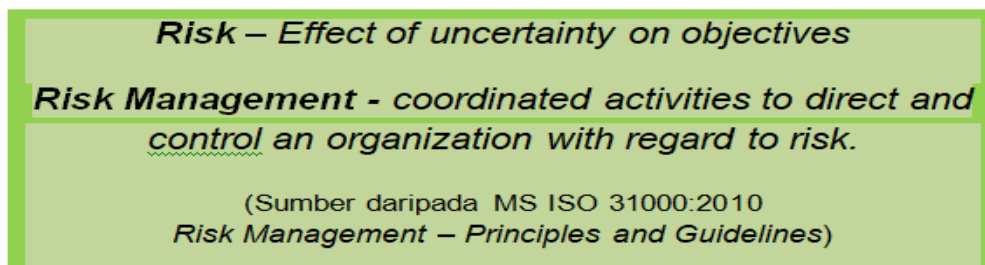

Figure 1: Definition of Risk and Risk Management [5]

In this literature review, generally referring to United States Departments of Justice (DOJ) [6], different state comes with different model to approach in managing the risk. For U.S Cops, more focus on how to prevent the risk in law enforcement which they identified 12 high-risk critical risks that impact law enforcement operations. The indentifies risks are use of force in implementing enforcement, pursuit and emergency vehicle operations, search and seizure including arrest, prisoners care, custody and control, domestic violence, property and evidence, off-duty conduct, sexual harassment

or misconduct, selection and hiring, internal investigations, special operations and dealing with people who have mental illnesses or emotional disturbances.

Meanwhile for the RMP, they are focusing on more to strengthen the agency from within in order to provide better service for the community and the country. However, the RMP still has a different kind of risk management plan according to the specific department task in the organization. The comparison of differences because of the jurisdiction by country is different. In this nation, the RMP has full authorities in enforcing the law especially on crime and maintaining security in the country. Whereas in some countries, the distribution of power and police authority by state as practiced by the US. This limiting the power of police in law enforcement is also seen as a factor in different objective and focus in police's risk management plan.

In the Industrial Revolution 4.0 (IR 4.0) era, police forces face increasing public expectations and scrutiny, changes in crime profile and increasing non-crime-related demand. Despite of the government budgeting challenges, the police force needs to understand and harness on the capabilities of IR4.0 technologies. As both criminal activities and interaction with citizens move increasingly online and digital, the traditional model of providing a physical presence in order to deter crime and reassure communities is no longer enough on its own, and is costly too. Police forces must learn to harness digital technology if they are to deliver a service that is fit for purpose in the 21st century.

For the United Kingdom (UK) Police, Digital technology has the potential to transform the way policing service is delivered – taking police officers away from police stations and bringing them closer to communities and crime spots. In Deliotte's paper [7], the Business Model (BM) focus on Digital policing which is the main focus on Proactive Policing, Digital Engagement and Digital Contact Management, Mobile Workforce Optimisation and Digital Investigation? Meanwhile, by comparison, RMP has adapted similar BM as the UK Police. This is because IR4.0 has been embedded as part of: (a) RMP Strategic Plan, and (b) government requirement under the latest circular Government Strategic Transformation Plan 2016-2020 under the 11th Malaysia Plan (RMK11).

III. PURPOSE

The purpose of this paper is to discusses how police departments from various country develop their risk management plan and how the departments addresses the challenges faced and opportunities created by IR4.0 technologies. This paper will also formulate and develop the business model options of RMP-of-the-Future by utilising the business model canvas (BMC) framework. This BMC will facilitate and help RMP-of-the-Future in identifying the key assets, and thus from these key assets the formulation of an effective enterprise risk management system.

IV. METHODOLOGY

The paper is based on literature review whereby it will investigate the current risk management impact in Malaysia and other countries as well as looking into the availability of related standards in Malaysia. It will also look upon the significance of IR4.0 in relation to the risk management in RMP and subsequently making RMP continuously relevance in the digital era. Interviews are also made with the staff from the risk management department of RMP to discuss and analyze their practice and approach for the risk management methods, as well as investigating upon their enterprise risk management policy and framework.

V. DISCUSSIONS

A. Malaysian Police Risk Management Framework

In designing a risk management plan, the RMP adopted the MS ISO 31000: 2010. So the process of planning the Risk Management Plan, the RMP begins with the *setting of a context*, which refers to the strategic vision, mission and core by examining the external and internal organizational environment and then analyzing the identified risks. Next, assess risk across all perspectives using the method of *identifying*, *analyzing* and *categorizing* risks. Then establish *risk control* strategies that include risk mitigation and mitigation actions as well as monitoring and reviewing identified risks over time. The framework of this plan is based on Figure 2.
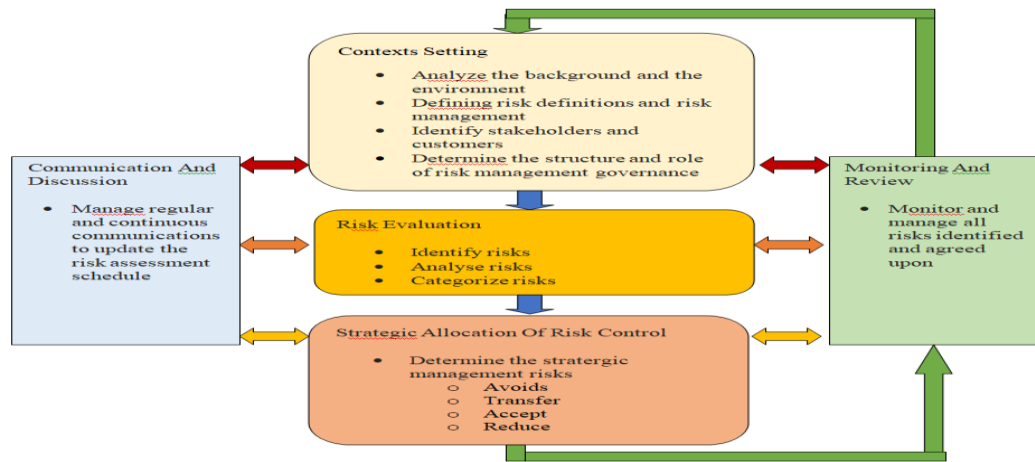
Figure 2: Risk Management Framework[5]

(Source of MS ISO 31000: 2010 Risk Management - Principles and Guideline)

Below is the outline on how the RMP implements Risk Management in the organisation. The three main focuses in implementing Risk management are: (a) Setting Context, (b) Risk Evaluation/Assessment, and (c) the Strategic Allocation of Risk Control.

(a) Setting Context

The main objective of setting a context is to identify risks. For that purpose, the interpretation of the context: defining the external and internal parameters to be taken into account when managing risk, and setting the scope and risk criteria. For that purpose, the RMP needs to conduct SWOT analysis to determine strengths, weaknesses, opportunities, and threats or perform a scan of PESTEL's external environment to identify political, economic, social, technological, environmental or legal. The results of this analysis not only help the team understand the types of risks that may or may not be present but also distinguish between strategic and operational risks. Here are the steps to take at the context-setting level:

i. *Define risk* context by referring to the strategic core of the organization's Strategic Plan;

ii. *Review the current status* of risk management within the organization;

iii. *Review the agency's operating environment* and its ability to address key risks associated with the achievement of objectives;

iv. *Analyze* the strengths, weaknesses, opportunities and threats of the organization; and

v. *Identify* relevant stakeholders and their level of risk acceptance and organizational risk acceptance limits.

(b) Risk Evaluation / Assessment

Assessing risks that may be faced is based on the quantitative or qualitative value of the impact of the identified risks and risks. Three (3) stages are involved in this process:

i. *Identifying Risk*

- Identify the potential risks to any risk in all parts of the RMP department. These risks are identified through retrospective or retrospective experience.

ii. *Risk Analysis*

- Analyze the identified risks that will occur across all departments / departments. At this stage the identified risk analysis is carried out to determine what issues are involved such as human resources, financial, operational, legal and so on.

iii. *Risk Category*

- Categorizing risks is based on the probability of them occurring and the extent of the impact of a risk on the delivery of RMP services.

(c) Strategic Allocation of Risk Control

Controlling risks are actions that control the probability of risks or mitigate the risk that the RMP may face in relation to failure to implement the RMPRMP program / project. For the purpose of controlling the risk, 2 steps has provided through this risk management plan as states below:

a) Prevention Action Plan is a strategic plan of control measures that must be taken to avoid, control and mitigate potential risks identified to determine the program / project or activity to be implemented.

b) Mitigation Plan is a strategic planning of mitigation actions that must be taken to reduce the impact of failure to execute the program / project but still achieve the full or partial goal.

In the process, several methods such as avoiding, transferring, reducing and accepting existing risks are applied

VI.   RISKS CATEGORIES IN RMP

From the existing Risk Management Plan, the RMP has categorized risk into 5 categories namely Human Resources Risk, Reputation Risk, Financial Risk, Operation Risk and Enforcement Risks.

A. Human Resources Risk

Human resources risks are the risks that could affect the delivery of RMP services in terms of personnel. The examples are incompetent workforce, brain drain and lack of replacement plans. The potential risks to human resources such as lack of police presence or police Omni presence, failure to address the lack of public awareness and responsibility for criminal cases and etc.

B. Reputation Risk

Reputation risks are the risks that could undermine the image and reputation of the RMP as a leading domestic authority. The potential risks to reputation such as the task not completed within given time, the two-way understanding and communication is not achieved, late in the investigation service and failure in crime prevention preparation.

C. Financial Risk

Risks that could result in financial losses such as fraud, misappropriation, abuse of power and poor financial management. The potential financial risks identified such as the project was not implemented due to the lack of financial allocation, delays in building and renovations of police headquarters and police stations and "open windows broken" applied due to lack of budget in maintaining the RMP on-line systems.

D. Operation Risk

Operation risks are risks affecting operations or delivery of Malaysian Police services. The potential operating risks identified such as failure to conduct legal education disclosure, failure to conduct research and amendments to the law, failure to meet targets in integrated enforcement of crime cases and etc.

E. Enforcement Risks

Risk of failure to comply with and comply with the regulations set forth in Treasury Instructions, General Orders, Guidelines and Government Circulars. The potential legal risks identified such as overlapping of tasks at all levels and the enforcement does not meet its objectives / cannot be implemented.

	SCALE OF RISK	EXPLANATION
5	POSSIBBLE	A frequent / almost catastrophic event / disaster - once a month
4	HIGH POSSIBILITIES	A major incident / disaster is likely - once every 6 months
3	POSSIBILITIES	An incident / disaster may occur - once every 12 months
2	LOW POSSIBILITIES	A low accident / disaster may occur - once every 36 months
1	RARE	A rare event / disaster - once over 60 months

Figure 3: Risk Probability Index [4]

Scales / Dimensions	TOO SMALL 1	SMALL 2	MODERATE 3	LARGE 4	DISASTER 5
Human	Affects the individual (police)	Affects of units, sections and the police station	Affects to the area, contingent and formation	Affects to the department- the PDRM department	Affects to the PDRM
	Affects the individual	Affects to the family	Affects towards the village, districts and communities	Affects against the state	Affects against community Malaysia
Reputations	Reputation is affected and cause a discomfort satisfied people individuals	Reputation is affected and make sense not satisfied groups / organizations	Reputation is affected and provoked criticism public / community	Reputation is affected so get it media coverage	Reputation is affected up to the people lost confidence to the country
Financial	Losses up 10% of the value / project return / RMP program	Losses up 20% of the value / project return / RMP program	Losses up 30% of the value / project return / RMP program	Losses up 40% of the value / project return / RMP program	Loss up to 50% of value / project return / RMP program
	No significant effect of provisions short-term finance department	Involves provisions in control and expectations	Involve outside provisions term however provisions ministry	Involve outside provisions long term but still at the maximum level absorption provisions ministry	Involve outside provisions over and over provisions ministry
Operations	Work processes and delivery late service but still perfected	Work processes and delivery no service follow the procedure	Work processes and delivery no service in accordance with the government policy	Work processes and delivery no service resolved	Work processes and delivery no service implemented
Enforcement	No implications legislation	There are implications legislation but resolved through existing rules	Implications legislation in rating court without changes to existing rules	Implications legislation in court level by cause changes to existing rules	Cause amendment of deed legislation

Figure 4: Index Of Risk Impact[4]

Risk Assesment Matrix	Scale Of Risk Level	Level Of Risk Explanation
Extreme	13 - 25	The risk is very high, a detailed action plan is required
High	8-12	High risk, taken care of Top Management of agencies
Medium	4 - 7	Risk is simple, managed and taken care of by the party is responsible
Low	1- 3	Low risk, managed according to existing procedures

Figure 5: Limit Of Acceptable Risk[4]

VII. BUSINESS MODEL CANVAS FOR RMP COMMUNITY POLICING

In ensuring its relevancy in the IR4.0 era, RMP has to work closely with other government agencies in developing various on-line collaborative systems. These collaborative systems will enhance the level of information sharing and delivery amongst the enforcement government agencies and also for the public. This also to support the government's E-Government efforts towards the paperless and timely information sharing.

One of the examples of this effort in RMP is the Crime prevention program through Community Policing. RMP has developed a system called *"Volunteer Smartphone Patrol"* or better known as VSP. VSP is a new initiative of the Royal Malaysian Police (RMP) in establishing strategic collaboration and cooperation in preventing crimes with the local community as the eyes and ears of the police. Previously the community could report crime through the RMP hotline and SMS messaging system services but through the VSP, the community can now provide complaints/information equipped with multimedia elements such as pictures, videos and GPS coordinates of the incident location. The VSP is also one of the programs under the National Blue Ocean Strategy (NBOS) and the PDRM has been appointed by the Government of Malaysia as the implementing agency of the program while the Department of Crime Prevention and Community Safety (JPJKK) has been named 'Initiative Owner'. Figure 6 below shows the example of Business Model Canvas (BMC) for RMP in Preventing Crime through Community Policing.

The Business Model Canvas (BMC) [9] can assist in the risk management concepts and implementation by identifying first the key assets, followed by the development of a risk register for each key asset [10, 11]. The key assets of RMP-of-the-Future, for example, can be identified from items listed under the nine BMC blocks namely Key Resources, Key Activities, Key Partners, Value Propositions, Customer Segments, Channels, Customer Relationship, Cost Structure, and Revenue Stream. Subsequently, this will help RMP-of-the-Future in formulating and developing an effective integrated risk management system.

KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITIONS	CUSTOMER RELATIONSHIPS	CUSTOMER SEGMENTS
-Ministry Of Home Affair -All RMP Divisions -City Council -Community / Citizens -Education Institution and School -Technical / IT support team -Advertisements Company	- Community Policing by physical patrolling (human, drone, vehicle) in a community. - Incidence information collection by duties officer / technical support/ community/ citizens during patrolling or via mobile application VSP/ Email/ SMS. -Incidence Information Management handling (action) including future response plan. - Awareness programs through lectures and brochures at universities and schools. -Maintenance the Social Media Application and application.	- Security protection to enhance the peacefulness of the community and country. - Improvising the law enforcement by enforcement bodies. - Conduct charity and welfare programmed for the community through education sector. - working with the community in combating social mobility and legal misconduct through on line information sharing. - Promoting and advertising regarding education and awareness program	- Maintaining Good relationship with others enforcement bodies and city council. - Communities and civilian support. - School and education institution support and active involvement. - Social Media Information sharing. -Technical / IT support to maintain mobile application, Email /SMS and websites.	- Malaysians Citizens (Individual, Communities, Bussiness) - Foreigner (Tourist, Students, Workers) - Education Sector - Public Sector
	KEY RESOURCES		**CHANNELS**	
	- Skilled personnel /employee - Transportation - Community / citizens - Technical & logistic equipment for system troubleshooting. - Communication - School representative		- Public relation Officer (Liaison) - Application " Virtual Smartphone Patrol (VPS)" - Social Media - Website, news, radio - TV programmes and interviews. - Live "Talk" programmes in community and education institution (school / university) - RMP Open Days and exhibition.	
COST STRUCTURE			**REVENUE STREAMS**	
- Personnel Allowance - Transport and Vehicle maintenance - Weapons and ammunition supply and maintenance - Information and on-line system gathering Budget (VPS) - Communication cost and walkie- talkie. - Charity and education programmes budget - Drone maintenance cost. - Identification card reader cost.			- Government Financial Budgets - Government Emergency Budgets - Government Special Budget	

Figure 6: Example of Business Model Canvas (BMC) for RMP in Preventing Crimes through Community Policing.

VIII. RECOMMENDATION

Although Royal Malaysian Police (RMP) are constantly working to reduce the risk, the risk monitoring needs to be carried out periodically and systematically on the existence of potential risks to all programs/ projects undertaken by all Risk Management Teams involved. Each party must play a role in the implementation and monitoring of risks. The risk progress meeting should be held at least two (2) times a year or more, depending on the needs and priority. However, to ensure the effectiveness of risk mitigation it is recommended that regular meeting or discussion can be held and chaired by the related commanding officers.

The results of the discussion should be recorded to ensure that any potential weaknesses and risks have been or are being taken and been highlighted. For this RMPRMP, reviewing on execution of the plan has been decided at least once a year. But due to IR 4.0, this is inaccurate and inappropriate due to current crime rates and crimes trends. It is recommended to review at least every six months to ensure the risk management plan is proactive, future-looking, up-to-date, sustainable, and relevant. Hence, risks the mitigation also involving on discussion about the burden of work and the well-being of employees which can be contributed to the risks in the team. The top officials in an enforcement body should ensure that each department involved plays a role, as appropriate, taking precautionary measures or mitigation actions if necessary.

Enhance training and conduct more advance course for improvement and awareness programs on personal and team interventions, financial management in economical concepts, understanding / disclosure of current legal provisions as well as other courses or awareness programs deemed appropriate to help team members develop appropriate personal skills. Thus, to ensure the effectiveness of the risk management plan, the following actions also should be given due consideration:

a) All stakeholders should be committed and responsible to ensure the effectiveness of the implementation of this plan;

b) The plan is constantly updated and monitored in accordance with current and changing needs and priority; and the plan must be implemented and fully complied with.

The increasing cyber threats, especially those involving data misuse and ransom ware, need to be taken seriously by enforcement agencies such as the RMP. Online systems that involve the RMP will further increase the high risks. This is because the concept of "information exchange" including intelligence information will provide opportunities for anyone to exploit and misuse. Therefore, the improvement of RMP-based online systems needs to be monitored and maintained by the RMP itself and not by the fully appointed vendor. RMP must set standards that should be maintained to ensure outbreaks do not occur.

Based on the BMC in Community Policing as shown in Figure 6, there are few improvements that can be made, starting with the collaboration with other enforcement agencies such as immigration and consumer affairs departments. The key activities can be improved where the RMP collaboration together in patrolling the communities. The keys resources can be shared not only for logistics aspect but also experiences between skilled employees from different background. The value proposition is to expand the scope of information collection, not only in crimes prevention but also in the issues of misuse of power and suspicious activities such as illegal immigrants and uncontrolled increase in prices of goods. This is important to ensure the rights of people as customers are guaranteed especially during festive seasons. This will also enhance the government good images and improve people perception on central and state governance. In addition, RMP also can share the burden and responsibilities in ensuring and keeping the community harmonious, safe and secure.

To align with the IR 4.0, the VPS application can be enhanced further by adding a new modules or functions, where the community not only can report or provide information regarding crimes, but also report on illegal immigrant activities, improper price increase, and other illegal activities. So, the cost structure can be decreased and control in minimum expenses. The government can prepare the special budget for related agencies involved in this program "group budget" in a revenue streams. However, by opening the door to other organisations, RMP actually increases the risks exposures especially on the cyber security risk. So the RMP must do a meticulous study on the risk factors and impact before implementing information sharing.

IX. CONCLUSION

The risk management plans for each law enforcement bodies are different from each other. They differ not only in their individual function but also in accordance with the provisions and "norms" of the governance of a country. For the RMP, the focus is on the 6 key strategic areas of risk management as discussed, namely **law enforcement, peaceful and security, crime prevention, investigation and prosecution, security intelligence** and **organization strengthening**. These core objectives will form the basis of the RMP not only in carrying out its mandate to enforce the law, but also to safeguard welfare and help the country to manage its increasingly difficult financial constraints. In addition to risk management that relies on the internal directives of the superiors, it also relies on current directives and circular from the government either through the relevant ministers or from the Prime Minister. The RMP also develops a risk management plan in accordance with MS ISO 31000: 2010 Risk Management - Principles and Guideline in which the plan contains 3 main levels of **setting context, risk evaluation** and **risk control**.

Regardless of the IR4.0 Revolution, the RMP is seen to be on the right track by partnering with other government agencies and sharing police information such as crime index rates and on-line risk information. The RMP also opens the door to the public to facilitate the RMP to communicate and cooperate with the people in helping in preventing and fighting crime. This paper has shown on how the Business Model Canvas (BMC) can assist and facilitate in the risk management concepts and implementation. Firstly, the RMP must identify the key assets, followed by the development of a risk register for each key asset. The key assets of RMP-of-the-Future can be identified from items listed under the nine BMC blocks namely Key Resources, Key Activities, Key Partners, Value Propositions, Customer Segments, Channels, Customer Relationship, Cost Structure, and Revenue Stream. Subsequently, this will help RMP-of-the-Future in formulating and developing an effective integrated risk management system.

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