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INTEGRATED RISK MANAGEMENT IN THE DIGITAL ERA: LEVERAGING ON BUSINESS MODEL CANVAS FOR A PROPERTY DEVELOPING COMPANY

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Abstract: **The risk of unexpected and harmful events haunted every business that will cost the company money or ultimately brings it to permanently close. Risk management allows organizations to get ready for the unforeseen events by minimizing and avoiding the risks before they happen. The implementation of a successful risk management plan will ensure an organization is saved from catastrophic consequences, thus protecting the company's future. The aim of this paper is to review the risk management in a particular property developing company in Malaysia and subsequently making this type of company 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 thriving in the digital era. For the purpose of this paper, the name of the company will not be disclosed. This paper will discuss on the business model options of the Property-Development-of-the-Future (PDotF) by using the business model canvas (BMC) framework, together with its new risks and challenges. This business model may facilitate and help PDotF in identifying the key assets, thus as an enabler the formulation of an effective enterprise risk management system.**

Keywords: **Business Model Canvas, Risk Identification, Risk Analysis, Risk Evaluation Property Developer, Enterprise Risk Management, Integrated Risk Management, Standards, Malaysia.**

I. INTRODUCTION

A systematic approach to the management of risk is now considered as best management practice. Notwithstanding the type of risk, the approach will continually benefit the company irrespective of category of risk involved and once the risk is identified and documented, the risk management process will be started. The risk management process will then lead to a comprehensive review and critical feedback that will help to develop and formulate changes in the company polices and thus saving the company's business.

Risk management decisions should be a part of business objectives. Every new project, policy or invention should include all the possible anticipated risks that one may possibly confront. Decision making process needs to consider threats identified, its impact and reaction on the business. By making a careful analysis, companies will have fewer surprises and thus may in the end spend less time recovering from the losses that may be inevitable at times. However, the approach of risk management must be suited with the current environment and technological advancement through the inception of integrated risk management. Therefore, it is imperative to highlight the current practice as well as the inception of PDotF of risk management in a property developing company in Malaysia.

II. PROBLEM STATEMENT

The world we live today is experiencing the digital revolution. The digital revolution started in the late 1950s to the late 1970s and continues to the present day. Hence, to adapt to the era of digitalization, the integrated risk management is the best approach and practice because it focuses on how you make risk-based decisions about adding technology to streamline your critical business processes.

The property developing company in Malaysia currently practiced the enterprise risk management whereby it focuses on the process of planning, organizing, leading, and controlling the activities within the organization. However, without integrated risk management it does not focus on the risk management holistically as the scope of IT risk has expanded to include the entire business [15]. Integrated risk management delivers a comprehensive view of enterprise-wide risk across business units, compliance functions, and enables enterprise-wide information security governance.

In response to this problem, this paper will discuss the current enterprise risk management adopted by the company and to suggest appropriate improvements as well as incorporating the business model options of the Property-Development-of-the-Future (PDotF) by using the business model canvas (BMC) framework, together with its new risks and challenges. This business model may facilitate and help PDotF in identifying the key assets, thus enabling the formulation of an effective enterprise risk management system, in order to be a relevant property developing company in Malaysia.

III. METHODOLOGY

The paper will be based on literature review whereby it will investigate the risk management impact in other countries and Malaysia as well as looking into the availability of related standards in Malaysia. It will also look upon the significance of industrial 4.0 in relation to property development industry and the inception of integrated risk management for the future of property development industry. Interviews are also made with the staff from the risk management department of the property development company 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.

IV. LITERATURE REVIEW

The art of identifying and successfully managing risk in an appropriate manner has become a fundamental fragment of strategic management. Property developers who are incapable to recognize the scope and significances of related risks and who subsequently fail to introduce effective mechanisms to cope with the risks, clearly jeopardizes the stability and overall business as a whole. Therefore, these risks need to be examined, predicted, analyzed, and managed as to ensure catastrophic incidences does not wind up or destroy a property developing company. The history of risk management can be traced back in as early as after the World War II. However according to [1], the foundation of modern risk management started between 1955-1964 and there were no references for risk management as well as courses offered over the its early introduction.

[2] The risk management in Nigeria had shown the evidences of overflowing in property development failures and abandonments that impacts the social, environmental and economic consequences. Projects are abandoned before completion or completed projects are not disposed over six months. In other cases, completed projects are foreclosed by development lenders due to inability of the developers to service their loans. These problems could be attributed to development companies not employing formal strategic risk management in project evaluation.

Meanwhile, in the Netherlands, according to [3] in the interview, it studied the response of listing the most important risks and why are they highly prioritized. Risk of planning procedure came on top whilst construction defect was the lowest as far as property development is concern. The practice of risk management in one of the well-known risk property company in Malaysia had resulted the company being identified as less risky than its peer groups [4]. In light of the foregoing, the MS ISO 31000: 2010 was recognized as the best practice and standards of risk management in Malaysia. It was adopted from the International Organization for Standardization ISO 31000 and under the SIRIM QAS International Sdn. Bhd, it was remodelled to MS ISO 31000 to suit the country.

An enterprise risk management should never be confused with integrated risk management. Enterprise risk management focuses on reviewing strategic business decisions, whilst integrated risk management focuses specifically on analyzing the risks inherent in company's business technologies [16]. Integrated risk management focuses on how we make risk-based decisions about adding technology to streamline company's critical business processes. According to [11] the property industry is starting to see the impact of Industry 4.0 in terms of the technologies to be used and building specifications. As far as property industry in Malaysia is concern, according to the [12] interviews were made with the Managing Directors from two well-known property developers in Malaysia, whereby both anticipated that the property industry in Malaysia is moving towards a technology driven mindset whereby smart homes and digitalization is the new way of life. Therefore, with the addition and use of technology in property industry, the integrated risk management is the future of risk management in a property developing industry in Malaysia. Additionally, according to [17] the IR4.0 in property development industry will involve the digital trends in the real estate by the elements and processes such as internet of things (IoT), robotic process automation, 3-D printing, blockchain and virtual brokerage and leasing.

V. DISCUSSION AND ANALYSIS

For the purpose of this paper, the selected company which is the property development company in Malaysia recognizes that it is obliged to systematically manage and regularly review its risk profile at a strategic, financial, operational and compliance level. It has done this by developing / adopting risk management framework that determines the process and identifies tools for realizing its objectives. Not only does it wish to minimize its risk but also maximizes its opportunities. It enhances the company's capability to respond timely to the changing environment and its ability to make better decisions.

[5] The company approached their risk management through the realization of their company's Enterprise Risk Management Policy and Framework. The objectives of the policy statement are to ensure that:

1. A common and consistent approach for management of risks is adopted within the company's group – property, and corporate support department.

2. The management of risk contributes to the quality of performance and continuous improvement of the company's businesses, its operations and delivery of services and products; and

3. All significant risks are identified, evaluated, managed and reported in a timely manner to the Board of Directors.

[6] With that, the company had identified and endorsed their risk management policy:

1. To integrate risk management into the culture, business activities and decision making processes. Risk management concept, thinking and initiatives must be embedded in the day-to-day business operations and decision-making process. Risks that can be managed through embedded, routine systems and processes should be so managed and monitored. Where risks cannot be so managed, they must be subject to individualized risk management techniques appropriate to a particular risk.

2. To anticipate and respond to the changing operational, social, environmental and regulatory requirements proactively. As far as reasonably possible, risks must be identified, analyzed and dealt with by Management proactively based on their experience, industry knowledge and information available from the marketplace. Company must not experience any crystallization of major risk unexpected by the Board. However, this does not mean risk will not transpire, but there are comprehensive plans put in place to respond timely and address the risk impact.

3. To manage risks pragmatically, to an acceptable level given the particular circumstances of each situation. In dealing with risks, the Board understands that it is not always possible, cost effective or desirable to manage or eliminate risk all together. A cost-benefit approach is needed where the returns must commensurate with the risks taken and reduce cost of risk controls.

4. Risk assessment report. To require that all papers that are submitted to the Board by Management relating to strategy, key project approval, significant action or investment must include a detailed risk assessment report.

5. To implement a robust and sustainable ERM framework that is aligned with company's vision and missions, and in accordance with best practices. The Board recognizes that a structured and consistent ERM framework is instrumental for company to deploy its operational strategy effectively.

According to an interview with [7] although the company provide the policy and framework of risk management and adopting the MS ISO 31000: 2009, the identification of risk is executed by brainstorming sessions with respective Head of Departments. Brainstorming is made initially between Head of Departments and will then be discussed in detailed within their respective staff in departments in order to identify the risk. The risk is identified through the department work processes in which it varies with the department's work objective. Respective head of departments are given freedom to identify and analyze their risk if it is related to their department's work process. After the risk is analyzed and identified, the risk will then be evaluated. Risk evaluation involves the exercise of determine the existing key controls on the identified risk, defining the existing control effectiveness and the likelihood and impact to produce the residual risk rating. The rating can then be used to determine further management or treatment by the company.

[8] The company has identified relevant likelihood and impact ratings, as shown in the Figure 1, 2 and 3; and then translated into overall risk rating matrix as per Figure 4.

Description	Risk Description
Almost Certain	Probability of **81% - 100%** of event happening; or More than **6 events** a year
Likely	Probability of **61% - 80%** of event happening; or **1 – 5 events** in a year
Possible	Probability of **31% - 60%** of event happening; or **Once (1) a year**
Unlikely	Probability of **11% - 30%** of event happening; or **Once (1) in 10 years**
Remote	Probability of **10% or less** of event happening; or **Once (1) in 20 years**

Figure 1: Likelihood rating

Financial	BUDGET	RISK CONSEQUENCES / IMPACT				
		Insignificant	Minor	Moderate	Major	Catastrophic
TIER 1- Group						
[redacted]Group	Profit Before Tax	Reduce By <5%	Reduce By 5%-10%	Reduce By 10%-15%	Reduce By 15%-20%	Reduce By > 20%
TIER 2 – Division						
[redacted]	Gross Profit	Reduce By <5%	Reduce By 5%-10%	Reduce By 10%-15%	Reduce By 15%-20%	Reduce By > 20%
[redacted]		Reduce By <5%	Reduce By 5%-10%	Reduce By 10%-15%	Reduce By 15%-20%	Reduce By > 20%
[redacted]		Reduce By <5%	Reduce By 5%-10%	Reduce By 10%-15%	Reduce By 15%-20%	Reduce By > 20%
[redacted]		Reduce By <5%	Reduce By 5%-10%	Reduce By 10%-15%	Reduce By 15%-20%	Reduce By > 20%
[redacted]		Reduce By <5%	Reduce By 5%-10%	Reduce By 10%-15%	Reduce By 15%-20%	Reduce By > 20%
[redacted]		Reduce By <5%	Reduce By 5%-10%	Reduce By 10%-15%	Reduce By 15%-20%	Reduce By > 20%
Others		Reduce By <5%	Reduce By 5%-10%	Reduce By 10%-15%	Reduce By 15%-20%	Reduce By > 20%

Figure 2: Impact Rating – Financial (The impact rating is compared against the approved budget)

Non financial	IMPACT				
	Insignificant	Minor	Moderate	Major	Catastrophic
Legal/Regulatory / Compliance	No litigation consequences	Issuance of warning latter	Issuance of reminder and warning letter	Issuance of Tribunal notice and writ of summon	Breach of contract
	Issuance of advise letter	Minimum fine	Moderate fine	Heavy fines Suspension of share	Closure of operations Jail sentence for directors
Reputations / Media	Minimum impact	Minor impact due to complaints	Significant media coverage	Serious media coverage/ negative public image	Adverse local / international media coverage with authority intervention that could cause the organisation's reputation to sustain long-term/ permanent damage/ disruption to business
	No permanent damaged in the short-or-long term	Unfavorable media coverage that would not disrupt the organisation routine operations	Public's complaints to authority/ stakeholders/ press that could disrupt the organisation's operations in the short-or-medium-term	Authority takes actions against the organisation that could disrupt the organisation's business in certain period of time	
Safety	Injuries with no treatment or repair on asset at no cost	Injuries with first aid treatment or minor repair on the asset with minor cost	Medical treatment required or damage on asset has to be repaired with high cost	Extensive injuries that effect productivity or major repair required on the asset with very high cost	Death or huge repair with huge cost required
General Statement	An event where the impact can be absorbed/ managed through routine activity	An event where the impact can be absorbed/ managed with minimum management effort	An event that cause the business to sustain negative financial / non – financial impact that would require some work/ planning from management to manage the issue	An event that could lead the business to sustain huge adverse financial/ non-financial impact that would require hard work from management to manage the issue	An event that could potentially crumple the entire business in the long-term

Figure 3: Impact Rating – Non-Financial

Likelihood	Impact: Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	High	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

Figure 4: Overall Risk Rating Matrix

[9] In addition to assessing likelihood and impact ratings, the Effectiveness of Existing Controls should also be considered in terms of the Rating Level as illustrated in Figures 5 and 6.

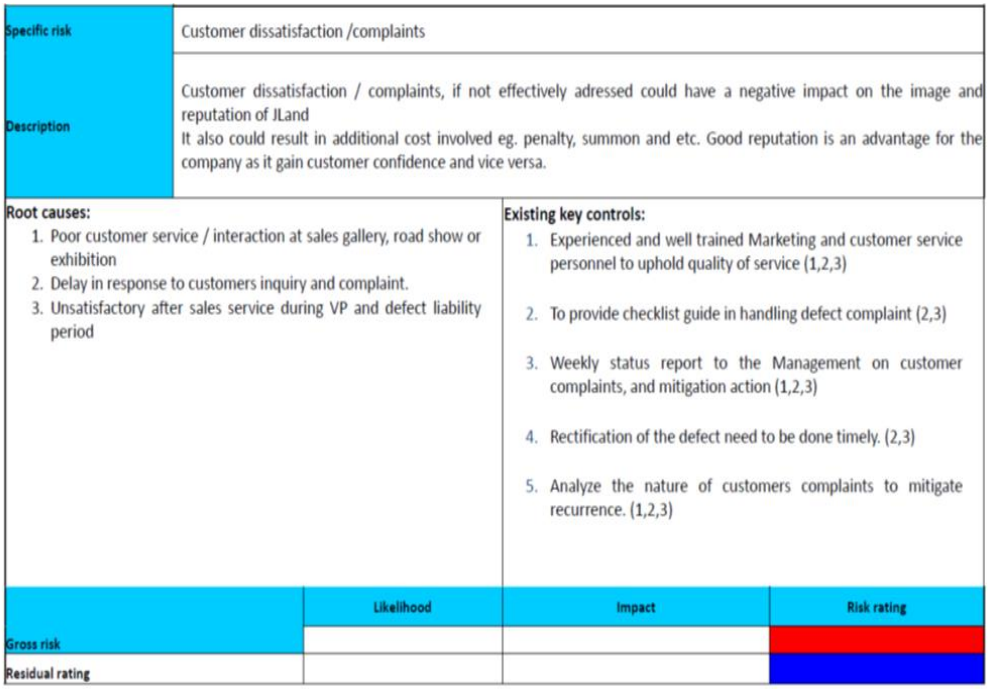
Level	Action
Extreme	Must be managed by top management with detail action plan
High	Senior management input or attention is required
Medium	Managed by routine procedures or the risk may be worth accepting with monitoring
Low	Unlikely to need specific application of resources or may accept the risk

Figure 5: Risk Level Rating

Description	Control Description
Satisfactory	Controls are well managed, operated properly, and meet compliance requirements.
Some weaknesses	Some control weaknesses / inefficiencies have been identified. Although they do not present serious risk exposures but improvements in the controls are required.
Weak	Unsatisfactory controls and do not meet acceptable standards, as many control weaknesses / inefficiencies have been identified.

Figure 6: Effectiveness of Existing Controls

The risk will then be registered following the format in figure 7.



Specific risk	Customer dissatisfaction /complaints		
Description	Customer dissatisfaction / complaints, if not effectively adressed could have a negative impact on the image and reputation of JLand It also could result in additional cost involved eg. penalty, summon and etc. Good reputation is an advantage for the company as it gain customer confidence and vice versa.		
Root causes: 1. Poor customer service / interaction at sales gallery, road show or exhibition 2. Delay in response to customers inquiry and complaint. 3. Unsatisfactory after sales service during VP and defect liability period		Existing key controls: 1. Experienced and well trained Marketing and customer service personnel to uphold quality of service (1,2,3) 2. To provide checklist guide in handling defect complaint (2,3) 3. Weekly status report to the Management on customer complaints, and mitigation action (1,2,3) 4. Rectification of the defect need to be done timely. (2,3) 5. Analyze the nature of customers complaints to mitigate recurrence. (1,2,3)	
	Likelihood	Impact	Risk rating
Gross risk			
Residual rating			

Figure 7: Sample of Risk Register

According to [10] the submitted risk register by respective departments will be reviewed biannually by the risk and compliance department in which they will follow up with respective head of departments for any risk mitigation and updates that has been done. Since this company is one of the subsidiary companies from a parent company, it was informed that the risk will then be reported to the parent company for further monitoring, decision and direction. From the interviews, the top 5 risks identified by the parent company to this subsidiary company are Sales and marketing: Unsold units, Compliance issues: Changes, new requirements by the govt. Act, laws, govt policies, Financial, Project delays and Quality issues: customer complaints, defects. These top 5 related risks are reported to the parent company once for every 2 months.

To make themselves relevant to the property development industry, the company had started using the technological advancement and planning such as inventing a smart home concept and virtual show house in order to compete with other companies and to be readily competitive in the property developing industry. In a nutshell, the company practices a good risk management through their enterprise risk management policy and framework that largely adopts the standards of risk management best practice MS ISO 31000: 2010.

VI. SUGGESTIONS AND RECOMMENDATIONS

Although the company provided a clear and precise policy and framework for risk management and adopted the MS ISO 3100:2010 for risk management, the practice of analyzing and identifying risk through respective department's work process can resulted in an overwhelmed and redundant risk register either between departments or as a whole.

It is recommended that the company should focus on its risk identification and analysis through their company's strategic planning so that it will be more accurate and more driven towards their company's vision and mission rather than focusing on department's work processes. Identifying risk through department's work processes will lead to a more unfocused and overwhelming list of risks. It is also noted that although the company embraces the enterprise risk management concept, the use of digital technologies to enhance their business strategy have not been integrated to their risk management. Integrated risk management is the holistic approach of the future of property developing industry because it overlooks the risk element as a whole, not just by strategic business functions. The company should also look forward into the effects IR4.0 in the property development industry. Having a strategy in place to identify and address emerging disruptive trends, analyse and prioritize their importance, understand their long-term implications, highlight risks and plan for action is imperative for thriving in this business environment. Technology adoption to the business by embracing the IR4.0 will position the company as a cutting-edge leader in the property development industry.

The Business Model Canvas (BMC) [13] can assist in the risk management concepts and can be implemented by identifying first the key assets, followed by the development of a risk register for each key asset [14]. In simple terms, the method that supports this technique is a pragmatic risk registry that can be used to identify key assets and risks based on the BMC of an organization. A BMC is a model used in strategic management to document existing and develop new business models. Figure 8 shows the proposed business model canvas for the property developing company. The key assets of PDotF, 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 PDotF in formulating and developing an effective integrated risk management system.

<table>
<tr><th>Key Partners</th><th>Key Activities</th><th>Value Propositions</th><th>Customer Relations</th><th>Customer Segments</th></tr>
<tr><td rowspan="3">1.Capital partners
2.Real estate brokers
3.Real estate agents
4.Bank mortgage
5.Bankruptcy law firms
6.Short sale specialist
7.Consultants
8.Government expeditor
9. Government authority</td><td>1.Distressed asset acquisition
2.Rehabilitation/ Modernization
3. R&D in property development
4. Marketing & selling property</td><td rowspan="3">1. Enhance quality of living style & environment
2.Affordable housing
3.Optimum home maintenance costs through green building, modern design and home automation at no cost.
4. Smart home concept.</td><td>1.Comprehensive warranty & maintenance program
2.Digital platform for customer</td><td rowspan="3">1. Individual income, age, location, life-style & budget-based customer
• Top 20
• Middle 40
• Bottom 40
• Aged group 25-55

2. Corporate Customer
• Government
• Private

3. Authority

4. Donor</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>1.Capital
2.Expertise (smart home, automation & green building)</td><td>1.Real estate broker/agents
2. Marketing/sales
3. Use of digital platform</td></tr>
<tr><td colspan="2">Cost Structure</td><td colspan="3">Revenue Streams</td></tr>
<tr><td colspan="2">Costs for Key Resources & Key Activities</td><td colspan="3">Dynamic pricing:

1. Sales
2. Grant & sponsorship</td></tr>
</table>

Figure 8: Sample of Business Model Canvas for property developer

VII. CONCLUSIONS

Conclusively risk management is very important to any business organization with or without facing risks. An effective risk management plan should have early and aggressive identification of risks through involvement and collaboration of relevant stakeholders. Risk management describes organization decisions on how they deal or will face various risks if they occur. It also helps to determine different ways and measures to control those risks and providing assurance to the organization that it can create and implement an effective management plan to minimize or prevent loses occurrence. A good risk management plan should state clearly strategies techniques to be used to recognize and confront threats and vulnerabilities facing the company and provide possible solution to the problems.

The risk management in a property developing company should always be aligned with the company's vision, mission and their strategic planning or strategic management approach. This in turn will help in identifying a more focused towards key assets risk identification approach that will ultimately create an efficient and effective risk management framework. The ultimate approach of risk for a property developing company is by implementing the integrated risk management whereby it caters the business strategic plan and strategic initiatives that works together with the use of technology and digitalization and also by using the business model options of the Property-Development-of-the-Future

(PDotF) by using the business model canvas (BMC) framework, together with its new risks and challenges. This business model may facilitate and help PDotF in identifying the key assets, thus enabling the formulation of an effective enterprise risk management system.

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