Diageo in Canada:

Alcohol-Cannabis Industry Partnerships

The George Washington University

DNSC 6254 – Risk Management

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Fall 2018

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SECTION 1 – Project Overview

The landscape for cannabis and cannabis-related products is evolving rapidly in today's global environment. There is a plethora of opportunities for business investment in this nascent industry. Firms from a variety of business sectors, such as food and beverage, tobacco, healthcare, and beauty, are exploring the myriad of possibilities for potential growth and expansion. As with any new and innovative business/technology, the importance of establishing an early presence to garner market share and capture explosive growth is essential. However, given the vast number of uncertainties and large investment required for market entry, it is imperative to utilize a disciplined risk management approach to analyze the viability and strategic fit of such an ambitious endeavor.

Diageo Plc is a U.K.-based multinational alcoholic beverages company, and the second-largest distiller in the world. Recently, Diageo expressed interest in entering into the cannabis products industry, reaching out to at least three Canadian cannabis producers for possible partnerships. Cannabis has been legalized in Canada as of October 2018 yet remains illegal in the U.K.

Through the use of Expert Choice's risk modeling software–Riskion–we intend to perform a risk analysis of Diageo's foray into the cannabis products industry ("the Enterprise") in the context of declining spirits sales and emerging opportunities for converging the alcohol-marijuana industries into a one-stop shop for recreation. The risk analysis will be performed from Diageo's point of view, and our time frame is approximately one year after Diageo's operative entry into the market. We will analyze and examine the various business, strategic, market, political, legal, and reputational risks associated with developing such partnerships and involving a product of varying legality.

SECTION 2 – Identifying Risk

2.1 Risk Events

Our first step was to survey the legal and commercial environment of the Canadian cannabis industry. With this information, we then brainstormed on the potential implications of Diageo–the world's largest producer of spirits–entering Canada's cannabis products market through partnerships with existing Canadian cannabis producers. We then identified ten major Risk Events that Diageo may face in the course of developing and introducing cannabis products or cannabis-infused alcohol products into the Canadian market. These Risk Events were chosen due to the uncertainty that they represent as well as their potential to cause a significant loss for the Enterprise.

Unique ID		Events
[01]		Canadian partnership(s) fall through
[03]		Poor reception of cannabis products
[05]		Domestic spirits sales decline
[06]		Canadian spirits sales decline
[09]		Product is rejected on health grounds
[10]		Onerous regulatory guidelines limit profitability
[13]		Management differ in implementation of company strategy
[14]		Restrictions on marketing
[17]		Inability to compete with Canadian cannabis companies
[19]		Product is rejected on moral grounds

Figure 1: Enterpise Risk Events

Sources of Risk

We then identified the potential sources for these Risk Events. In total, we identified five categories of sources (or causes) for our potential Risk Events, as they may arise in the course of Diageo's entry into the Canadian cannabis industry. In order to assess risk as comprehensively as possible, we listed 3-5 specific risk elements within each source category that may give rise to the ten risk events depicted in Figure 1 above.

- Sources
  - Political
    - Parliamentary decision
    - Judicial rulings
    - Executive proclamations
  - Regulatory
    - Canadian regulators issue restrictions on marketing
    - UK regulators issue restrictions on cannabis partnerships
    - Onerous government fines/taxes
  - Partnership
    - Supply chain bottleneck
    - Company cultural differences
    - Organizational challenges
    - Leadership differences
  - Competition
    - Strong/established competitors
    - Ineffective marketing
    - Spirits sales cannibalize cannabis product sales
    - Competitor products are better reviewed
    - Too many similar product offerings in Canadian market
  - Consumer Response
    - Public moral objection
    - Negative social media
    - Minister of Health issues warning
    - Religious organization denounces marijuana use

Figure 2: Hierarchy of Sources for Risk Events

Likelihood of Risk Events

The relationship between each Risk Event and a given Risk Source (if applicable) was then mapped as below. Note that most Risk Sources may be associated with multiple Risk Events.

	Sources																		
	Political			Regulatory			Partnership				Competition					Consumer Response			
Events	Parliamentary dec	Judicial rulings	Executive proclam	Canadian regulat	UK regulators issu	Onerous governm	Supply chain bott	Company cultural	Organizational ch	Leadership differe	Strong/establishe	Ineffective market	Spirits sales cann	Competitor produ	Too many similar	Public moral objec	Negative social m	Minister of Health	Religious organiz
Canadian partnership(s) f				✓			✓		✓	✓					✓	✓	✓	✓	✓
Poor reception of cannab												✓		✓			✓	✓	✓
Domestic spirits sales de					✓											✓	✓		
Canadian spirits sales de						✓			✓			✓	✓			✓	✓		
Product is rejected on he		✓	✓														✓	✓	
Onerous regulatory guide	✓	✓		✓	✓		✓						✓						
Management differ in imp							✓	✓	✓	✓			✓		✓				
Restrictions on marketing	✓			✓					✓			✓							
Inability to compete with (							✓	✓	✓		✓			✓	✓				
Product is rejected on mc			✓									✓				✓	✓		✓

Figure 3: Risk Sources and Corresponding Risk Events

Project Objectives

We then proceeded to outline the Enterprise's Objectives–or goals–as well as the threats posed under each objective category by the risk events. This Risk Assessment as a whole will measure and analyze the risk posed to these objectives by the risk events and their sources.

- Objectives
  - Company health
    - Financial loss
    - Reputational loss
    - Inability to attract new customers
  - Performance
    - Low sales
    - Ineffective partnerships
    - Competition with spirits sales
  - Public Relations
    - Poorly reviewed products
    - Widespread use by minors
    - Boycotts by religious/moral groups
  - Partnership Opportunities
    - Resistance to non-Canadian suppliers
    - Cannabis market glut

Figure 4: Hierarchy of Enterprise Objectives

Impact of Risk Events

The figure below depicts the relationship between a Risk Event and the project Objectives. The grid specifically shows how a Risk Event would threaten the project Objectives ("Consequences"). Often, a risk event has the potential to threaten the project objectives across multiple categories.

	Objectives/Consequences										
	Company health			Performance			Public Relations			Partnership Opportuni	
Events	Financial loss	Reputational loss	Inability to attract new customers	Low sales	Ineffective partnerships	Competition with spirits sales	Poorly reviewed products	Widespread use by minors	Boycotts by religious/moral groups	Resistance to non-Canadian suppliers	Cannabis market glut
Canadian partnership(s) fall through					✓	✓				✓	✓
Poor reception of cannabis products						✓	✓	✓	✓		
Domestic spirits sales decline	✓	✓							✓		
Canadian spirits sales decline	✓								✓		
Product is rejected on health grounds	✓	✓	✓	✓				✓			
Onerous regulatory guidelines limit profitab			✓	✓	✓						
Management differ in implementation of co	✓		✓		✓					✓	
Restrictions on marketing			✓	✓	✓	✓			✓		
Inability to compete with Canadian cannabi	✓	✓	✓	✓	✓						✓
Product is rejected on moral grounds	✓	✓	✓	✓			✓	✓	✓		

Figure 5: Potential Consequences of Risk Events to Enterprise Objectives

SECTION 3 – Measuring Risk

Key Participants and Roles

Several key Diageo personnel are involved in assessing the risk profile of entering Canada's cannabis market. Depending on their role within Diageo and in this project, each participant took part in making judgements for the likelihood of each Risk Event in the context of the project objectives and possible risk sources. A list of each participant and his or her role in evaluating risk for sources and for events is displayed below. The participants' evaluation purview was limited in scope, whereby they evaluated likelihood of Risk Events (as related to Sources or Objectives) within the areas/categories in which they have experience, authority or expertise in. Only the Chief Risk Officer performed judgments for all Risk Event-Source and Risk-Objective permutations.

Email Address	Participant Name
CandaceC@diageoplc2.com	Candace Duncan (In-House Counsel)
CecilyB@diageoplc2.com	Cecily Bosch (R&D Analyst)
OscarW@diageoplc2.com	Oscar White (VP of Product Development)
ShelleyR@diageoplc2.com	Shelley Ruiz (Chief Risk Officer)
VincentW@diageoplc2.com	Vincent Wu (VP of Marketing)
GlennS@@diageoplc2.com	Glenn Summers (Director of North American Operations)

Figure 6: Key Evaluators in Risk Assessment

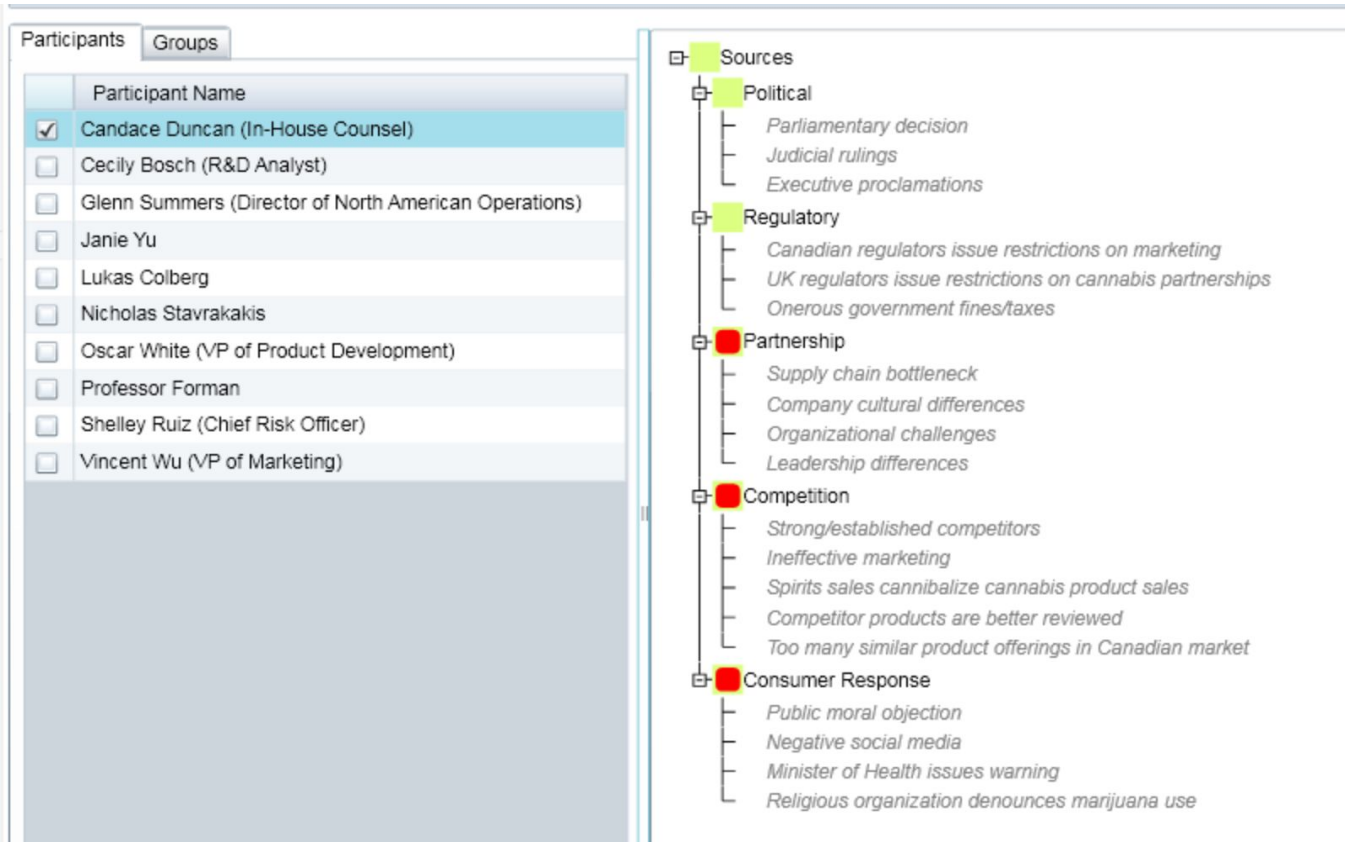

Figure 7: Sample Participant Roles in Evaluation of the Likelihood of Risk Events and Their Causes

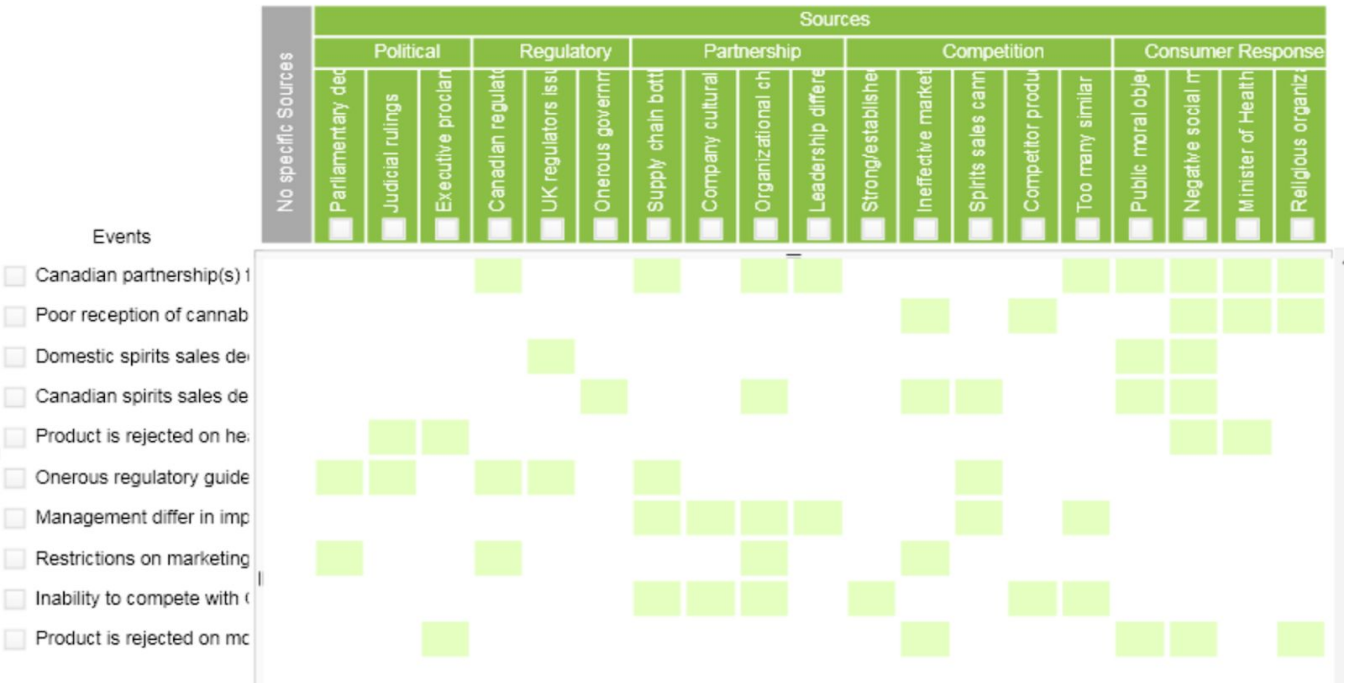

Figure 8: Sample Participant Roles in Evaluation of Likelihood of Risk Events in Relation to Sources

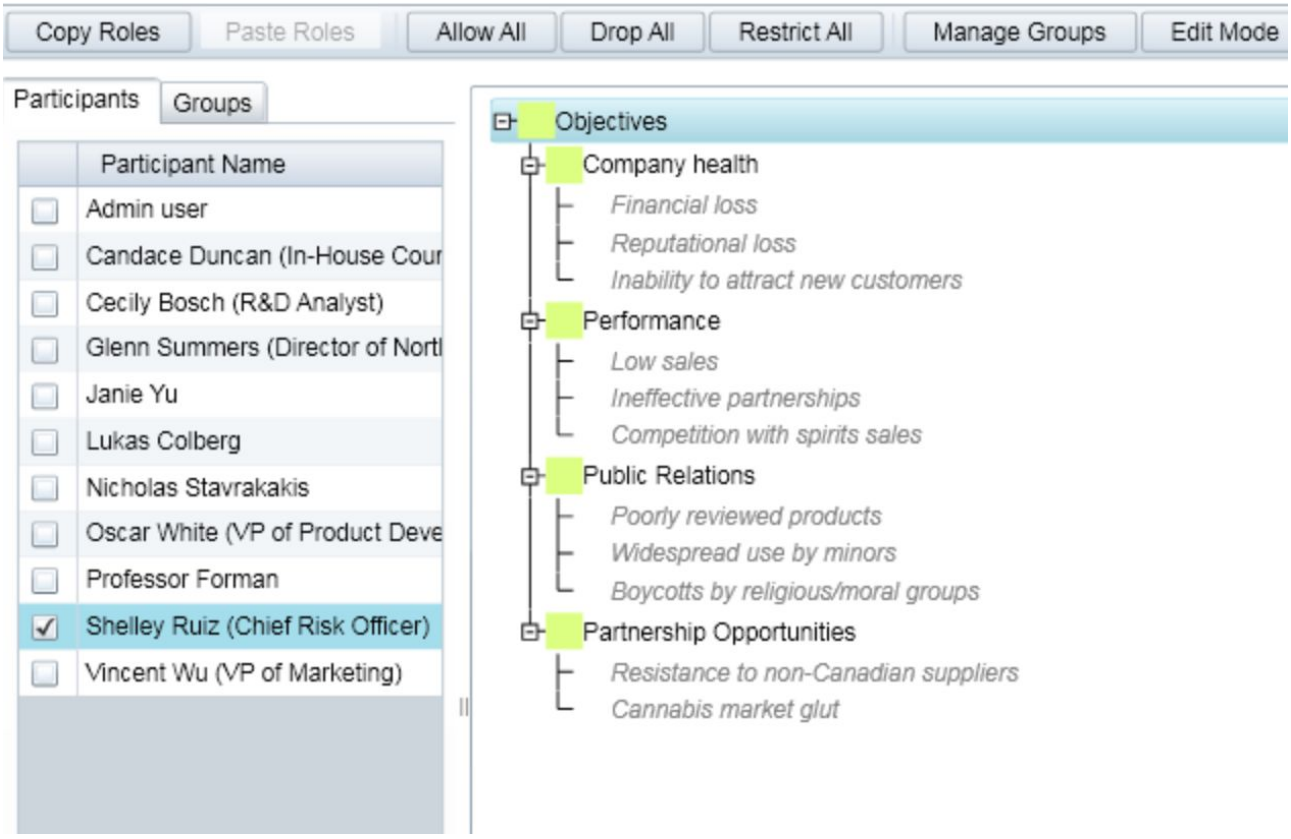

Figure 9: Sample Participant Roles in Evaluation of the Likelihood of Risk Events and Their Consequences

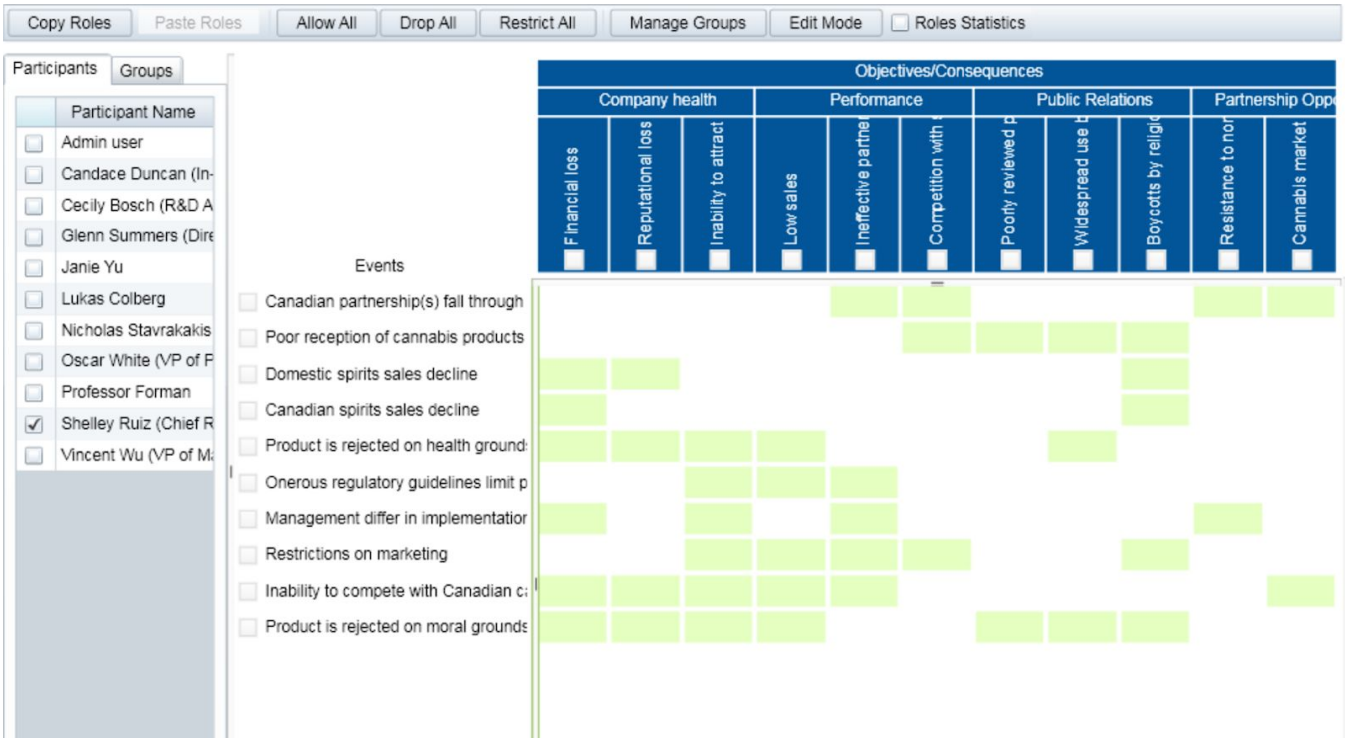

Figure 10: Sample Participant Roles in Evaluation of Likelihood of Risk Events in Relation to Objectives

Measurement Methods

The Expert Choice Riskion software used to measure risk in this project provides for several different methods with which to evaluate risk events–all based on mathematically meaningful ratio scales under the integrated AHP model. We chose to use both an ordinal rating scale (for absolute measurements) as well as the pairwise comparison method with given likelihood (a relative measurement in which the known likelihood of one of the events is used to compute the likelihood of the other).

Measuring Risk Sources and Events Through Likelihood of Events

The following two figures depict measurements for likelihood of events. As per Figure 11, Risk Source likelihoods will be computed using a high likelihood rating scale. After a ranking (or intensity) is assigned to the Source, its Likelihood will be derived by the pairwise comparison of two intensities. We also used a pairwise with given comparison measurement, whereby a known likelihood value (UK regulators issue restrictions on cannabis partnerships) is assigned, and the other Risk Source likelihoods are computed via pairwise comparison. As per Figure 12, Risk Event likelihoods given the Source were measured using a wide likelihood rating scale.

Measure Likelihood	Measurement Type	Measurement Scale or Given Likelihooc	Action
Sources	Direct		Copy
Political	Rating Scale	HIGH LIKELIHOOD RATING SCALE	Copy Edit
Parliamentary decision			
Judicial rulings			
Executive proclamations			
Regulatory	Pairwise with Give	UK regulators issue restrictio...: 0.4	Copy
Canadian regulators issue restrictions on marketing			
UK regulators issue restrictions on cannabis partnerships			
Onerous government fines/taxes			
Partnership	Rating Scale	HIGH LIKELIHOOD RATING SCALE	Copy Edit
Supply chain bottleneck			
Company cultural differences			
Organizational challenges			
Leadership differences			
Competition	Rating Scale	HIGH LIKELIHOOD RATING SCALE	Copy Edit
Strong/established competitors			
Ineffective marketing			
Spirits sales cannibalize cannabis product sales			
Competitor products are better reviewed			
Too many similar product offerings in Canadian market			
Consumer Response	Rating Scale	HIGH LIKELIHOOD RATING SCALE	Copy Edit
Public moral objection			
Negative social media			
Minister of Health issues warning			
Religious organization denounces marijuana use			

Figure 11: Sample Measurement of Risk Source Likelihood

Measure Event Likelihoods	Measurement Type Default: Rating Scale	Measurement Scale or Given Likelihood	Action
Sources			
Political			
Parliamentary decision	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Judicial rulings	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Executive proclamations	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Regulatory			
Canadian regulators issue restrictions on	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
UK regulators issue restrictions on canns	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Onerous government fines/taxes	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Partnership			
Supply chain bottleneck	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Company cultural differences	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Organizational challenges	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Leadership differences	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Competition			
Strong/established competitors	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Ineffective marketing	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Spirits sales cannibalize cannabis produc	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Competitor products are better reviewed	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Too many similar product offerings in Ca	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Consumer Response			
Public moral objection	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Negative social media	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Minister of Health issues warning	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit
Religious organization denounces mariju	Rating Scale	WIDE LIKELIHOOD RATING SCALE	Copy Edit

Figure 12: Sample Measurement of Risk Event Likelihood Given Source

Measuring Events and Objectives Through Impact of Events

The following two figures depict measurements for the impact of events. As per Figure 13, the relative importance (or priority) of Risk Objectives (i.e., Consequences) will be computed using pairwise verbal comparisons. These were used due to the lack of data regarding such a venture. As per Figure 14, Risk Event impact given Objectives was computed using a default impact rating scale.

Measure Importance With Respect To	Measurement Type	Measurement Scale	Action
Objectives	Pairwise Compari:		Copy
Company health	Pairwise Compari:		Copy
Financial loss			
Reputational loss			
Inability to attract new customers			
Performance	Pairwise Compari:		Copy
Low sales			
Ineffective partnerships			
Competition with spirits sales			
Public Relations	Pairwise Compari:		Copy
Poorly reviewed products			
Widespread use by minors			
Boycotts by religious/moral groups			
Partnership Opportunities	Pairwise Compari:		Copy
Resistance to non-Canadian suppliers			
Cannabis market glut			

Figure 13: Sample Measurement of Objective Priorities

Measure Events With Respect To	Measurement Type Default: Rating Scale	Measurement Scale	Action
Objectives			
Company health			
Financial loss	Rating Scale	Default Impact Scale	Copy Edit
Reputational loss	Rating Scale	Default Impact Scale	Copy Edit
Inability to attract new customers	Rating Scale	Default Impact Scale	Copy Edit
Performance			
Low sales	Rating Scale	Default Impact Scale	Copy Edit
Ineffective partnerships	Rating Scale	Default Impact Scale	Copy Edit
Competition with spirits sales	Rating Scale	Default Impact Scale	Copy Edit
Public Relations			
Poorly reviewed products	Rating Scale	Default Impact Scale	Copy Edit
Widespread use by minors	Rating Scale	Default Impact Scale	Copy Edit
Boycotts by religious/moral groups	Rating Scale	Default Impact Scale	Copy Edit
Partnership Opportunities			
Resistance to non-Canadian suppliers	Rating Scale	Default Impact Scale	Copy Edit
Cannabis market glut	Rating Scale	Default Impact Scale	Copy Edit

Figure 14: Sample Measurement of Risk Event Impact Given Objectives

Evaluations

After the parameters for the measurement methods were determined, as discussed above, participants conducted individual evaluations of the likelihood and impact of Risk Events. To do so, they input likelihood and impact judgments in Riskion respectively for each Event-Source and Event-Objective combination. As mentioned above, the scope of participants' judgments was determined by their Role.

On the basis of the mathematical properties of right-hand eigenvector matrix of the pairwise/verbal comparisons used for the evaluations, Riskion was able to drive priorities from these judgements (as determined by the measurement method used). These priorities were then used to perform the Sensitivity Analysis as discussed in the following section.

SECTION 4 – Sensitivity Analysis

Following the inputs of all data, it was synthesized using the Riskion software. We used Dynamic Sensitivity analysis and Performance Sensitivity analysis to examine likelihood and impact of risk events.

Likelihood of Events and Sources

In computing likelihood of events and sources, synthesis results below show that two risk events have the highest likelihood of occuring: Inability to compete with Canadian cannabis companies and Canadian partnerships falling through, at 44.41% and 40.49% respectively. A possible outlier takes the form of Poor reception of cannabis products (at 29.93%). While this high likelihood may not appear intuitive on its face, we believe that the sources related to this risk event provide for a broader definition of "poor reception": for example, ineffective marketing (perhaps due to the unfamiliar market) or better-reviewed competing products may lead to poor reception specifically of Diageo's product. Overall, Regulatory hurdles account for 44.91% of Diageo's overall risk in pursuing this enterprise.

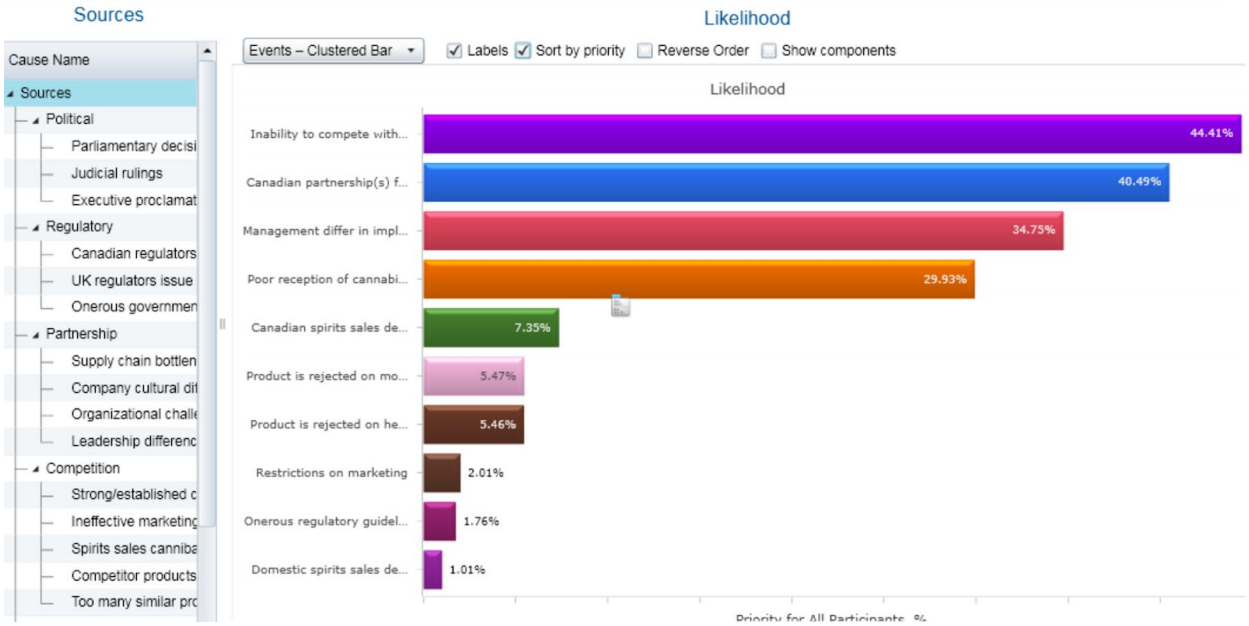

Figure 15: Likelihood of Events Given Sources

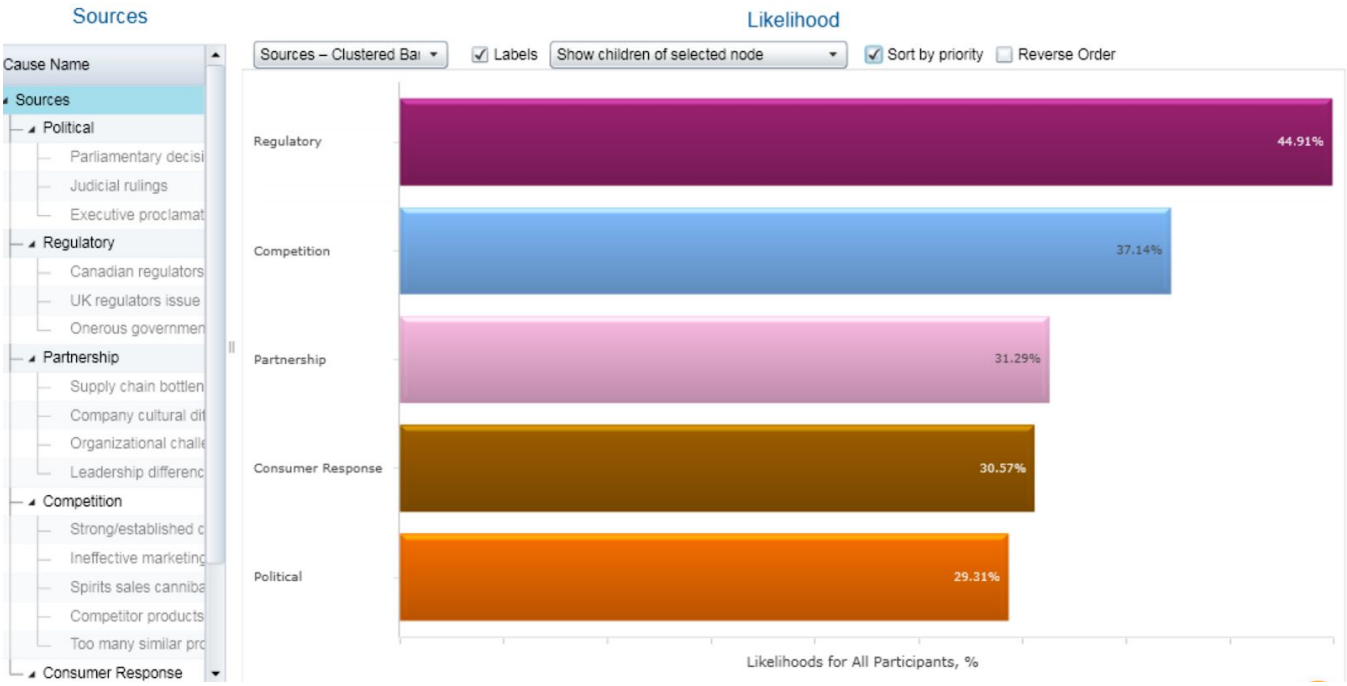

Figure 16 Computed Priorities of Sources

Sample Causes and Impact of Highest-Likelihood Risk Event (Without Controls)

As shown in the bow-tie diagram below, the risk event “Inability to compete with Canadian cannabis companies” has both the highest likelihood of occuring, at 38.14% (computed by multiplying the likelihood of this event given its risk category by the likelihood of this event given its cause), and the highest potential financial risk impact, at $24.90M.

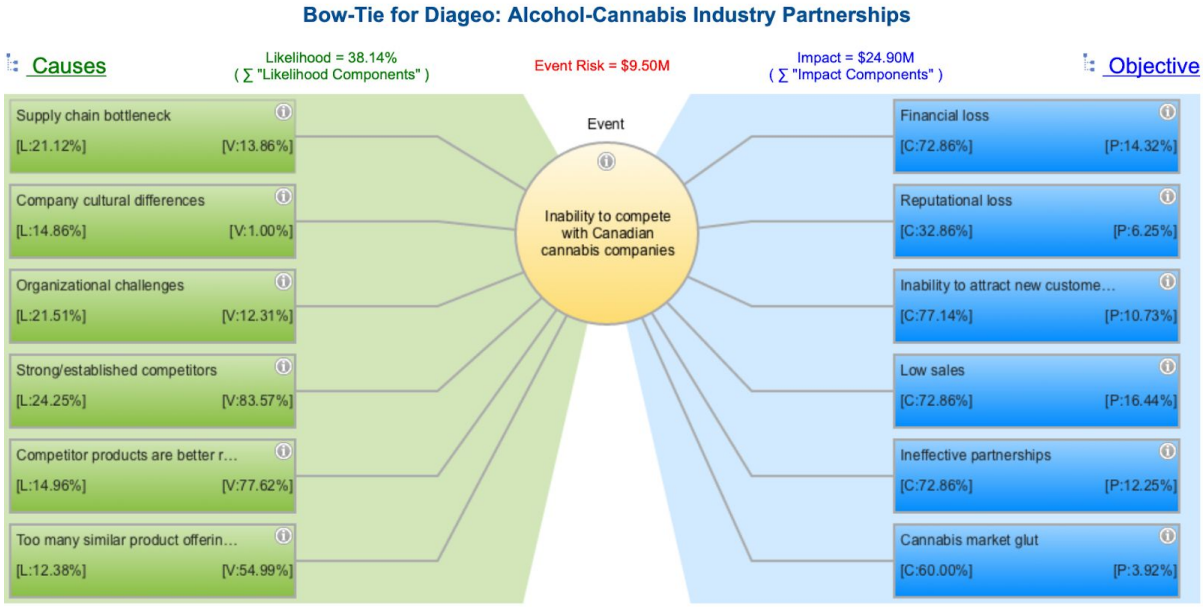

Figure 17: Bow-Tie Diagram depicting the causes and financial impact of the highest-likelihood Risk Event

Impact of Events and Objectives

In measuring the impact of events as relate to Diageo's objectives, Riskion showed that Company Health and Performance are the highest, at nearly the same risk level (~31%). Partnership Opportunities are a close third at 26.79%. However, the importance levels of these Objectives are subjective. Since they were derived using pairwise comparisons, we are able to adjust the slider for each objective in the sensitivity analysis to determine how the relative impact/importance of each objective changes as one Objective is given more importance over the others. The Event Impacts will consequently see a change as well.

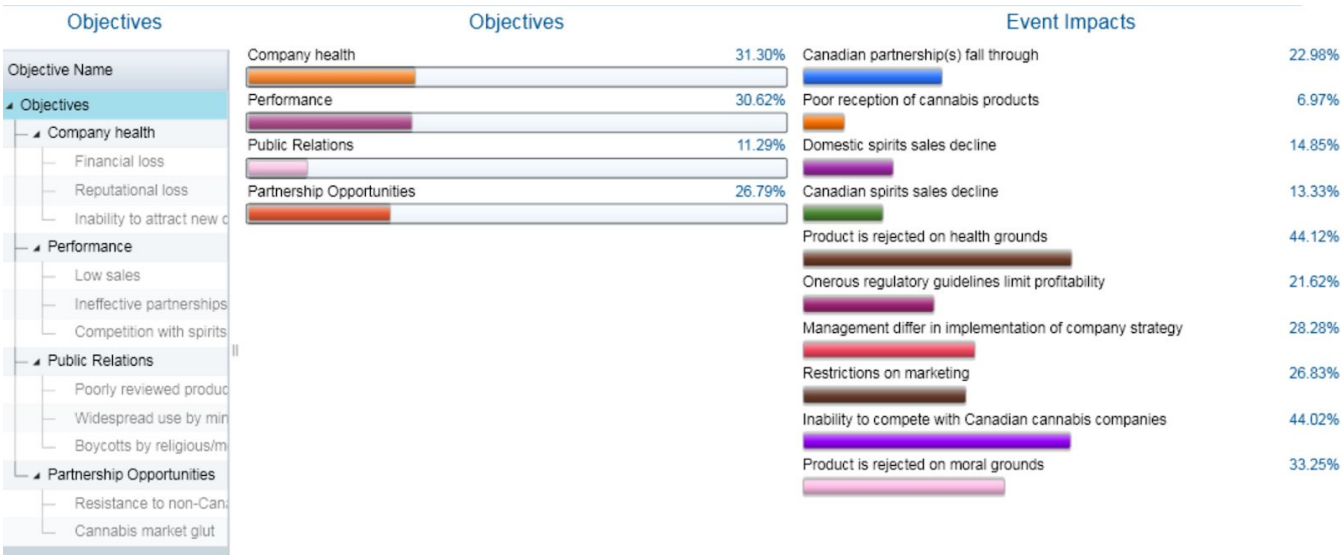

Figure 18: Dynamic Sensitivity Analysis Results of Objectives and Event Impacts

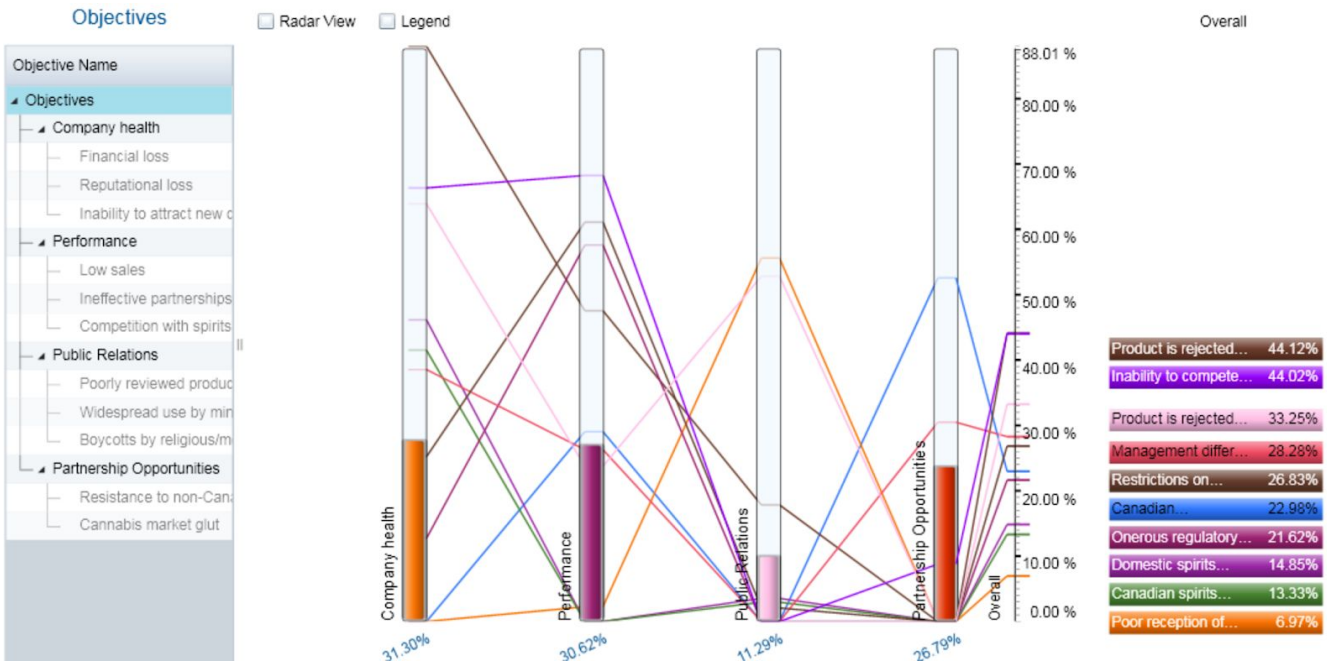

Figure 19: Performance Sensitivity Analysis Results of Objectives and Event Impacts

SECTION 5 – Risk Review

Overall Simulated Risk

Risk, in the context of this project, is understood to be "an uncertainty that may cause an event which results in an undesirable outcome and/or a loss that is significant". Thus far we have identified and measured the likelihoods and impacts of the Risk Events related to this project, as well as their impact given their stated Sources and Objectives. For measurement purposes, we have valued Diageo's endeavor at $65.4M, which includes projected hypothetical revenue from sales in one year of $20.5M (arising out of its partnerships with Canadian cannabis manufacturers). The figure below represents the overall (monetized) simulated likelihood, impact and risks for each event.

Overall Likelihoods, Impacts, and Risks for Diageo: Alcohol-Cannabis Industry Partnerships

No. ▲	Event	All Participants Likelihood Simulated	Impact, $ Simulated	Risk, $ Simulated
[01]	Canadian partnership(s) fall through	35.90%	13,686,918	4,913,603
[03]	Poor reception of cannabis products	29.30%	4,501,967	1,319,076
[05]	Domestic spirits sales decline	1.10%	7,065,820	77,724
[06]	Canadian spirits sales decline	8.10%	6,452,980	522,691
[09]	Product is rejected on health grounds	6.00%	22,569,989	1,354,199
[10]	Onerous regulatory guidelines limit profitability	1.50%	12,280,458	184,206
[13]	Management differ in implementation of company strategy	31.40%	15,986,842	5,019,868
[14]	Restrictions on marketing	1.40%	14,121,217	197,697
[17]	Inability to compete with Canadian cannabis companies	38.50%	25,439,420	9,794,177
[19]	Product is rejected on moral grounds	6.30%	18,947,227	1,193,675
				Simulated
			Total Risk	$24,576,919

Figure 20: Overall Monetized Simulated Risk Profile of Enterprise (Without Controls)

Simulated Losses

Simulated results are used because we want to avoid double-counting the impact of Event causes when performing the likelihood calculations. However, when such results are simulated, they tend to decrease slightly from the initial computed value due to the flaw of averages. We therefore adjusted the number of trials from 1,000 to 10,000 in order to obtain more reliable simulated results. The graph of the loss exceedance curve below represents the probability that losses will exceed the corresponding value. It appears that there is about a 50% chance that the losses will exceed $30M.

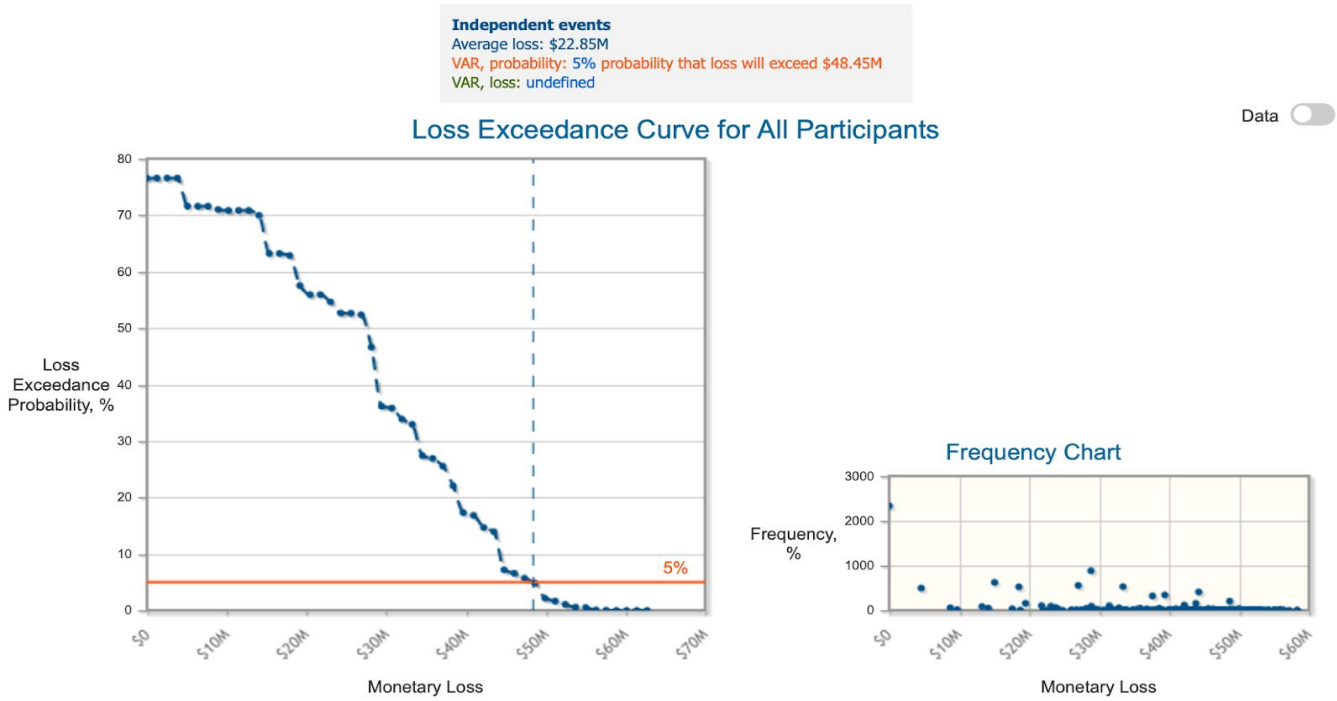

Figure 21: Loss Exceedance Probability Curve of Enterprise (Without Controls)

Risk Map (without Controls)

The risk "heat map" in the figure below depicts the likelihood and impact of our risk events. The size of each bubble is proportional to the likelihood and impact of the event. As can be seen, Diageo's "Inability to compete with Canadian cannabis companies" by far poses the greatest potential risk to the enterprise. This is a useful graphical representation because it is an easy way to pinpoint where we should be focusing our controls, discussed in the next section. We suspected that this would be the biggest risk to Diageo's foray into the Canadian cannabis market, since cannabis products have been legal there for some time now, and domestic companies naturally have had a longer time to establish themselves in the market. We are hopeful that Diageo's large size, resources, distribution network and experience in the spirits market will allow it to apply risk controls successfully against this eventuality.

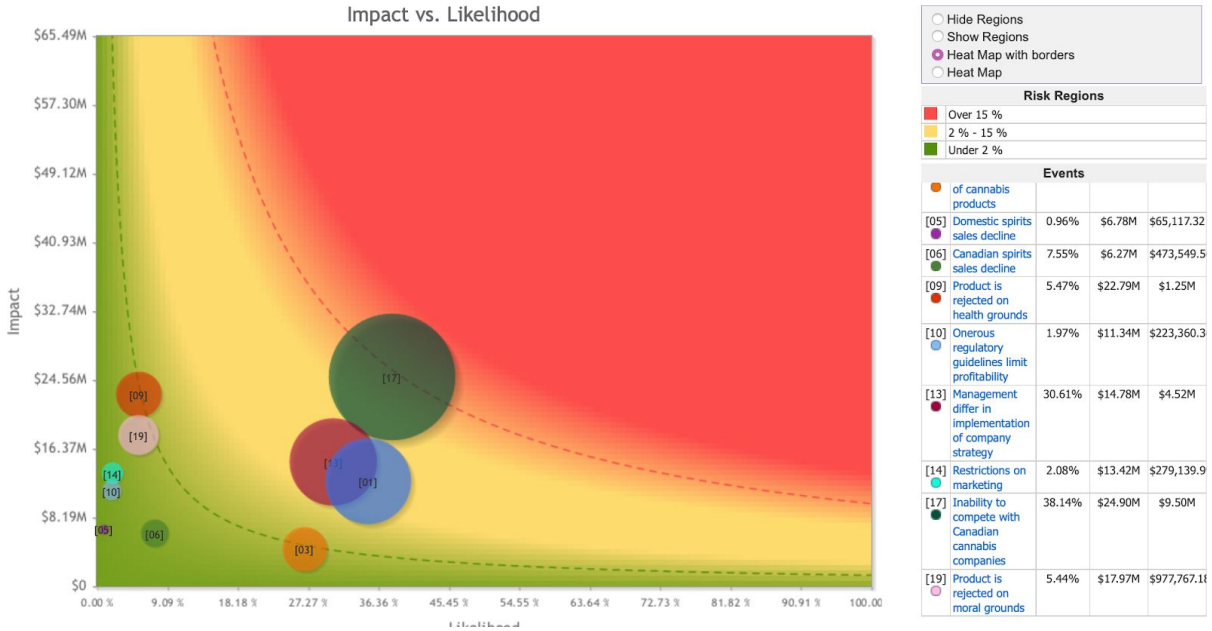

Figure 22: Risk "Heat" Map of Likelihood and Impact of Risk Events (Without Controls)

SECTION 6 – Controlling Risk

In order to mitigate the likelihood of the Risk Events discussed above–particularly those with the highest likelihood of occuring and highest potential impact–we selected an roster of 24 controls, depicted in the figure below, and then mapped them to their sources, vulnerabilities and consequences: three for Causes, two for Vulnerabilities and two for Consequences. Cost and number of applications were then assigned to these controls by the Chief Risk Officer (Actual selection was done through Lukas Colberg's Riskion account, although in a real-world scenario, the CRO would select these herself). The controls, which are applied to either Risk Events, Sources or Objectives, have the potential to reduce the likelihood of Risk Events occuring that would be detrimental to the enterprise. The cost of these control measures may very well save Diageo more money in the future.

Controls for "RM Project 2018: Diageo in Canada: Alcohol-Cannabis Industry Partnerships"

Selected controls: 24
Cost Of Selected Controls: $14,785,000 (unfunded: $0)
Total Cost Of All Controls: $14,785,000

Previous 1 2 Next

Index	Control Name	Control for	Selected	Cost	Applications
01	Professional Lobbyist promote/advocate our objectives with various political and regulatory bodies	Cause	Yes	250000	6
02	Hire Human Resources/Organizational Consultant help coordinate cohesive relationship within combined organization	Cause	Yes	175000	3
03	Outside marketing with experise in managing public perception/image in social media platforms	Cause	Yes	500000	4
04	Create written specification of project/collaboration expectation.	Cause	Yes	100000	3
05	Establish mechanism for dialogue/feedback on consistent basis	Cause	Yes	100000	3
06	Establish review mechanism for modifications if necessary	Cause	Yes	100000	2
07	Invest in R&D for innovative products	Cause	Yes	500000	2
08	Mount proactive campaign tauting product vs competitor	Cause	Yes	1500000	4
09	Ensure all partnershipl contract/agreement provide for adequate financial compensation in event of counter party default or failure to perform as expected	Vulnerabilit	Yes	300000	5
10	Dedicate resources to bolster non-Canadian markets to mitigate potential threat from Canadian companies	Vulnerabilit	Yes	1000000	5
11	Create dedicated project management team to create/maintain synergies and communications with partners	Vulnerabilit	Yes	750000	5
12	Recruit social media influencer(s) to generate positve buzz around product.	Vulnerabilit	Yes	100000	3
13	Commission scientic studies showing lack of deleterious usage of cannabis	Vulnerabilit	Yes	500000	5
14	Establish philanthropic giving arm of organization to donate to worthy charitable causes	Vulnerabilit	Yes	1500000	3
15	Dedicate resources to promote public awareness of health/medical benefits of cannabis consumption or usage	Vulnerabilit	Yes	750000	3
16	Hire professional political operatives to influence regulator decisions	Vulnerabilit	Yes	700000	3
17	Develop creative methods of product placement	Vulnerabilit	Yes	2000000	1
18	Calculate necessary break even level for project given investment vs worst case sales scenario	Consequen	Yes	250000	3
19	Allocate resources for fresh marketing for core product to ensure stabilization of spirit sales in domestic and Canadian market	Consequen	Yes	1000000	1
20	Marketing campaign to promote responsible usage of cannabis products	Consequen	Yes	1000000	2

Figure 23: Selection of Controls for Causes, Vulnerabilities and Consequences

Overall Risk (with all controls)

In our initial analysis, we decided to examine what the risk reduction would be if all of these controls were implemented. As can be seen in the heat map and loss exceedance curve graphs below, the Risk likelihood for our most high-threat events saw a massive reduction. This is illustrated by the leftwards and slightly downwards shift of the corresponding bubbles (green and blue) in the heatmap. “Inability to compete with Canadian cannabis companies” and “Canadian partnerships fall through” both dropped from about 35% likelihood to about 4% likelihood. Further, the loss exceedance curve shows that the likelihood that the enterprise would lose over $30M dropped to 5%.

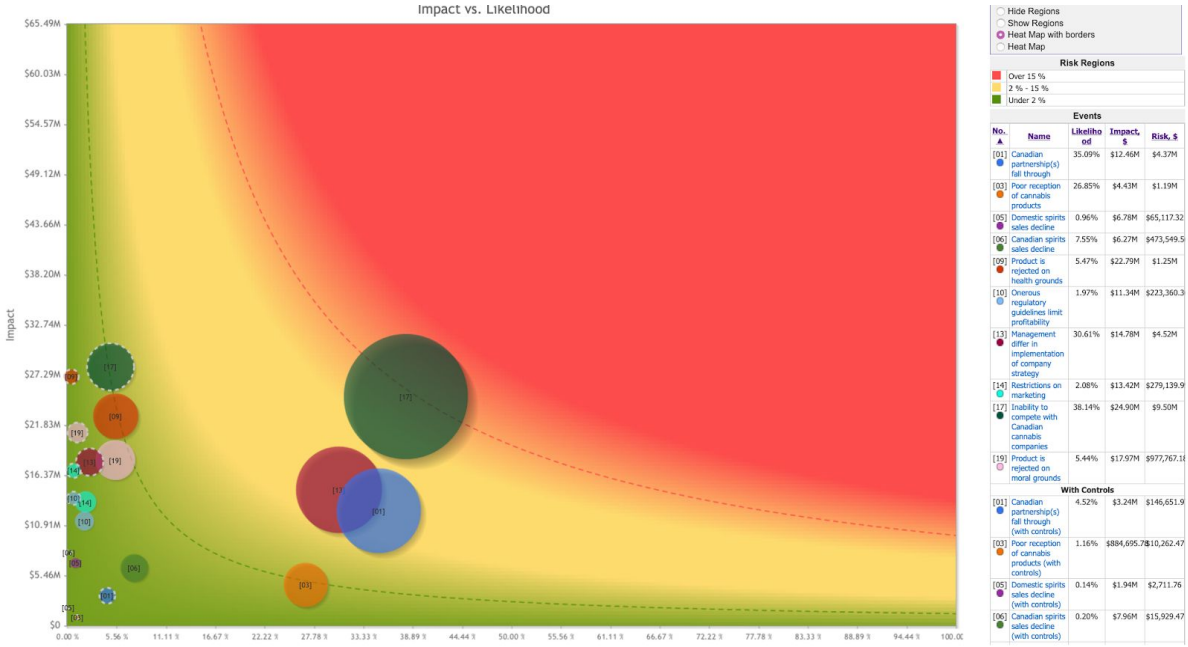

Figure 24: Risk “Heat” Map of Likelihood and Impact of Risk Events (With vs. Without Controls)

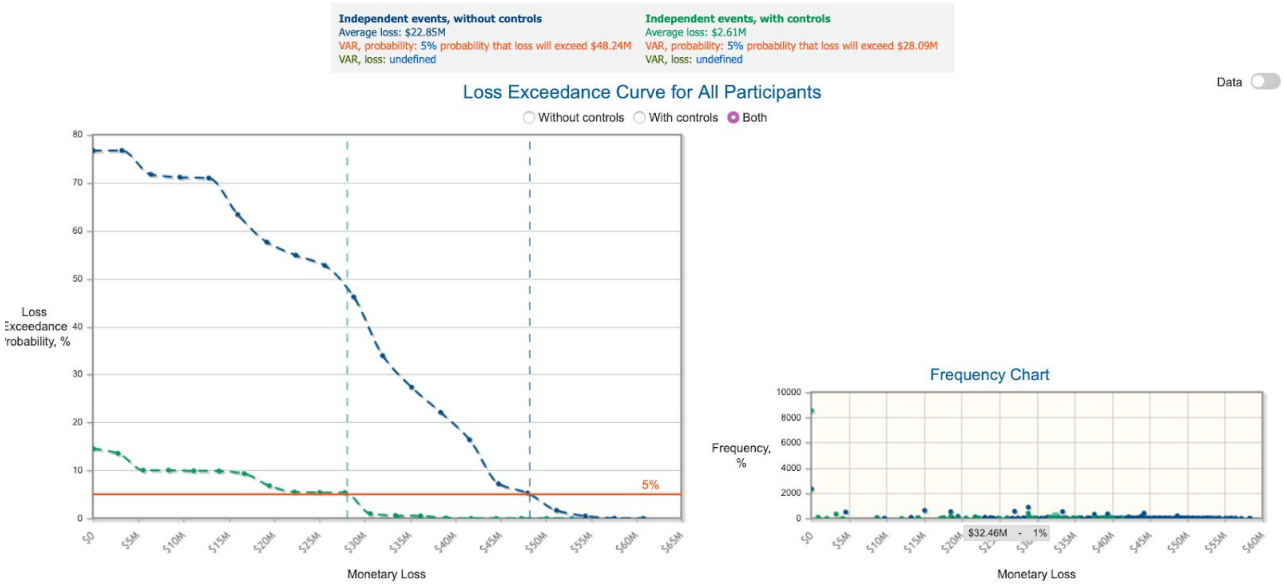

Figure 25: Loss Exceedance Probability Curve of Enterprise (With vs. Without Controls)

Risk Budget and Manual Selection of Risk Controls

While the enterprise's risk would be reduced by $20.2M if we were to apply all controls, the total budget for this option would be $14M. This figure is too high a price for an enterprise valued at $65M. As such, we instead set testing a combination of controls that would best serve the company's goals and budgets. For example, high-cost controls that reduce Risk exposure only marginally were discarded. Likewise with two or more controls that may be reducing risk likelihood in the same area were adjusted in order to remain cost effective. We gave ourselves a limit of 10% of the Enterprise value (around $6.5M)–not an insubstantial figure, but we noted that there is no historical precedent for this type of market entry.. We then manually selected what we considered the most important controls while remaining under the $6.5M budget. As can be seen in the figure below, we then managed to reduce our projected risk by $18.6M, very close to the all-controls scenario.

Select Controls

Total Risk*: $22,847,093
Risk With Selected Controls*: $4,164,185 (Δ: $18,682,908)
Risk With All Controls: $2,608,383 (Δ: $20,238,709)
Selected controls: 16
Cost Of Selected Controls: $6,285,000 (unfunded: $8,500,000)
Total Cost Of All Controls: $14,785,000

☑ Show Monetary Values (Value of Enterprise: $65,489,846,Value of "Company health": $20,500,000)

Simulations Settings
Number of trials: 10000 Seed: 430 ☑ Keep Seed

Select: All | None Previous 1 2 Next Search:

Index	Selected	Control Name	Control for	Selected	Cost	Applications	Categories	Must	Must Not
	☑	project/collaboration expectation.						☐	☐
05	☑	Establish mechanism for dialogue/feedback on consistent basis	Cause	Yes	100000	3		☐	☐
06	☑	Establish review mechanism for modifications if necessary	Cause	Yes	100000	2		☐	☐
07	☑	Invest in R&D for innovative products	Cause	Yes	500000	2		☐	☐
08	☑	Mount proactive campaign tauting product vs competitor	Cause	Yes	1500000	4		☐	☐
09	☑	Ensure all partnershipl contract/agreement provide for adequate financial compensation in event of counter party default or failure to perform as expected	Vulnerability	Yes	300000	5		☐	☐
10	☐	Dedicate resources to bolster non-Canadian markets to mitigate potential threat from Canadian companies	Vulnerability		1000000	5		☐	☐
11	☐	Create dedicated project management team to create/maintain synergies and communications with partners	Vulnerability		750000	5		☐	☐
12	☑	Recruit social media influencer(s) to generate positve buzz around product.	Vulnerability	Yes	100000	3		☐	☐
13	☑	Commission scientic studies showing lack of deleterious usage of cannabis	Vulnerability	Yes	500000	5		☐	☐

Figure 26: Risk Reduction and Budget for Manually Selected Controls

Optimization of Risk Controls

In order to maximize the cost-effectiveness and utility of our risk controls, we turned to Riskion's Optimization feature in order to compare to our manual controls. Based on the budget we used for our manual controls, we set a Controls budget of $6M, which Riskion then used to allocate the optimal combination of controls for our enterprise. In the end, we were able to reduce our risk by $19M with this budget!

Overall Likelihoods, Impacts, and Risks (With Controls) for RM Project 2018: Diageo in Canada: Alcohol-Cannabis Industry Partnerships

No. ▲	Event	All Participants Likelihood Simulated	Impact, $ Simulated	Risk, $ Simulated
[01]	Canadian partnership(s) fall through	4.79%	3,589,266	171,925
[03]	Poor reception of cannabis products	1.26%	2,081,397	26,225
[05]	Domestic spirits sales decline	0.22%	3,833,393	8,433
[06]	Canadian spirits sales decline	0.20%	7,938,794	15,877
[09]	Product is rejected on health grounds	1.46%	27,623,419	403,301
[10]	Onerous regulatory guidelines limit profitability	0.85%	13,846,860	117,698
[13]	Management differ in implementation of company strategy	2.69%	17,746,905	477,391
[14]	Restrictions on marketing	0.73%	16,788,339	122,554
[17]	Inability to compete with Canadian cannabis companies	4.88%	28,040,734	1,368,387
[19]	Product is rejected on moral grounds	1.17%	20,945,147	245,058

# Controls	Cost of Controls	How Selected		Simulated
15	$5,985,000	Optimized based on simulated input and output with budget of $6,000,000	Total Risk	$22,847,093
			Risk Reduction	$19,890,238
			Residual Risk	$2,956,855

Figure 27: Overall Monetized Simulated Risk Profile of Enterprise (With Optimized Controls)

Further, Figures 28 and 29 depict the final Risk Map and Loss Exceedance curve, comparing Diageo's original risk exposure (without controls) to the risks faced with the Optimized combination of controls applied. As can be seen, the graphs are very close to the scenario where all controls are applied, and the Risk likelihood of our two most high-threat events, [01] and [17], remains below 5% albeit at a much lower cost than the no-control scenario.

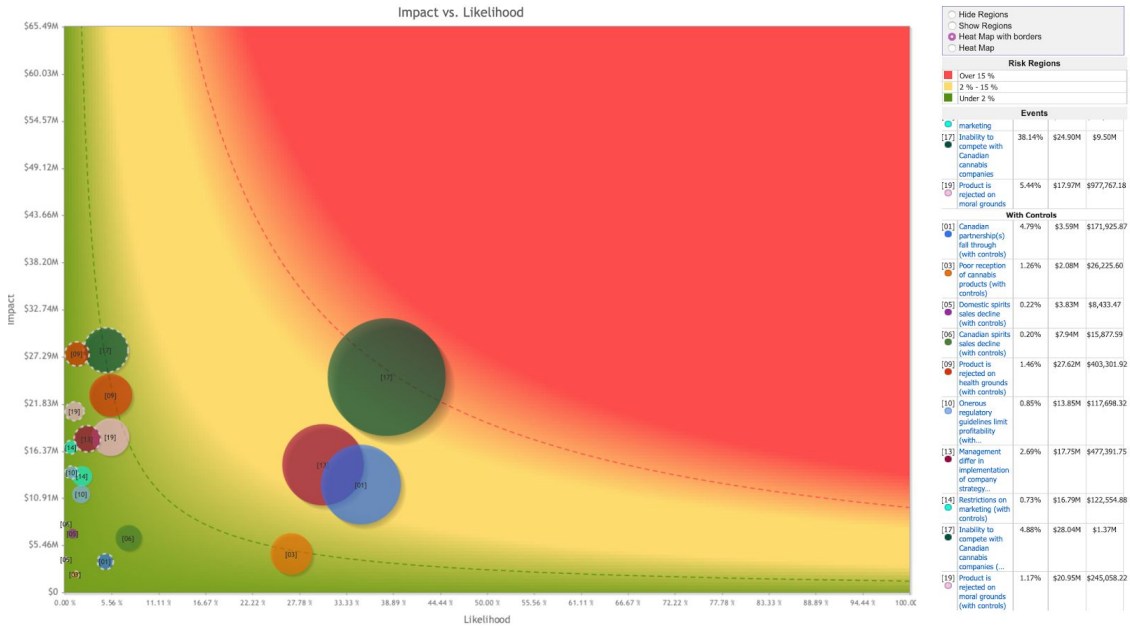

Figure 28: Risk "Heat" Map of Likelihood and Impact of Risk Events (With Optimized vs. Without Controls)

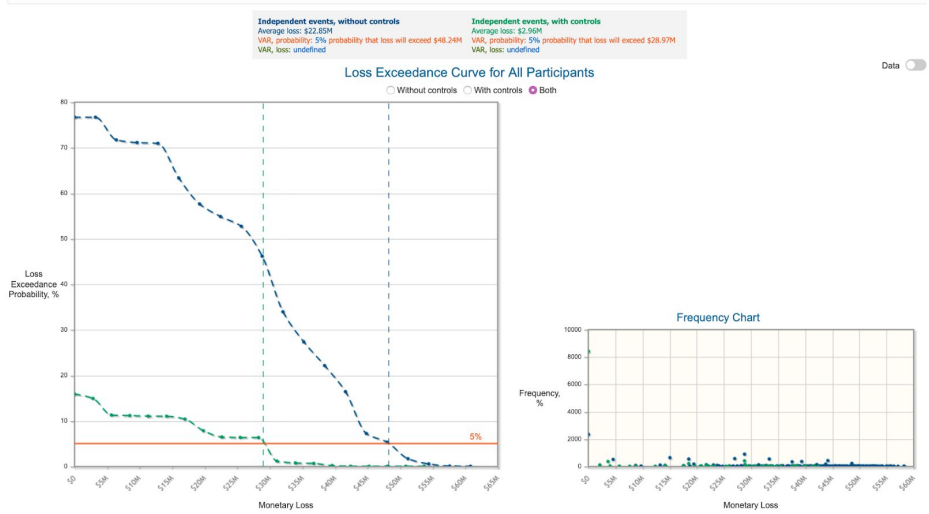

Figure 29: Loss Exceedance Probability Curve of Enterprise (With Optimized vs. Without Controls)

Efficiency Frontier

Finally, the graph below tracks the efficiency frontier of our Optimized Risks against the set budget. As illustrated, diminishing returns in Optimized Risk come in just around the $5.5-6M mark (the "efficiency frontier"). This means that it would no longer be efficient to spend money on additional controls past this point, and we can consider the Optimized Controls and $6M budget to be validated.

Index	Controls/Budget	$0	$739,250	$1.48M	$2.22M	$2.96M	$3.70M	$4.44M	$5.17M	$5.91M	$6.65M	$7.39M	$8.13M	$8.87M	$9.61M	$10.35M	$11.09M	$11.83M
	Risk with Selected Controls, $	$4.65M	$2.40M	$1.77M	$1.30M	$1.03M	$798,976.13	$628,702.53	$543,565.72	$491,173.85	$451,879.94	$451,879.94	$445,330.96	$445,330.96	$445,330.96	$438,781.97	$438,781.97	$438,781.97
	Funded Cost	$0	$700,000	$1.48M	$2.13M	$2.95M	$3.63M	$4.38M	$5.13M	$5.74M	$6.63M	$7.04M	$7.79M	$8.59M	$9.59M	$10.29M	$10.29M	$11.29M
1.	Professional Lobbyist promote/advocate our objectives with various political and regulatory bodies				FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED
2.	Hire Human Resources/Organizational Consultant help coordinate cohesive relationship within combined organization			FUNDED	FUNDED		FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED
3.	Outside marketing with experise in managing public perception/image in social media platforms								FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED	FUNDED
	Create written specification of																	

Figure 30: Efficient Frontier of Enterprise (With Optimized Controls and ~$6M budget)

SECTION 7 – Conclusion

Diageo, one of the largest multinational alcoholic beverages companies in the world, is currently evaluating the possibility of entering the cannabis related product market as a viable opportunity for consideration. Their objective is to stabilize its business by diversifying its product offerings and increasing revenue potential. Clearly, a firm the size of Diageo and an investment of such magnitude requires a structured approach to managing risks inherent in such a proposition. By utilizing Expert Choice Riskion software, we identified controls necessary for mitigating the risks in determining the feasibility of market entry. Our analysis indicated that Diageo's contemplated foray into the cannabis related market could prove to be a profitable venture with the proper implementation of risk strategy and protocols. It is important to note that while we identified numerous possible risk controls that could be instituted, the employment of the structured pairwise comparisons approach in Riskion enabled us to determine the optimal mix of controls, with respect to their related cost, in order to achieve desired outcomes. All risks involve an element of uncertainty, particularly in high cost ventures with little precedence such as these. As such, Diageo must be prepared to adapt to any unexpected developments and proceed with measured confidence. That being said, given the Risk Assessment results and relatively small budget (~$6M) suggested for mitigating these risks–and given the potential short term and long term gains of Canada's October 2018 legalization of cannabis products–we do recommend Diageo move forward with the enterprise.