Navigating the complexities of marketing decision-making in uncertain supply chains: A quantitative exploration

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CHRONICLE	ABSTRACT
	Making rational decisions in times of uncertainty is an important capability required of marketing managers. However, choosing the precise quantitative decision-making technique or a combination of such tools usually presents managers with a score of challenges. To lessen this challenge, this single case research demonstrates how the choice of three Bayesian decision models (Laplace criterion, Savage minimax regret, and Hurwicz coefficient of realization) can reduce uncertainty in content marketing, search engine optimization (SEO), and referral marketing decision. We employed the case study approach to enable direct access to the decision-making process of the case organization, and to collect relevant data relating to the three marketing decision variables. Results show that, although the Laplace criterion may not have a direct effect on content marketing decisions, it influences the decision-making process leading to the creation and promotion of content. The Savage minimax regret had a direct bearing on SEO decision-making. Hurwicz's coefficient of realization yielded no direct impact on referral marketing but shows the possibility of influencing decision-making processes that led to the development and implementation of referral marketing campaigns. The implications are discussed.

1. Introduction

In all walks of life, decision-making is essential for growth and development. In business and industry, decision-making is a basic function of every manager (Köse *et al.,* 2016). A decision is a choice made from several alternatives about a situation or circumstances. Decision-making processes involve identifying the problem, getting needful information, identifying the alternatives, weighing the proof, choosing among substitutes, and reviewing made decisions (Asikhia *et al.*, 2021). Good marketing leads to a successful organization, and marketing is the ability to turn a consumer's buying ability into sales for the organization. Decisions in marketing cover areas like promoting sales, segmenting markets, product quality and design, corporate image-building, advertising budgets, channels of distribution, etc. Camilleri., (2018), market segmentation is a process that involves identifying segments of the market/customers and dividing goods and services based on each segment. Cheng., (2018) described product quality and design as a planned, targeted, and directional creative. Distribution channels are networks of how goods or services move from producers to consumers.

Decision-making can be affected by marketing strategies. Morgan *et al.,* (2018) defined marketing strategy as an organization's default pattern of decisions that point to marketing activities, concerning markets, communication, delivery of products, marketing resources, and products in the creation which brings value to customers and enhances partnership with the organization and customers thereby enables the organization to achieve specific objectives. Marketing strategies can be affected by some uncertainty. Prieto., (2020) defined uncertainty as a consisting of ambiguity, volatility, and variability. Uncertainty includes new customers' needs different from the old customers, competitive pressure, market segmentation, Laplace criterion, Savage minimax regret, and Hurwicz coefficient of realization. Decision makers will have to take into consideration every uncertainty when strategizing for their organizational markets.

Wild Fusion (a hypothetical organization) is a digital marketing agency that provides services such as website design and development, search engine optimization (SEO), social media management, online advertising, and digital strategy consulting. It was founded in Nigeria in 2010 and has since expanded to other countries in Africa. Wild Fusion's mission is to help organizations develop their web-based presence and reach their target audiences through successful digital marketing strategies. The company has worked with a diverse range of clients across various industries, including finance, education, healthcare, and retail. Some of the key services offered by Wild Fusion include website design and development, which involves creating responsive and user-friendly websites that are optimized for search engines and designed to convert visitors into customers.

The agency also provides SEO services to help businesses rank higher in search engine results pages and attract more organic traffic to their websites. Other services include social media management, which involves creating and managing social media accounts for businesses to engage with their customers and build brand awareness, as well as online advertising, which involves creating and running digital ad campaigns to reach target audiences on platforms such as Google and Facebook. Wild Fusion also offers digital strategy consulting services to help businesses develop a comprehensive and effective digital marketing strategy that aligns with their business goals and objectives. Overall, Wild Fusion is a leading digital marketing agency in Africa that helps businesses succeed in the digital landscape.

Decision-making is a cognitive process that involves choosing a course of action from among several alternatives. Marketing strategies are essential for the success of any business, but they often involve a degree of uncertainty due to factors such as market volatility, changing consumer behavior, and technological advancements.

Available literature (Kozioł-Nadolna *et al.,* 2020; Morgan *et al*., 2018) shows that there are other studies but none of them affect decision making under uncertainty on marketing strategies: a study on Wild Fusion. This study intends to fill the gap in knowledge of the effect of decision-making under uncertainty on marketing strategies.

To achieve this objective, the following research questions are raised:

1. What is the extent of the influence of adopting a Laplace criterion on content marketing decisions?
2. What is the effect of adopting Savage minimax regret on search engine optimization decisions?
3. To what effect is the adoption of the Hurwicz coefficient of realization on referral marketing decisions?

2. Theoretical Framework

Theoretical frameworks for decision-making and uncertainty in marketing strategies provides a structured approach for analyzing decision problems, selecting the best alternative based on a set of criteria or objectives, helping marketers to identify and manage risks, and developing a robust strategy that can adapt to changing conditions. This study was anchored on two theories: Herbert Simon's (1956) Satisficing Theory and The Bayesian Decision Theory propounded by Bayes & Price, (1763).

2.1 The Satisficing Theory

Satisficing theory is a decision-making concept introduced by Herbert Simon in the field of economics and psychology. According to this theory, people make decisions by searching for options until they find one that is satisfactory, rather than by seeking the best possible option (Simon, 1956). This theory assumes that decision-makers do not have access to complete information and cannot evaluate all possible alternatives. Instead, they focus on identifying alternatives that are good enough or satisfactory, rather than seeking the best possible alternative. The term "satisficing" is a combination of the words "satisfy" and "suffice".

Simon, (1956) proposed that individuals have limited cognitive abilities, and therefore, they cannot consider every possible alternative and outcome when making decisions. Instead, they use a bounded rationality approach, which means that they make decisions based on a limited amount of information and cognitive resources. Satisficing involves setting a minimum acceptable standard or threshold for a decision and then selecting the first option that meets that threshold. This approach allows individuals to make decisions quickly and with less effort, which is especially useful in situations where time or resources are limited (Barge, 2012). The theory portrays that individuals and organizations should focus on finding satisfactory solutions rather than seeking the optimal one.

2.2 The Bayesian Decision Theory

Bayesian decision theory is a statistical framework that provides a way to make decisions in situations where there is uncertainty about the outcomes. The framework is based on the principles of Bayesian inference, which involves updating one's beliefs based on new evidence. Bayesian decision theory involves using prior knowledge and data to update the probability of different outcomes and making decisions based on the updated probabilities. This approach can help marketers to make informed decisions based on data and to adjust the marketing strategy based on changing conditions.

In Bayesian decision theory, a decision maker begins with a prior belief about the probability of different outcomes, and then updates that belief based on new information. The decision maker then decides based on the updated probability distribution. The decision is made to maximize some objective function, such as expected utility or expected profit.

The key steps in the Bayesian decision-making process are:

1. Prior probability: The decision maker starts with a prior probability distribution over the possible outcomes.
2. Evidence: New evidence is observed, which may provide information about the true state of the world.
3. Posterior probability: The decision maker updates their prior probability distribution to a posterior distribution, based on Bayes' rule.
4. Decision: The decision maker chooses an action that maximizes some objective function, such as expected utility or expected profit.

The theory portrays a principled way to make decisions in situations where there is uncertainty and can be used to optimize decisions in complex systems.

3. Conceptual Literature Review

Decision-making is an important role for managers in different organizations and in achieving goals (Kozioł-Nadolna *et al.*, 2020). According to Carrapichano (2021) decision-making is the understanding of what consumers buy, when, where, how they buy, and how much they are prepared to spend. Carrapichano had a five-stage purchase decision-making process, which means customers had to undergo all stages in its hierarchy before they decided to buy a product. The five-stage purchase decision-making are:
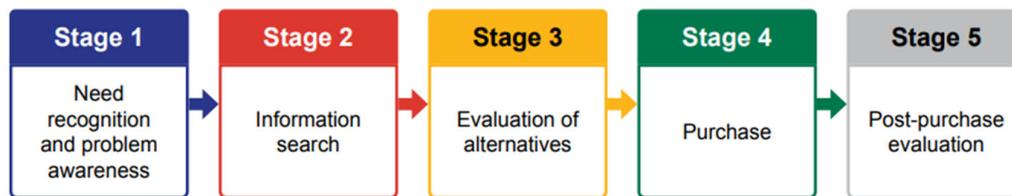

Fig. 1. The five-stage purchase decision-making process

Source: Adopted from Carrapichano, A. (2021). *Consumer* Decision-Making. Retrieved from
https://openbooks.uct.ac.za/uct/catalog/download/29/43/1433?inline=1

Fig. 1 shows the purchase decision-making and stage 1 deals with the need recognition and problem awareness, in this stage customers become aware of a problem, which creates a need to be solved. Decision makers in Wild Fusion must predict these problems, provide solutions to the problems and gain customers. In stage 2, customers begin to search for ways to fulfil their needs and the decision manager can use marketing strategy to make the needed product or service visible to the customers. Stage 3, the customer looks for alternatives, and it is the work of the decision makers to make every product better than the competitor's product, to gain more customers. The 4 and 5 stage is purchase and after purchasing, payment method must be easy and less stressful for customers. All this cannot be achieved without a good marketing strategy.

Morgan *et al.,* (2018) defined marketing strategy to be constructs that is in the middle of the field of strategic marketing and practice of marketing. Marketing strategies are a set of tactics and techniques businesses use to promote their products and services and reach their target audience. The goal of a marketing strategy is to increase sales and revenue for the business. In the modern marketing, here are some examples of marketing strategies:

1. Content marketing: Content marketing involves creating and sharing valuable content, such as blog posts, videos, and social media posts, to attract and retain a target audience.
2. Search engine optimization (SEO): involves streamlining a site's substance and construction to work on its perceivability and positioning on web index results pages.
3. Social media marketing: Social media marketing involves using social media platforms like Facebook, Twitter, and Instagram to promote a business's products or services and engage with its target audience.
4. Influencer marketing: Influencer marketing involves partnering with influencers, who have a significant following on social media, to promote a business's products or services to their audience.
5. Email marketing: Email marketing involves sending targeted emails to a business's subscribers to promote its products or services and nurture its relationship with its audience.
6. Paid advertising: Paid advertising involves placing ads on search engines, social media platforms, or other websites to reach a broader audience and increase brand awareness.

7. Event marketing: Event marketing involves organizing or sponsoring events like conferences, trade shows, or product launches to promote a business's products or services and engage with its target audience.
8. Referral marketing: Referral marketing involves encouraging existing customers to refer their friends or family members to a business's products or services in exchange for incentives like discounts or rewards.

Decision managers can make use of decision-making processes and marketing strategies to plan for uncertainty. Uncertainty can arise due to various reasons such as changes in market trends, consumer behaviour, or unexpected events like natural disasters or economic downturns. In such scenarios, making marketing decisions based on incomplete or ambiguous information can be challenging and may lead to suboptimal outcomes. Ulanskya and Razab (2021), explained uncertainty to be connected with a complete lack of information. Decision making under uncertainty can have a significant effect on marketing strategies. Decision making under uncertainty can affect marketing strategies in:

1. Risk-taking: When there is uncertainty in the market, marketers may need to take more risks to stay competitive. For instance, launching a new product or entering a new market may require taking risks that could have significant financial implications. Marketers may need to weigh the potential risks against the potential rewards to make informed decisions.
2. Resource allocation: Decision making under uncertainty can also impact how marketing resources are allocated. For instance, if there is uncertainty about the demand for a product or service, marketers may need to allocate resources to multiple marketing channels to reach a larger audience.
3. Flexibility: Marketers may need to be more flexible in their marketing strategies to adapt to changing market conditions. They may need to be open to pivoting their strategies and adjusting based on new information or emerging trends.
4. Customer focus: Decision-making under uncertainty can also impact how marketers prioritize their customers. They may need to be more customer-centric and focus on meeting the evolving needs of their customers to stay ahead of the competition.
5. Data-driven decision-making: Marketers may need to rely more heavily on data-driven decision-making to navigate uncertainty in the market. By analysing customer behaviour and market trends, marketers can make informed decisions and mitigate risks associated with uncertainty.

3.1 Laplace Criterion and Content Marketing Decision

The Laplace criterion is a decision-making rule that involves assigning equal probability to all possible outcomes and choosing the alternative with the highest expected value. While the Laplace criterion may not have a direct impact on content marketing, it can influence content marketing indirectly by informing decision-making processes that lead to the creation and promotion of content. A content marketer may use the Laplace criterion to evaluate different content creation strategies. They could assign equal probability to different outcomes, such as the number of clicks, social media shares, and conversions, and choose the content creation strategy that has the highest expected value. Similarly, the Laplace criterion could be used to evaluate different content promotion strategies. A content marketer could assign equal probability to different outcomes, such as the number of clicks, social media shares, and conversions, and choose the content promotion strategy that has the highest expected value. The Laplace criterion can also inform the development of metrics to measure the success of content marketing campaigns. By assigning equal probability to different outcomes, content marketers can develop metrics that reflect a balanced assessment of the impact of their content marketing efforts.

3.2 Savage Minimax Regret and Search Engine Optimization Decision

Savage minimax regret is a decision-making rule that involves selecting the alternative with the minimum maximum regret. Maximum regret is the difference between the payoff of the best alternative and the payoff of the alternative that was chosen. Savage minimax regret is a conservative decision-making rule that seeks to minimize the maximum possible regret. On the other hand, search engine optimization (SEO) is the practice of improving the quality and quantity of website traffic by increasing the visibility of a website or a web page in a search engine's organic results. SEO involves optimizing a website's content, structure, and technical aspects to make it more appealing to search engines and increase its chances of ranking higher in search engine results pages. There is no direct relationship between Savage minimax regret and SEO, as they are two different concepts that operate in different domains. However, the principles of Savage minimax regret can be applied in the context of SEO decision-making. A website owner could use Savage minimax regret to decide which keywords to target in their SEO strategy. They could evaluate the potential payoffs and risks of targeting different keywords and choose the keywords that have the minimum maximum regret. Similarly, Savage minimax regret could be used to evaluate different SEO strategies, such as link building, content creation, and website optimization. A website owner could assess the potential payoffs and risks of different strategies and choose the strategy that has the minimum maximum regret.

3.3 Hurwicz Coefficient of Realization And Referral Marketing Decision

The Hurwicz coefficient of realization is a decision-making rule that involves choosing the alternative with a weighted average of the best and worst outcomes, where the weight is determined by a coefficient of optimism, called the Hurwicz coefficient. The Hurwicz coefficient represents the decision maker's degree of optimism about future outcomes. Referral

marketing is a marketing strategy that involves incentivizing existing customers to refer new customers to a business. The success of a referral marketing campaign depends on various factors, such as the incentive structure, the target audience, and the referral process. The Hurwicz coefficient of realization may not have a direct impact on referral marketing, but it can influence decision-making processes that lead to the development and implementation of referral marketing campaigns. A business owner could use the Hurwicz coefficient of realization to evaluate different referral marketing strategies. They could assign weights to the best and worst outcomes of each strategy, based on their degree of optimism, and choose the strategy that has the highest expected value. Similarly, the Hurwicz coefficient of realization could be used to evaluate the incentive structure of a referral marketing campaign. A business owner could assign weights to the best and worst outcomes of each incentive structure, based on their degree of optimism, and choose the incentive structure that has the highest expected value.

3.4 Empirical Review

Marketing strategies were investigated by Quan et al., (2018) through empirical research involving various merchants. According to his research, it was found that the merchant's market strategies are significantly impacted by factors such as risk preference, market uncertainty, and market power. If a merchant is not willing to take risks, they may postpone the display of holiday merchandise, reduce their order size, and ultimately miss out on potential market advantages. The merchant will wait to avoid opportunity costs due to the significant uncertainty in the holiday market, and this delay will enable them to improve their forecast accuracy. Wang et al., (2021) investigated the impact of marketing strategy style on the performance of public firms in China. From this evaluation, it was observed that aggressively promoting a system can have a negative impact on the performance of a firm. In addition, constraints on resources can significantly limit their overall effectiveness and control plays a feeble change job. Ulanskya and Razab (2021) conducted a study to look at the speculation of minimax and maximin standards in a game against nature with partial a priori uncertainty. The article proposed a new criterion for selecting the optimal decision in this context, with results indicating that the minimum average payoff by the Hurwicz criterion is equivalent to that of the Bayes criterion at an α value of 0.575, though this value is not known beforehand. Gaspars-Wieloch (2014) explored the utilization of a variation of Hurwicz decision rule in multicriteria dynamic situations where vulnerability is present. Two distinct procedures were employed for uncertain multi-objective improvement (for dependent and independent systems) that are based on the SAPO methodology - a modification of Hurwicz norm for single-issue problems. The new techniques consider the leader's ideal structure and attitude towards risk. The result was that SAPO(CS) and SAPO(SC) can be effectively applied to any business or the board multi-objective issue, given that future monetary repercussions are introduced through situation arranging, which is a broad choice help apparatus for tending to vulnerabilities.

4. Methodology

This research investigated the impact of decision-making in an uncertain environment on marketing tactics, with the objective of discovering the links between decisions to be taken, and decision-making under uncertain marketing strategies. To guide this study, the Laplace criterion, Savage minimax regret, and Hurwicz coefficient of realization were used as uncertainties to be considered when deciding on market strategies. Pažek and Rozman (2019) described decision analysis as a methodical way of addressing issues with unpredictable elements as a key factor. Models are developed to illustrate decision-making issues, and considerations and suggest actions to take.

The decision matrix: $M = \{A, S, R, P\}$

A	S			
	$S1$	$S2$	***	Sn
	$P1$	$P2$	***	Pn
$A1$	$R11$	$R12$	***	$R1n$
$A2$	$R21$	$R22$	***	$R2n$
*	*	*		*
*	*	*		*
Am	$Rm1$	$Rm2$	***	Rmn

where:

A − $Decision\ alternatives\ Ai\ (for\ i = 1,2...,m)$
S – $State\ of\ nature\ Sj\ (for\ j = 1,2...,n)$

R − $Payoffs$ (rewards) Rij realized by selecting alternative $Ai.if$ state Sj occurs
P − the probability distribution applicable to S (the set of probabilities
$P1$ describes the likelihood that state $S1will$ occur).

4.1 Laplace criterion

The Laplace criterion is a decision-making rule that involves assessing the expected value of an alternative. This criterion is based on the idea that a decision should be made based on the probability of its outcome and the sum of that outcome. Mathematically, the Laplace criterion can be expressed as follows:

Let A1, A2, ..., An be the set of alternatives, and let X1, X2, ..., Xm be the set of possible outcomes for each alternative.

The expected value of alternative Ai is given by:

$$E(Ai) = (P(X1|Ai) * V(X1)) + (P(X2|Ai) * V(X2)) + ... + (P(Xm|Ai) * V(Xm))$$

where P(Xj|Ai) is the probability of outcome Xj given alternative Ai, and V(Xj) is the value of outcome Xj.

The substitute with the most expected estimate is chosen:

Choose alternative A* = argmax E(Ai)

where argmax is the function that returns the argument that maximizes the function inside it.

In summary, the Laplace criterion is a decision-making rule that involves calculating the expected value of each alternative and choosing the alternative with the highest expected value. It assumes that decision-makers are risk-neutral and that they can calculate the probability of each outcome and its value.

4.2 Savage's Minimax Regret

Savage minimax regret criterion is a decision-making rule that involves assessing the regret associated with each alternative. Regret is the contrast between the most ideal result and the genuine result that is realized. Mathematically, the Savage minimax regret criterion can be expressed as follows:

Let A1, A2, ..., An be the set of alternatives, and let X1, X2, ..., Xm be the set of possible outcomes for each alternative.

The regret associated with each alternative Ai and outcome Xj is given by:

$$R(Ai, Xj) = max\{V(X1) − V(Xj), V(X2) − V(Xj), ..., V(Xm) − V(Xj)\}$$

where V(Xj) is the value of outcome Xj, and max{} is the function that returns the maximum value inside the brackets.

The worst possible regret for each alternative Ai is given by:

$$W(Ai) = max\{R(Ai, X1), R(Ai, X2), ..., R(Ai, Xm)\}$$

The maximum regret for each alternative Ai is given by:

$$M(Ai) = max\{W(Ai) − W(A1), W(Ai) − W(A2), ..., W(Ai) − W(An)\}$$

The alternative with the smallest maximum regret is chosen:

Choose alternative A* = argmin M(Ai)

where argmin is the function that returns the argument that minimizes the function inside it.

In summary, the Savage minimax regret criterion is a decision-making rule that involves identifying the worst possible regret for each alternative and choosing the alternative with the smallest maximum regret. It assumes that decision-makers are risk-averse and that they can calculate the regret associated with each alternative and outcome.

4.3 Hurwicz coefficient of realization

The Hurwicz coefficient of realization is a decision-making rule that involves assessing the degree of optimism or pessimism of the decision-maker. This coefficient takes a value between 0 and 1, where a coefficient of 0 shows complete pessimism,

and a coefficient of 1 shows complete optimism. Mathematically, the Hurwicz coefficient of realization can be expressed as follows:

Let A1, A2, ..., An be the set of alternatives, and let X1, X2, ..., Xm be the set of possible outcomes for each alternative.

The weighted average of the worst and best possible outcomes for each alternative Ai is given by:

$$R(Ai) = (1 - \alpha) * min\{V(X1), V(X2), \ldots, V(Xm)\} + \alpha * max\{V(X1), V(X2), \ldots, V(Xm)\}$$

where V(Xj) is the value of outcome Xj, min{} is the function that returns the minimum value inside the brackets, and max{} is the function that restores the maximum value inside the brackets.

The alternative with the highest weighted average is chosen:

Choose alternative A* = argmax R(Ai)

where argmax is the function that returns the argument that maximizes the function inside it.

The value of α determines the extent of optimism or pessimism decision that will be made. If α is close to 0, the decision-maker is more pessimistic and values the worst possible outcome more heavily. If α is close to 1, the decision-maker is more optimistic and values the best possible outcome more heavily.

In summary, the Hurwicz coefficient of realization is a decision-making rule that involves calculating a weighted average of the worst and better possible outcomes for each alternative, where the weight given to the worst possible outcome is $(1 - \alpha)$ and the weight given to the best possible outcome is α. It assumes that decision-makers have a degree of optimism or pessimism and can determine the best value of α to reflect this.

5. Results and Discussion

Concerning uncertainty, the theory of decision provides two (2) fundamental methodologies. The initial method is to lessen the unpredictability case to the occurrence of risk by making use of Satisficing theory. The second approach exploits criteria using prior knowledge to update the probability of different outcomes by Bayesian Decision theory. Three production business alternatives for digital strategy consulting (D1, D2, D3) and three different market opportunities (M1, M2, M3) were evaluated using Laplace's, Savage's and Hurwicz's criteria as part of the analysis.

Table 1
Basic data for business alternative evaluation

Alternative	Quantity	Unit
A1	5	ha
A2	7	ha
A3	3	ha
X1	100	%
X2	85	%
X3	50	%

Table 2
Decision matrix for digital strategy consulting (₦)

	X1(₦)	X2(₦)	X3(₦)
A1	758	864	-747
A2	844	578	-867
A3	798	833	-327

5.1 Laplace's criterion

As indicated by Laplace's standard, when the probabilities of condition of nature are unsure, the probabilities (X1, X2 and X3) are thought to be equivalent (0.33). No likelihood has more importance than another. The weighted worth of every business elective was determined by duplicating every one of the three probabilities with 0.33 and adding them together.

$$E(Ai) = (P(X1|Ai) * V(X1)) + (P(X2|Ai) * V(X2)) + \ldots + (P(Xm|Ai) * V(Xm))$$

where P(Xj|Ai) is the probability of outcome Xj given alternative Ai, and V(Xj) is the value of outcome Xj.

Table 3
Decision matrix based on Laplace's criterion calculation

	X1(₦)	X2(₦)	X3(₦)	Sum	Laplace's sum
A1	758	864	-747	875	291
A2	844	578	-867	555	185
A3	798	833	-327	1304	1522

5.2 Savage's criterion

Regret criterion diminishes the chances regrets for the producer of choice. The regret sum for explicit situation were made by all selling plans while minimax or Savage's rule was applied to these qualities.

The regret associated with each alternative Ai and outcome Xj is given by:

$$R(Ai, Xj) = max\{V(X1) - V(Xj), V(X2) - V(Xj), \ldots, V(Xm) - V(Xj)\}$$

where V(Xj) is the value of outcome Xj, and max{} is the function that returns the maximum value inside the brackets.

The worst possible regret for each alternative Ai is given by:

$$W(Ai) = max\{R(Ai, X1), R(Ai, X2), \ldots, R(Ai, Xm)\}$$

The maximum regret for each alternative Ai is given by:

$$M(Ai) = max\{W(Ai) - W(A1), W(Ai) - W(A2), \ldots, W(Ai) - W(An)\}$$

The alternative with the smallest maximum regret is chosen:

Choose alternative A* = argmin M(Ai)

where argmin is the function that brings the argument that minimizes the function in it.

Table 4
Decision matrix based on Laplace criterion calculation

	X1(₦)	X2(₦)	X3(₦)
A1	315	118	214
A2	217	219	318
A3	129	316	113

5.3 Hurwicz's criterion

According to Hurwicz's model, the farmer is presented with both positive and negative options. Each outcome has been assigned a positive coefficient ($k = 0.7$) and a negative coefficient ($1 - k = 0.3$). The weighted average of the worst and best possible outcomes for each option Ai is calculated by multiplying the respective coefficients with the respective outcomes.

$$R(Ai) = (1 - \alpha) * min\{V(X1), V(X2), \ldots, V(Xm)\} + \alpha * max\{V(X1), V(X2), \ldots, V(Xm)\}$$

$where\ V(Xj) is\ the\ value\ of\ outcome\ Xj, min\{\ \} is\ the\ function\ that\ brings\ the\ minimum\ value$

$inside\ the\ brackets,$

$and\ max\{\} is\ the\ function\ brings\ the\ maximum\ value\ inside\ the\ bracket.$

The alternative with the highest weighted average is chosen:

Choose alternative A* = argmax R(Ai)

where argmax is the function that returns the argument that maximizes the function inside it.

Table 5
Result of Hurwicz criterion calculated as k = 0.7

	Maximum value (₦)	Minimum value (₦) (1-k)
A1	864	-747
A2	844	-867
A3	833	-327

6. Conclusion

Decision making under uncertainty can have a significant impact on marketing strategies. Wild Fusion needs to be prepared to take risks, allocate resources effectively, be flexible in their strategies, prioritize customers, and rely on data-driven decision making to succeed in an uncertain market. Marketing strategies are crucial for businesses to promote their products or services, increase brand awareness, and reach their target audience.

By implementing the right marketing strategies, Wild Fusion can achieve their marketing objectives and grow their customer base and revenue. Laplace criterion may not have a direct impact on content marketing, it can influence decision-making processes that lead to the creation and promotion of content, as well as the development of metrics to measure the success of content marketing campaigns, while there is no direct relationship between Savage minimax regret and SEO, the principles of Savage minimax regret can be applied in the context of SEO decision-making to make more informed and conservative decisions. The Hurwicz coefficient of realization may not have a direct impact on referral marketing, it can influence decision-making processes that lead to the development and implementation of referral marketing campaigns, such as the evaluation of different strategies and incentive structures.

By using this decision-making tool, Wild Fusion can make informed decisions under conditions of uncertainty and choose the best strategy for Wild Fusion to minimize the maximum regret they could face from making the wrong decision or strike a balance between pessimism and optimism and choose the strategy that best fits their business objectives.

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40