

Neuro-tourism: Collaboration of Neuro-Science with Tourism with DMAIC Technology and Automated Marketing with detailed Analysis

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ABSTRACT

The tourism of Emotions also can be explained as Emotional SEO (Search Engine Optimization) for tourism is one of the newly emerging areas which has opened a new door to tourism industry and also has ample potential as a research topic, formation of Neuro-Science and social science together with the blend of tourism has led to the development of this discipline. On the other hand, the internet technologies evolution regarding distribution models and communication in the past few decennary has donated a lot concerning about the auspicious change in the economic environment like in business environment, companies and the consumer condition regarding the purchase of goods and services.

Challenges in the areas of marketing which can have a solution with the automation are the management of capacities, management of inventories and relevant price setting. Integration of the DMAIC technology, Lean Six Sigma with Neuro-tourism along with the application of Marketing Automation can result in a successful business and marketing strategy. On behalf of consumers: offering vital market changes create problem like decisions regarding hierarchy and authorize managers to create real time changes. The way of shifting the part of the activities and process in Marketing Automation can be substitute for the companies.

The aim is to form clusters of Data based on the data obtained by data analysis and filtering techniques such as customers favoring to visit Mountains, Deserts, Sea Beach, etc as per the requirement of the tourism service provider. Further, the different automated marketing tools are used to initiate the repetitive marketing to the targeted and probable set of customers aiming to achieve a high conversion rate and thus increase the throughput.

Keywords: Cognitive Response, Neuroscience, Neuro-tourism, Neurophysiology, Motivation, Search Engine Optimization (SEO), Unconscious Mind, Marketing Automation Fields, Real-Time Marketing, Automated Marketing, DMAIC, Lean, Six Sigma

1. INTRODUCTION TO GUT MICROBIOTA AND PERSONALIZED MEDICINE

Neuro-tourism is the study of unconscious emotional and psychological feature responses to commercial enterprise pictures employing a neurobiology methodology. This applied neurobiology study tries to grasp however travel destination preferences are often determined by direct and unconscious emotional and mental feature responses. It includes medicine, sociology and tourism together where the decision making processes of the consumer is considered and their choice which is really very important is identified.

Choice of popular travel destinations is largely influenced by psychological factors. However, as people's point of view and thought processes change while traveling, their behaviors and reactions to the challenges and frustrations of travel and vacation life also change. The behaviour and the mental health of both local and tourist are closely related to psychology because of the impact of tourism on them.

Lean Six Sigma is a partnered directorial concept in which **Lean** is the set of practices by administration which is responsible to enhancing efficacy and skill by sort out the waste with the help of application of several technologies one of which is **DMAIC**. Conventionally **Lean** concentrates on sort out the waste of eight kind ("muda") and on the other hand Six Sigma is responsible for concentrate on enhancing output quality by removing and recognizing the reasons of errors and minimizing

variation in processes.

Define, Measure, Analyze, Improve, and Control this five phases is an acronym which stands for **DMAIC** which creates the process that can be applied to the existing strategies to reduce and eliminate non-value adding activities and waste. For enhancing the throughput of the processes the **DMAIC** strategy of data-driven quality is used. In the past two decades there is a huge competition for a review regarding the conventional strategies of marketing.

The act of application of technology that handles repetitive marketing activities and tasks, such as posting content on social media and creating email lists may be explained as **Automated Marketing**. It helps you streamline your marketing processes to save your business time and resources and increase the throughput.

Probability of using marketing automation tools by different business has seen an exponential growth nowadays — around 56% of businesses currently implement the technology, and that number continues to grow.

The huge competition over the last two decades calls for a review of the traditional marketing strategies. Change in the conventional marketing is necessitated by several conditions are enumerated below:

- In business and public life for decisions and processes a new benchmark is set by the widespread application of new technologies.
- □ In businesses, the different types of risks involved which require adequate responses.
- Because of the change in consumer behaviour the resistance to conventional marketing tools leading the companies to diversify and innovate.
- flexible real-time marketing need has increased.

OBSERVATIONS ON NEURO TOURISM

Throughout their vacation processes it has been determined that tourists exhibit differing types of higher cognitive process behavior for varied services and product they purchase. Arising of requirements is the initial step of every higher cognitive process. Requirements arise once there's a distinction between the \$64000 scenario (the present state of the person) and also the scenario desired by the consumer. Once customers face a haul, they become awake to their desires. No necessity happens once there's no distinction between the 2 situations; so there'll be no demand for creating a choice. Commercial enterprises should be prepared for attempting new product and tendency in demand.

Selection of best popular destination originates and progress from psychological factors substantial contribution. However, since travelling there is change within the point of view and thought method of people; the results regarding their nature, and individuals' reaction for adapting to difficulties and frustrations regarding travel and the life of vacation, and also the outcome of commercial enterprise in the psychological behavior and state of tourists and native individuals square measure associated with science significantly.

There are many factors regarding why people render a high quality vacation service, one of the factors is Hygiene of the destination. It's achieved by the general hygiene and cleanness of food enterprises and accommodation, neatness of the beaches, oceans, touristic and historical places within the destination. The safety feeling of tourists, nature and behavior of the personnel and the general atmosphere of the destination used among and outdoors of the accommodation facility. Welcome, among the factors is one in all the foremost poignant service quality may be a lot of intangible thought compared to the opposite essential factors, and attitudes and behavior of the native individuals conjointly defines the welcome of that specific destination.

There are different characteristics in every other place, which offered various activities. The activities of adequacy at the seacoast, facilities of amusement at the destination, night life suggests that, searching facilities, finding risk in the empty place of beaches, availability of health services within the destination, best activities and services for kids and sportive activities show the standard of the place in a very destination providing ocean, sun, sand, commercial enterprise usually.

Consumers finally reach a choice with the factors considering demographic factors like age, gender, income, occupation, family size and academic status; psychological factors includes perception, mood, motivation, living vogue, learning and attitude; and socio-cultural factors as well as people and culture family, informative cluster. In touristic buying behaviour there is a series of sub-selection as well as transportation, vacation spots, reservation, budget, activities and accommodation. First issue which must be taken into thought first is to search out the answers to the queries associated with the factors poignant choice of various destination spots by tourists and what the reason affects them in their choice method. Producers and mediators of commercial enterprise trade should take into consideration the motivating factors making certain higher cognitive process by customers to render and supply commercial enterprise services well. Travelers choose their vacation spots for its associated resources qualified look as an acceptable and adequate place for a reasonable stay.. This nature is termed as the behaviour of client.

Throughout their vacation tourists interact with the workers, tradesmen and native individuals may be a dynamic issue for satisfaction in vacation. The prices of products and services offered in a very destination have an essential place in vacation evaluation. Because the service offered value is cheap very matching with the standard, belief of tourists and as a result their satisfaction levels increase. The holiday total price spent within the accommodation costs, destination, food costs and amusement costs compose the worth evaluations in a very destination generally and should reach the satisfaction level. Tourists measure the entire price of their vacation supported the holiday prices in various vacation spots and this analysis is predicated on general satisfaction.

According to the study of Monroe (1986) socio-economic characteristics have an effect on value and quality preferences of customers and their complete decisions progress looking on this, and there's a positive relationship between the 2 variables for value and quality perception, rating may be a issue deciding quality additionally to the standard being a big consider client preferences, and customers with high financial gain level like high value product. it absolutely was according that customers compared adequacy, product or service costs, quality etc. and assessed their family budget and created decisions supported these factors.

PICTORIAL REPRESENTATION OF DECIDING CRITERIA AND THEIR PROPERTIES

An example of implementation mistreatment encephalogram to work out the choice of restaurants whereas providing some pictures or a group of inquiries to a group of participants wherever reactions of the participants in unconscious Emotional and psychological feature responses square measure recorded supported the budget, welcome, location, comfort and quality criteria which might be assessed and at last the collected knowledge are often analyzed supported some parameters to work out the preferences. The pictorial representation is often determined below :

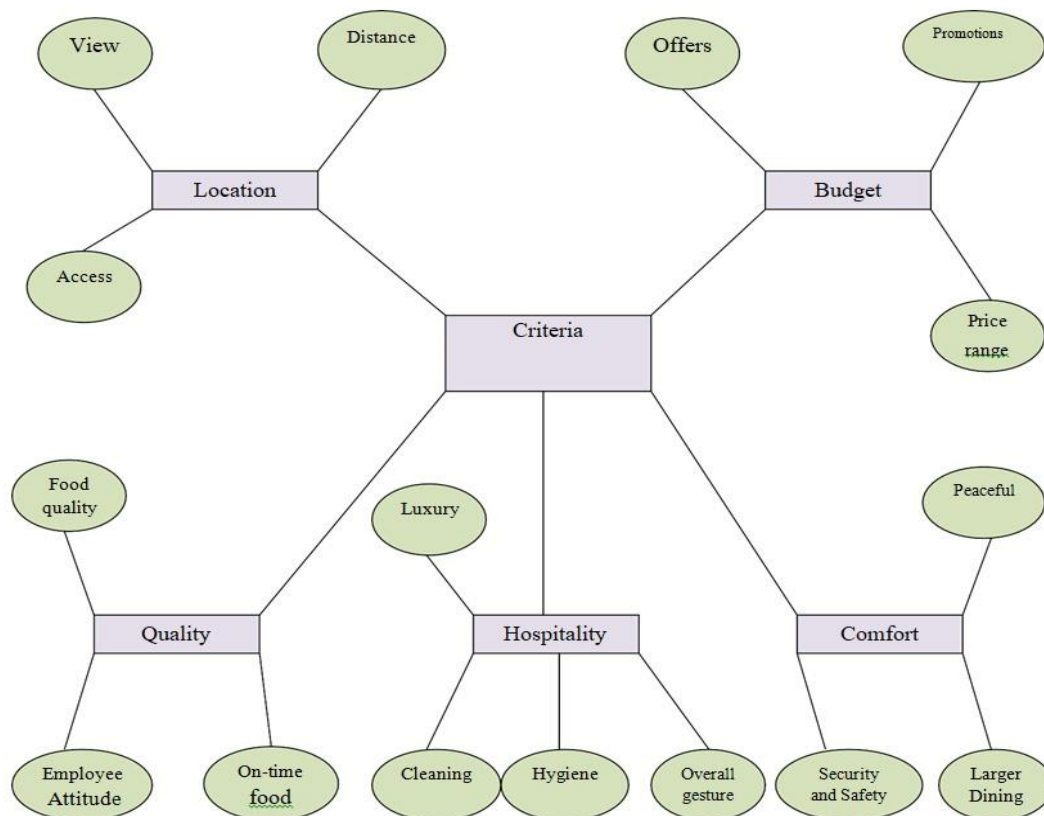


Figure: Different Criteria along with their properties that can be used for output generation

AUTOMATED MARKETING TOOLS

Automated Marketing tools use software to automate redundant marketing tasks. Email actions, lead scoring, sales lead rotation, SMS, CRM updates and drip sequences are some services offered by some platforms.

The implementation of automated advertising chores may provide advantages to your firm, such as enhancing worldwide throughput and enabling you to allocate additional time to high-priority activities. Marketing automation systems have the capability to gather useful data, which can afterward be used to generate more customized advertising initiatives and enhance

rates of conversion.

IMPLEMENTATION PROCESS

The Define phase of the process can be implemented by using several fashionable neurobiological tools like eye pursuit and brain scanning Electroencephalography (EEG) to assess emotional and psychological feature responses.

In the Measure phase, the team checks how the process is performing as per the expectation of the customer. The main function here is to define the baseline.

In the Analyze phase, the collected knowledge is then analyzed using different data analysis tools like Python, MS-Excel, Microsoft Power BI, etc. During this phase, higher observance and programming will be done by commercial enterprise managers. Hence, it's planned that neuroscience knowledge ought to be enclosed within the management data systems.

In the next phase, which is the Improve phase, the identification of the defects and loop-holes in the system is done and various corrective measures are applied for the improvement of the process.

In the Control Process, the main emphasis is to control the newly implemented improved process i.e., this phase ensures the newly implemented process does not revert to previous ways. The implementation of whatever changes have been identified in the [Improve phase of DMAIC](#) for the new process. In addition, it is also ensured that the responsibilities to the new owner have been successfully transitioned.

Now, after the application of Neuro-tourism process and successful fetching and analysis of the data obtained for the above-mentioned industry, clusters can be formed based on the data obtained by data analysis and filtering techniques such as customers favoring to visit Mountains, Deserts, Sea Beach, etc as per the requirement of the tourism service provider. Further, the different automated marketing tools are used to initiate the repetitive marketing to the targeted and probable set of customers.

INDUSTRY APPLICATIONS

Knowing and investigation of the behavior of tourists to figure with sensory promoting is what's achieved by Neuro-tourism. It finds its applications within the five phases of business enterprise enumerated below:

Dreaming- Tourists continually dream of their ideal trip and tries to form it.

Planning- correct coming up with is an important criterion for a cushty, safe trip.

Reservation- Facilitate the reservation with acceptable technology.

Experience- Satisfaction of having the ability to get pleasure from the trip and varied forms of experiences are one in all the foremost vital criteria for tourists.

Loyalty- If all the higher than mentioned phases yields positive output then the loyalty happens.

The Neuro-tourism discipline finds its application in business enterprise trade wherever the emotions of tourists will be analyzed to form a far better market and to produce the tourists precisely what they're trying to find. Neuro-Marketing ways can even be applied so enhancing the opportunities during a additional economical manner.

REQUIREMENTS

First, Data Collection is done by the application of neurobiology tools like eye pursuit and brain scanning Electroencephalography (EEG) to assess emotional and psychological feature responses. Second, the storage big data collected over the online platform is done in cloud platform. Third, the analysis of the big data stored over the cloud needs to be done with the application of various data analysis tools like Microsoft Power BI, python etc. depending on customer and user behavior based on various parameters of Neuroscience. The software responsible for the creation and execution of rules performs the necessary tasks. Numerous software suppliers provide a range of execution tools and data analysis capabilities, with significant variations in the scope of functionality. Furthermore, a significant number of software applications have a simple user interface that does not need a technical background. However, possessing experience in both Computer Science and Business Administration would be an ideal combo. Marketing automation is a vital component within the field of Business and Information Systems Engineering (BISE).

GENERAL DATA OF MOUNTAIN TOURISM

In recent decades, mountains have emerged as a prominent destination for visitors worldwide (Richins & Hull, 2016). In Europe, the Alps had a significant yearly increase of 120 million tourists (World Tourism Organisation, 2021; Food and Agriculture Organisation). Specifically, in 2019, the Auvergne-Rhone-Alpes area in France documented 24.1 million overnight stays (Statista, 2020).

According to the New South Wales Government (2022), the Snowy Mountains in Australia saw a total of 1.68 million

tourists in the year 2019. Rocky Mountain National Park in North America had a notable rise in visitor numbers, with an increase from 2.82 million in 2009 to 4.67 million in 2019 (Rocky Mountain National Park, 2021). I'm sorry, but I need more context or information in order to provide an academic rewrite. Table Mountain in Africa had a notable increase in tourist activity, as seen by the substantial influx of approximately 3.1 million tourists in the year 2019 (WESGRO, 2020). According to a report by China Daily (2022), Mount Huangshan in China, renowned for its popularity among tourists, saw a total of 63.17 million visitors in the year 2021. Nepal had a significant increase in tourist arrivals in the Himalayas and other distant regions, with the number of tourists rising from 0.21 million in 2009 to 1.20 million in 2019 (WorldData, 2021).

GENERAL DATA OF SEA BEACH TOURISM

In the whole world tourism is the fastest growing sector in economy [1]. In 2017, there were 1.322 billion international tourists, a 7% increase from 2016, and this number is projected to reach 1.8 billion by 2030. The global tourism revenue in 2016 was US\$ 1.220 billion, a 2.6% increase from the previous year [1]. Tourism also contributed to about 5% of the global GDP in 2016 and employed one in ten people directly or indirectly worldwide [1]. The average contribution of tourism to GDP is around 10%, but it varies from about 2% for countries with low tourism activity to more than 10% for countries with high tourism activity. For some small islands and developing countries, tourism can have an even bigger impact, representing up to 25% of their GDP in some cases. According to the data from 2016 [1], the countries that earned the most from tourism were the United States, Spain and Thailand, while the countries that received the most international visitors were France, the United States and Spain. More than half of the international tourists in 2016 (53% or 657 million) traveled for holidays, recreation or other leisure purposes, and many of them preferred beach destinations.

LIMITATIONS AND IMPLICATIONS OF NEUROLOGICAL TOOLS AND TECHNIQUES

Limitations	Implications
Development of short time and high priced Neuro imaging experiments	Limited sampling
	poor analysis regarding neuroscience variations
Developing experiments confined to artificial lab environments.	Experimental distortion
	Incomplete comprehension of emotional states of subjects
Operation of a neurological imaging device.	Over-invested results
	Limited integration of neurology and psychological signals.
Use of Neuro imaging technology at that time: Useful Reasoned Imaging (fMRI)	Incomplete chart of cerebral function.
	Overinvested outcomes
Social, ethical and ethical abuses of neuroscientist mechanisms used for neurotourism.	Manipulation regarding customers mind
	too little protection of helpless populations

OPPORTUNITIES AND IMPLICATIONS OF NANOTECHNOLOGIES TOOLS

Opportunities	Implications
Balance of engineering science techniques applied with social, ethical, ethical needs	Protection of helpless population teams
	Protection of customers privacy
	Understanding of compulsive behaviors and pathologies
Application of multifunctional nanotechnologies device	Increased dependableness and searching validity
	Combined measurement of various medical specialties and psychological signals.
Combination of lab tests and assessments of daily life	Increased dependableness and searching validity
	Co-measuring of various medical specialty, mental signals and biological
Using discrete and mobile nanotechnologies devices	Entirely different monitoring of the neuro-scientific signal in a natural, continuous and comfortable manner.
	Eliminates the perception of aggressiveness and distortions of standard laboratory equipment.
Real-time emotional state visualization using nanotechnology	Removing generalizations of restricted laboratory studies
	Observation of subjects' emotional states and purchasing nature over time
	raised dependableness and validity of findings

2. CONCLUSION

It is terminated that unconscious Emotional and psychological feature responses are natural processes that require to be studied and understood, not as a special case, however embedded as a natural part of commercial enterprise analysis. Neuro-tourism additionally has to be incorporated with the Neuro-marketing ways for a higher and economical understanding of the wants and application in accordance with them. Thus, for brain bases of understanding complicated preference build and selection, commercial enterprise analysis might so be an acceptable field for understanding. Clear understanding of human psyche is incredibly essential in integrated promoting communication method for destination Marketers.

3. SUGGESTIONS

The study and analysis activities on Neuro-tourism is principally focused on fashionable neuro- science tools like eye trailing and brain scanning Electroencephalography (EEG) to assess emotional and psychological feature responses. Application of Artificial Neural Network (ANN) in conjunction with some economical information analysis tools are often wont to acquire desired results. it's terribly essential to know human psyche in integrated promoting communication method for destination Marketers. Implementation processes of Neuro-tourism additionally ought to be intermingled with the ways of Neuro-Marketing for getting a decent turnout with higher and economical understanding of the applications in accordance with them. Therefore, business enterprise analysis might so be an appropriate field wherever the understanding of brain bases of advanced preference formation and selection will yield optimistic and desired result.

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