

NEURO - GEOMETRY IN BANK LOAN DECISIONS

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The human being makes decisions in a context of limited rationality, subject to biases and noises that lead him to behave sub optimally, from the point of view of what Neoclassical Economics prescribes.

..... Laza in 'Neuroeconomics; The Disruptive Path' (Ed. 2018)

Abstract

Bank loan judgement-making is a region of intense study in neuro - geometrical managerial science. In real world, bank loan judgement processes and judgements emerge from complexly interlinked web of parameters, agents and decisional elements. There is a causal (forward - backward posturing) relationship amongst these constituents. Explorations like how brain absorbs information, identifies and borders problematical situations and finally indicates apposite responses consider various sources of data and evidence before sanctioning a judgement. Brain imaging technologies have motivated neuro - geometrical scholarship of internal order of mind and connotations with bandwidth of (bank loan) judgements. Imaging, a significant aspect of dynamic capability, exhibits cumulative quantum of evidence as regards evolutionary architectures in decision spectrum. How does the manager decide on a loan application? What all processes torrent across the span of his brain? What limitations and restrictions boundary his neuro - geometrical dynamics? Does preceding familiarity of endorsing loans influence his computing results? There are some identifiable questions, though some have signatures of supporting a hypothesized solution. This paper attempts to report contemporary stride of advances to reconnoiter phenomena through managerial decision action, bank loan judgement - making and reasoning processes. Objective is to set forth a prototypical argument for bank loan judgement, in which interaction between neuro - neuro - geometrical aspects of loan judgement processes are indicated through calibration of brain activity at time of loan judgements. Attempt is towards linking neuro - geometrical - psycho and loan administration perspectives of predicting observed comportment. This provides architectural frame for understanding managerial loan decisional administration at intersection of neuro - geometrical managerial science, loan administration and psychology linking and spanning numerous echelons of exploration.

Key Words: Brain Imaging, Loan Decision and Neuro - geometrical Geometry.

Introduction

The only skills you need to be a cogent and practical business stake holder; : an ability to fail, an ability to have ideas, to sell those ideas, to execute on those ideas and to be persistent so even as you fail you learn and move onto the next adventure.

..... James Altucher

Conventionally, object of neuro - management theory and neuro - management cognitive psychology, business stake holder economic choice in transformation of an economy has recently become a research focus in systems neuroscience. Since antediluvian times scholars at many levels of reduction have studied choice in transformation of an economy making. Over the last three decades, social and natural scientists have tried to appreciate how we make choice in transformation of an economy, using different strategies. Since the 90s, groups of inter - related scholars have begun to combine social and natural scientific approaches to study choice in transformation of an economy in an emerging discipline called 'Neurobusiness management'. Assumption is that by combining theoretical and empirical tools from neurobusiness stake holder science, cognitive psychology and neuro - management into a single approach, resulting synthesis will offer insights

valuable to all three - parent disciplines. Studies seem to support that conclusion. Theories have begun to restructure neurobusiness stake holder appreciating of choice in transformation of an economy-making, and findings suggest constraints on theoretical models developed in neuro - management and psychological domains. At a lower level of reduction, psychologists studying mechanisms of pronouncement and choice in transformation of an economy seek to appreciate mental constructs that guide choice in transformation of an economy making at process-based level of analysis. Mental dynamics form algorithmic components of psychological models of choice in transformation of an economy. These models seek not just to predict comportment but capture accurately mental events that precede choice in transformation of an economy. As such, they are complicated that neuro - management models. Although this convolution often makes them more realistic it does so at a cost, because these models are hard to test completely. At a yet lower level of reduction, neurobusiness stake holder researchers have been trying to appreciate cognitive pathways and computations that give rise to choice in transformation of an economy - making comportment. These scientists have sought to appreciate, at a physical level, how it is that the brain achieves choice in transformation of an economy by studying computational architecture of the brain. Of course, challenge is one of scale. Appreciating how choice in transformation of an economy is made simply by tracing cognitive pathways has constrained studying simple choice in transformation of an economy (Satpathy and Banerji; 2019).

Undoubtedly, the unparalleled, captivating and multifaceted thing in the entire neuro - geometrical cosmos is 'human mind' and 'brain', as a 'nucleus' of human body. What are these crafted and precast for? This is a pertinent and significant issue that has confounded researchers as a 'mitochondrial' theme for a debate between old 'typescripts' vs. 'cultivate' debate within the 'protoplasmic spectrum' of phenomenal experience or qualia in decision making. This can be referred as a case of 'biological taxonomy'. In spite of all recent advances, there's so much vacuum in the world of scholarship that there exists a scope for a multi - disciplinary neuro - geometrical exploration. There is an inevitability to discover how human brain captivates evidence, recognises and frames challenging circumstances and indicates suitable responses in a complexly intertwined neuro - geometrical decision milieu.

Contemporary global business development and its arrangement have ushered vicissitudes in business environment. Most experimentation occurs or is undertaken in calibrated well-ordered laboratory schemes. Some lend credence to emergence of new facts and figures. Some lend credence to replicability of previous studies. And, some germinate to sprout new issues and problems. Brain of any manager considers sources of information before bank loan judgement. Exploratory interest is in assumptions, beliefs, habits and tactics to craft bank loan judgements. Any iteration of behavioural finance, as a managerial exertion, needs explanation of substrates, mechanisms and variable effects upon neuro - geometrical functions operative in bank loan judgement-making processes. Nonetheless, how does it do this? Neuro - geometrical judgement tools offer modeling comportment. This probes neural bases of bank loan judgement predictability and value, parameters to bank loan judgement. Integration offers exciting potential for construction of near - accurate models of bank loan judgement - making. Although studies explore correlation between neuro - geometrical abilities and bank loan judgement making, few pigeonhole specific neuro - geometrical abilities underlying such judgement making proficiency. Bank loan judgements are inevitable part of activities of any bank. Deciphering brain - loan sanctioning transactions requires automatous understandings of biological processes that implement value-dependent judgement-making. There is a critical metamorphosis between 'thinking about thinking' and actually enhancing brain and mental processes ('biological taxonomy') by developing latent potential of each managerial judgement. Theoretical approaches accomplish this through sequence of neural computations. Here, expected future reward opportunities are compared and the option with highest expected value is carefully chosen. How to handle managerial brains behind loan - decision dealings in age of histrionic change and growing uncertainty? What coherent brain dynamics gridlock bank loan judgement-making?

Problem Statement

There are unaddressed and unsolved problems in (bank managerial) cognition. Some have supporting evidence as regards general implications of neuro - geometrical (bank managerial) loan administration? With an aim towards stimulating debate and future research, some unsolved research issues that can be of future research concentration are; how does bank manager decide in a state of vacillation, Risk and Probability? How does a Bank manager decide in state of VUCA (Uncertainty, Vulnerability, Complexity and Ambiguity)? How does managerial brain compute and represent mental ideas? What counts as explanation of how brain works ('biological taxonomy')? This invites managerial attempts at addressing issues with

neuro - neuro - geometrical methods (fMRI, BOLD, EEG, ECG, etc.). This provides conceptual framework for understanding and conducting neuro - geometrical decisional research at intersection of neuro - geometrical managerial science, loan administration and psychology. The cavernous meaning of each element attempts to enhance a strategic significance of VUCA compartment of bank managers.

Loan Judgement

Visibly discernable apparatuses of humanoid activities carry a minuscule fraction of information that substances. Human spectators are infinitely attentive in identifying or supposing mental states; principles, longings and intents that form bedrock of an apparent casing. How are bank loan judgements carried out in brain? Question is how bank manager make bank loan judgements. How do we know what bank managers are thinking on a loan application document? How do we judge these managers and what is happening in their brains towards taking a decision; loan application accepted or rejected? Managerial brain considers sources of information ('biological taxonomy') before arriving at a particular and specific judgement. In particular, neuro - geometrical processes by which bank managers reach loan judgements have been ignored. Problems confronting bank loan judgement makers often embody conflicting values. Bank manager often fail to design 'rational' bank loan judgements. When faced with obscure bank loan judgement, individuals engage in strategic simplifications of bank loan judgement problems. How do parts of the brain that govern bank loan judgement-making coordinate their activity when making a bank loan judgement? This attempt explores certain neuro - geometrical - reinforcements in bank managerial bank loan judgement modeling. Imaging, an important aspect of dynamic capabilities, represents increasing amount of evidence of how evolutionary architectures are shaped. Imaging technologies have stimulated neuro - geometrical ('biological taxonomy' or bank managerial) studies of order of mind and links with bandwidth of managerial bank loan judgements.

Volatility, Uncertainty, Complexity and Ambiguity

Ceteris paribus the elements of economic contests, it is obvious that bank managers need to be more agile. These managers are cruising in a World where 'volatility' and 'uncertainty' are the 'new normal'. They look at the World through a lens (VUCA), which stands for 'Volatile, Unstable, Complex, and Ambiguous.' VUCA, as prescribed in Wikipedia, is describes or reflects on ischemic failures and comportmental failures, which are imperative to organisational failure, At some level, capacity for VUCA hinges on enterprise value schemes, assumptions and natural goals. A 'prepared and resolved' enterprise is engaged with strategic agenda that is aware of and empowered by VUCA forces. Capacity for VUCA managership in strategic and operating terms depends on a well, developed mindset for gauging the technical, social, political, market and economic realities of the environment in which manager's work. These elements present the context in which organisations view their current and future state, They present boundaries for planning and policy loan administration, They come together in ways that either confound bank loan judgements or sharpen the capacity to look ahead, plan ahead and move ahead, VUCA sets the stage for managing and leading, The particular meaning and relevance of VUCA often relates to how people view the conditions under which they make bank loan judgements, plan forward, manage risks, foster change and solve problems. Working with deeper smarts about elements of VUCA may be a driver for survival and sustainability in an otherwise complicated World.

- V = Volatility; Character, dynamics of change and speed of change forces with change catalysts,
- U = Uncertainty; Lack of predictability, prospects for surprise, awareness and understanding of issues,
- C = Complexity; The multiplex of forces, confounding of issues and disorder and confusion that surround,
- A = Ambiguity; The haziness of reality, potential for misreads and mixed meanings of conditions.

In general, premises of VUCA tend to shape capacity to:

- Anticipate issues that shape conditions,
- Understand consequences of issues and actions,
- Appreciate interdependence of variables,
- Prepare for alternative realities and challenges, and

- Interpret and address relevant opportunities.

Managerial Brain Tectonics

Interpretation of activity in terms of neuro - geometrical managerial science is typically concerned with neuro - geometrical and physiological underpinnings of judgement. This is a clearly a case of 'biological taxonomy'. Not all brain circuits get activated when executing response to given circumstances. A key insight is 'modularity' (notch to which arrangement's apparatuses may be unglued and recombined, often with benefit of elasticity and variability in usage) of managerial brain. Same stimuli may generate different comportmental responses depending on which brain circuits are activated. If proposition is precise, different brain circuits monitor different judgements depending on which brain structures and circuits are triggered but may be with possibly conflicting preference orderings.

Bank managers seek information than required thereby causing delay because of time required to process information. This impairs effectiveness of bank loan judgement. In this state, neuro – geometrical perspectives seek to explain loan judgement -making, ability to clinically examine manifold alternatives and choose an optimal course of action towards arriving at some viable decision. It studies how loan administration comportment shape with respect to coherent brain dynamics underlying judgement making. Theoretical elucidations postulate that managerial brain accomplishes this through neural computations. Deciphering such transactions require understanding of neuro - geometrical processes that implement value - dependent bank loan judgement making. This leads to formulation of a 'neuro - geometrical - loan administration bank loan judgement making paradox'. The goal is a speculation of how brain implements bank loan judgements with an optimised combination. Each (combination) of alternatives leads to a result with some quantifiable significance. Neuro - geometrical research suggests that diverse preference orderings conceivably will surface depending on which brain circuits are activated.

Neurobiology of Loan Decision

Managerial agility and adaptability are skills required to make continuous shifts in bank loan judgement making. To meet challenges of VUCA, what's the point of strategy; central dilemma of 21st-century banking business? Strategy helps managers conquer ever-flowing watercourse of junk information that otherwise cause managers to reread, spool and amend so indiscriminately that managers will at no time commit to anything and never fulfill their potential. During active bank loan judgement making, risk modulates regions of lateral prefrontal cortex, parietal cortex, and anterior insular cortex (Mohr et al; 2010), that contribute to adaptive control of other aspects of comportment. Yet, risk influences activation in other regions seemingly associated with simpler sensory, motor, or attentional processes (McCoy and Platt, 2005), as well as in brain's reward system directly (Berns et al; 2001; Fiorillo et al; 2003). Presence of ambiguity likewise modulates activation in both regions that support executive control (Huettel et al; 2006) and regions that track aversive outcomes (Hsu et al; 2005). In some, brain regions have been linked to characteristics of neuro - geometrical managerial bank loan judgement making problem, which, in turn provide new insights into neural function. Theorists in a VUCA World opine to always retain a clear vision against which judgements can be made. There should be some grade of with dexterity to flex and answer applicably to swiftly recounting circumstances. There is an imperative need to supplement efforts with provide clear path routes and unswerving messaging against torrent of continually shifting priorities. Such concentrated efforts should be backed up by fresh dosages of virtual marques of communication, guestimate risks, think of a bigger scenario, make bank loan judgements based as intuition, capitalise on convolution, seize opportunity to innovate, leverage diversity, get used to being uncomfortable, and take leaps of conviction.

Brain is governing organ of nervous scheme. Imaging studies submit that metamorphoses in reasoning and comportment (might) share differences in brain connectivity. Cerebral cortex part is functionally aligned towards the dynamics of vision Size of brain comes vs – a - vis cerebral cortex (frontal lobes) are associated with executive (loan) judgement functions. In neuro geometrical spectrum, how brain processes diverse sensory stimuli and what neural basis are involved in deciding, have been studied. Deficiencies are at core of assortment of psychological and neuro - geometrical evidence when faced with a choice. This triggers an action once that evidence reaches an angling point. But, how do managers know where they are heading for? How are bank loan judgements carried out in brain? Question is how bank manager make bank loan judgements. How actions are assembled into organised sequences? Psychological models explain that managers gradually

accumulate evidence for a choice / preference on a loan application over time. They then propose to execute that choice when evidence reaches some degree of critical level. Managerial brain considers numerous sources of information before aiding the manager to arrive at the intended bank loan judgement. Such steps often embody conflicting values. There are bright chances that the bank manager may, at this critical stage, fail to design 'rational' judgements. Therefore, experimental studies reveal that when faced with incomprehensible judgement, managers engage in strategic simplifications of judgement problems. It is interesting at this stage to explore how parts of the brain that govern judgement making coordinate activity towards a (loan) judgement? Theories acknowledge that, not only environmental cues, but core representation of temporal or task context must be structured into a hierarchy. Based on neuro - geometrical evidence, brain can be sculpted subject to three conflicts aspects: disproportionate information, time - based vista and inducement salience. Each leads to a fresh perspective. This would certainly lend credence towards certain neuro - geometrical-underpinnings in bank loan judgement modeling. It's important to understand this stage of intricacy with developed 'cerebral cortex'. This sub - model of can explain anatomical and physiological aspects of (loan) judgement, to a certain extent. These can then be explored to determine an optimal judgement plan.

Estimated Enquiries

New brain imaging technologies have motivated neuro - geometrical - loan administration studies of internal order of the mind and its links within spectrum of managerial bank managerial choices from bank managerial choice making among fixed gambles to bank managerial choice making mediated by market and other institutional rules. We are only at the beginning of the enterprise, but its promise suggests a fundamental change in how we think, observe and model bank managerial choice in all its contexts

.... (Smith; 2002).

How can we leverage brain in business of bank loan judgement? How can we capitalise / invest on brain for bank loan judgement? How can bank managers arrive at best bank loan judgement? How can bank managers find productivity 'hot buttons' in brain for bank loan judgement? How can bank managers encourage creative and ethical brain? What is the nature of explanation in bank managerial neuro - geometrical management? What information about the past is relevant to managerial neuro - geometrical judgement making? How do experience influence managers bank loan judgements? What kinds of experiences produce better bank loan judgements and better variation? What learning processes take place during sampling and repeated consequential loan judgements? How do these processes alter when judgements are interconnected over time? When bank loan judgements are time dependent? How do managers address consequential and sampling bank loan judgements when 'environment' is dynamic? How can managers validate and test theories / hypotheses with computational models? How do bank managers process logic representations of data relationships? Is representation of past in any sense 'rational'? Are affective as well as neuro - geometrical processes involved? A complete answer to this question cannot be given at the present state of the art. Nevertheless, empirical findings put limits to concept and indicate in which direction supplementary inquiry should go.

The above integrative approach conglomerates neuro geometrical tools with some (area or range within which an amount or estimate is likely to be correct) trans - traditional dimensions of bank loan judgement. Why would specific neuro - geometric experiments be relevant to causal knowledge concerning bank loan judgement realm? First, neuro - geometrical experiments holds promise to unify within managerial sciences. Second, experiments uncover neural underpinnings that are applicable to managerial comportment in (bank) managerial context. Third, we can use the schema to causally explain managerial neuro - geometric judgement. Fourth, neuro - geometric evidences establish reality of managerial judgement. On the neuro - managerial front, stimulation of anterior insula and properties of oxytocin establish reality of preferences. Fifth, neuro - geometrical perceptions improve judgement by provisioning automatous details behind judgement. Coupled up with element of 'trust', framework molds into a 'stratified image' and grips six dimensions:-

- Neural networks,
- Biological attribute that describes evolutionary perspective,
- Anthropological component that defines and describes trust,
- Psychological aspect that provides definition of trust pertinent to cognitions,
- Philosophical dimension that regards rational dimension as in-depth scrutiny of causes and origins,
- Socio - level of influence that describes dependent inter-relations.

Measurement of brain activity affords information about underlying mechanisms used by brain regions that seemingly activate when a judgement is made. The approach used in neuro - geometrical modeling has binary recompenses. Predominantly, evidence from brain sciences provide precise strategies for constraints that should be obligatory on bank loan judgement making processes. This information shapes a model that represents documented biological property of the brain. Neuro - geometrical judgement making has been described by utility functions that represent goals and interact at (Nash) equilibrium. Nonetheless, discrepancies between theoretical predictions and observed comporment can be observed. The objective of neuro - geometrical exposition is to build models based on evidence from brain sciences, such as experimental neuro - geometry, judgement making and neuro - biology. Fundamental proposition is that 'sensory-motor circuits' are neural substrates that represent 'value' and 'probability of managerial action'. These circuits must intermingle and effect flow of information towards prompting a judgement and succeeding comporment. Bank loan judgement is generated when 'enough' information supporting one alternative is attained and brain usages assortment of biological apparatuses to sieve information in a controlled optimal manner. Pressing questions at this juncture is that in what way and where these abstract variables stand meshed in brain. Related issue is, by what means does dynamics of such neural computation stimulates a 'bank loan judgement.' For the reason that analysis is grounded on optimal comporment, they have capability to grow a detailed, integrated context for interpreting managerial alternatives that draws upon formal models to go past sensory - motor path, consenting opportunities for understanding challenging neural basis underlying high level neuro - geometrical processes.

Quantification of Choice

Adaptive judgement making depend on strategic explanations of problems. Quantification of choice has been a major area of exploration due to sighting of 'Matching Law'. The law stipulates that relative response rate on concomitantly obtainable alternatives 'match' accessible comparative bolstering tariffs. This pronounces response allocation in ambiguous situations. Bank manager 'may' fail to design 'rational' judgements. Economic agents 'may be' subject to numerous biases that 'may' affect and 'may' lead to have calamitous consequences. What do brain scans really tell us? The answer is; when faced with such a scenario, (bank) managers engage in streamlining strategies. Neuro - geometrical management bridges contrasting fields into a single, unified discipline with aim of providing single, general conjecture of bank managerial comporment. This is the emerging field in which harmony of two or more inductions from perceptive and modeling comporment of different groups of phenomena operate. Integration of these approaches and methodologies offers exciting potential for construction of near-accurate models of bank loan judgement-making (Satpathy; 2014). Among the gargantuan questions are; how does neuro - geometry code numerical value of various options? How does coding different parts of brain govern bank loan judgement making? What triggers a bank loan judgement? Is it accumulative buildup of firing neuro - geometrical decision atoms to final choice (Satpathy; 2015)?

Barriers

Common obstructions encountered in making good managerial bank loan judgements are:

- *Plunging In* - Gathering information and concluding without thinking about crux of issue,
- *Frame Blindness* - Solving wrong problem due to mental framework,
- *Lack of Frame Control* - Failing to define problem on a multiple sphere,
- *Overconfidence* - Failing to collect key factual information,
- *Shortsighted Shortcuts* - Relying on 'rules of thumb',
- *Shooting from the Hip* - Believing in information discovered and 'winging it',
- *Group Failure* - Assuming that with smart managers' good loan judgements will follow automatically,
- *Fooling Ourselves about Feedback* - Failing to interpret evidence from past outcomes,
- *Not Keeping Track* - Assuming that experience makes lessons accessible automatically,
- *Failure to Audit* - Failing to understand judgement,

Good neuro - geometry based bank loan judgements can be attained by:

- *Framing - Structuring the Question (know your frames, open minded framing and know frames of others)*

- *Gather Intelligence*
- *Coming to Conclusion*
- *Learning from Feedback*

Experiential Observations / Deductions

Researches opine through various experimental and empirical approaches that;

- Groups can make better bank loan judgements than individuals,
- Groups should be helped along by skillful manager,
- Intellectual bank managers make superior bank loan judgements,
- Bank managers must encourage debate and intelligence gathering,
- Bank managers must encourage disagreement,
- Managers must converge on final bank loan judgement realistically.

Limits and Implications

Is 'universe' naturally symmetric? Do brains look for certain types of symmetry which then become a reality? Computational theory of attention holds that mind is a computation that arises from brain acting as 'computing machine'. Statement can be elaborated in the manner that brain is a 'computer' and mind is result of a 'program' that brain runs. Computational theory views that managerial mind or brain (or both) is information processing scheme and thinking is a form of computing. Bank manager is not a solitary entity of a solitary mind. Neuro - geometrical managerial science believes so. What shadows is explanation of some methodical, logical and applied issues that tip to uncertainty in data and limitations in ability to induce conclusions. Such propositions are complex and uncertain. Intelligent comportment consists in departure from completely disciplined attitude involved in computation. Computational thinking, built on power and limits of computing processes, uses abstraction and decomposition when confronting a complex task or scheme. Separating concerns, it chooses appropriate representation using invariants to describe succinctly and declaratively.

Recommended Prototypes

Principles advance bounded rationality as basic problem in bank loan judgement-making. There is an envelope of a complex environment, assuming a trade - off between costs and benefits where information is typically inadequate and neuro - geometrical resources are insufficient. Thus, two options might exist to deal with this problematic proposition and find a resource sparing explanation: (i) Relying on optimisation strategy under given constraints; or (ii) basing bank loan judgements on heuristics. Both the above approaches provision idea of dual processing theories which differentiate between two schemes: first, programmed, instinctual dispensation scheme which is typically involved in fulfilling heuristic approach, and second, analytic reasoning scheme which might be overwhelmed when reaching analytic processing capability. From a neuro - geometrical scientific perspective, ample evidence supports the two-part dispensation arrangements. The two schemes enjoy described with differing attributes. Depending on decision task, diverse cortical areas are involved in either of these arrangements. Areas of lateral and medial prefrontal cortex are activated during bank loan judgement-making tasks. Additional activations are found in occipital, parietal and temporal areas for stimulus processing (visually presented impetuses) for (bank loan) judgement-making. For cataloguing of stimuli, relevance of a loop between prefrontal cortex and basal ganglia is stressed. Nevertheless, it still remnants indefinable how other factors guide use of either scheme, with respect to adaptation to fresh situations.

Functional MRI (fMRI): Functional magnetic resonance imaging or functional MRI (fMRI) is a functional neuro - geometrical imaging procedure using magnetic resonance imaging technology that measures brain activity. This is done by detecting associated changes in blood flow. Functional magnetic resonance imaging localises regions of activity in brain by measuring blood flow and / or metabolism following task activation. This apparatus is generally used to identify areas of Broca's Wernicke's area and sensorimotor function (sensorimotor cortex). This technique relies on the fact that cerebral blood flow and neuro - activation are coupled. fMRI concept builds on earlier MRI scanning technology and discovery of properties of oxygen-rich blood. The study consists of; formulating a research question, designing a fMRI protocol, analyzing a fMRI data and interpreting and reporting the fMRI results.

Magnetoencephalography (MEG): Magneto Encephalography is a functional neuro - geometrical induced imaging technique for mapping brain activity. This is by recording magnetic produced by electrical currents happening logically in the brain. This is done by using very sensitive magnetometers.

Electrocardiography (ECG): Electrocardiography (ECG) is the process of recording electrical activity of heart over a period of time using electrodes. Transcranial Direct Current Stimulation (tDCS) is a form of neuro - geometric stimulation that uses continuous, low current delivered to brain area of interest via electrodes on scalp.

Electroencephalography (EEG): Electroencephalography (EEG) is a non - invasive method that records electrical activity of brain along scalp.

Positron Emission Tomography (PET): Positron Emission Tomography is a nuclear medicine, functional imaging technique that produces a 3 - D image of functional processes in body.

Transcranial Magnetic Stimulation (TMS): Transcranial Magnetic Stimulation is a noninvasive method that stimulates small regions of the brain.

Eye Tracking: Eye Tracking is the process of measuring either the point of gaze (where one is looking) or the motion of an eye relative to the head.

Electro dermal Activity: Electrodermal Activity (EDA), is property of body that causes continuous variation in electrical characteristics of skin.

BOLD: Blood - Oxygen-Level Dependent Contrast Imaging, or BOLD - contrast imaging, is a method used in functional magnetic resonance imaging (fMRI) to observe different areas of brain or other organs that are found to be active at any given time.

Conclusion: Real - world problems are often complicated. How strong is the discipline behind the discoveries we have made to date? Highlighting areas overlap between neuro - geometrical modeling and multi - attribute judgement. This definitely will stimulate further cross-fertilization and inspire research examining 'boundary conditions' of various models. Deciphering brain - environment transactions requires mechanistic understandings of neuro - geometrical biological processes that implement value - dependent organisational bank loan judgement-making. There is a critical difference between 'thinking about thinking' and actually enhancing brain and mental processes by developing latent potential of each individual.

There is sufficient overlap to motivate further investigation. Combining information obtained from structural and functional imaging methods is powerful. By using complimentary techniques, knowledge of physiology and pathophysiology can be enhanced.

Neuro - geometrical managerial science is a brave new World of research opportunities. Neuro - geometrical imaging has made inroads into understanding bank loan judgement-making. There is growing interest in exploring the potential links between managerial biology and loan administration. This is bringing greater attention to bear on place of mental processes in explaining managerial comportment and effectiveness. This represents multidisciplinary approach to conceptualization of loan administration. While there is focus on neuro - geometrical imaging, other alternative neuro - methods offer some unique caveats.

References

- Satpathy, J., Malhotra, S., Hejmadi, A., Pradhan, S., Sahoo, K. and Wadhwa, C. (2019). *Endoscopic View of Neuro - Preference Connectionism*, *European Journal of Business and Social Sciences*, ISSN: 2235-767X, Volume 07 Issue 06, June, Pp: 182 - 202, Zurich, Switzerland (International).
- Satpathy, J., Hejmadi, A. and Mishra, I. (2019). *Clinical Observation On Neuro - Decision Capability*, *European Journal of Business and Social Sciences*, ISSN: 2235-767X, Volume 07 Issue 05, May, Pp: 1091 - 1109, Zurich, Switzerland (International).
- Mishra, B.P. and Satpathy, J. (2019). *Managerial Decision Making*, *Journal of Personnel Focus*, ISSN: 2229 - 6506, Vol. 14, Issue (3), July, Pp: 01 - 07, Bhubaneswar, India (National).

- Satpathy, J. and Hejmadi, A. (2019). **Managerial Decision Uncertainties In VUCA Spectrum**, Proceedings of National Seminar on Issues and Challenges in VUCA World, 23 Mar 2019, ICBM - School of Business Excellence, Hyderabad, Telengana, **India** (Adjudged as **Outstanding Research Paper**) (National).
- Satpathy, J. and Hejmadi, A. (2019). **Neuro - Optometric Decision Estimates in Managing Creative Organisation**, Proceedings of National Seminar on Managing Resource through Creativity for Generating Opportunities in 21st Century, Pp: 30 - 55, ISBN Number: 978 - 81 - 922746 - 9 - 0, S B Patil Institute of Management, Pune University, 18 -19 Jan 2019, Pune, **India** (National). Reprinted under the title **NEURO - OCULAR DECISION GUESTIMATES** in Odisha Journal of Social Science, Vol 6. (1), January Edition, Pp: 103 - 115, Bhubaneswar, Odisha, **India**. (National).
- Satpathy, J. (2019). **Neuro - Optometric Decision Estimates in Managing Creative Organization (Poster)**, 4th Coler Conference on Behavioral Economics (CCBE), 19 - 20 June 2019, Center for Behavior Change, Tel Aviv University, **Israel** (International).
- Satpathy, J., Hejmadi, A., Mishra, D. and Singh, S. (2018). **Managerial Eyes for Business Decisions**, FMU Journal of Management, Department of Business Management, Vol. 5 and 6, March 2018, Balasore, **India** (National).
- Satpathy, J. (2018). **Neuro - Based Decisions in Global Business Undercurrents**, IMS International Conference on Indian Trade and Commerce: Past, Present and Future, March 18, Bhubaneswar, **India** (International).
- Satpathy, J. and Hejmadi, A. (2018). **Decision Signatures in Managerial Brain Architecture (Poster)**, Proceedings of NeuroPsychoEconomics Conference, Pp: 61, May 24 - 25, Zurich, **Switzerland**. (International).
- Satpathy, J. and Hejmadi, A., Subhashree P. and Mishra, S. (2018). **Decision Monikers in Managerial Eyes**, Proceedings of International Conference on Contemporary Issues in Business Innovation, Technology and Social Sciences, Gautam Buddha University, 01 - 02 June 2018, June 2018, Noida (UP), **India** (International).
- Satpathy, J. and Mallik, B. (2018). **Mathematical Exposition on Eye Movements in Decision Dynamics**, Proceedings of International Conference on Mathematical Sciences in Engineering Applications (ICMSEA - 2017), Dept. of Mathematics, Centurion, University, 22 - 24 Dec 2017, Vishakhapatnam, **India** (International). Reprinted in International Journal of Management, Technology and Engineering, ISSN No: 2249-7455, Volume 8, Issue XII, Pp: 3245 - 3254, December, **India** (International).
- Satpathy, J. and Singh, S. (2017). **Romancing Neurodecision Making**, Imperial Journal of Interdisciplinary Research (IJIR), Vol. 3, Issue 4, ISSN: 1556-1583, Pp: 2171 - 2198, **UAE**. (International).
- Satpathy, J. and Mishra, B.P. (2017). **Review on Neuromanerial Decision Crescendos**, Imperial Journal of Interdisciplinary Research (IJIR), Vol. 3, Issue 9, ISSN: 2454 - 1362, Pp: 65 - 115, **UAE** (International)

