



Neuroscience and its relevance to Decision Making among Businesswomen – A Case Study

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Abstract

The Indian Economy is thriving on global business expansions through innovative strategies. Industrial expansion and business start-ups are pivotal for our growth. Governments across the globe are emphasizing more on women-led businesses which enables them with support for skill development, financial aid, welfare schemes, etc. Their business acumen in adapting to changes in the business environment, managing the challenges in the volatile market, sustaining the tempo of business development, and yet being different in their domain plays an indispensable role in their success. All of these revolve around one key aspect of any business, which is decision-making. Most of the time, businesswomen may assume that they have rational decisions when they make choices, However, there may be various biases like emotional biases or cognitive biases which may not yield an optimal choice decision. Neuroeconomics is a combined field of psychology, economics, and neuroscience. It gives an insight into value-based decision-making. It also delves into the role of neurobiology on the choices we make, and the role of emotions that may lead to biases. This qualitative research paper is based on two case studies to study the role of emotions in decision-making among Businesswomen and to understand the role of the neuro-programming structure of the brain behind these emotions. The findings suggested that emotions especially neutral emotions play a key role in value-driven decisions making particularly in business, and financial decisions. The style of decision-making is influenced by the emotional state.

Keywords: Businesswomen, Decision-Making, Neuro Economics, Neuroscience, Rationality, Emotions

1. Introduction

Businesses in India are shifting their level of social, Economic, and political outlook to adapt to global business strategic changes. The momentum of changes happens at such a rapid pace that countries have very less time to react, adapt and accelerate their growth. The development of Industries and global trades plays a crucial role in such a transformational trajectory. Every successful business not only brings growth to the nation but also to every individual in diverse ways. It creates new opportunities,

redefines markets, introduces new products, widens global reach, and in turn, improves every individual's standard of living. The entrepreneurs who run the businesses play a vital role in shaping the country's future. The business space was male-dominant and gender disparity is still prevalent. However, changes in the world economy and business outlook have brought changes all over the world and given way to the rise of more women in business in recent times. They are becoming successful in managing bigger companies and running start-ups despite the challenges around them. Women have the innate ability to lead, and the art of management starts in the early days of their personal lives juggling their home with studies/work, being a multi-tasker / multi-faceted with skills to balance multiple roles. The Governments of various countries have also realized the value of women's business ability and they have come out with so many schemes in support of women entrepreneurs.

Irrespective of gender, the key that makes or breaks an entrepreneur is the art of decision-making. The decision-making is all about selecting the best choice among the options considering every dimension, advantage, and disadvantage of those choices for the best interest of the business. The decision-making relies on two crucial factors – Choices and uncertainty. In Business, value-based decision-making is so important that it helps to stay ahead in the race of competition, turns the business more profitable, and supports planning for risks and mitigation. While decision-making is an art, deciding without any bias is a science. When we approach this as a science, it leads to an interesting area of study called Neuroeconomics. Ultimately, it is about understanding the neurological science/biology of the brain behind the choices human makes, their probability, and the value they attach to every choice. The brain plays a significant role in how decisions get affected by behavioural biases which are cognitive and emotional. The decisions are to be neutral to personal biases and should be for the welfare of the Employees, Organization, Society, in turn to the Nation.

2. Objectives

The objectives of this research paper are,

- To study the role of emotions in decision-making.
- To understand the role of neurobiology in value-driven decision-making.

3. Review of Literature

a) Women in Business:

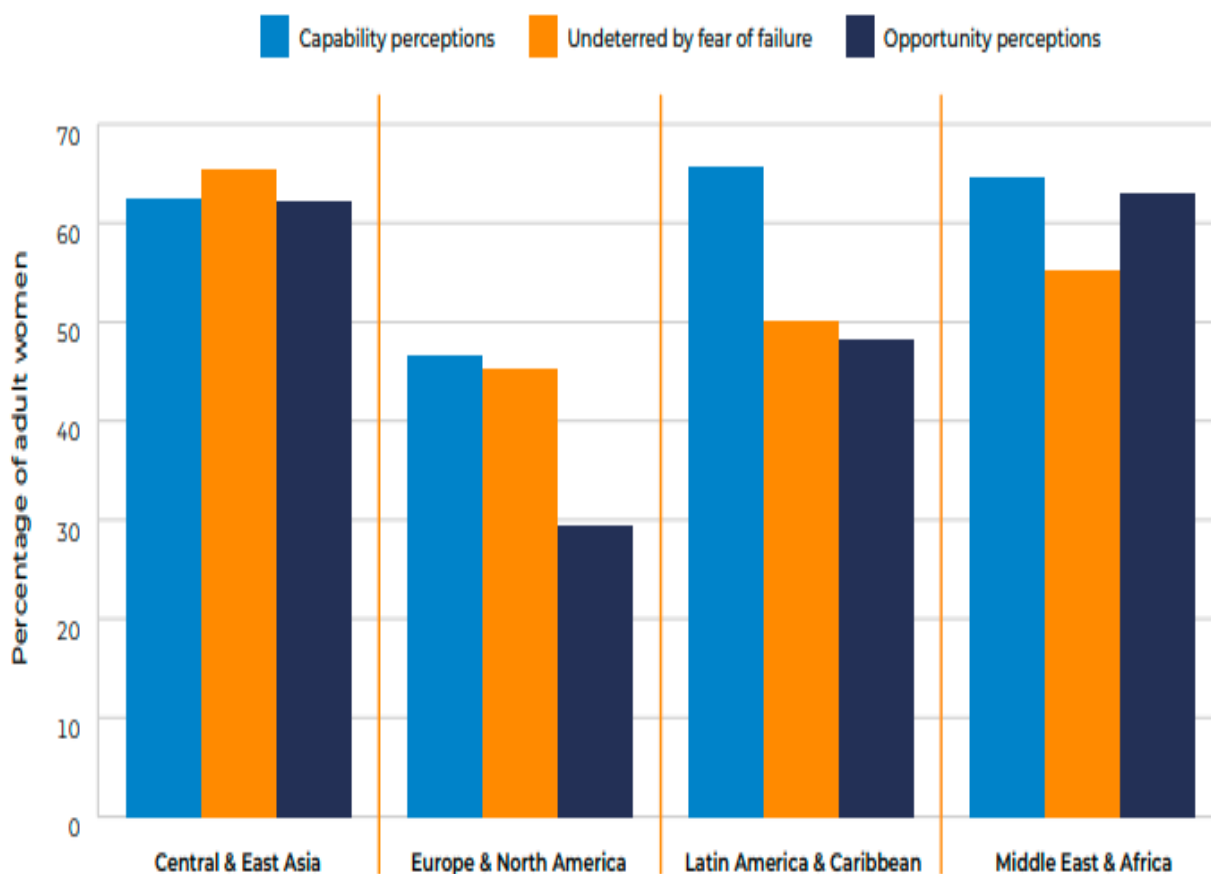
The government of India defined Women Entrepreneur / Businesswomen as “An enterprise owned and controlled by women having a minimum financial interest of 51% of the capital and giving at least 51% of employment for women”[\[24\]](#)

The companies founded/headed by women are fast-growing across the globe. The potential growth of women in business changed over the years due to revolutions at the societal level, adaptability of economies, Government initiatives to address gender disparity, education advancements, and Pro-Women policies.

Global Entrepreneurship Monitor (GEM) conducts research based on surveys about entrepreneurship and its ecosystems across the globe every year. Based on the GEM 2020 survey, an estimated 274

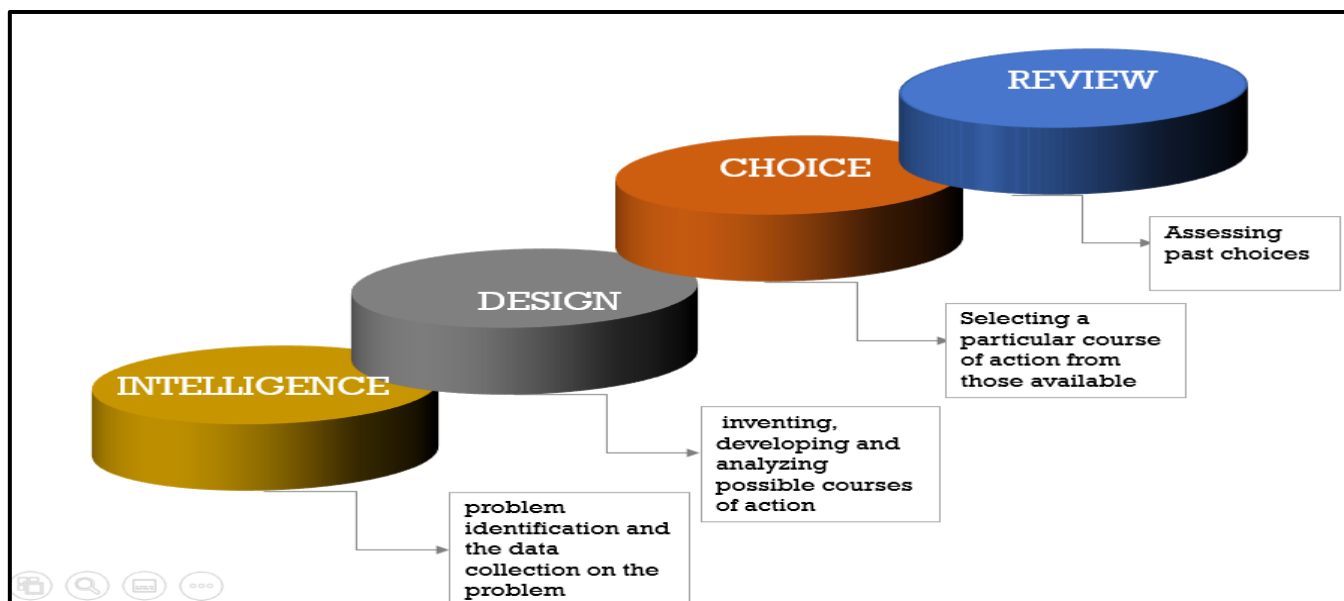
million women globally are involved in business start-ups in addition to 139 million women owners/managers of established businesses and 144 million women informal investors globally. GEM report 2020/21 [17] talks about various perceptions of women relating to starting a business where the impact of emotions like fear of failure, decisions about business opportunities, and their capabilities play a significant role.

Source: GEM 2020



b) Decision Making:

Decision-making is a multidisciplinary approach where scholars from Economics, Psychology, Management, and Neuroscience to name a few have done various experiments and many theories were also formed over years. Irrespective of the field of research, the influence of emotions in decision-making, be it financial, economic, or personal is still under research. The traditional approaches in economics assumed that the decisions are fully rational and called the decision-makers “homo-economicus” (Fully rational man / Woman) which is impossible given the external factors and internal influences. Simon (1977) explained the rational process of decision-making in the way of categorizing them into four phases [20]. They are,



Taking references to his work on Psychology, he also talked about the effect of three factors of cognitive load in decision-making -attention, Information, and stress. This led to his theory of “Bounded Rationality.” As he developed on these cognitive factors, Simon defined the theory as a process of decision-making where humans try to satisfice, not optimize. Simon said “In its simplest form, the theory of bounded rationality is a theory of “how to live” in an infinite world, while disposing of extremely limited computational means (Simon, 1984, p. 595) [10]. Simon concluded that: “So long as human attention is a rarer resource than information, we have to re-think our organizations in terms of attention management” (Simon, 1984, p. 590).”

c) Neuro Science and Economics:

The traditional approaches in mathematical and science disciplines assumed decision-making to be a rational and analytical process while behavioral economics and neuroscience explored the effect of emotions, affect, and moods on decisions. Neuroeconomics is a discipline that combines these two and analyses the impact of neuroscience on economic decisions. The brain plays a major role in the decision-making process to evaluate the options, attaching values to options, selecting the best rather optimal option with benefits while associating cost to all the options.[21] The brain consists of billions of neurons, and each neuron has thousands of connections, so altogether it makes the brain the most complex device in the universe. The parts of the brain responsible for decision-making are[22],

| | |
|-------------------------------------|--|
| Ventral Striatum(Nucleus Accumbens) | •calculates the anticipated value of the choices |
| Orbitofrontal Cortex | •Compares and assimilates information regarding the outcome and creates decision value |
| Insular Cortex | •Emotions Awareness |
| Ventromedial prefrontal cortex | •Emotions regulation for economic valuation |
| Amygdala | •Understanding of emotions , stimuli and learning |
| Dorsal Cortex | •Behavioural Adjustments relating to decisions |
| Hypothalamus | •Control Centre - Connecting nervous to endocrine system |

The above relations were illustrated by Antonio Damasio in his somatic marker hypothesis [23]. It gives the neuroanatomical and cognitive framework for decision-making and the influence of emotions on it. This neural theory talks about how somatic states primarily triggered due to changes in the ventromedial prefrontal cortex lead to changes in decision-making.

Behavioural economics researchers have done a detailed amount of study to understand the relationship between affective and emotional factors in economic actions/decisions. Elster and Kahneman's contributions were significant in this area (Ref: Elster 1998: Kahneman 2003: Loewenstein,2000) [9]. They studied the valence of emotion (i.e.) positivity or negativity of the emotion in detail and explained the effect of these emotions in decision making.

Peterson (2009) [14] said that behavioural economics studies judgments and decision-making focusing on psychological aspects. Elster (1998) talked about the economic theory of emotions and motivations like self-interest. [1]

Lerner JS [16] conducted numerous studies on moods, affect, and emotions to understand their impact on decision-making. In Decision making, bias occurs when the thought of attaching more value to the products belongs to us even with awareness of market pricing. This is called Endowment Effect(Kahneman,1991). His experiment on the endowment effect by inducing moods concluded that neutral mood made participants choose the classic endowment way. Studies also revealed that the Ventral striatum was activated when positive emotions were induced for preferred buying/selling.

4. Research Methods

a) Research Question:

How do emotions impact decision-making capability among businesswomen?

b) Research Process

The aim was to use both the primary data (from interviews) and secondary data (from available journals, research articles, and books) on decision-making, neuroscience, emotions, and theories on behavioural economics related to the stated objectives. Multiple case studies of size 2 were studied to assess the decision-making capabilities, decision-making styles, and the influence of emotions in their decision-making.

c) Tools used:

The DSQ (Decision Style Questionnaire) by Yan Leykin and Robert J. DeRubeis [18] was used. DSQ is a scale to assess 9 decision styles: Respected, Confident, Spontaneous, Dependent, Vigilant, Avoidant, Brooding, Intuitive, and Anxious. It is a 43-item scale with 5-point ratings. (Never to always).

The interview was conducted to understand the emotional influence by providing hypothetical scenarios and recording the responses and the emotions used. The scenarios covered three primary areas of focus on decision making.

- 1) Business Decision
- 2) Collaboration
- 3) Rationality in Decisions

The scenarios given had been designed to understand the judgment on choices, emotions that comes as an influencer, and behaviours based on framing e.g., one of the questions asked about “a launch of new region / new business line / new product / Close of a region/business line/product, The question “ what do you think are the common factors to consider? “made subject not to think about the commonality but about what is uncommon in the scenario.

5. Results

| Case | Industry | In Business for | Type of Business | Age Group | Decisional Self Esteem | Decision Style Primary | Emotional Neutrality |
|------|------------------|-----------------|------------------|-----------|------------------------|------------------------|----------------------|
| 1 | Service | 20 | Start-up | 40-50 | Confident | Vigilant | High |
| 2 | Financial Sector | 20 | Family Run | 40-50 | Respected | Avoidant /Dependant | Medium |

*Source: Primary Data

The subjects in this case study were two distinct profiles from different industries.

Case 1:

- Service industry person who is running a start-up. She usually goes through the complete business life cycle and hence maintaining emotional neutrality in a business decision helps her for the growth of her company.
- The decision-making process of this entrepreneur covered areas such as product features, marketing, availability of funds, utilizing funds, employee onboarding, and Organization Structure and Cost of operations.
- Emotional influences were assessed through interviews on how she takes business decisions / Economical decisions, how she assesses and works in a team in collaboration and how rational were her decisions. The findings were that the emotional neutrality was high in Case 1 which meant that she was taking decisions evaluating options weighing their pros and cons attaching values to every possibility and the decisions were based primarily on three factors in this case:
 - Business need
 - Rationality
 - Self-interest
- The decision-making style from DSQ Assessment revealed that case 1 's decision-making style is Vigilant. Vigilant decision-making is described as an ideal pattern of decision-making in which the decision-maker "searches painstakingly for relevant information, assimilates information in an unbiased manner, and appraises alternatives carefully before making a choice" [5] (Janis, 1982, p. 73). This is like the Rational style of decision-making.
- The findings suggest that the avoidance of emotional biases and being in a state of emotional neutrality while taking business decisions is likely to help them to be rational and vigilant decision-makers.

Case 2:

- The entrepreneur is from a family-run business where she already has an established setup that can be expanded further, which necessarily meant a good network of customers, Peers, and team.
- The decision-making process ranged from improving customer service for existing customers, acquiring new customers, Cost optimization, and increasing/maintaining business profits to employee retention and recruitment.
- The Emotional influences were assessed in terms of her business decisions on the same parameters as in case I. However, the findings suggested that her emotional neutrality was at a medium level where her decisions were based on
 - Business Sustenance
 - Loss aversion
 - Management opinion

These factors meant that the emotions like fear of loss, and risk aversion played a role while taking decisions.

- The decision-making style from DSQ Assessment reveals that case 2 's decision-making style is Avoidant and Dependent. Avoidant style is the tendency to avoid decisions whenever possible wherein dependent style is about searching and relying on the advice of others.
- The influence of emotional biases was evident from her interview and that was reflected in her decision-making style also as she is a mixed type of avoidant and dependant wherein the strong network of existing peers made her more dependent on the people / existing process and emotions like fear suggested that she may be avoiding taking decisions given a choice.

6. Discussion

Women continue to make headway in the entrepreneurial arena. Apart from challenges for a typical entrepreneur, women face much more challenges such as gender discrimination, access to financial resources, quality of education, family support system, confidence in their choices, and avenues to improve business skills to name a few. While there are many factors hindering growth, the decision to plunge into the business arena itself is the biggest decision she can take. Hence, the decision-making process commences for them from the first step of their career ladder from deciding to work to progressing to lead.

However irrespective of gender, decision-making is THE most important skill for a successful businessperson. Every decision they take should be balanced with emotion with the logical reason that creates a positive outcome for their employees, customers, companies, stakeholders, and society. The decision taken by them primarily rely on economic values and objectives, however, they tend to miss the rationality behind decisions. Sometimes we tend to satisfice, not to optimize according to Simon as stated in his Bounded Rationality theory. We tend to get influenced by cognitive biases and emotional biases which also lead to irrationality in our decisions which in turn leads the brain to pick up the choices which are not ideal. According to neuroeconomics, the neural network processes this learning, and the outcome of these learnings are applied in future decisions making processes. The quality of decisions may improve if we keep our emotions neutral especially while making financial, and economic decisions. The findings of the interview and DSQ questionnaire suggested that emotions play a key role in decisions making especially in business, and financial decisions. The decision-making style also seems to be in line with the emotional state of mind. The case studies implied that emotions have a considerable influence on their business decision-making styles, and one may need to have a neutral emotional state during their decision-making process for avoiding biases and to make the best choices.

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