

Chapter 2
Theoretical Framework

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THEORETICAL FRAMEWORK

2.1 Introduction

Traditional theories of economics as proposed by neoclassical economists endorse rational-decision making. Traditional economic theory assumes the fact that individuals are rational agents in the economy and they tend to maximise their gains and reduce their losses. Behavioral economics was proposed by Kahneman and Tversky in response to neoclassical theories. According to them, individuals are irrational and they make decisions based on heuristics and biases, which, may or may not yield the greatest gain in terms of the choices people make (Kahneman, 2011).

2.2 Behavioral Theories

There are various behavioral theories related to behavioral change that have examined the factors related to the low acceptance of vaccination and immunizations to promote uptake and acceptance. One of the most important theories is the framing effect which means how the messages are framed and conveyed to the individuals to yield the attitude and behavioral perspective of an individual (Levin et al., 1998). The theory is originated from the prospect theory.

2.2.1 The Theory of Planned Behavior

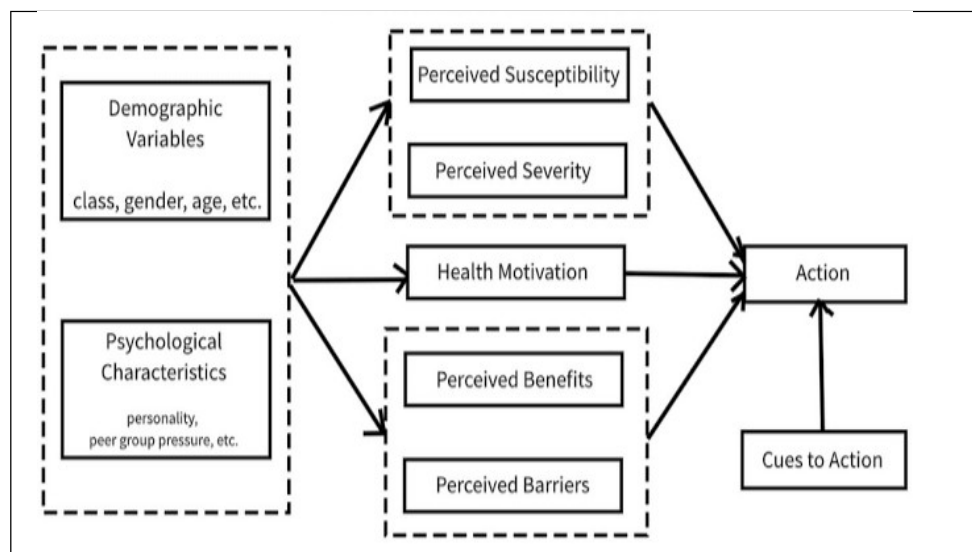
The theory of planned behavior (Ajzen, 1991) takes into account the factors which directly influence the intentions of individuals to engage in a health behavior which encompasses attitude towards the behavior, the person's perception regarding the subjective group norms and the perceived behavioral control. The theory intends to explain all the behaviors in which people have abilities to exert self-control.

It has been widely used in a wide range of health behaviors and intentions such as immunizations etc. It explains how behavioral achievement is dependent upon both motivation and ability.

2.2.2 Health Belief Model

The health belief model (Rosenstock, 1988) is a theoretical model of behavior which is mostly applied in studies of immunizations, perception regarding the severity of disease and perceptions regarding the benefits and risks of vaccines that directly influence health behaviors. The model takes into account six main theoretical domains which help to predict preventative behaviors that are perceived severity, perceived susceptibility, perceived barriers, perceived benefits, self-efficacy and call to action. The health belief model also suggests how people's perception regarding various health problems, perceived benefits of action, self-efficacy explains how people are engaged in health-promoting behavior. It suggests how a stimulus must be present to trigger the health-promoting behavior.

Figure 2.1: Health Belief Model



Source: The Health Belief Model, Charles Abraham

2.2.3 Prospect Theory

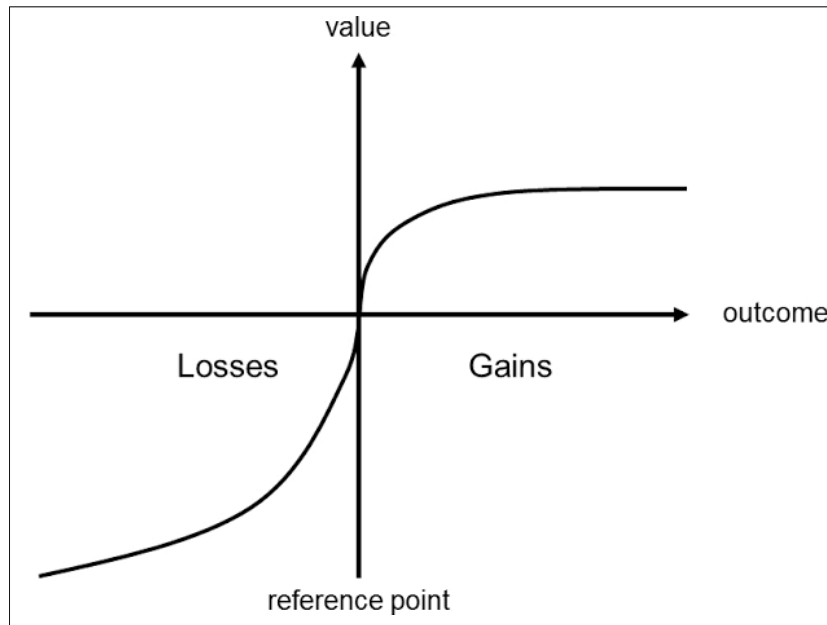
Surprisingly, individuals tend to become risk-taker or pro-risk in the case of loss situations such as while playing the lottery and risk-averse in the situations of gain, where the odds are stacked in their favour. Prospect theory (Kahneman & Tversky, 1979) help us understand the fact why individuals fail to do the right thing even after knowing what is right, just like in the case of vaccination. It explains how people assess the potential for loss or gain in an asymmetric manner which is dominated by the aversion from losing something. A gain frame is a positive side where individuals adopt behavior due to the benefits derived. On the other hand, loss-frame means the cost associated with not adopting the behavior. For instance, a gain frame message in the case of vaccinations would be “you reduce the chances of getting infected with COVID-19 virus if you vaccinate”, whereas a loss frame message would be “you increase the chances of getting infected with COVID-19 virus if you do not vaccinate”. Although, these statements have the same intense meaning, how these messages are framed can influence the behavior of an individual.

Prospect theory emphasizes the fact that due to the loss aversion behavior, losses have a more psychological impact than gains of the same amount. For example, a loss of Rs 1000 weighs more than the gain of the same amount for an individual. So it can be said that individuals are more risk-seeking in the case when losses are emphasized more to avoid the loss, whereas individuals are risk-averse to retain their gains in the case when gains are emphasized.

The fundamental part of the prospect theory can be explained with a two-stage choice model which (Kahneman & Tversky, 1981) defines in the form of the value function and weighting functions. Value function in prospect theory is explained through asymmetric S-curve which depicts how people avoid risks in the case of gains and how individuals seek risks in the case of losses often termed as loss aversion. The S-shape of the value function more specifically

indicates that the values are considered concave for the gains and convex for the losses. For instance, people will value a raise in pay from Rs 500 to Rs1000 more as compared to Rs 5000 to Rs 5500. The non-symmetry in the value function S-curve depicts that value drops much faster with the losses as compared to the rise with gains. It is represented in Figure 2.2 below.

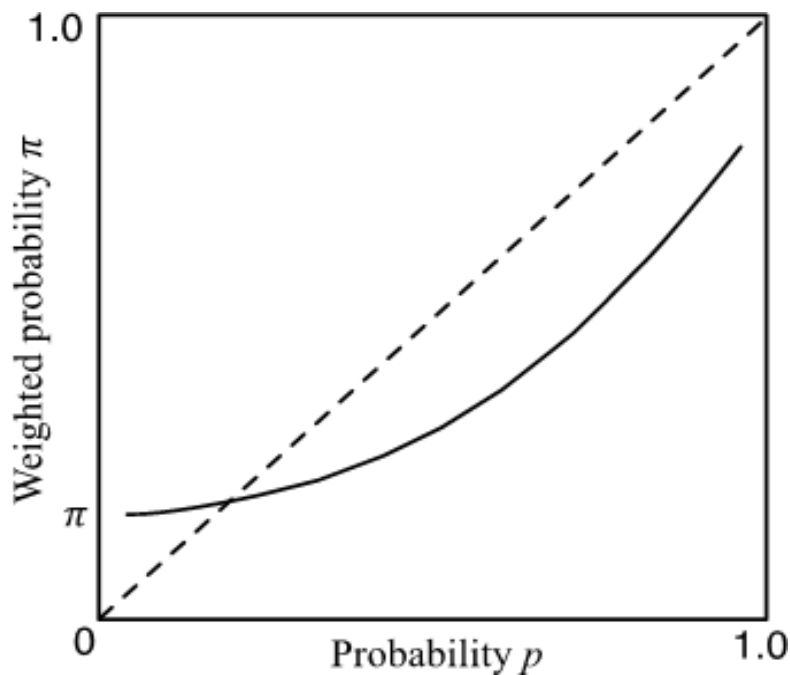
Figure 2.2: Value Function (Prospect theory)



Source: Kahneman and Tversky, 1979

In the case of the weighting function, the decision weight is not the case of probabilities but instead a rising function of probabilities. The weighting function is a nonlinear convex curve that shows several properties regarding risky choice preferences such as overweighting, subadditivity, uncertainty and proportionality. Both the functions are an interplay of each other.

Figure 2.3: Weighting Function (Prospect Theory)



Source: Kahneman and Tversky, 1979

The behavior of individuals can be classified as prevention or detection. The distinction is important because both the loss frame and gain frame are effective but rather it depends on whether the behavior is for prevention or detection. In the case of prevention behaviors, gain frames are more effective while in the case of detection behaviors, loss frames would be more effective. It happens because of increased risk in the case of detection behaviors as compared to prevention.

In the case of vaccination, they are classified as preventative behavior since they reduce the risk of getting infected with the virus. People are afraid of side-effects and due to this framing effect is important as it influences the behavior of a particular individual. It is important to test the framing strategies before implementing the communication regarding vaccinations. It is also important to test the framed communications in different contexts.

2.2.4 Heuristics

Heuristics can be defined as a general time-saving rule of thumb that allows individuals to make decisions, move to a particular judgment or even resolve various problems. Unfortunately, these heuristics sometimes helps in solving particular problems but can often lead to various systematized cognitive biases. Tversky and Kahneman, Experts of behavioral economics pinpoint the fact how heuristics lead in the decision making in the case of vaccination and other relevant decision-making processes. We can define heuristics as any decision or plan regarding an action that an individual use to solve any kind of problem. It is not necessary that individuals always make the right decision and because of that various cognitive biases occur.

2.3 Behavioral Biases

Individuals are prone to various cognitive and behavioral biases which often lead to psychological errors and faulty decision making in various respects. Individuals often make non-efficient choices in the case of vaccinations when they come across various ambiguous decisions. Behavioral biases are also often termed cognitive biases and hence they are identified in the same manner as systematized errors. There are various cognitive biases and the classification of these biases is useful but there is no such fundamental theory in this regard that explains why individuals are prone to these biases. Some of the behavioral biases which are considered in the present study are:

2.3.1 Availability Bias

Availability bias means the tendency of the individuals to give greater weight to all the factors that are easy to recall for the individuals. It is a mental shortcut that explains how an individual relies on various examples which immediately come to the mind while making a decision or evaluating the risk of a particular outcome. It has been reported in various studies that how an anti-vaccination message by media is likely to affect individual decision making.

2.3.2 Anchoring Effect

The anchoring effect is also termed as ‘First-impression bias’. It is regarding the tendency of individuals to rely heavily on the values which are initially presented while making a particular decision.

2.3.3 Omission Bias

Omission bias means how individuals have a propensity that any action which they do (commission) is severe as compared to any action which they do not consider doing (omission). Omission will always be regarded as less severe even if the results from omission are severe or equal to the commission. It has been reported that in the case of vaccine-hesitant individuals, availability bias often leads to omission.

2.3.4 Ambiguity Aversion

Ambiguity aversion is the preference of the individuals towards known risk or certain probabilities over unknown risk or uncertain probabilities. It is one of the fundamental reasons for vaccine hesitancy. In the case of vaccines, individuals tend to take the risk of not getting vaccinated because of the side-effects fear over the risk of getting vaccinated to prevent disease.

2.3.5 Loss Aversion

Loss aversion is a propensity of individuals when they are ready to take risks in the case of loss situations but does not risk in the gain situations. In the case of vaccination, the loss aversion from the commission is higher than the loss aversion from omission. This happens because individuals often evaluate vaccination outcomes both in the form of commission and omission.

2.3.6 Present Bias

Present bias means when individuals give more weight to all the costs and benefits which are associated in present over all the costs and benefits which can be realized in future. In the case of vaccinations, individuals can see the adverse effects associated with getting vaccinated

hence they often weigh it more since the cost associated with getting vaccinated is visible while decision making.

2.3.7 Risk Aversion

Risk aversion means overweighting of risk factors while risk-seeking means underweighting of risk factors. This type of behavior is largely associated with the willingness of individuals to vaccinate. A risk-averse individual will overweight the risk related to vaccination i.e. the perceived side effects from taking the vaccine and hence sometimes lead to irrational behavior.