Case Study – Hackathon Challenge

How customers buy insurance?

World is still recovering from COVID-19 pandemic that brought many industries to a standstill for almost two years. However, it had an opposite effect on life insurance penetration in India. It took India's life insurance penetration level from 2.82% in 2019 to 3.2% in 2020, which is close to the global average. The pandemic also gave push to online sales of life insurance. In financial year 201920, 12.5% of overall term policies by premium were purchased by Indians online. However, on savings side, it is still muted with less than 1% of total premium by channel.

For most Indians, insurance agents still are the ones who introduced the concept of life insurance to them and they remain an important part of customer's policy purchase decision. But, with or without COVID, trends suggest that India is rapidly shifting to digital channels for purchase of financial products and insurance is not untouched by this phenomenon. Where agent influence remains a dominant influencing factor when it comes to insurance policy purchase, a lot of people are doing their own research and opting for direct purchase from online platforms. In such scenario, it becomes important to understand how they make purchase decision and how they select right policy for themselves.

Type of Life Insurance Products

Different customers have difference needs. Hence, there are various types of life insurance products one can choose from. Types of insurance products offered in India are as follows:

- **Term Insurance Plan**: Term is one of the most popular types of life insurance plans available in India. It provides life cover to the life assured for a specific term and pays the death benefit or sum assured to the nominee in case of the life assured's death. Term insurance plans are cost-effective life insurance products as it allows the insured to get a higher sum assured by paying a nominal insurance premium.

- **Unit-linked Insurance Plan (ULIP):** ULIPs have the features and benefits of both a life insurance and an investment product. When you buy a ULIP plan, your money is used to provide life insurance protection and at the same time invested in a variety of funds to help you reap market-linked returns. They have a minimum lock-in period of 5 years and investors get the freedom to allocate their money in a fund of their choice, they also provide tax benefits.

- **Traditional Endowment Plan:** Traditional Endowment plans provide life insurance cover and savings opportunity to the policyholders. These policies apart from covering life of the insured, also offer a lump sum amount to the policyholder on maturity in case he/she survives the policy term. Unlike ULIPs, their daily value is not published, instead bonuses are accumulated over the period and paid on maturity.

- **Whole Life Traditional Endowment Insurance Plan:** A whole life insurance cover provides life insurance protection to the life assured during his entire lifetime, up to a maximum of 100 years. If the life assured dies, the sum assured is paid to the nominee. In case he/she survives the policy term, sum assured and bonuses are paid to the policyholder.

- **Child Insurance Plans:** Child insurance plans are savings plans that help build a corpus for your child's education. In case the policyholder parent passes away, a death benefit is paid to the beneficiary.

- **Pension plans:** Pension plans are insurance plans that provide life insurance protection and help the policyholder to save wealth for a comfortable retirement. You can opt for a onetime pay-out on retirement, fixed monthly income or annual pay-outs after the age of 60.

Policy Features

Apart from product types, depending on how the premium money is invested customers can choose from below options as per their preference:

- Participating vs non-participating life insurance policy: A participating life insurance policy, also referred to as a par policy, allows the policyholder to participate in the profits of the life insurance company. In a participating plan, the benefits of these profits are passed on to the policyholder.

- Linked vs non linked life insurance policies: Non-linked policies are the ones that are not linked to market and their returns are not dependent on any underlying asset. Whereas a linked policy provides return that is dependent on market variable. For non-linked policies, customer pays a premium depending on sum insured whereas for linked policies returns can vary based on market performance.

Factors affecting policy purchase decision

Apart from choosing the right product type, it is also important to know what features you want in your policy considering your preferences. These preference can vary with time or life stage:

- **Life stage** – People have different types of responsibilities in different life stages and one should plan accordingly for their life goals.
- **Premium and coverage** – Based on one's long term goals and lifestyle, person has to decide what will be the right amount of coverage for him/her. Also the premium should be decided based on one's monthly budget. According to experts, life insurance coverage should be 10 times of your yearly income.
- **Risk appetite and returns expected** – Different policies invest their premium received in different types of instruments such as stocks, debt, and a combination of the two. Depending on risk appetite, a customer can select a policy that invests in company stocks that offer higher return but higher risk due to nature of stock market or in debt which offer lower return but are safer.

- **Tax benefits –** Many life insurance policies offer tax savings. People often see life insurance primarily as a tax saving instrument that offers some amount of life cover.
- **Premium paying term and lock-in period –** Some people prefer to pay smaller premiums during a longer term while some may prefer to reduce the policy paying term by paying higher amounts. Some policies also have lock-in period before which you cannot withdraw any amount from it.

This is not an exhaustive list, there can be many other attributes affecting customer's purchase decisions and should be considered while solving this challenge.

Market Factors

Market factors also play an important role in customer's investment decisions. Different customer segments may react differently to market factors. In addition to customer's persona, these factors also need to be considered while evaluating preferred product preference of a segment. Some market factors are:

- Interest rates
- Stock market
- Gold prices

This is an indicative list. You can include as many factors as you want while working on this case study.

The challenge

Whichever channel a customer purchases from, there are various factors that affect customer's policy purchase decisions. We want you to:

- Create segments of customers based on their persona
- The segments should be defined clearly and should not be too similar to each other
- Evaluate weightage of product features for each customer segment created
- Create a recommender systems (statistical based model or algorithm) to find the attributes influencing the customer's preference for product features
- Identify effect of market factors on these segments

The model needs to be specific to Indian life insurance market, hence, if you are using any data from public sources, ensure that it is relevant to India market.

Input parameters:

- Customer attributes
- Market attributes (Policy issuance month will be shared in the data. Basis this, participants are free to create features on macro-economic indicators. e.g., on particular month, is nifty50 index affecting the customer's choice, similarly other macro factors can used)
- Location intelligence (Pincode will be shared in the data, to get location based data)
- Product Features (product category will be given with the data. Using this, features can be created. e.g. if ULIP is the product category, risk category of the customer can be defined)

Candidates do not have to limit to these parameters, if any other parameter is found relevant it can be included.

Data for analysis:

Dummy data containing demographic information and relevant product category will be provided by BALIC. Marker attributes for relevant time period can be fetched by participants using public sources.

Deliverables:

- PowerPoint presentation (Shortlisted teams will have to present to panel created by BALIC for Hackathon)

- Python/R code

- Detailed documentation including code, assumptions, etc.

- Population segmentation clearly defining characteristics of the segment and preferred product category (top 2) by those

- Weightage of input parameters for each segment

Rules

1. Team size can be up to 3 people
2. Programming language to be used – R/Python
3. Winners of the hackathon will be offered 3-6 months paid internship with BALIC
4. Duration – 2 weeks (To be discussed)

Outcome (Paid internship)

- Cash prizes for top 3 teams
- Shortlist 20 candidates (individuals) in first round
- Targeted hiring – 3 to 4 interns
- Internship duration – 3 to 6 months
- Remuneration – 20-25 k per month