



CASE STUDY  
**Pricing Analytics Solution**



# Motor Vehicle Insurance: **Pricing Analytics Solution**

**Case Summary**

**Industry:** Insurance  
**LoB:** Motor Insurance  
**Project Focus:** Pricing Analytics

**Challenges**

Improve the business performance of the motor vehicle Insurance division through adjustments in pricing

**Business Results**

- Predicted profitability using Earnix will increase by 1.2% year over year
- Company adopted measurable KPIs and gained clarity on business drivers
- Deeper analytical perspective on company's current pricing process.

**Background**

The company is a large European insurance company, with several subsidiaries. They have over 500,000 customers and offer all types of non-life insurance in the private, agriculture and business sectors. The auto book is over €200 million and includes over 300,000 policies.

**Business Process**

The company sells motor vehicle insurance policies through different distribution channels including the internet, call-centers, agents and brokers. On average, each customer holds 2.2 different insurance products. Over one third of the insurance quotes that are accepted originate from existing customers. At the point of purchase, customers can choose to have the same renewal date as their other policies, meaning that some policies can be held for less than one year.

**Insurance Process Flow**

The following business process for new business sales was modeled as part of the project in the form of a decision tree. Each branch decision had a separate statistical regression model where the sum of all models enables the creation of a scenario that was then optimized.





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**Without the Earnix solution, the company lacked the methodology and tools to check whether a relationship existed between prices and policy cancellations**

### **Business Needs**

The company wanted to achieve the following:

- Realize how pricing analytics could help improve their understanding of the price/customer relationship
- Understand the difference in price flexibility and product preference across different segments
- Foresee the effect prices have on demand/retention and predict whether more sophisticated pricing methodologies would add any value

The company at this stage knew that their cancellation rate was high but lacked the methodology and tools to verify whether a relationship existed between prices, policy cancellations and other elements of their data

### **Business Goals & Constraints**

The company wanted to explore the tradeoffs between an increase of market share and profitability.

The business constraints set for the project allowed for the price to vary between a 4-9% range, relative to the current pricing structure.



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## Project Process The Earnix way

Project preparations



**Define business goals**  
e.g. Improve performance,  
increase market share



**Define project constraints**  
e.g. Range of price changes



**Determine base line**  
e.g. Regenerate existing  
pricing models and  
methodologies



**Data cleansing and analysis**  
Gathering, cleaning and  
analyzing data



**Statistical modelling**  
Build models to predict  
business processes



Pricing



**Extensive scenario analysis and testing**  
Exploration of what-if  
scenarios



**Demand Based Pricing recommendations**  
Support decision -  
making process



## The Earnix Solution

The Earnix project process includes the following steps:

- > Project preparation:
  - Business goals and constraint definition
  - Baseline calculation
- > Data cleansing and analysis
- > Statistical modelling
- > Pricing
  - Extensive scenario analysis
  - Demand based pricing strategy recommendations

The process above culminates in a detailed testing of results which forms the basis of the Earnix solutions report.

The project extended over a 5 month period. Data preparation was fast and required only 1 month, followed by a modeling period of 2 months, with an additional 2 months to generate optimized pricing scenarios. The field test finished with excellent results, achieving a slight increase in the conversion rate and an increase in earnings that was comparable to over 2% of GWP.

## Challenges and Solutions

### 1) Concept Definitions

#### a. Better defined sales conversion indicator

The company considered every sale as a conversion even if it was cancelled during the first two weeks after the starting date. This added noise to the analysis and contributed to creating inflated sales data. Earnix clarified and redefined conversion to mean the policy had to be accepted and active for at least two weeks, to be counted as "true conversion". The difference in the definitions amounted in a high single digit reduction in sales figures.

#### b. True retention measurement

Retention is defined based on conversion and mid-term cancellation rates and provides a more accurate reading of the book size at the end of the insurance period. In this company, the reasoning behind the high cancellation rate had not been truly understood. As a direct effect, the company's retention rate was not used in designing pricing strategies. Earnix provided the structure and tools to enable the company to use retention as a factor in their business pricing decision-making process.



**Earnix anticipates an increase in profitability of 1.2% of GWP, while maintaining the same level of retention.**

### **2) Policy cancellation rates**

Prior to the project, the cancellation rate was in the mid 20% range during the first year period, which was high by compared to industry standards. The company lacked the ability to measure their cancellation rate due to the complexity of the policy tenure terms. Giving customers the option to align their motor insurance renewal date with the other insurance policies they held, meant that in many cases, the initial policy was not held for a full year before the policy came to term.

Earnix created a mid-term cancellation model to address this issue. As a result the company was able to pin-point which customers were more prone to cancel their policies and to predict the amount of time the policy would be valid for.

Furthermore, the company was unaware of how price changes could have an effect on their cancellation rate. With the Earnix solution, they were able to determine a significant relationship between price and cancellation rates.

### **3) Accommodating for the company's current IT system**

The individual pricing structure predicted an uplift in profit of around 2% of GWP using the Earnix solution. However, the company wished to use their current IT system without implementing the Earnix Online solution, in order to deliver Demand Based Pricing to the market. This restriction required the use of reverse engineering techniques, which also meant that the company knew ahead of time that it would not be possible to gain the full 2% potential uplift in profit.

Using one method of reverse engineering modeling, the company obtained an improved profit of 1.2%, thus only gaining 60% of the 2% potential profit uplift.

To improve the profit figure, the problem was approached from a different angle. This time it resulted in a profit figure of 1.6%, capturing 80% of the 2% potential profit uplift.

### **4) Changes to the environment**

After the pricing committee met to discuss the project findings, significant changes to the business goal and constraints were imposed, and a new baseline "Base Case" was established to compare against. The Earnix software immediately allowed for the regeneration of pricing schemes based on these new assumptions, along with their correspondent predictive KPIs.



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**A full set of new pricing strategies were developed. This empowered the company to select the most appropriate pricing strategy to drive their future growth.**

### **Key Success Factors and Results**

The Earnix team worked closely with the top echelons of the company's product and pricing teams. The following are the key benefits and results from the project:

#### **1) New pricing strategy**

A full set of new pricing strategies were developed and presented to the company, accompanied with the predictive ramifications of each pricing strategy. This empowered the company to select the most appropriate pricing strategy to drive their future growth. A very clear relationship now exists between factors like prices and rates.

#### **2) Aligning the company's outlook and strategy with KPIs**

Earnix solution measured KPIs, thus enabling the company to have a more accurate and realistic read on their main business drivers. For example, the measurement of conversion produced a significant difference in sales figures between the company's original definition and Earnix's redefined definition.

#### **3) Impact of the predictive models on the company's quoting process**

The Earnix solution provided a deeper analytical perspective of the company's existing pricing process. For example, the realization that price does influence mid-term cancellation rates. Before this project, the company lacked the tools and methodology to deal with cancellation analysis for new customers.

#### **4) Adherence to project deadline: immediate adaptation to changes in business goals and constraints**

The project timeline was kept in spite of mid-project changes of business goals and constraints. The modeling framework adaptability and the solutions flexibility allowed for the immediate recalibration and delivery of a new set of prices.

#### **5) Earnix successfully met the company's business goals within the given business constraints**

After running a field test, the actual results found were very close to the predicted figures, thus achieving the expected economic benefit of the project. These results include increases ranging from **1.2-1.6% of gross written premium**.



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### About Earnix

Earnix provides advanced analytics solutions designed for the financial services industry, which deliver significant results by integrating data-driven decision-making into the business process. We enable financial institutions to better compete in a new environment of highly personalized services by using advanced analytics to determine pricing and other offer components. Our integrated technology platform provides users with the most comprehensive set of tools, including machine learning capabilities, and is often connected to real-time production systems. Earnix has extensive experience providing solutions to the most sophisticated insurers and banks around the globe, and has a track record of empowering executives to act quickly and confidently, making a direct and measurable impact on their key performance indicators.

For more information visit

[www.earnix.com](http://www.earnix.com)