

REFLECTIONS

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Automated Underwriting

Nilesh Dasari

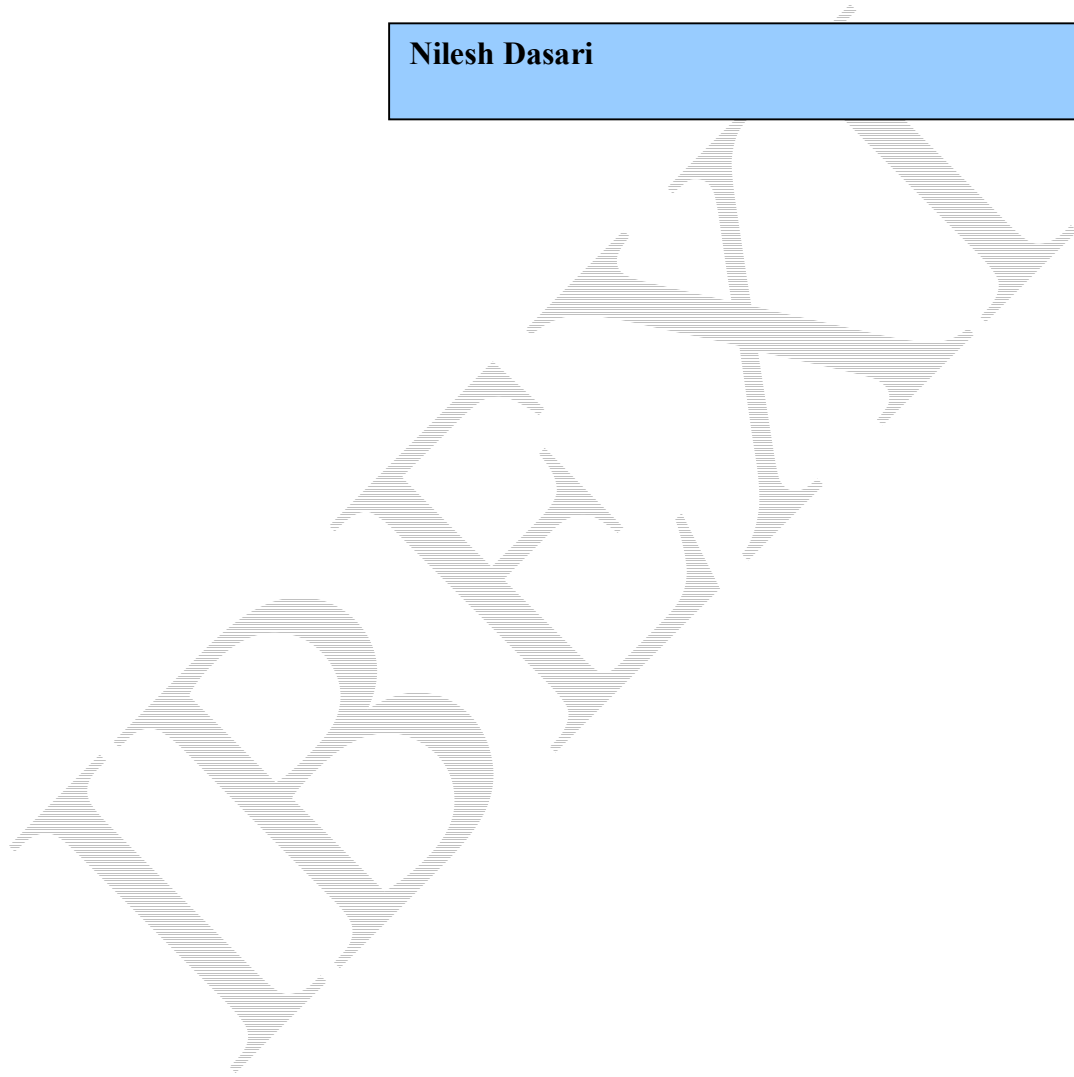


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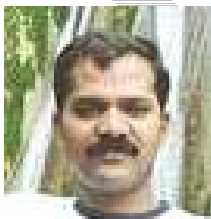
Executive Summary

The challenge for the Life insurance companies in the increasingly competitive market is to maintain profitability and the market share. To achieve this, the companies need to streamline their processes and make their people more competent. This is particularly true of the following core areas of their operations: sales and marketing and underwriting.

This paper looks into the underwriting aspect. Underwriters need to assess the risk and write/rate it consistently. Most often underwriting results suffer because of an inability to write it consistently. More often than not this area of operation is always pressed for time. More over the inventory piles up continuously which further adds to the cost. The paper looks at how adding automation to their current underwriting processes, most companies can expedite their processes and reduce the cost of operation.

It also looks at how the companies can capture the essential information in an automated underwriting process so as to write the risk correctly. The paper elucidates what information an Automated Underwriting System should capture and how one can go about the same. The paper also looks how companies can formulate rules for automated underwriting and how to fine-tune these rules based on analysis of the results.

About the Author



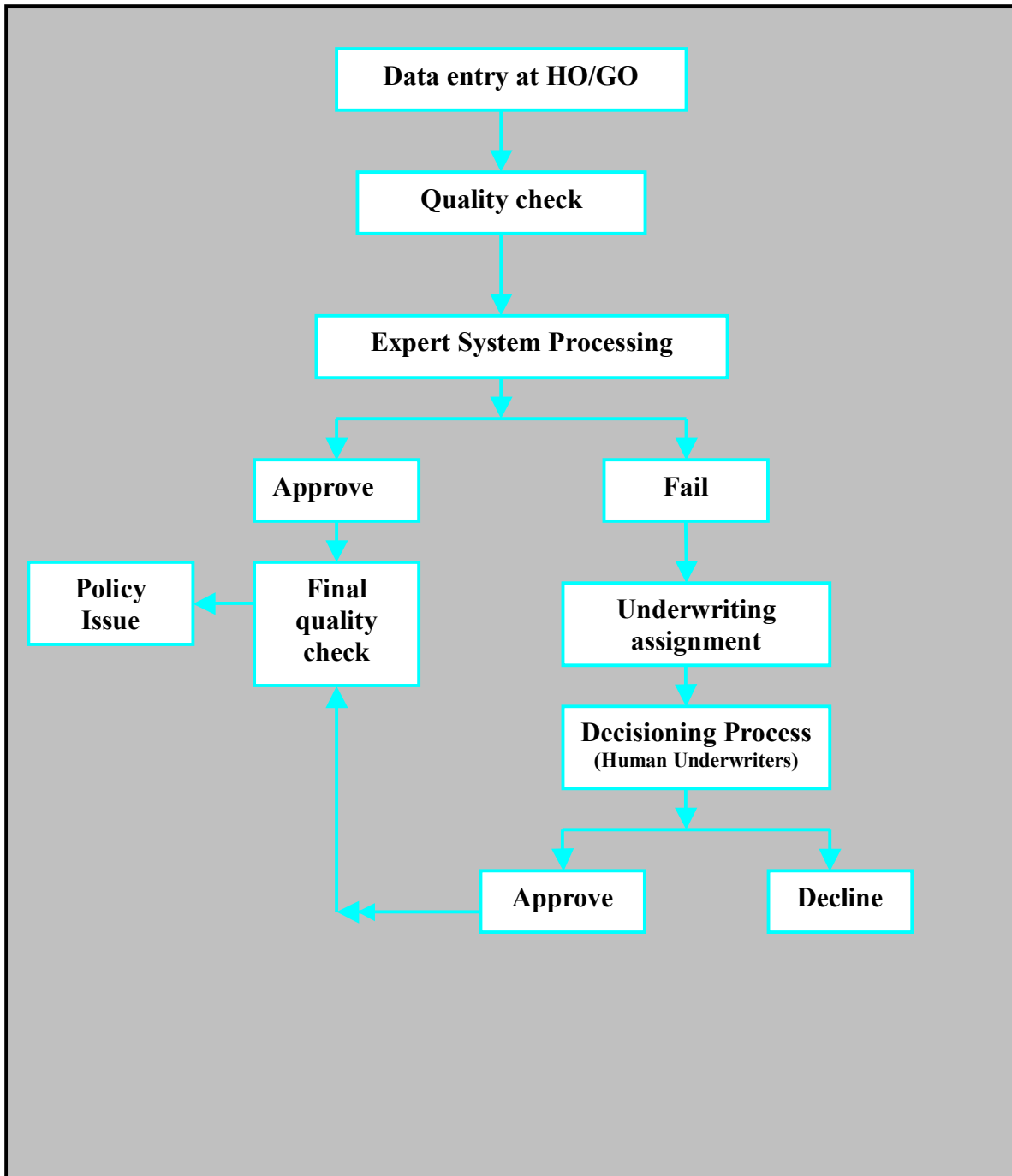
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Introduction

In this era of intense competition companies need to continuously maintain competitive advantage to achieve or maintain growth. Real growth involves both top line as well as bottom line. This is particularly true of the insurance industry. Pricing and product differentiation contribute more to the bottom line but when a carrier company streamlines its operations, it not only saves on cost but also contributes to the top line. Underwriting is the bottleneck of operations in insurance industry; it is that part of operations where the inventory spends the maximum time. And in life insurance, effect of poor underwriting standard can be felt quite late, it being a long tail business. Hence early streamlining of the process, without compromising on turn around time is essential for growth and profitability. By reducing the time spent in underwriting without comprising on the risk, insurance companies can improve their bottom line growth in a big way. This is where automated underwriting systems or expert systems as they are called can play a significant role.

Automated Underwriting

Traditionally, the underwriting process is handled by professional underwriters, who examine every application and make decisions based on their knowledge and experience and assess the risk exposure on the life to be insured. Automated underwriting involves deploying a computerised system that facilitates and expedites application processing by managing and controlling a great deal of the routine part of underwriting. This enables the underwriters to spend more time on complex or high value proposals that require their expertise. The applications that are used for automated underwriting are often called Expert Systems. A typical Underwriting System can be depicted as shown below:



Expert Systems

The underwriting process is essentially a set of rules-based decisions. The advantage of manual decision making is that, in certain complex cases these people can consider different factors before arriving at the decision. However there are several disadvantages: one needs trained and expert people for decision making; for complex cases the decision making process is not standard; as the volumes increase underwriting productivity is affected because of workload and fatigue and this could affect the business growth. An expert system if deployed can overcome these though it cannot replace the human underwriters completely.

An expert system for underwriting is a type of enterprise software which, based on the information entered, applies certain rules and either clears the application as straight-through-pass or generates requirements. For example, if all necessary information is available, then the application can be assigned to a particular group based on the sum insured. With an expert system, simple decisions which do not require judgement can be made quickly and with same consistency -given the same data, the expert system will always make the same decision. Additionally, an expert system, working with a data management system, can recognize missing required information, and execute a request to people, systems or databases to obtain that information.

Automated underwriting is best suitable for markets where volumes are high and hence there is a need to delegate certain simple tasks to regional offices. The information can be gathered by trained personnel at these offices and fed to the system by various means which are discussed elsewhere.

Automated underwriting is suited to situations with small to moderate sums insured, simpler benefits, and where judgements based on experience or complexity are not being made. Automated underwriting offers various advantages like quality and consistency in decisions. There is considerable saving by way of faster disposal of proposals and increase in processing capacity as the system can be employed round the clock. Further the human resources

released by deploying an expert system can focus on decisioning complex cases as well as on analyses and mining. Also the quality of information gathered by a system is more correct with regards to certain health related questions as compared to those gathered by an agent considering the embarrassment factor.

At the end of 2003, a Gartner Inc. study found that 74% of U.S. property/casualty insurers and 65% of U.S. life insurers were implementing an automated underwriting solution to improve product distribution and new business.

Case Studies

A large Life Insurance Company in India

The company received about 350000 proposals in the year 2004. Of these about 60% of the cases were having moderate face amounts. And about 40 % of these cases were simple and eligible for straight through processing. That makes around 80000 proposals. In the current set-up the company could auto underwrite 30000 of these proposals which is considerable saving in cost and time. There could be further savings in costs and time if the process is automated further. This calls for additional underwriting rules to increase the level of automation without however increasing the risk. Such additional rules would be extremely difficult to capture from underwriters, since they represent the more complex aspects of underwriting. They would also need to reflect the trends and patterns in the current business process. This would require intense data mining to discover the profiles of applicants whose underwriting risk assessment could be automated. The process for this data mining is currently on using OLAP cubes.

An interesting example in this regard is that of **a major life insurance company in Ireland.:**

A major life insurance company in Ireland

In mid 90s this company in Ireland decided to re-engineer their existing Life Underwriting Process. Their main objectives were to reduce the cost of underwriting, to speed up the underwriting process and provide customers with a better service.

They employed the services of consultants who after intense mining and analysis came up with surprising results. For quite a number of proposals which were not cleared in straight-through-processing and forwarded for manual underwriting, there was no increase in the premium rate. So there was definitely scope for further refinement of rules and automate the system more. The consultants carried out rigorous analyses and generated more rules like :

e.g.

IF (Age > 30) and (Age < 41) and (Height_Weight = Normal) and... THEN Probability of Increased Risk is 0.015

The new rules were added to the Expert Underwriting System, increasing the level of automated underwriting from 50% to 70%. Extensive ongoing monitoring of the new automated rules was undertaken to ensure that the benefits these rules provided would be maintained over time. This confirmed the robustness of the new rules. A subsequent data mining analysis was then further able to increase the level of automated underwriting to 80%.

Rules for Automated Underwriting

The rules in an automated system can be a variety of rules. These are based on testing the responses provided on the proposal by the client. Some of these could be simple tests, e.g. checking if the customer has responded to a yes/no question. Other simple tests could be based on checking if the client's response is within a range of acceptable numbers. Another type of test could check if the customer's response is within a set of acceptable values. There are also more complex tests which are not easily classifiable.

Examples:

1. Have you ever been diagnosed with liver disorders like jaundice, hepatitis, cirrhosis etc.?

Allowed Responses

- Yes
- No

The client will fail this test if the response is 'Yes' or she has not answered this question.

2. How many cigarettes do you smoke in a week?

The client will fail this test if the response is outside a range of values. Let's say the range is 0-100. The client will pass the test if her response is within this range, say 70; she will fail the test if the response is outside this range, say 105.

3. What is your occupation?

The response will be choosing from a list of occupations. Say the list contains all the occupations. If the client selects occupation, which is considered standard, say Bank Employee, then she will pass the test; if she selects a non-standard occupation, say Pilot, then she will fail the test.

Complex rules are those, which perform some calculations/comparisons based on the information in the application form.

Example: Height and Weight Table Ratings

This complex test uses the height and weight of the client to determine the recommended ratings. The client will fail this complex test if the client's recommended rating is below the minimum or above the maximum specified on the allowable rating range.

Let's take an example.

Allowable rating range – 100 to 100 (i.e. any rating other than 100 is not accepted and hence will fail the test).

Sample height weight table

Age	Height (cm)	Weight Range(kg)	Recommended Rating
34	160	<40	150
34	160	40 - 65	100
34	160	>65	150

The look up on the above table happens in bands and not exact values (unlike premiums).

So a 34 yr old with height 160cms and weight 35 kg will fail the test while he will pass the test if his weight is say 50 kg.

The rules explained above are most commonly used in systems where we compare the data with a set of allowable values and any deviation from the values is considered as failure. In a point-based rating system, the expert system assigns certain points for any deviations. Adding all the points system arrives at total deviation and based on this it can either recommend premium loading or counter-offer/reject the proposal.

Point based expert systems can be used for Medical and Financial underwriting. In medical underwriting, based on certain medical tests and results, underwriters grade the client's health status. If they find that this is beyond certain allowable risk limits then they load the premium

depending on the risk. Similarly financial underwriting entails assessment of client's financial health vis-à-vis the insurance cover. Here points could be given for the income source, stability in income and number of dependents on the client and the insurable interest. However extensive analysis should be carried out before formulating such rules because claims underwriting happens at a very later stage and the business may suffer if a certain rule is captured incorrectly. There would be large number of claims for risks, which could have been written differently in the absence of this rule.

Method of Deployment

There are various ways in which an Expert System can be deployed. One way is to scan the applications at the branch offices and send them over to head office where they are entered into the system. But this process too is time-consuming since a proposal may spend considerable amount of time at the branch office. Further, more time is consumed in fulfilling requirements generated by the system.

Another way is to deploy the system at the branch offices so that the information can be gathered while the customer is present and any requirement generated can be fulfilled swiftly. Where cases are not accepted at standard rates, the system may load it or refer complex cases directly to an underwriter sitting in head office. But this will be governed by cost of deploying the system and training the work force at the branch offices.

In similar way the system can be deployed at the head office and the information can be gathered by means of call centre representatives who can contact the customer at preferred time. The information can also be gathered using web-based applications. This method saves considerably in terms of time, quality and capacity.

The decision on the method of deployment is market driven and also depends on the risk carrier's assessment of the same. In a growing market like India where volumes are increasing it will be advantageous to go for a solution where most of the proposals can be rated at the branch office.

Common Expert Underwriting Systems

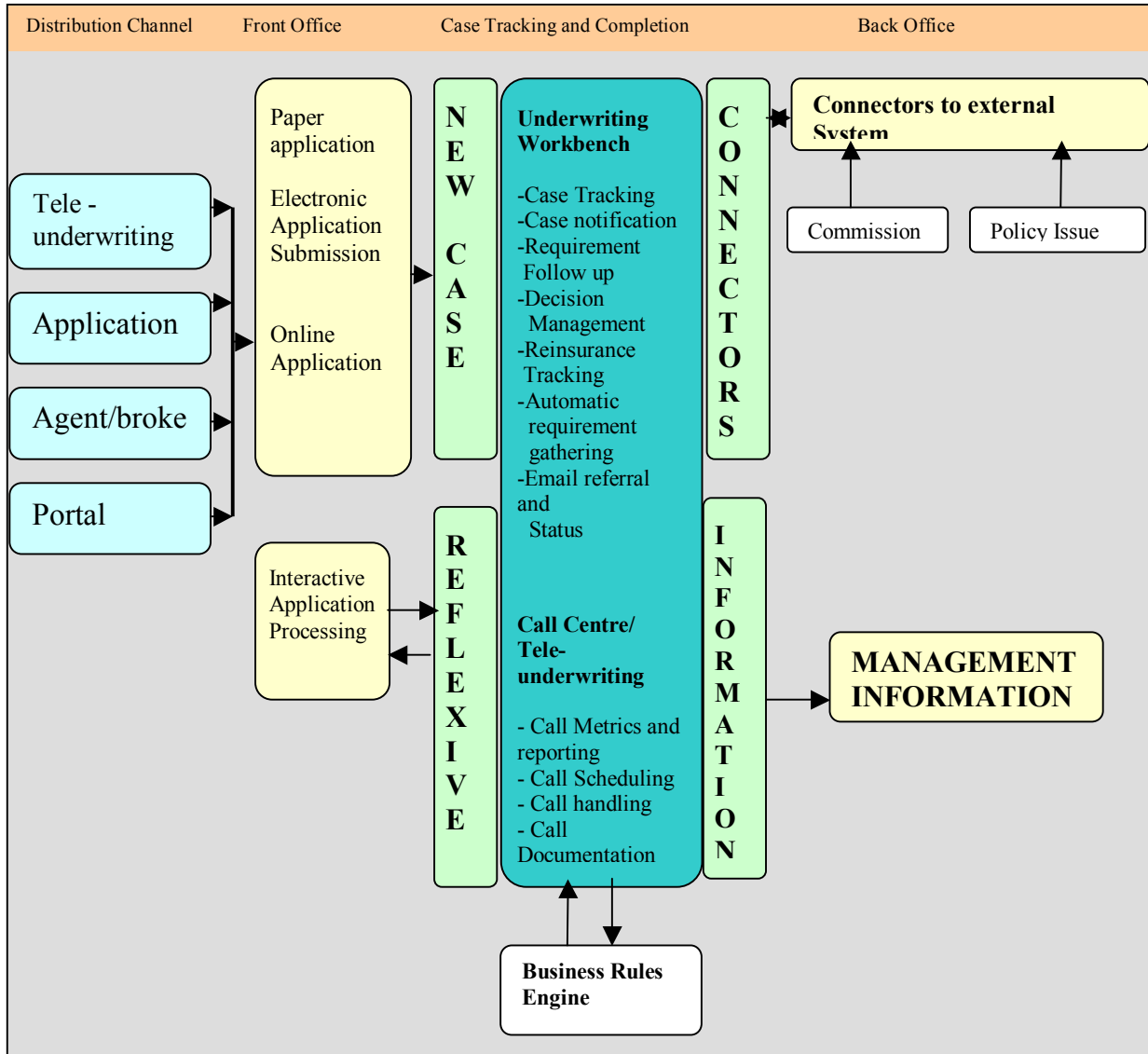
Various expert solutions are present in the market. Some of the more commonly used ones are :

- ✓ Automated Underwriting and Risk Analysis (AURA™) from Reinsurance Group of America.
- ✓ Magnum from Swiss Re
- ✓ nbAccelerator from CSC
- ✓ ExampleServer™ from DuckCreek.

AURA and Magnum are robust systems and both work stand alone as well as they can be embedded with other systems. Both are capable of tracking cases, requirements and managing workflow. The advantage of these systems lie in the fact that they support multiple distribution channels and models.

These systems have the capability to underwrite simple straight-through-processing cases as well as they can underwrite certain complex systems with recommendations for premium loading. AURA has a large number of clients in North America and also has several clients in the rapidly growing Indian insurance market. Magnum too has a large client base in Europe and America.

Typically the process flow for these systems can be depicted graphically as :



Both AURA and Magnum give a summary of information on which they recommend certain loading. They are also capable of generating reports which can be used by the management to analyse their portfolio.

ExampleServer and nbAccelerator are fullfledged new business proceesing systems which include underwriting, workflow, user interface and document services. Both have a large customer base in North America.

Conclusion

Automated Underwriting will definitely streamline the operations and contribute to the bottom line of insurance companies world over. But expert systems can only be applied to a certain level. They cannot replace human underwriters.

Maintaining underwriting discipline is of prime concern.. With growing market pressures and declining margins companies may make the fatal decision to lax their underwriting rules though the risk remains the same. And if this enters the automated underwriting system then the premium income may not be able to service the claims and expenses.

Expert systems can only reduce costs and add to the bottom line if they are applied prudently. In-depth underwriting analysis and adherence to basic rules are the blocks on which expert systems should be implemented.

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