



The Smart Decision Group

# Building Predictive Models In-House

What a business needs – and the Practical Alternatives

Analytics, Automation, Advantage

2025 White Paper

## Executive Summary

Predictive models—whether logistic regression scorecards or advanced machine-learning models—have become core to modern decision-making. They drive credit decisions, fraud detection, pricing, customer management, cross-sell, retention, collections, and more.

But many organisations underestimate what is required to successfully **build, deploy, and maintain** these models in-house. The challenge is not the maths or the software; it is the **data, people, governance, and operational discipline** needed to run modelling capability sustainably.

This paper outlines:

- What a business needs to build and host predictive models internally
- The four practical alternatives used in the market today
- A comparison of cost, speed, governance, and long-term value
- A modern approach: Scorecard-as-a-Service using Champion/Challenger rotation
- How executives can choose the right option based on maturity, data, and urgency

## Detail

### 1. How Businesses Access Scorecards and Predictive Models Today

Organisations typically choose one of four paths to obtain scoring capability.

#### o Option 1: Use a Bureau General Scorecard

Credit bureaus offer generalised risk scorecards built using industry-wide data.

##### Advantages:

- Extremely fast to implement
- Low cost
- Regulator-accepted and stable
- No internal team required

##### Limitations:

- Not customised to your customer base
- Limited uplift compared to a tailored model
- Everyone else is using the same score

Best for organisations needing **immediate go-live**, or those with **limited internal data**.

#### o Option 2: Custom Scorecard Developed and Hosted by a Bureau

A bureau builds a custom model using your data but hosts and manages it.

##### Advantages:

- Better predictive lift than generic scores
- Bureau handles hosting, updates, and governance
- Reduces internal staffing burden

##### Limitations:

- Costlier than generic models
- Long turnaround times for updates
- Vendor lock-in
- Slow experimentation, limited flexibility

Best for organisations that want a customised model but do **not** want to operate the infrastructure.

- **Option 3: Use a Specialist Third-Party Modelling Provider**

Independent analytics companies build the scorecard; hosting may be on your infrastructure or theirs.

**Advantages:**

- High expertise and innovation
- Faster delivery than bureaus
- Customised to your business context

**Limitations:**

- Variable governance quality
- You may still need infrastructure to host it
- Performance monitoring often remains your responsibility

Best for businesses with **moderate to high data maturity** looking for strong uplift.

- **Option 4: Scorecard-as-a-Service (Design + Hosting + Rotation) — Your Offering**

This is a modern, scalable approach: businesses **rent** scorecards instead of building or hosting them internally.

The service includes:

- Champion / Challenger Model

- Businesses receive **two** scorecards:
- **Champion** – current production model
- **Challenger** – experimental model competing in shadow
- Every 3–6 months (depending on volume), performance is evaluated:
- If the Challenger outperforms → it becomes the new Champion
- A new Challenger is developed
- Over time, the business gets **continuous uplift**, not a model updated every 2–3 years.

- Business Benefits

- No internal data science team required
- No hosting or model infrastructure needed
- Predictable monthly or annual pricing
- Faster go-live
- Independent governance and monitoring included
- Continuous improvement without project overhead
- Transparent, explainable results
- Easy integration with your decision engine

Best for organisations wanting **fast results, continuous uplift, and low operational burden**.

## 2. Why Some Businesses Choose to Build In-House

Despite the complexity, some businesses prefer internal modelling because they want:

- **Full IP ownership**
- **Deep transparency and explainability**
- **Tight integration** with internal platforms
- **Strategic differentiation**
- **Regulatory control**
- **Long-term cost efficiency** once maturity is reached

However, this path demands the highest level of organisational readiness.

## 3. What a Business Needs to Build and Run Its Own Predictive Models

Building internal modelling capability requires five capability pillars.

- A Reliable Data Foundation

- Clean, historical data (12–36+ months)
- Consistent variable definitions
- Secure and compliant storage (e.g., POPIA)
- Ability to integrate internal + external data sources

**Without high-quality labelled data, model performance is severely limited.**

- Skilled People (or Access to Them)

An effective modelling function requires:

- Data scientists
- Data engineers
- Business analysts
- Independent model validators
- Model risk & governance
- IT and deployment support

Most mid-sized companies lack these roles, making in-house development challenging.

- The Right Tools and Technology

Businesses need:

- A secure modelling environment
- Production hosting infrastructure
- Automated monitoring
- Integration with operational systems
- Versioning, audit trails, and fallback capability

This adds ongoing cost and requires dedicated IT involvement.

- Governance & Regulatory Compliance

Executives must ensure:

- Models are fair and explainable
- Documentation is complete
- Policies are followed
- Independent validation occurs
- Regular monitoring is performed
- Decisions are compliant and auditable

This is often the most demanding requirement.

- Continuous Monitoring & Maintenance

Predictive models degrade over time. Sustaining performance requires:

- Monthly monitoring
- Champion/Challenger strategy or A/B testing
- Recalibration
- Periodic rebuilds
- Strategy impact assessments

Model development is not a project — it is an ongoing discipline.

## 4. The Model Development Lifecycle (Executive Version)

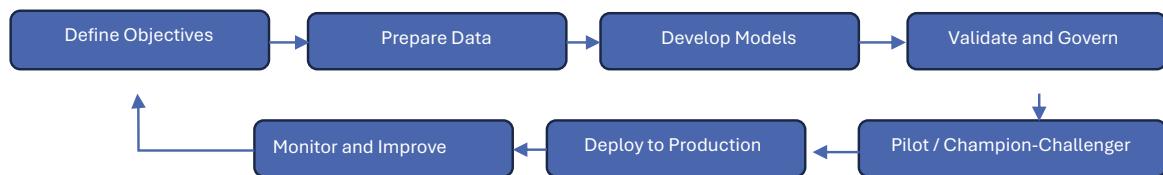


Figure 1 — Model Development Lifecycle

### 1. Business Objective Definition

Alignment with strategy, compliance, and financial goals.

### 2. Data Preparation

Clean, merge, standardise, and engineer predictive variables.

### 3. Model Development

Logistic regression, scorecards, ML models depending on purpose.

### 4. Validation & Governance

Independent challenge, bias testing, stability assessments.

### 5. Pilot Testing & Champion/Challenger

Controlled rollout with performance comparison.

### 6. Deployment

Integration into the decision engine or workflow.

### 7. Monitoring & Maintenance

Ongoing tracking and periodic redevelopment.

## 5. Deployment & Integration Requirements

To unlock value, a model must be:

- Embedded into operational decisioning
- Connected to data sources
- Integrated with your front-end systems, workflows, CRM, or underwriting environment
- Version-controlled and auditable

Decision engines accelerate this significantly by handling workflows, branching, overrides, policies, and audit trails.

## 6. Build vs Buy vs Rent — Executive Comparison

### o Decision Matrix

Criteria	Bureau Generic	Bureau Custom	Specialist Provider	Scorecard-as-a-Service	Build In-House
Speed to Market	★★★★★	★★★	★★★	★★★★★	★
Short-Term Cost	★★★★★	★★	★★	★★★★	★
Long-Term Cost	★★	★	★★	★★★★★	★★★★★
Predictive Lift	★	★★	★★★★	★★★★★	★★★★★
Ownership	★	★★	★★★★	★★★★★	★★★★★
Governance Burden	★★★★★	★★★★★	★★	★★★★★	★
Continuous Burden	★	★	★★	★★★★★	★★★★★

<b>Vendor Lock-In</b>	High	High	Medium	Low	None
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## 7. Budget & Timeline Expectations

- A realistic, market-aligned view:

Approach	Time to First model	Typical Cost Profile
<b>Bureau Generic</b>	Days	Very Low
<b>Bureau Custom</b>	2-6 Months	Medium-High
<b>Third-Party Specialist</b>	1-3 Months	Medium
<b>Scorecard-as-a-Service</b>	Days-Weeks	Predictable Subscription
<b>Build In-House</b>	6-12+ Months	High Initial + Ongoing

## 8. When Renting a Scorecard Is the Optimal Path

Scorecard-as-a-Service is ideal when:

- You want results **within weeks**, not months
- Data is limited or inconsistent
- You lack an internal modelling team
- Governance and audit requirements are strict
- You want model uplift without project overhead
- You want continuous Champion/Challenger improvement
- You want predictable subscription-based costs
- You need to reduce risk before investing in full internal capability

It is particularly effective when paired with a modern decision engine.

## 9. Conclusion & Executive Recommendation

Predictive models are essential for modern businesses—but building an internal modelling capability is only suitable for organisations with the necessary **data maturity, staff, governance, infrastructure, and long-term commitment**.

Most organisations achieve faster and more consistent value by leveraging:

- Bureau models
- Specialist third parties
- Or, increasingly, **Scorecard-as-a-Service** using Champion/Challenger rotation.

This approach balances uplift, cost, governance, and speed to market—allowing businesses to modernise decisions while building internal capability over time.

**If your organisation is beginning its journey, needs rapid lift, or lacks internal resources, renting a scorecard is often the most strategic and least risky path.**

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