I'll create a comprehensive presentation speech for you that flows naturally through all 10 slides. This is designed for approximately 15-20 minutes of presentation time.

**PRESENTATION SPEECH**

**Business Analytics Solution for Investigating Third-Party Motor Insurance Claims**

**SLIDE 1: TITLE SLIDE**

**Good [morning/afternoon/evening], respected faculty members and fellow students.**

Today, I'm excited to present my capstone project titled "Business Analytics Solution for Investigating Third-Party Motor Insurance Claims: A Case Study of Right View Investigators."

My name is Muneeshwari N, roll number 24ds3000101, from the IITM Online BS Degree Program at Indian Institute of Technology, Madras.

This project represents a comprehensive data-driven analysis of real-world insurance investigation operations, where I've applied business analytics techniques to solve critical operational challenges.

Let me take you through this journey.

**SLIDE 2: ABOUT THE BUSINESS**

So, let me introduce you to the organization I worked with.

**Right View Investigators** is a private investigation firm based in Madurai, Tamil Nadu, established in 2017. They specialize in third-party motor insurance claim investigations.

The firm is located at K.Pudur, Madurai, and has grown significantly since its inception. With a team of less than 50 staff members, including field investigators, report analysts, and administrative support, they handle investigations for major insurance companies across India.

Their core services include:

* Third-Party Bodily Injury and Fatal Claims
* Own Damage Claims investigations
* Motor Vehicle Accident Reconstructions
* And various connected investigations

What makes this case study particularly interesting is that their **key clients include major insurance companies like Chola, Magma, Shriram, and Liberty** – some of the biggest names in the Indian insurance sector.

The firm has been operating efficiently for over 7 years, but like many small businesses experiencing rapid growth, they've encountered operational bottlenecks that data analytics can help solve.

**SLIDE 3: PROBLEMS & CHALLENGES**

Now, let me explain the three critical problems I identified during my analysis.

**Problem 1: Manual Tracking Inefficiencies**

The firm was using Excel-based systems to track over 1,000 cases. This manual approach led to:

* Inconsistent data entry
* Delayed processing
* Error-prone claim tracking
* No real-time visibility into case status

Imagine managing hundreds of ongoing investigations with multiple insurance companies, each with different requirements, all in spreadsheets. The complexity was overwhelming.

**Problem 2: Revenue Tracking Gaps**

This was a financial challenge. The firm couldn't track:

* Overdue claims in real-time
* Pending fee collections
* And most critically, they had **1.15 million rupees tied up in pending cases** with no systematic way to monitor it.

**Problem 3: No Fraud Detection or Pattern Analysis**

Without analytics, they had no way to:

* Identify trends or bottlenecks
* Detect unusual patterns that might indicate fraud
* Make data-driven decisions about resource allocation

**Now, here's how I approached these problems:**

I used a **rigorous statistical approach**:

* Conducted a **Chi-square test** to examine the relationship between claim types and status, which revealed a significant association with a chi-square value of 30.62 and p-value less than 0.001
* Performed **revenue gap analysis** showing that 95% of earnings were locked in unresolved cases
* Applied **Z-score analysis** for outlier detection, identifying 12 extreme turnaround time cases and 5 unusual fee cases
* Conducted **correlation analysis** between turnaround time and fees, finding almost no correlation with an R-squared of just 0.005

This systematic approach gave us concrete evidence of where the problems existed.

**SLIDE 4: DATA OVERVIEW & METADATA**

Let me walk you through the data I worked with.

**The dataset** came from the firm's operational records titled "Combine RTI and Case Status Trial" – an Excel file containing their complete investigation tracking system.

The data covered a **6-month period from January to June 2025**, starting with 1,082 initial records. After thorough cleaning, I worked with **1,079 unique cases** across **26 operational variables**.

These variables fell into four main categories:

1. **Operational fields** – including claim numbers, company names, dates, status, and turnaround time
2. **Investigation fields** – type of investigation, police station details, RTI dates, and location information
3. **Financial fields** – investigation amounts and fee receipt dates
4. **Administrative fields** – reporter names, mail status, and document links

Now, looking at the key statistics:

* **Average turnaround time: 87.5 days** – this was our primary efficiency metric
* **Average claim amount: ₹3,192** – showing the typical investigation fee
* **688 TP cases** – Third Party investigations dominated the workload
* **62% in Submitted status** – indicating most cases reach report submission stage

This rich dataset gave me everything I needed to conduct comprehensive analysis and provide actionable recommendations.

**SLIDE 5: DATA CLEANING & ANALYSIS PROCESS**

Before I could analyze anything, I had to ensure data quality. Let me explain the rigorous process I followed.

**Data Cleaning involved four major steps:**

First, I **removed 3 duplicate records**, bringing the dataset from 1,082 to 1,079 unique cases. This ensured accuracy in all subsequent calculations.

Second, I **standardized all date formats** to DD/MM/YYYY format. Dates are critical for turnaround time calculations, so consistency was essential.

Third – and this was challenging – I dealt with **45% missing values** in the Submitted Date field. I imputed these using the Dispatch Date where available, creating a new imputed column while preserving the original data.

Finally, I **unified column naming conventions** and converted data types to ensure numerical fields were ready for statistical analysis.

**For Statistical Analysis**, I employed multiple techniques:

* Descriptive statistics including mean, median, mode, and standard deviation
* Chi-square testing for categorical associations
* Z-score analysis for outlier detection
* Correlation analysis
* Revenue gap quantification

**The tools I used** were carefully selected:

* **Google Sheets** for initial cleaning and basic statistics
* **Excel** for pivot table analysis and advanced filtering
* **Python with Pandas** for validation and complex computations

**My analysis focused on five key areas:**

1. TAT distribution to identify bottlenecks
2. Claim amount patterns and outliers
3. Client-wise case volume analysis
4. Monthly submission trends
5. Case status and backlog assessment

This systematic approach ensured reliable, reproducible results.

**SLIDE 6: RESULTS - TAT & CLAIM AMOUNT DISTRIBUTION**

Now we get to the exciting part – what did the data reveal?

**Let's start with Turnaround Time:**

The histogram shows a clear pattern – the **TAT distribution is right-skewed**, meaning most cases close quickly, but a few extreme delays pull the average up.

The numbers tell the story:

* **Mean TAT: 87.5 days**
* **Median: 77 days**
* **Mode: 18 days** – the most common resolution time

What's significant here? While **most cases close within 10 to 40 days**, with a peak in the 20-30 day range handling over 130 cases, we have outliers extending up to **589 days** – that's over 19 months for a single case!

The **standard deviation of 67.7 days** shows high variability, indicating inconsistent processing times. This variability is what's hurting overall performance.

**Now, looking at Claim Amounts:**

The claim amount distribution is much more controlled. Most claims fall between **₹1,500 and ₹5,500**, with a peak concentration around **₹1,950** where we see over 80 cases.

The statistics:

* **Average: ₹3,192**
* **Median: ₹3,600**
* **Mode: ₹1,800**

Very few claims exceed ₹6,000, which shows **controlled financial exposure** – good for the business.

**Here's a critical finding:** I found **NO correlation between TAT and fees**, with an R-squared value of just 0.005. This means the fee structure is standardized and doesn't reflect investigation complexity or duration. This is important for pricing strategy recommendations later.

**SLIDE 7: RESULTS - CLIENT DISTRIBUTION & CASE STATUS**

Moving to client analysis and operational status:

**Client Distribution Analysis:**

The bar chart clearly shows that **Chola and Magma are the dominant clients**, together representing approximately **35% of total case volume**. Following them are Shriram and Liberty.

This concentration is both an opportunity and a risk:

* **Opportunity:** Strong relationships with major clients
* **Risk:** Heavy dependence on a few clients

This finding led me to recommend **resource prioritization** and **client-specific service level agreements** for these high-volume clients.

**Case Status Distribution:**

The pie chart reveals the operational reality:

* **62% of cases are Submitted** – This is positive! It means most investigations reach the final report submission stage
* **33% remain Pending** – This is our major concern. That's 356 cases in limbo
* **4% are Completed** – Only 43 cases have received full closure
* **0.6% Withdrawn** – Just 7 cases, showing minimal dropout

But here's the deeper insight from my chi-square analysis: **TP cases show a 37.6% pending rate compared to just 25.6% for Non-TP cases**. This 12 percentage point difference is statistically significant and tells us exactly where the bottleneck is.

The submitted cases represent work done but revenue not yet realized – **₹2.14 million waiting to be collected**. The pending cases tie up **₹1.15 million**. Together, that's **₹3.29 million in unrealized revenue**.

**SLIDE 8: RESULTS - INVESTIGATION TYPE & MONTHLY TRENDS**

This slide reveals where the real operational challenges lie.

**Investigation Type Analysis:**

The stacked bar chart shows the workload composition. **TP investigations dominate with 688 cases** – that's 64% of the total workload. But here's the problem: of those 688 cases:

* 391 are submitted
* **259 are still pending** – the largest backlog in any category
* Only 36 are completed

OD cases come second with 139 cases, and Connected investigations have 135.

But the real story is in the **average turnaround times by case type**:

* **PS Document cases: 238 days average** – over 7 months!
* **Health investigations: 217 days** – over 7 months again!
* In contrast, **OD Spot cases: just 32 days**
* **PAY & REC cases: 44 days**

This shows that certain case types have inherent complexity requiring different resource allocation strategies.

The **chi-square test confirmed** that case type and status are not independent – they're significantly associated, with TP cases disproportionately represented in the pending category.

**Monthly Submission Trends:**

The line chart shows clear seasonality. We see **strong activity from February through May**, with a peak of **190 submissions in May** – that's over 30% of total submissions in a single month!

Then June shows a decline to just over 100 cases, suggesting either:

* Seasonal variation in accident claims
* Resource constraints
* Or end-of-quarter effects

This pattern indicates the need for **flexible resource planning** – you can't staff for average volume when you have such peaks and valleys.

**SLIDE 9: STRATEGIC RECOMMENDATIONS**

Based on these findings, I've developed a comprehensive set of actionable recommendations across four strategic areas. These aren't just theoretical suggestions – they're **specific, measurable, achievable targets**.

**1. Operational Efficiency:**

First and foremost, **reduce the TP backlog by 20% within 3 months** – that means bringing pending cases down from 259 to fewer than 210 cases.

How? By implementing:

* **Case-type specific SLAs** – for example, OD Spot investigations should be completed within 30 days, Health investigations within 120 days
* **Automated alert systems** that trigger when cases cross SLA thresholds
* **Seasonal resource planning** – hire temporary investigators or reallocate resources during April-May peaks

The target: **Keep pending cases below 25% of new inflows** consistently.

**2. Client-Centric Strategy:**

Since Chola and Magma represent 35% of volume, they deserve special attention.

Recommendations:

* **Assign dedicated case managers** for these top clients
* **Target 90% or higher SLA compliance** for them specifically
* **Provide real-time client dashboards** so they can track their cases independently
* This should **reduce client follow-up requests by 30%** in the next quarter, freeing up administrative time

**3. Financial Optimization:**

The current fee structure doesn't reflect case complexity. My recommendation:

* Introduce **tiered pricing** for complex cases like Health and Pay & Recover investigations
* Implement this pilot program to **recover an additional ₹200,000 in pending fees within 6 months**
* **Maintain fixed pricing** between ₹1,800 to ₹3,600 for routine investigations to preserve transparency
* Focus on **unlocking the ₹2.14 million from submitted cases** through better follow-up processes

**4. Data Quality & Reporting:**

Prevention is better than cure. To avoid future data issues:

* Make **drop-down menus mandatory** for case type and status fields – no more free text entry
* **Target 100% standardized entries by Q4 2025**
* **Reduce missing dates from 45% to under 10%** in the next data collection cycle
* Implement **automated revenue monitoring dashboards** for real-time financial tracking
* **Achieve 90% or higher data accuracy** in all core operational fields

**Expected Impact Summary:**

If these recommendations are implemented, Right View Investigators can expect:

* ✅ **20% reduction in pending backlog**
* ✅ **90%+ SLA compliance for key clients**
* ✅ **₹200,000 in additional revenue recovery**
* ✅ **90%+ data accuracy**

These are realistic, achievable targets that will transform operations.

**SLIDE 10: CONCLUSION**

Let me bring this all together.

This comprehensive analysis of **1,079 motor insurance claim investigations** has revealed both the strengths and critical improvement areas for Right View Investigators.

**Key Findings Summary:**

✓ The **average turnaround time of 87.5 days** has significant room for improvement, especially with outliers extending to 589 days

✓ **Third-Party investigations face disproportionate bottlenecks** with a 37.6% pending rate – this is where management attention is most needed

✓ There's **₹1.15 million tied up in pending cases** and **₹2.14 million in submitted but not collected cases** – that's ₹3.29 million in working capital locked up

✓ **Top clients Chola and Magma require prioritized service** to maintain these crucial relationships

✓ The **lack of correlation between TAT and fees** (R² = 0.005) indicates a standardized pricing model that doesn't reflect case complexity

**The Path Forward:**

By implementing the recommendations I've outlined – targeting 20% backlog reduction, 90% SLA compliance, ₹200,000 in revenue recovery, and 90%+ data accuracy by Q4 2025 – Right View Investigators can:

1. **Enhance operational efficiency** significantly
2. **Strengthen client relationships** and satisfaction
3. **Improve financial sustainability** and cash flow
4. **Build a data-driven culture** for long-term competitive advantage

**Final Thought:**

This project demonstrates that **even small businesses can benefit enormously from data analytics**. The insights derived from existing operational data – when properly cleaned, analyzed, and interpreted – can drive meaningful business transformation.

Right View Investigators now has a clear roadmap for improvement, backed by statistical evidence and actionable recommendations.

**THANK YOU SLIDE**

**Thank you for your attention. I'm happy to answer any questions.**

**ANTICIPATED Q&A - BE PREPARED FOR THESE:**

**Q1: "Why did you choose this particular firm for your study?"**

**A:** I chose Right View Investigators because they presented a perfect case study combining real-world business challenges with rich data. As a growing small business in the insurance investigation sector, they faced typical scaling problems – manual processes, data quality issues, and revenue tracking gaps. The availability of 6 months of actual operational data with 1,079 records gave me enough statistical power to conduct meaningful analysis. Additionally, the insurance investigation domain is critical for fraud prevention in India's growing insurance sector, making the insights broadly applicable.

**Q2: "How did you handle the 45% missing data in Submitted Dates?"**

**A:** Excellent question. I used a careful imputation strategy. First, I analyzed the data generation process and found that Dispatch Date was often recorded when Submitted Date was missing, and these dates were typically very close. I created a new column called "Submitted Date Imputed" where I used Dispatch Date as a proxy where available. I kept the original column intact for transparency and documented the imputation method. For TAT calculations, I used multiple date combinations and validated results against available complete records. This approach balanced the need for complete data with statistical integrity.

**Q3: "What was the business impact of your recommendations?"**

**A:** The recommendations are designed for measurable impact. The 20% reduction in TP backlog translates to clearing 49 cases over 3 months – that's about 4 additional cases per week. The ₹200,000 revenue recovery target represents about 6% of locked-up revenue, achievable through better follow-up on just the highest-value pending cases. The 90% SLA compliance target for top clients would strengthen relationships accounting for 35% of revenue. Most importantly, the data quality improvements create a foundation for ongoing analytics-driven decision-making, which compounds benefits over time.

**Q4: "Did you consider machine learning or predictive modeling?"**

**A:** That's a great question. For this phase, I focused on descriptive and diagnostic analytics because the immediate business need was understanding current operations and identifying bottlenecks. However, in my future scope section, I noted that the cleaned dataset is now ready for predictive modeling. With additional historical data, we could build models to predict case duration, identify high-risk cases likely to exceed SLA, forecast monthly workload, and even develop fraud risk scores. The foundation I've laid makes these advanced applications feasible for future phases.

**Q5: "How generalizable are your findings to other investigation firms?"**

**A:** The specific metrics are unique to Right View Investigators, but the patterns are highly generalizable. Most growing service businesses face similar challenges: manual tracking inefficiencies, revenue recognition delays, and resource allocation issues. The analytical framework I used – data cleaning, descriptive statistics, hypothesis testing, and evidence-based recommendations – can be applied to any professional services firm. The TP bottleneck finding might be specific, but the methodology for identifying and quantifying bottlenecks is universal. The key insight that standardized pricing doesn't reflect complexity is common across many service industries.

**Q6: "What were the biggest challenges in this project?"**

**A:** The biggest challenge was data quality. With 45% missing Submitted Dates and 78% missing Fee Receipt Dates, I had to carefully decide what could be imputed versus what should be flagged as data collection issues. Another challenge was working with real business data where perfect experimental conditions don't exist – there's seasonality, changing business practices, and data entry inconsistencies. Finally, translating statistical findings into actionable business recommendations required understanding the operational constraints of a small firm – I couldn't recommend solutions requiring massive IT investment or doubling headcount.

**Q7: "How long would implementation of your recommendations take?"**

**A:** I designed the recommendations with a phased timeline. Quick wins like mandatory dropdown menus and automated alerts could be implemented within 2-4 weeks using existing tools like Google Forms or Excel data validation. The dedicated client teams and SLA definitions could roll out in 1-2 months as they require process documentation and training. The tiered pricing model needs market research and client communication, so I estimated 3-6 months. The backlog reduction target spans 3 months. Overall, most recommendations could show measurable progress within a quarter, with full implementation within 6-12 months.

**TIPS FOR DELIVERY:**

1. **Maintain eye contact** – don't read from slides
2. **Speak slowly and clearly** – this is technical content
3. **Use hand gestures** to emphasize key points
4. **Pause after important statistics** to let them sink in
5. **Show enthusiasm** – you did great work!
6. **Time yourself** – aim for 15-18 minutes
7. **Have a glass of water** handy
8. **Breathe** – take pauses between slides

**Good luck with your presentation! You've done excellent work.** 🎓✨