

Business Analytics Project Requirement Specification Document

Takealot's Business Analytics Project Requirement Specification
Document for Enhanced Online Customer Behaviour Purchasing Insights

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Assignment Two

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1.0 Project Name: Machine Learning Driven Customer Purchasing Insights.

2.0 Project Manager: Mubanga Nsofu, Senior Business Analytics Manager.

3.0 Executive Summary:

Takealot is facing stiff competition from Amazon, the global e-commerce giant, a new entrant into the South African market. To protect market share, Takealot has decided to adopt advanced business analytics to understand its customers' purchasing behaviour and thus better serve them. Clustering will be used to segment online customer behaviour and predict the likelihood of purchase using classification techniques. The project will adopt a CRISP-DM approach (Roy, 2018) and will be implemented using Agile techniques.

In summary, the solution will incorporate descriptive analytics, diagnostic analytics and elements of predictive analytics to help Takealot minimise churn risks, optimise marketing and advertising budgets and improve overall return on investment by predicting which customers are likely to purchase.

4.0 Project Objectives:

- Identify behavioural purchasing patterns by segmentation using clustering from unsupervised learning. Algorithms such as K-means and DBSCAN will be explored.
- Improve customer rate conversion by 15% through predictive analytics.
- Reduce customer churn by 10% through an improved shopping experience based on online shoppers' profiles and targeted campaigns.
- Provide an analytics dashboard for real-time customer behaviour monitoring.
- Track segment performance and interpret business impact.

Figure 1 depicts the project objectives.

Figure 1

Project Objectives.



Note: Created by the Author (2025).

5.0 Project Scope:

In Scope:

- Data integration from website logs, CRM and transaction systems.
- Clustering and Classification Machine Learning model development.
- Dashboard development for the C-suite (CEO, CMO, and CIO), marketing, and business analysts using R and Python Technology stacks such as Shiny (Posit, n.d.).
- Iterative releases using Agile software development methodology (Beck et al., 2001).

Out of Scope:

- System hardware upgrades
- Mobile app analytics (to be considered in phase 2 of the project)

6.0 Business Requirements:

Table 1

Takealot's Analytics Business Requirements

Takealot Business Analytics Project Requirement Specification

PRIORITY LEVEL	CRITICAL LEVEL	REQUIREMENT DESCRIPTION
High	Critical	Business and Data Understanding
High	Critical	Data Integration and cleaning, exploratory data analysis
High	Critical	Develop customer segmentation models based on customer data
High	High	Develop a model for predicting purchasing intent of customers
Medium	High	Evaluate Developed Models
Medium	High	Build interactive dashboards for C-Suite, marketing and business analysts

Table 1 shows the business requirements for the project, with the cleaning and preparation of the data for machine learning being critical. In a data-centric environment, data quality is

critical since data is used for strategic decision-making in contemporary times rather than only supporting operations (Park University, 2024). In addition, the business requirements mirror the CRISP-DM process to ensure the project meets the objectives of Takealot’s C-Suite.

7.0 Key Stakeholders:

Table 2 shows the key stakeholders. During the agile sprints, they will be apprised of the project’s progress.

Table 2

Takealot’s Business Analytics Key Stakeholders

Takealot Business Analytics Project Stakeholders

NAME	JOB ROLE	DUTIES
Mubanga Nsofu	Project Manager	Oversee project delivery, stakeholder engagement
Sarah Jacobs	Head of Marketing	Define customer experience KPIs, use insights for campaigns
John Doe	Data Engineer	Data preparation, integration, and quality assurance
David Banner	Data Scientist	Develop ML alogorithms, dashboards and support insights generation
Thomas Aremu	Marketing Analyst	Leverage generated insights to improve customer experience
Linda Nkosi	Business Analyst	Leverage generated insights to improve customer experience

8.0 Project Constraints:

Table 3 highlights the project's constraints, including budget limitations that could occur should any project overruns occur. Thus, an agile approach will be used to ensure the project is moving in the right direction within budget. Although data privacy regulations are highlighted as a constraint, Takealot’s existing privacy policy is expected to suffice. Nevertheless, it is important to highlight this aspect given the ramifications in the event of a data breach.

Table 3

Takealot's Business Analytics Project Constraints

Takealot Business Analytics Project Constraints

CONSTRAINT	DESCRIPTION
Budget Limitations	Project limited to R2.5 million over 12 months.
Data Privacy Regulations	Must comply with POPIA and GDPR laws.
Legacy System Integration	Existing systems may have compatibility limitations.

9.0 Cost-Benefit Analysis:

Table 4 provides a cost-benefit analysis for the project. If execution is within projected timelines of under 12 months, then the implementation will be within budget, and the project sponsors and stakeholders can expect a 70% return on investment.

Table 4

Takealot's Business Analytics Project Cost-Benefit Analysis

Takealot Business Analytics Project Cost Benefit Analysis

COST ELEMENT	COST ESTIMATE (R)	BENEFIT	EXPECTED ROI (%)
Data integration and cleaning	700000	Improved data reliability and completeness.	20
Machine learning model development	800000	Customer Segmentation and Predictive Customer Behaviour	25
Dashboard development	500000	Real-time customer behavior monitoring.	15
Project management and overhead	300000	Efficient delivery and coordination.	10
Total Cost	2300000		70% ROI Expected

10.0 Application of Agile methodology on the project:

- A scrum framework will be adopted and executed in sprints every fortnight.
- Product Owners: Sarah Jacobs.
- Scrum Master: Mubanga Nsofu.
- During the solution's development, regular reviews will be conducted via fortnightly sprints to ensure stakeholder engagement, alignment, and feedback.
- The project will deliver a minimum viable product, such as initial model outputs (segmentation and classification) and a bare minimum dashboard.
- An iterative approach will be adopted to ensure quick course correction in response to stakeholder and customer feedback and ensure the project is completed within budget.

11.0 Summary

This project aims to ensure that Takealot remains the leading e-commerce platform in South Africa despite Amazon's entry. Using machine learning on customer data and transactions, Takealot can improve customer rate conversion by 15% through predictive analytics and reduce customer churn by 10% through an improved shopping experience based on online shoppers' profiles and targeted campaigns. The project will also provide an analytics dashboard for real-time monitoring of customer behaviour.

12. References

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Park University. (2024). *The Importance of Data Governance in Today's Business Environment*. <https://www.park.edu/blog/the-importance-of-data-governance-in-todays-business-environment/>

Posit. (n.d.). *Shiny for Python*. Retrieved May 17, 2025, from <https://shiny.posit.co/py/>

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