**Business Intelligence & Business Analytics**

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Table of Contents

[1. Abstract 3](#_Toc103372105)

[2. Background Information 3](#_Toc103372106)

[2.1. Organization 3](#_Toc103372107)

[2.2. Marketplace 3](#_Toc103372108)

[2.3. Scope of processes 3](#_Toc103372109)

[3. Balanced Scorecard 5](#_Toc103372110)

[4. Gap analysis 6](#_Toc103372111)

[5. System Design 7](#_Toc103372112)

[5.1. Process Diagram 7](#_Toc103372113)

[5.2. Data Capture Points 7](#_Toc103372114)

[5.3. Customer Integration 8](#_Toc103372115)

[5.4. Analytics Requirements and Dashboards 8](#_Toc103372116)

[5.5. SCM Implementation and Review Analysis. 9](#_Toc103372117)

[6. Implementation of business analytics in PowerBI 12](#_Toc103372118)

[6.1. Business Overview 12](#_Toc103372119)

[6.2. Dead Stock Report 13](#_Toc103372120)

[6.3. Sales overview after implementation of the system. 14](#_Toc103372121)

[6.4. Sales Performance after implementation of the system 15](#_Toc103372122)

[7. Teamwork 16](#_Toc103372123)

[8. Business rationale 16](#_Toc103372124)

[8.1. Cost of implementation 16](#_Toc103372125)

[8.2. Business benefits 17](#_Toc103372126)

[References 18](#_Toc103372127)

**TABLE OF FIGURES**

[Figure 1 Balanced Score Card 5](#_Toc103372128)

[Figure 2 Implementation Idea Flowchart 7](#_Toc103372129)

[Figure 3 SCM Intelligent Order Management System Template 9](#_Toc103372130)

[Figure 4 Intelligent Order Management System 10](#_Toc103372131)

[Figure 5 SCM Dashboard 10](#_Toc103372132)

[Figure 6 Power Automation of Automatic Email Trigger 11](#_Toc103372133)

[Figure 7 Inventory Management 11](#_Toc103372134)

[Figure 8 Sales Before Implementation 12](#_Toc103372135)

[Figure 9 Dead Stock Report 13](#_Toc103372136)

[Figure 10 Sales After Implementation 14](#_Toc103372137)

[Figure 11 Sales Performance after implementation of the system 15](#_Toc103372138)

[Figure 12 Proposed Timeline for Implementation 16](#_Toc103372139)

**LIST OF TABLES**

[Table 1 The results of the gap analysis 5](#_Toc103366439)

[Table 2 Licence fees of the proposed software solutions 11](#_Toc103366440)

# Abstract

We have been hired recently as a Business analysts by a leading fashion brand named (PRIMACY) based out of Ireland. The primary goal of the company was to improve the sales, Which has been affected during the global pandemic.

As a starting point, we created a Balanced Scorecard to demonstrate that the implementation of the proposed new system is aligned to the customer's strategic goals. Then, we performed a gap analysis to identify actions needed to reach the target operating model.

As for technical implementation, we will use Power BI and Tableau to produce dashboards and analytics. We implement a Supply chain Management system in Dynamics 365 to enable the company to serve its customers more efficiently and increase overall profit. The system and database design are also outlined in the report.

Finally, a cost-benefit analysis is presented to prove that there is a business rationale for the proposed system implementation.

# Background Information

## Organization

For our project purpose, we have created a fictional company based on a Textile and Fashion brand called Primacy Fashion. We have created a situation where the company is planning to start online sales and how we can improve the process and other problems currently faced by the company. In the prime time for e-commerce and online sales, our company didn’t have any online presence.

The organization currently does not have any BI tools or SCM systems and we are pitching in the efficiency of having one and the company is declined to implement our idea. We have also shown the post implementation of the system and BI tools.

## Marketplace

In recent times the company has faced issues in its In-Store sales due to global pandemic events and planning to start and expand its online sales.

## Scope of processes

The processes in the scope of the system implementation include Supply Chain Management (SCM) and related business intelligence (BI) and analytics.

The SCM system will be introduced to the organization and tracking of online orders will be started and it will be streamlined.

We have also introduced a Power Automate option of triggering an email to the concerned person if negative feedback or review is received about the product or delivery.

The purpose of the BI application is to provide summary statistics for management about the sales, Trends, Performance of Each county, and revenue generated by category and mode(online and In-Store).

To have better track of customers and to turn potential visitors into customers.

Further details on the proposed contents of dashboards are included in section 5.4.

# Balanced Scorecard

The Balanced Scorecard of Primacy Fashion is shown in Figure 1 below, including its purpose statement and strategic goals from the perspective of its customers, financials, internal and business processes, and the learning and growth opportunities for its Supply chain and IT Staff. The structure of the Balanced Scorecard is based on.

**Purpose statement:** Provide high quality service to our customer, improve sales and revenue.

Suitable Visualisation and BI tool.

Customer (Shoppers) perspective

Financial perspective

Cost savings and Revenue Generation

More Choice

Reduce Dead Stock

Increased Product Visibility

Internal perspective

Learning and growth perspective

Effective online sales and more customers

Improved IT Process

Effective SCM and order Tracking

Focus on the Trend and Feedback

Figure 1 Balanced Score Card

We explain below how the company could benefit from the implementation of a CRM and BI from the strategic perspectives:

* **Customers**
  + Since the Pandemic customers are more inclined to online sales
  + More options and choices of the latest trends
  + The customers from the countryside don’t require to travel to buy their favorite product.
* **Financial**
  + A cost-effective platform and easy to implement should fit the size of an organization
  + Lower maintenance costs by using a single platform
  + Reduce Dead Stock
* **Internal**
  + Effective SCM and Order tracking
  + Improved IT process
  + Visibility toward stock and Trends
  + Efficient Customer Tracking
* **Learning and growth**
  + Focus on the Trend and Feedback
  + Have effective online sales

# Gap analysis

We performed a gap analysis to highlight improvement areas and actions required to achieve the target operating model.

**Table 1: Results of the gap analysis**

|  |  |  |
| --- | --- | --- |
| **GAP Analysis** | | |
| **Area under consideration** | Improve effective Stock Management and Start the presence of Online sales | |
| **Desired state** | **Current state** | **Action steps** |
| 1. Effective online sales, order status tracking and receiving feedback 2. Understand the trend in sales and revenue performance using the dashboard 3. No Dead Stock | 1. No Business Intelligent tool 2. There is no integration between all the departments 3. No details about dead stock 4. No order management tools 5. No automated Feedback system | 1. 1. Implement Dynamic 365 and use effective SCM and CRM 2. 2. Implement Intelligent Dashboards to have the visualization of Dead stocks, Sales Trends. 3. 3. Trigger an email for Negative Reviews received and improve Customer Satisfaction. 4. 4. Connecting the Order Details with SCM (Intelligent Order Management System) |

Table 1 The results of the gap analysis

The gap analysis shows that significant effort is needed to implement new SCM (Intelligent Order Management System) and BI systems and to upload Order details, Feedback analysis, and Product Tracking.

# System Design

## Process Diagram

A high-level process diagram of process design is shown in Figure 2 below:

Diagram

Description automatically generated

Figure 2 Implementation Idea Flowchart

In our Implementation idea/model we have created a flow chart and process implementation of integration of online orders received with Dynamic 365 SCM – Intelligent Order Management System.

* **Priority Order Sorting**

Recently we have seen a trend decline towards express delivery with little extra payment and we have used the same option to attract our customers as well with priority/Next Day delivery. We have also created a decision tree to move the product to the priority list and ship immediately.

* **Dashboards**

We have created multiple dashboards to access and evaluate the sales performance before and after the implementation of SCM and online sales. We have also created a dashboard to access and check the dead stock. And our dashboard will also help understand the seasonal trends to focus on the current trend and make decisions.

* **Customer feedback**

We have also collected the feedback from all the customers after their purchase and we have analyzed the feedback to help improve the performance of that county and improve the customer satisfaction rate.

## Data Capture Points

Interactions with customers are captured via the data capture points outlined below. In addition to this, the system includes existing data migrated from the old admin system (IT Staff, existing supply chain inventory, and Sales Data).

**Online visits**

All the online activity and clicks are captured to understand the trend of the buyer and choices can be suggested based on the customer interest and Trends.

**Emails**

When an order is placed, we have captured the email address of the customer and have been used to share the latest publications of product broachers, On Sale, Discounts, and New Arrivals with the consent of the customers by agreeing to Terms & conditions.

**Scheduling Priority order**

We have created a column as the delivery type and a decision flow is made to check for the delivery type which customer has selected and prioritize it accordingly.

**Sales Data**

We have created an interactive Dashboard to monitor the sales based on different parameters like county, Gender, Category, Mode (Online and In-store), and Trends.

**Customer Feedback**

Customer Feedback is collected after every online and In-store Purchase. We have analyzed to understand the customer satisfaction rate and suggestions provided by the customers. We have also used power automate (An in-built tool) from Dynamic 365 to trigger an email alert for all the customer feedback with Negative comments.

## Customer Integration

In our database model, the customer purchase is the key entity at all stages. New orders are integrated as they are placed with the website, in-store purchases, and provide feedback.

## Analytics Requirements and Dashboards

We have created four dashboards to understand the performance of the company before and after the implementation of SCM and BI tools.

The contents of these dashboards are shown below:

**Sales/Performance before implementation dashboard**

* Total sales per county
* Total sales based on trend
* Gender-based sales throughout the counties
* Sales analysis based on regions in Ireland (East, West, North, South)

**Dead Stock**

* Dead Stock count by the county before implementation of SCM.
* Dead Stock count by the county after implementation of SCM.
* Dead Stock analysis by Trend.
* Dead stock analysis by year, month, and category lists.

**Sales after implementation 1**

* The highest grossing month from online sales.
* The highest grossing month from in-store sales.
* The highest grossing month from online and in-store sales.
* In-store and online sales by year and month.
* Online, in-store, and total sales by category.

**Sales After Implementation 2**

* Total sales by county
* Total sales by gender
* Total sales analysis based on shipment mode.
* Customer’s review ratings are based on county.

The dashboards provide trend analysis over time to enable management to change their selling strategy.

In addition to the PowerBI dashboards, the Dynamics 365 system produces built-in dashboards and statistics as well e.g. order status, number of completed orders, customer feedback

## SCM Implementation and Review Analysis.

**SCM Implementation and Benefits**

We have connected the order details placed on our website and the App available in App Store and Play Store. We have used the existing template available from the Dynamic 365 – Intelligent Order management System Refer to the below Figure

Table

Description automatically generated

Figure 3 SCM Intelligent Order Management System Template

We have uploaded the order details to the intelligent order management system using the above template and created a list of active orders and their status. This enables the user to track and update the status of each delivery.

**Active Order Tracking**

As an in-built feature available in the SCM we can track the entire active and completed orders. Please refer to the below figure.

Graphical user interface, text, email

Description automatically generated

Figure 4 Intelligent Order Management System

**In-Built Dashboard of Online Tracking**

The below figure summarises the status of active and completed/canceled orders.

Graphical user interface, website

Description automatically generated

Figure 5 SCM Dashboard

**Power Automate**

We have used Power Automation (an in-built) tool to automate the email triggering process for all the negative reviews/feedback received. This has helped us to improve the customer satisfaction rate and provide appropriate suggestions according to the reviews and trends.

Graphical user interface, application

Description automatically generated

Figure 6 Power Automation of Automatic Email Trigger

**Improved Inventory Management**

We have also implemented an Inventory management system using dynamic 365 and it has helped us to identify dead stock and do analysis on dead stocks.

Graphical user interface

Description automatically generated

Figure 7 Inventory Management

# Implementation of business analytics in PowerBI

## Business Overview

**First Dashboard:**

Chart

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Figure 8 Sales Before Implementation

**First Graph (top left)**

The first graph shows the total sales from different counties through the country from 2018-2021. The graph is used to understand the sales based on different counties. We see that the highest in-store sales are from county Limerick and the county with less sales is Kerry. The reason can be the global pandemic of COVID-19. People in smaller counties have to travel more distance which was restricted.

**Second Graph (top right)**

We have divided the country into four regions and analysed the sales in east, west, north and south. It can be clearly seen that the highest sales are from south region of Ireland which can help to understand the customer base in a particular region.

**Third Graph (top left)**

Before implementing the system, this graph can be used to see the sales distribution based on genders. This butterfly chart shows the total sales per gender. For future online presence of the customers it will help to identify the sales generation based on gender. Based on the visualization, we see that the male sales are 52.08% which is higher than the female sales.

**Fourth Graph (bottom right)**

This graph shows the trend based sales over the specified years. It depicts that the customers buys shirts and coats/jackets as compared to other trends. The less performing trends can be improved with the online presence by better visualisation of product.

## Dead Stock Report

**Second Dashboard:**

The second dashboard contains graphs on the data related to the dead stock before and after the implementation of SCM and PowerBI tools as given below. The dashboard helps to understand the dead stock and less popular items. The dashboard analyse the dead stock based on multiple factors. We can identify the trends which are less popular, the months and years with more dead stock, etc.

Chart, histogram

Description automatically generated

Figure 9 Dead Stock Report

**First Graph (top left)**

The first graph shows the number of dead stocks in different counties before implementing the system. The graph shows that the stores in Galway County have the largest dead stock as compared to other counties in Ireland. The county with lowest dead stock is Cork. This helps us to understand the trend and product acceptance across the counties.

**Second Graph (top right)**

The second graph shows the number of dead stocks in different counties after implementing the system. The graph shows that the stores in Galway County still have the largest dead stock as compared to other counties in Ireland. This will allow us to focus more on online sales in county Galway and to do a intensive customer preference analysis.

**Third Graph (bottom left)**

From this graph, we analyse the trends which are less popular and contribute the more towards dead stock. Although, shirts are the most popular among different trends, they create the largest deadstock throughout the country. The lowest dead stock is in the jeans category. We can balance the manufacturing more effectively after analysing the graph and implementing the system.

**Fourth Graph (bottom right)**

This graph shows the dead stock based on year, month, and different categories of product. We can analyse which category is popular over different months and tailor our manufacturing and business implementation accordingly.

## Sales overview after implementation of the system.

**Third Dashboard**:

Chart

Description automatically generated

Figure 10 Sales After Implementation

**First Graph (left)**

The first graph of the dashboard compares the total sales online and in-store by year and month. We see there just after implementation of our systems; the online sales are increasing rapidly. Although, the stores are still the major source of sales, but the online system is making its presence effectively.

**Second Graph (right)**

In this graph we show the online and in-store sales based on different categories. We also show the count of total sales based on categories of the products.

## Sales Performance after implementation of the system

**Fourth Dashboard**:

A picture containing text, screenshot, stationary, vector graphics

Description automatically generated

Figure 11 Sales Performance after implementation of the system

**First Graph (top left)**

The first graph shows the total sales from different counties through the country after implementing the system. We analyse the sales based on different counties. We see that the highest sales happening in both online and in-store are from county Galway rather than Limerick and the county with least sales is Donegal. Since the county Donegal is not near big cities, we can improve the sales there through the online system implementation.

**Second Graph (top right)**

After implementing the system, we show again the sales based on the gender. We see that the females are accepting the online presence well and outnumbering males in the generation of total sales.

**Third Graph (bottom left)**

The third graph shows the sales happened through different shipment modes after implementing the online sales. The standard delivery is most opted by the customers. However, there are a large section of people who preferred express delivery option which suggests the incapability of certain customers to come for in-store shopping, which can be effectively tackled by online accessibility and different delivery options.

**Fourth Graph (bottom right)**

Since the online implementation of the business has enabled us to store and mine customer’s reviews and feedbacks, we show analyse here the reviews submitted by the customers in different counties. The county Galway has the highest reviews given by the customers with most of them being neutral. County Kildare has the highest negative reviews submitted by the customers. This effectively helps us to track products performance and quality. The services therefore can be improved for the specific regions and counties.

# Business rationale

## Cost of implementation

We have provided a comprehensive timeline for the implementation of this proposed solution. This timeline is following the agile Implementation methodology for 2 full-time Business Analysts with Automation and Power Apps experience to deliver the following activities.

A picture containing timeline

Description automatically generated

Figure 12 Proposed Timeline for Implementation

The Roles and Responsibilities of the Proposed resources:

* Extract data from existing systems
* Migrate data to the new system
* Establish a connection between Online orders and Dynamic 365
* System design and setting up system rules
* Functional testing
* Prepare proposal on final system output (management information pack)
* Gather and incorporate feedback from business users and train them
* Deliver training for business users
* Deliver Post implementation care and Warranty period.

Furthermore, both tools are scalable and the cost of adding business user is marginal as per Table 4 (pricing information is based on recent pricing tables from Microsoft included in [3] and [4]):

|  |  |  |  |
| --- | --- | --- | --- |
| **License fees** | | | |
| **Software and Licences** | **Annual cost/user** | **Number of**  **users** | **Total cost (rounded to €100)** |
| Power BI Pro Licences | € 101 | 5 | € 500 |
| Dynamics 365 - Customer Service Enterprise - First user | € 961 | 1 | € 1,000 |
| Dynamics 365 - Customer Service Enterprise – Other users | € 203 | 20 | € 4,060 |
| Man Power cost for 1 Full-time Business Analyst (Optional) | € 60,000 | 2 | € 120,000 |
| **TOTAL** |  |  | **€ 125,560** |

Table 2 Licence fees of the proposed software solutions

We allowed 21 users for the Dynamics 365 CRM solution, this includes administrators, IT staff, and business analysts.

The users required for Power BI Pro are very less as management reporting is minimal and once dashboards are set up and the connections are established connection. The maintenance effort is limited to analysis and presentations to executives. Hence, we have only procured 5 user licenses for PowerBI Pro.

Based on the table description above, license fees are marginal (€5,560) and costs remain very low when adding additional users making this a scalable solution. Furthermore, as both are Microsoft tools, they integrate well with each other.

For an accelerated implementation and to recover from sales targets, we can employ two additional or new resources to kick start the transformation as soon as possible. Even though this may look like an additional cost but the benefits will help the company on a big scale.

## Business benefits

The benefits of the proposed system are summarised below:

* Cost effective
* Short Term to implement
* Effective Visualisation
* Improvised inventory
* Reduction of dead stock
* Improved revenue generation
* Improved customer interaction
* Better analysis of feedback and reviews
* Enhanced product visibility and
* Overall improvisation of brand value

## Video Presentation Link :

<https://studentncirl-my.sharepoint.com/:v:/g/personal/x21166099_student_ncirl_ie/ET2xiHQPXJxPnkI71iicaw0BbtTIpk5Omm6nCaBEtEEx2A?e=zBdlGd>

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