

VIRGIN TRAINS CASE STUDY

SONIA

<https://businesscasestudies.co.uk/virgin-trains/>

Case Study

Virgin Trains

This case study describes how a successful private railway operating company doubled passenger numbers over a period of 12 years, partly through sound commercial management. Second, it describes the experience and lessons learned from franchising in an uncertain environment created by a major infrastructure investment by a separate railway infrastructure company.

1 Rail Franchising in Britain

After nearly 40 years in the public sector as British Rail (BR), the British railway industry was completely transformed over the period 1994-1997, with the separation of infrastructure from operations, franchising of passenger services, and selling off freight operations.³⁹⁰ BR's passenger rolling stock was divided into three rolling stock leasing companies (ROSCOs), which were sold in 1996. Since then, the ROSCOs have also leased most new locomotives, coaches, and multiple units to passenger train operating companies.

Since privatization, passenger rail services in Britain have been operated by private

TASKS

1. Analyze the business case using 5W 1H & the Six Stage Problem-Solving Process and generate 3 business questions from business case.
 2. Using SQL build at least four (4) tables with the necessary columns to support the solution that was defined under step 1 and 2.
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3. Using SQL build the database diagrams for the tables generated from model.
 4. Apply SCD - SSIS to the data prepared for the business case.
 5. Under SSAS platform develop a solution (model) to support a business model defined in the steps above.
 6. Deploy the new solution to SQL and identify via SSAS' browser two data query solutions to address possible (if scenarios) discovered under section 1 and 2.
 7. Visualize Results using Tableau or Power BI

5W 1H ANALYSIS

1 - WHO

#	Question	Answer
Q1.1	Who is involved?	Virgin Rail Group
Q1.2	Who is affected?	Virgin Rail Group, customers, Investors & Government
Q1.3	Who will benefit?	Virgin Rail Group, customers, Investors & Government
Q1.4	Who will be harmed?	Virgin Rail Group, customers, Investors

5W 1H ANALYSIS

2 - WHAT

#	Question	Answer
Q2.1	What is your topic narrowed down in a simple phrase/sentence?	How the Virgin Rail Group successfully doubled passenger numbers & improved revenue over a period of 12 as well as the challenges & lessons in rail infrastructure investment.
Q2.2	What does your topic involve? (i.e. What are the different parts to it?)	<ul style="list-style-type: none">• Running a successful Rail Company.• Experience and lessons from Rail franchising in an uncertain environment.• Challenges & Lessons in Rail Infrastructure investing.
Q2.3	What is it similar to / different from?	NA
Q2.4	What might be affected/changed by your topic?	NA

5W 1H ANALYSIS

3 - WHEN

#	Question	Answer
Q 3. 1	When does this take place? When did this take place? When will it take place? When should this take place?	This took place over the period of 1994-2009
Q 3. 2	Does when this takes place affect the topic?	Yes, it does as it helps us narrow down the specific time in the past when rail transportation was transformed in Britain.

5W 1H ANALYSIS

4 - WHERE

#	Question	Answer
Q4.1	Where does this take place? (Where did it Where will it ... Where should it?)	It took place in Britain (Rail Franchising in Britain)
Q4.2	Does it matter where it takes place? Is it affected by location?	It is affected by the location because it is about the Rail Franchising in Britain

5W 1H ANALYSIS

5 - WHY

#	Question	Answer
Q5.1	Why is this topic important? Why does it matter?	It is important because it explained the challenges & lessons learnt in the transformation of the British Rail system by Virgin Rail Group, Government and other partners.
Q5.2	Why do certain things happen? (What are some causes and effects within the topic?)	NA

5W 1H ANALYSIS

6 - HOW

#	Question	Answer
Q6.1	How does this topic work? How does it function? How does it do what it does?	The topic explains the challenges, experiences, lessons & gains in privatizing Britain's rail network
Q6.2	How did it come to be?	This came to be because the British government wanted an improved efficiency in the Rail Sector.
Q6.3	How are those involved affected?	Profit for Virgin Rail group and other Investors, Cost saving & a source of Income for government, Passengers/Customers enjoy improved services in rail transportation.

Six Stage Problem-Solving Process

1.Exploring the Mess

#	Question	Answer
Q1.1	What problems (or opportunities) did they face?	Challenges centered around: <ul style="list-style-type: none">• Improving Customer experience in rail transportation• Rail Infrastructure Investing.• Challenges in rail franchising
Q1.2	Where was there a gap between the current situation and the desired one?	Yes:The gap was that government wanted an improved efficiency in rail transportation architecture
Q1.3	What were the stated and unstated goals?	Stated Goals for the government was to improve rail transport operations and passenger services as well as save cost.The Unstated goal was the volume of income to be generated.

Six Stage Problem-Solving Process

2. Searching for Information

#	Question	Answer
Q2.1	What were the symptoms and causes?	Symptoms were reflected in passenger complaints & poor operational services despite the huge investment in rail transport. The cause of this was a lack of capacity and competence by the government (British Rail) to efficiently manage rail services
Q2.2	What measures of effectiveness seemed appropriate?	Privatizing and Franchising the passenger services and operations to improve Rail transport efficiency.
Q2.3	What actions were available?	Privatizing and Franchising Rail Transportation

Six Stage Problem-Solving Process

3. Identify the Problem

#	Question	Answer
Q3.1	Which was the most important problem in this situation?	The most important problem was that of inefficiency which prompted government to privatize and franchise Rail services and Operations
Q3.2	Was the problem like others they had dealt with?	NA
Q3.3	What were the consequences of a broad versus narrow problem statement?	NA

Six Stage Problem-Solving Process

4. Searching for Solutions

#	Question	Answer
Q4.1	What decisions were open to them?	One of the decision was what was done. Privatizing and franchising Rail services and Operations to improve rail transportation.
Q4.2	What solutions had been tried in similar situations?	NA
Q4.3	How did the various candidate solutions link to the outcomes of interest?	NA

Six Stage Problem-Solving Process

5. Evaluating Solutions

#	Question	Answer
Q5.1	How did the solution impact each of the criteria?	The solution to separate infrastructure from operations, Franchise passenger services and sell off freight operations was important because it turned out to be successful as Virgin Rail group was able to double passenger numbers in 12 years.
Q5.2	What factors within their control could have improved the outcomes?	NA
Q5.3	What factors outside their control could have altered the outcomes?	NA

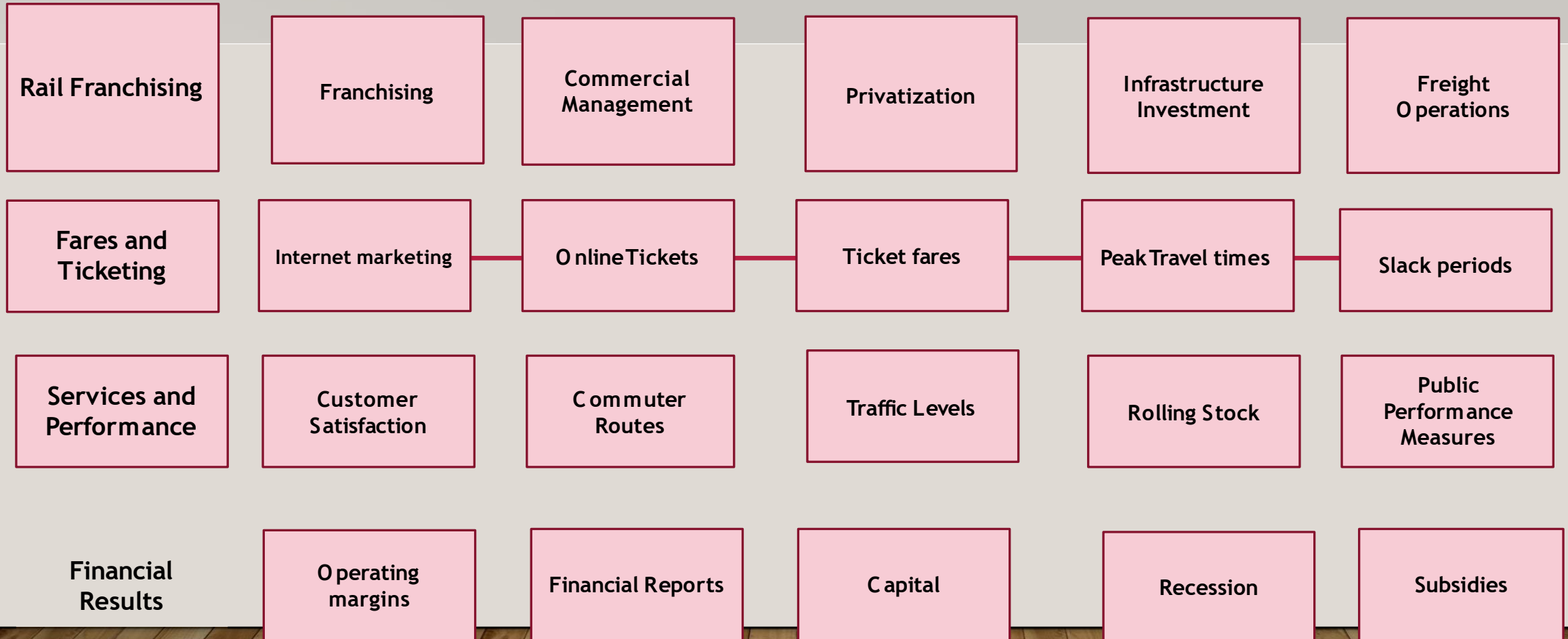
Six Stage Problem-Solving Process

6. Implementing

#	Question	Answer
Q6.1	What were the barriers to successful implementation?	NA
Q6.2	Where was there support and motivation, or resistance and conflict?	For the government, The motivation was to improve efficiency and cut cost. For Virgin group, it as to make profit, grow brand and provide world class customer services.
Q6.3	Were there resources available for successful implementation?	Yes: Government had resources to invest in the rail transport system while Virgin already had experience in air and Bus transport services.

VIRGIN TRAINS

A) Identify and Design Relationship



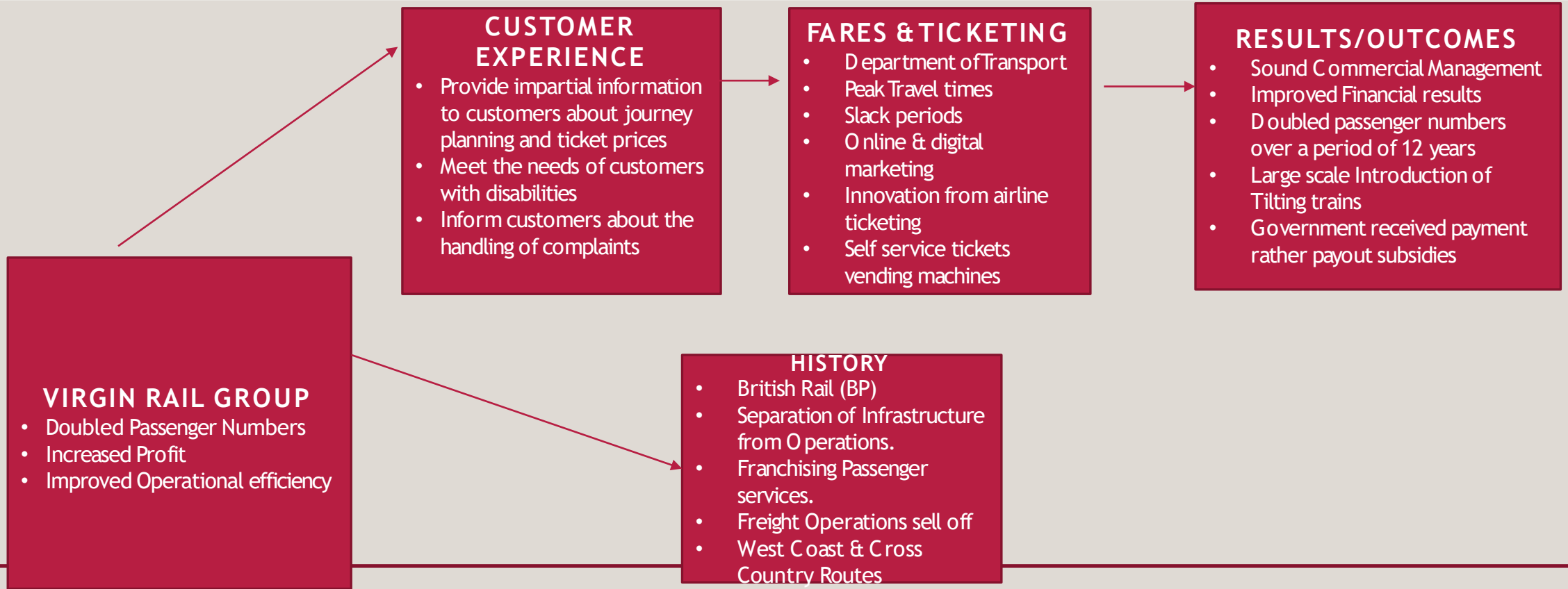
Data Dictionary

B) Define Core Terms

Definition type	Concept	Definition
Franchise	Phrase	The right or license granted to an individual or group to market a company's goods or services in a particular territory.
Privatisation	Phrase	Privatization occurs when a government-owned business, operation, or property becomes owned by a private, non-government party.
Freight Operations	Phrase	The practical work of moving goods from a shipper to a receiver, a subset of activities that constitute logistics (or supply chain) management.
Rolling Stock	Phrase	Wheeled vehicles owned and used by a railroad or motor carrier. i.e., Anything on rail wheels.
Online Marketing	Operationalized	Measured Using: <ul style="list-style-type: none">• email marketing (Total emails sent & opened by customers)• Online Adverts (How many clicks per post)• Press Releases & Blogs (How many visitors & how many read content)
Customer Satisfaction	Operationalized	Measured Using: <ul style="list-style-type: none">• Net Promoter Score (single survey question asking respondents to rate the likelihood that they would recommend a company, product, or a service to a friend or colleague.)• Churn rate (The rate or measure at which customers stop doing business with a company over a given period)• Customer Satisfaction Score (Metric that acts as a key performance indicator for customer service and product quality in all kinds of businesses)

Data Modeling - Conceptual Model

A) Causes and effects. Where's data?



What-if

C) Project Considerations

What are the
long-term
sustainability
?

Transitory nature
of Governments?

Trains become
obsolete?

People Start
considering other
Means of
transportation?

Business questions

1. What were the names of the first 3 customers to purchase Tickets in 2008 and what Route did they purchase?
2. How much was the cost of the most expensive First-Class Ticket in 2008?
3. What were the total distance travelled, most ticket purchased by a customer and the average fare price of all travels made?

TASK

2

Business Question #1: What were the Names of the first 3 customers to purchase Tickets in 2008 and what Route did they purchase?

```
SQLQuery43.sql - C...\INTRAINS (sa (53))*  SQLQuery15.sql - C...\INTRAINS (sa (64))*  SQLQuery31.sql - C...\INTRAINS (sa (61))*
1  ----/***** What were the Names of the first 3 customers to purchase Tickets in 2008 and what Route did they purchase?
2  SELECT TOP (3) TCA.CustomerId, TCA.FirstName, TCA.LastName, TCA.TicketPurchaseDate, TTD.TrainRoute
3  FROM [dbo].[Trains.CustomerAccount] TCA
4  FULL OUTER JOIN
5  [dbo].[Trains.TrainDetails] TTD
6  ON TCA.StationId = TTD.StationId
7
```

100 %

Results Messages

	CustomerId	FirstName	LastName	TicketPurchaseDate	TrainRoute
1	22330	John	Anthony	14/02/2008	London-Scotland
2	22331	Adams	Adams	25/03/2008	London-Liverpool
3	22332	Michael	Angelo	18/04/2008	London-West Midlands

Business Question #2: How much was the cost of the most expensive First-Class Ticket in 2008?

SQLQuery43.sql - C...INTRAINS (sa (53))*

SQLQuery15.sql - C...INTRAINS (sa (64))*

SQLQuery39.sql - C...INTRAINS (sa (70))*



```
1  ---/***** What was the cost of the most expensive First Class Ticket in 2008?
2  SELECT [StationId],[CustomerId],[FareAmount] ,[PaymentDate]
3      ,[PaymentMethod]
4      ,[NumberofTickets]
5      ,[TicketType]
6  FROM [SAIT_VIRGINTRAINS].[dbo].[Trains.Ticketing]
7  Where Tickettype = 'First Class'
8  Order by FareAmount Desc
```

100 %

Results Messages

	StationId	CustomerId	FareAmount	PaymentDate	PaymentMethod	NumberofTickets	TicketType
1	22334	1005A	115	19/04/2008	Credit Card	1	First Class
2	22331	1002A	105	25/03/2008	Credit Card	2	First Class
3	22330	1001A	85	14/02/2008	Mobile Device	1	First Class

Business Question #3: What were the total Distance Travelled, Total Tickets Sold and the average fare price of all travels made?

SQLQuery7.sql - CH...INTRAINS (sa (53))*   SQLQuery6.sql - CH...INTRAINS (sa (54)) Model [Browse]

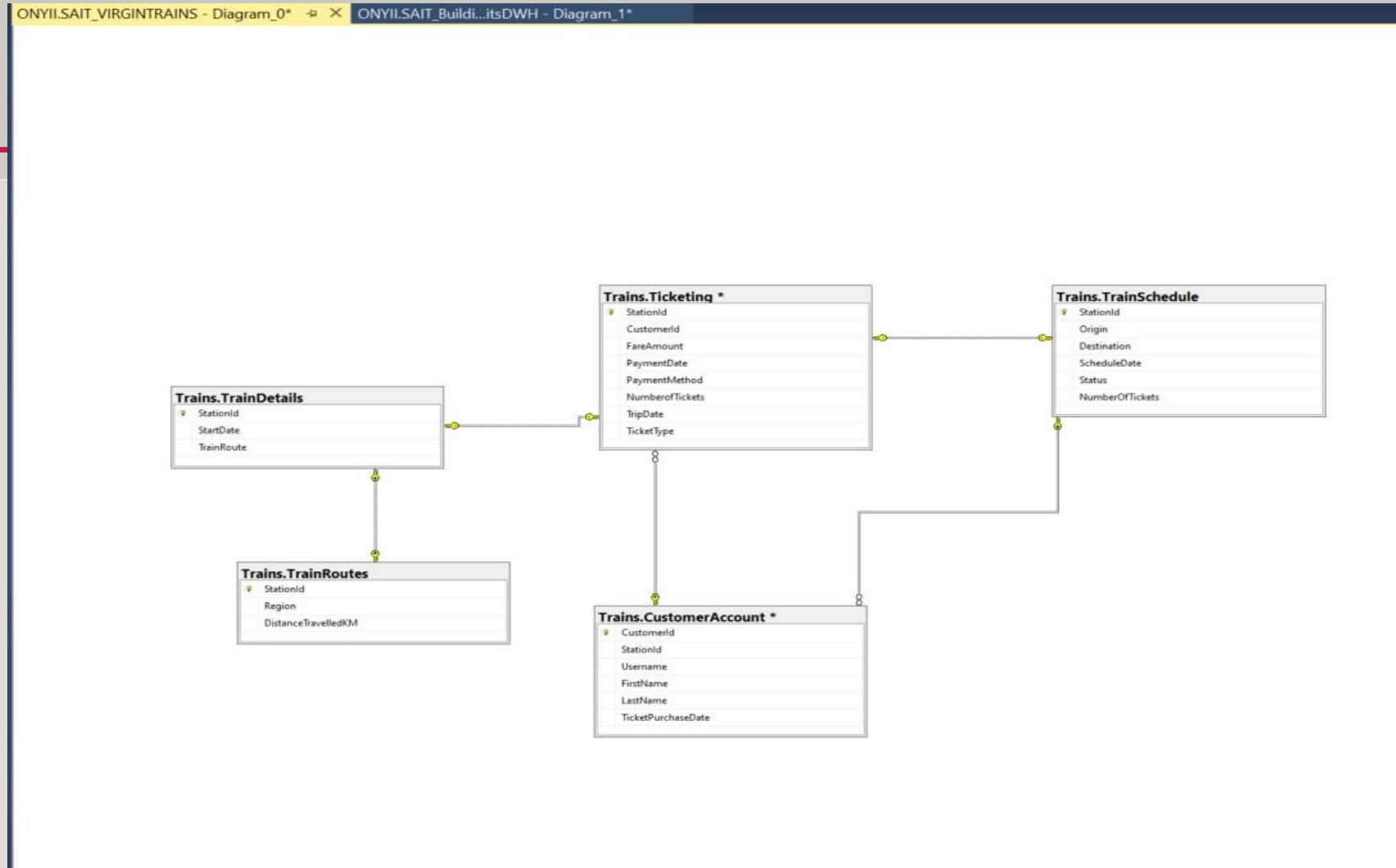
```
1 ---/What were the total Distance Travelled, Most Ticket Purchased by a customer and the average fare price of all travels made?  
2  
3 SELECT SUM (DistanceTravelledKM) as TotalDistanceKM,  
4         Max(NumberOfTickets) as MostTicketPurchase,  
5         AVG(FareAmount) as AverageFarePrice  
6 FROM [SAIT_VIRGINTRAINS].[dbo].[Trains.TrainRoutes] TTR  
7 FULL JOIN  
8 [dbo].[Trains.Ticketing] TT  
9 ON TT.StationId = TTR.StationId
```

100 %

 Results  Messages

	TotalDistanceKM	MostTicketPurchase	AverageFarePrice
1	319	4	110

Database Diagram



TASK 4

APPLYING SCD - SSIS CHANGES

The screenshot displays the Microsoft SQL Server Data Tools (SSIS) interface. The main window shows a package design for 'Package.dtsx [Design]'. The design includes a 'Read TrainDetails_Changes' task connected to a 'Foreach Loop Container', which contains a 'Validate TrainDetails' task. The output of the loop is connected to a 'Save NewData in Destination' task. The 'SSIS Toolbox' on the left lists various tasks and containers. The 'Variables' pane at the bottom shows two variables: 'StationIdNumber' (String) and 'StationIdMaster' (Object). The 'Git Changes' pane on the right provides instructions on how to initialize, clone, and use Git repositories. The 'Getting Started (SSIS)' pane at the bottom right offers a welcome message and links to sample tutorials.

SSIS Toolbox

- Search SSIS Toolbox
- Favorites
 - Data Flow Task
 - Execute SQL Task
- Common
 - Analysis Services Processing Task
 - Bulk Insert Task
 - Data Profiling Task
 - Execute Package Task
 - Execute Process Task
 - Expression Task
 - File System Task
 - FTP Task
 - Hadoop File System Task
 - Hadoop Hive Task
 - Hadoop Pig Task
 - Script Task
 - Send Mail Task
 - Web Service Task
 - XML Task
- Azure
- Containers
 - For Loop Container
 - Foreach Loop Container
 - Sequence Container
- Other Tasks
- Package Parts

Package.dtsx [Design]

Control Flow | Data Flow | Parameters | Event Handlers | Package Explorer | Execution Results

Read TrainDetails_Changes → Foreach Loop Container (Validate TrainDetails) → Save NewData in Destination

Variables

Name	Scope	Data type	Value	Expression
StationIdNumber	Package	String		
StationIdMaster	Package	Object	System.Object	

Git Changes

Initialize, back up, and share your repository.

Create Git Repository...

Get code from an online repository like GitHub or Azure DevOps.

Clone Repository...

Use the **Git** menu to access your existing local repositories.

To learn more about how to use Git in Visual Studio [read our docs](#).

Getting Started (SSIS)

Welcome to SQL Server Integration Services (SSIS).

Samples

- [My First SSIS Solution](#)
This sample serves as an introduction to the SQL Server Integration Services development environment
- [Control Flow Basics](#)
This sample introduces the fundamental concepts of the control flow
- [Data Flow Basics](#)
This sample introduces the fundamental concepts of the data flow

Execute SQL Task

Executes SQL statements or stored procedures in a relational database. For example, truncate a table before starting a load, or...

[Find Samples](#)

APPLYING SCD - SSIS CHANGES

SQLQuery24.sql - onyii.SAIT_VIRGINTRAINS (ONYII\Charity (67)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

SAIT_VIRGINTRAINS Execute

Object Explorer

Connect

- SAIT_BuildingPermitsDWH
- SAIT_SCD_ONYII
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.InvoiceSalesSCD
 - dbo.InvoiceSalesSCD_Changes
 - Columns
 - Keys
 - Constraints
 - Triggers
 - Indexes
 - Statistics
 - dbo.WarehouseSports_Sales
 - dbo.WarehouseSports_Sales_Changes
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Service Broker
 - Storage
 - Security
- SAIT_YYCCrimeDWH
- SAIT_VIRGINTRAINS
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.TrainDetails
 - dbo.TrainDetails_Changes
 - dbo.Trains.CustomerAccount

SQLQuery24.sql - o...ONYII\Charity (67)) SQLQuery29.sql - o...ONYII\Charity (71))* Sales

```
/****** Script for SelectTopNRows command from SSMS *****/  
SELECT TOP (1000) [StationId]  
                , [StartDate]  
                , [TrainRoute]  
                , [CurrentIndicator]  
                , [DateUpdate]  
FROM [SAIT_VIRGINTRAINS].[dbo].[TrainDetails]
```

100 %

Results Messages

	StationId	StartDate	TrainRoute	CurrentIndicator	DateUpdate
1	1001A	14/02/2007	London-Scotland	1	NULL
2	1002A	25/03/2007	London-Liverpool	1	NULL
3	1003A	18/04/2007	London-West Midlands	1	NULL
4	1004A	19/04/2007	London-Chester	1	NULL
5	1005A	19/04/2007	London-Manchester	1	NULL
6	1006B	25/06/2007	London-Holyhead	1	NULL
7	1007B	25/06/2007	London-Shrewsbury	1	NULL
8	1008B	25/07/2007	London-Wrexham	1	NULL
9	1009B	30/08/2007	London-Blackpool	1	NULL

APPLYING SCD - SSIS CHANGES

The screenshot displays the SQL Server Enterprise Manager interface. The left pane shows the Object Explorer with the database SAIT_VIRGINTRAINS expanded, highlighting the dbo.TrainDetails table. The right pane shows a SQL query window with the following query:

```
select * FROM [SAIT_VIRGINTRAINS].[dbo].[TrainDetails]
```

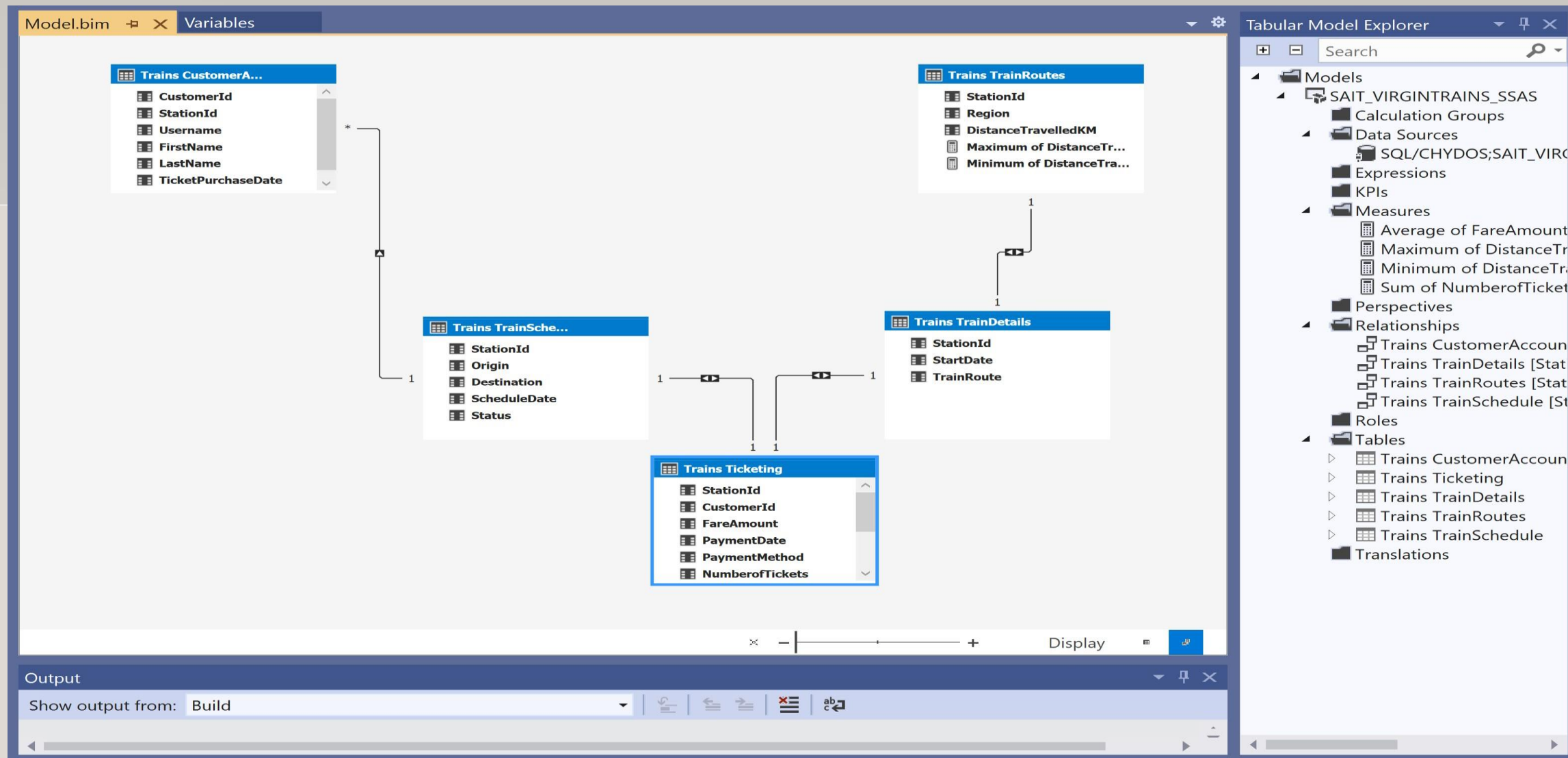
The query results are displayed in a table with the following columns: StationId, StartDate, TrainRoute, CurrentIndicator, and DateUpdate. The results show 14 rows of data, with the 13th row (StationId 1005A) highlighted.

	StationId	StartDate	TrainRoute	CurrentIndicator	DateUpdate
1	1001A	14/02/2007	London-Scotland	0	NULL
2	1002A	25/03/2007	London-Liverpool	1	NULL
3	1003A	18/04/2007	London-West Midlands	1	NULL
4	1004A	19/04/2007	London-Chester	0	NULL
5	1005A	19/04/2007	London-Manchester	0	NULL
6	1006B	25/06/2007	London-Holyhead	1	NULL
7	1007B	25/06/2007	London-Shrewsbury	1	NULL
8	1008B	25/07/2007	London-Wrexham	1	NULL
9	1009B	30/08/2007	London-Blackpool	1	NULL
10	1001A	14/02/2007	London-Aberdeen	1	2007-03-08 10:15
11	1005A	21/06/2007	London-Chester	0	2007-05-11 03:15
12	1005A	21/06/2007	London-Chester	0	2007-05-11 03:15
13	1005A	21/06/2007	London-Chester	1	2007-05-11 03:15
14	1004A	11/02/2007	London-Liverpool	1	2007-02-08 12:15

The status bar at the bottom indicates "Query executed successfully."

TASK 5

SSAS PLATFORM/BUSINESS MODEL (RELATIONSHIPS)



SSAS PLATFORM/BUSINESS MODEL (MEASURES)

Model.bim* Variables							
[StationId]							
Stati... CustomerId FareAmount PaymentDate PaymentMethod NumberofTickets TripDate TicketType Add Column							
1 22330	1001A	...	85	14/02/2008	Mobile Device	1 15/02/2008	First Class
2 22331	1002A	...	105	25/03/2008	Credit Card	2 30/03/2008	First Class
3 22332	1003A	...	140	18/04/2008	Contactless Card	2 20/04/2008	Flexi Season
4 22333	1004A	...	110	19/04/2008	Debit Card	4 26/04/2008	Off-Peak
5 22334	1005A	...	115	19/04/2008	Credit Card	1 28/04/2008	First Class
6 22335	1006B	...	125	25/06/2008	Debit Card	2 25/07/2008	Off-Peak
7 22336	1007B	...	95	25/06/2008	Online	1 29/07/2008	Flexi Season
8 22337	1008B	...	130	25/07/2008	Credit Card	3 30/08/2008	Advance
9 22338	1009B	...	90	30/08/2008	Credit Card	1 25/09/2008	Anytime

Model.bim* Variables			
[DistanceTravelledKM]			
Stati... Region DistanceTravelledKM Add Column			
1 1001A	Eastern	21	
2 1002A	North ...	18	
3 1003A	Scotlan...	30	
4 1004A	Southern	50	
5 1005A	Western	41	
6 1006B	North ...	21	
7 1007B	Eastern	45	
8 1008B	Western	35	
9 1009B	Scotlan...	58	

Average of FareAmount:	Sum of NumberofTickets:	Maximum of DistanceTravelledKM:
110.5555555555	17	58
		Minimum of DistanceTravelledKM:
		18

SSAS PLATFORM/BUSINESS MODEL (PUBLISHED TO SQL)

The screenshot displays the SQL Server Enterprise Manager interface, specifically the SSAS Platform/Business Model (Published to SQL) view. The interface is divided into several panes:

- Object Explorer:** Shows the server hierarchy for CHYDOS (SQL Server 15.0.2000.5 - sa). The 'Databases' folder is expanded, showing various databases including AdventureWorks2019, AdventureWorksDW2019, SAIT_BUILDINGPERMITSDW, SAIT_SCD_SUMMER2022, SAIT_VIRGINTRAINS, and SAIT_YYCCrimeDWH.
- Model [Browse]:** The main pane shows the 'Model' browser. The 'Metadata' tab is selected, displaying a search bar and a list of measures and KPIs. The 'Measures' list includes 'Trains CustomerAccount', 'Trains Ticketing', 'Trains TrainDetails', 'Trains TrainRoutes', and 'Trains TrainSchedule'. The 'KPIs' list is empty.
- Dimension:** A dropdown menu is open, showing '<Select dimension>'. The 'Hierarchy' column is visible, showing the dimension hierarchy.
- Operator:** A dropdown menu is open, showing '<Select operator>'. The 'Filter Expression' column is visible, showing the filter expression.
- Paramet...:** A dropdown menu is open, showing '<Select parameter>'. The 'Parameter' column is visible, showing the parameter name.

The interface also includes a 'Calculated Members' section at the bottom, which is currently empty. A message at the bottom of the main pane reads: 'Drag levels or measures here to add to the query.'

TASK 6

SSAS PLATFORM/BUSINESS MODEL (SCENERIO 1)

1.What was the route and the maximum distanceTravelled by Customer "22337"

Ans: Customer "22337" (Fabio Viera) travelled via London-Blackpool and did a maximum of travel distance

The screenshot displays the SSAS Enterprise Manager interface. At the top, there's a toolbar with icons for 'Edit as Text', 'Import...', and a dropdown menu set to 'MDX'. Below this, the 'Model' pane on the left shows a tree structure with 'Metadata' and 'Measure Group' sections. The 'Measures' section is expanded, showing a hierarchy: 'Trains Ticketing' > 'Trains TrainRoutes' > 'Maximum of DistanceTravelledKM'. The 'KPIs' section is also expanded, showing 'Trains CustomerAccount', 'Trains Ticketing', and 'Trains TrainDetails'. The 'Calculated Members' section is empty. The main pane on the right shows the MDX query results. It includes a table with columns: 'Dimension', 'Hierarchy', 'Operator', 'Filter Expression', and 'Parameter'. The first row shows 'Trains CustomerAccount' with hierarchy 'CustomerId', operator 'Equal', and filter expression '{ 22337 }'. Below this, a table displays the query results for CustomerId 22337, showing the first name 'Fabio', last name 'Viera', and the maximum distance travelled '58' for the route 'London-B...'. The table has columns: 'CustomerId', 'FirstName', 'LastName', 'TrainRoute', and 'Maximum of DistanceTrave...'. The data row shows: '22337', 'Fabio', 'Viera', 'London-B...', and '58'.

Dimension	Hierarchy	Operator	Filter Expression	Parameter
Trains CustomerAccount	CustomerId	Equal	{ 22337 }	
<Select dimension>				

CustomerId	FirstName	LastName	TrainRoute	Maximum of DistanceTrave...
22337	Fabio	Viera	London-B...	58

SSAS PLATFORM/BUSINESS MODEL (SCENERIO 2)

2.What is the average fare amount for first class tickets paid by customers?

1. Ans: £101.7

Model

Metadata

Search Model

Measure Group:

<All>

Trains Ticketing

- CustomerId
- FareAmount
- NumberOfTickets
- PaymentDate
- PaymentMethod
- StationId
- TicketType
- TripDate

Calculated Members

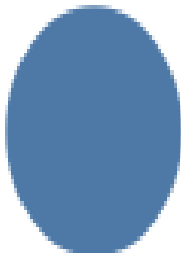
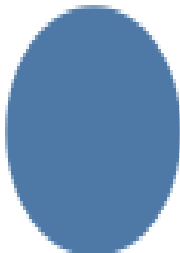

Dimension	Hierarchy	Operator	Filter Expression	Paramet...
Trains Ticketing	TicketType	Equal	{ First Class }	<input type="checkbox"/>
<Select dimension>				<input type="checkbox"/>

TicketPurchaseDate	FirstName	LastName	TicketType	Average of FareAmount
14/02/2008	John	Anthony	First Class	101.666666666667
18/04/2008	Michael	Angelo	First Class	101.666666666667
19/04/2008	Daniel	James	First Class	101.666666666667
19/04/2008	Jeff	Jeminez	First Class	101.666666666667
25/03/2008	Adams	Adams	First Class	101.666666666667
25/06/2008	Emma	Wayne	First Class	101.666666666667
25/06/2008	Patrick	Evra	First Class	101.666666666667
25/07/2008	Fabio	Viera	First Class	101.666666666667
30/08/2008	Issa	Newman	First Class	101.666666666667

TASK 9

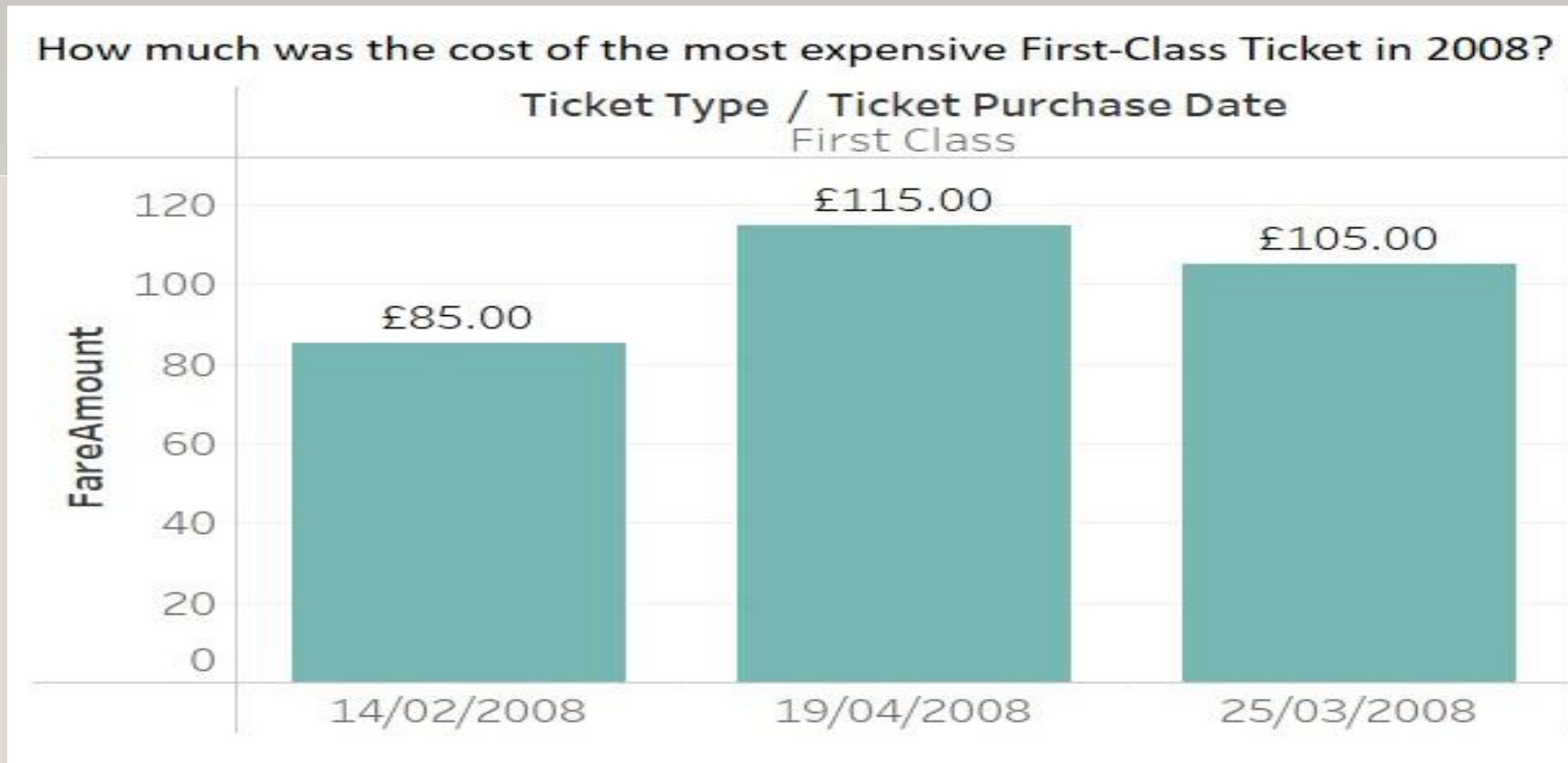
VISUALIZATION (TABLEAU)

Business question 1 [What were the Names of the first 3 customers to purchase Tickets in 2008 and what Route did they purchase?]

London-Liverpool Adams 25/03/2008	London-Scotland John 14/02/2008	London-West Midlands Michael 18/04/2008
		

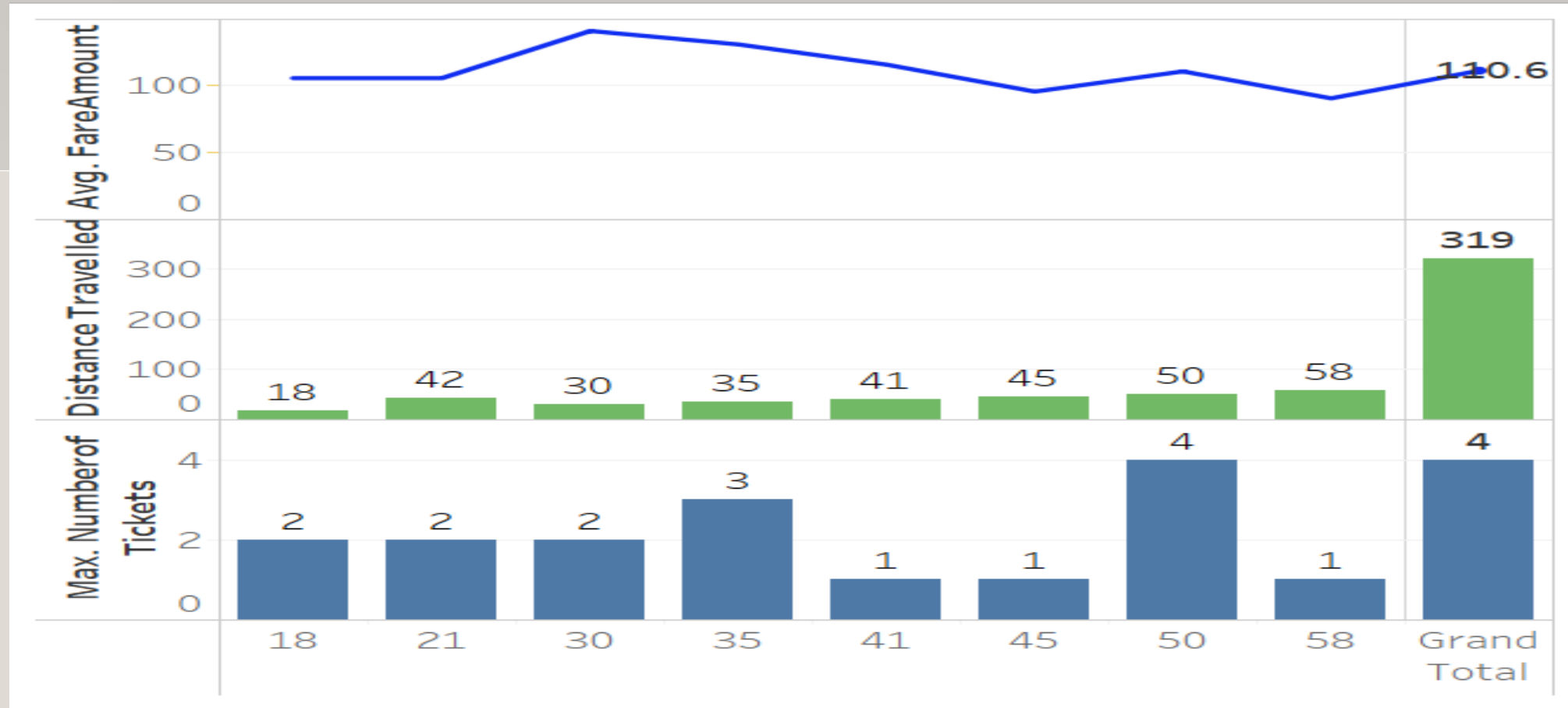
Question #1 Answer: Adams, John and Michael were the first 3 customers to purchase tickets in 2008 and they each purchased the train route “London-Liverpool”, “London-Scotland” and “London-West Midlands” respectively.

Business question 2 [How much was the cost of the most expensive First-Class Ticket in 2008?]



Question #2 Answer: The cost of the most expensive First-Class Ticket in 2008 was £115.00

Business question 3 [What were the total distance travelled, most ticket purchased by a customer and the average fare price of all travels made?]



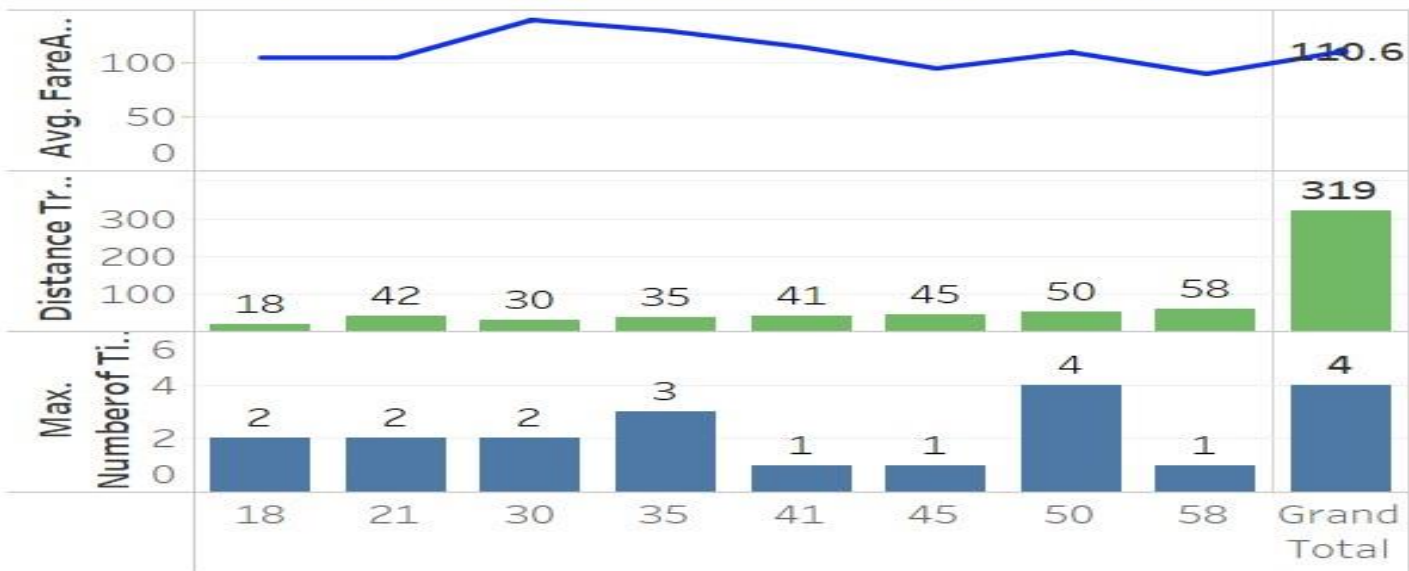
Question #3 Answer: The total Distance Traveled is 319 km, the most Tickets sold were 4(tickets) and the average fare of all travels made was £110

Dashboard in Tableau

What were the Names of the first 3 customers to purchase Tickets in 2008 and what Route did they purchase?

London-Liverpool Adams 25/03/2008	London-Scotland John 14/02/2008	London-West Midlan.. Michael 18/04/2008
		

What were the total distance travelled, most ticket purchased by a customer and the average fare price of all travels made?



How much was the cost of the most expensive First-Class Ticket in 2008?





THANK YOU