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1 --Data Panel
2 SELECT
3     d.SalesOrderID,
4     p.ProductID,
5     d.UnitPrice,
6     p.[Name] AS ProductName,
7     d.UnitPriceDiscount,
8     d.OrderQty,
9     h.OrderDate,
10    p.StandardCost,
11    d.LineTotal,
12    (d.UnitPrice * (1.0 - d.UnitPriceDiscount) - p.StandardCost) AS UnitProfit,
13    h.CustomerID,
14    h.ModifiedDate,
15    sp.[Name] AS StateProvince,
16    cr.[Name] AS Country,
17    cr.CountryRegionCode,
18    a.StateProvinceID,
19    a.City,
20    pct.[Name] AS CategoryName,
21    psc.[Name] AS SubCategoryName,
22    pct.ProductCategoryID,
23    psc.ProductSubcategoryID
24 INTO #panel_Project
25 FROM Sales.SalesOrderDetail AS d
26     JOIN Sales.SalesOrderHeader AS h
27     ON h.SalesOrderID = d.SalesOrderID
28     JOIN Production.Product AS p
29     ON p.ProductID = d.ProductID
30     JOIN Person.Address AS a
31     ON a.AddressID = h.ShipToAddressID
32     JOIN Person.StateProvince AS sp
33     ON sp.StateProvinceID = a.StateProvinceID
34     JOIN Person.CountryRegion AS cr
35     ON cr.CountryRegionCode = sp.CountryRegionCode
36     LEFT JOIN Production.ProductSubcategory AS psc
37     ON p.ProductSubcategoryID = psc.ProductSubcategoryID
38     LEFT JOIN Production.ProductCategory AS pct
39     ON psc.ProductCategoryID = pct.ProductCategoryID
40
41 --Data Check
42 --Número de colunas
43 SELECT COUNT(*) AS TotalRows FROM #panel_Project
44
45 --Contagem de NULL's por coluna
46 SELECT
47     SUM(CASE WHEN SalesOrderID IS NULL THEN 1 ELSE 0 END) AS Null_SalesOrderID,
48     SUM(CASE WHEN ProductID IS NULL THEN 1 ELSE 0 END) AS Null_ProductID,
49     SUM(CASE WHEN UnitPrice IS NULL THEN 1 ELSE 0 END) AS Null_UnitPrice,
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...Curso DaTa Analyst\Projeto SQL\Documentacao SQL.sql 2

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50    SUM(CASE WHEN ProductName IS NULL THEN 1 ELSE 0 END) AS Null_ProductName,
51    SUM(CASE WHEN UnitPriceDiscount IS NULL THEN 1 ELSE 0 END) AS Null_UnitPriceDiscount,
52    SUM(CASE WHEN OrderQty IS NULL THEN 1 ELSE 0 END) AS Null_OrderQty,
53    SUM(CASE WHEN OrderDate IS NULL THEN 1 ELSE 0 END) AS Null_OrderDate,
54    SUM(CASE WHEN StandardCost IS NULL THEN 1 ELSE 0 END) AS Null_StandardCost,
55    SUM(CASE WHEN LineTotal IS NULL THEN 1 ELSE 0 END) AS Null_LineTotal,
56    SUM(CASE WHEN UnitProfit IS NULL THEN 1 ELSE 0 END) AS Null_UnitProfit,
57    SUM(CASE WHEN CustomerID IS NULL THEN 1 ELSE 0 END) AS Null_CustomerID,
58    SUM(CASE WHEN Country IS NULL THEN 1 ELSE 0 END) AS Null_Country,
59    SUM(CASE WHEN CountryRegionCode IS NULL THEN 1 ELSE 0 END) AS Null_CountryRegionCode,
60    SUM(CASE WHEN CategoryName IS NULL THEN 1 ELSE 0 END) AS Null_CategoryName,
61    SUM(CASE WHEN SubCategoryName IS NULL THEN 1 ELSE 0 END) AS Null_SubCategoryName
62 FROM #panel_Project
63
64 --Contagem de duplicados no Data Panel
65 SELECT
66     SalesOrderID, ProductID, COUNT(*) AS DuplicateCount
67 FROM #panel_Project
68 GROUP BY SalesOrderID, ProductID
69 HAVING COUNT(*) > 1
70
71 --Quantidades iguais a zero ou negativas
72 SELECT *
73 FROM #panel_Project
74 WHERE OrderQty <= 0
75
76 --Preços iguais a 0 ou negativos
77 SELECT *
78 FROM #panel_Project
79 WHERE UnitPrice <= 0 OR StandardCost < 0
80
81 --Lucros Negativos(UnitProfit)
82 SELECT *
83 FROM #panel_Project
84 WHERE UnitProfit < 0
85 ORDER BY UnitProfit ASC
86
87 --Consistência da data
88 SELECT
89     MIN(OrderDate) AS MinDate,
90     MAX(OrderDate) AS MaxDate
91 FROM #panel_Project

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92
93 --Check se algum produto tem categoria mas não tem subcategoria
94 SELECT *
95 FROM #panel_Project
96 WHERE SubCategoryName IS NULL AND CategoryName IS NOT NULL
97
98 --Check se alguma subcategoria pertence a mais do que uma categoria
99 SELECT SubCategoryName, COUNT(DISTINCT CategoryName) AS DifferentCategories
100 FROM #panel_Project
101 GROUP BY SubCategoryName
102 HAVING COUNT(DISTINCT CategoryName) > 1
103
104 --Análise de Vendas
105 --Análise da Sazonalidade
106 --Receita e lucro da empresa ao longo dos meses:
107 SELECT
108 Year(OrderDate) AS Year,
109 Month(OrderDate) AS Month,
110 Sum(LineTotal) AS Revenue,
111 Sum(LineTotal - StandardCost * OrderQty) AS Profit
112 FROM #panel_Project
113 GROUP BY Year(OrderDate), Month(OrderDate)
114 ORDER BY Year, Month
115
116 --Índice mensal de receita e lucro da empresa (100 = média global):
117 With MonthlyData as
118 (Select Year(OrderDate) as Year,
119 Month(OrderDate) as Month,
120 Sum(LineTotal) as Revenue,
121 Sum(LineTotal - (StandardCost * OrderQty)) as Profit
122 From #panel_Project
123 Group by Year(OrderDate), Month(OrderDate))
124 Select Year,
125     Month,
126     Revenue,
127     Profit,
128     Cast(Revenue * 100/Avg(Revenue) over() as Decimal(10,2)) as PercRevenueFromAvg,
129     Cast(Profit * 100/Avg(Profit) over() as Decimal(10,2)) as PercProfitFromAvg
130 From MonthlyData
131 Order by Year, Month
132
133 --Tendência dos dados da empresa
134 --Receita, lucro e margem de lucro da empresa ao longo dos trimestres:
135 WITH Q AS (
136     SELECT
137         YEAR(OrderDate) AS Year,
138         DATEPART(QUARTER, OrderDate) AS Quarter,
139         SUM(LineTotal) AS Revenue,
140         SUM(LineTotal - StandardCost * OrderQty) AS Profit
141     FROM #panel_Project
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142     GROUP BY YEAR(OrderDate), DATEPART(QUARTER, OrderDate)
143 )
144 SELECT
145     Year,
146     Quarter,
147     Revenue,
148     Profit,
149     Profit / Revenue AS ProfitMargin
150 FROM Q
151 ORDER BY Year, Quarter
152
153 --Evolução mensal de novos clientes
154 WITH FirstPurchase AS (
155     SELECT
156         CustomerID,
157         MIN(CAST(OrderDate AS date)) AS FirstDate
158     FROM #panel_Project
159     GROUP BY CustomerID
160 )
161 SELECT
162     YEAR(FirstDate) AS FirstYear,
163     MONTH(FirstDate) AS FirstMonth,
164     COUNT(*) AS NewClients
165 FROM FirstPurchase
166 GROUP BY YEAR(FirstDate), MONTH(FirstDate)
167 ORDER BY FirstYear, FirstMonth
168
169 --Análise de cada região
170 --Receita e Lucro de cada País ao longo dos meses:
171 SELECT
172     YEAR(OrderDate) AS Year,
173     MONTH(OrderDate) AS Month,
174     Country,
175     SUM(LineTotal) AS Revenue,
176     SUM(LineTotal - StandardCost * OrderQty) AS Profit
177 FROM #panel_Project
178 GROUP BY YEAR(OrderDate), MONTH(OrderDate), Country
179 ORDER BY Country, Year, Month
180
181 --Vendas mensais em novas regiões:
182 SELECT
183     YEAR(FirstMonth) AS Year,
184     MONTH(FirstMonth) AS Month,
185     StateProvince AS StateName,
186     Country AS CountryName
187 FROM (
188     SELECT
189         StateProvinceID,
190         StateProvince,
191         Country,
192         DATEFROMPARTS(YEAR(MIN(OrderDate)), MONTH(MIN(OrderDate)), 1) AS FirstMonth
193     FROM #panel_Project
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194      WHERE StateProvinceID IS NOT NULL
195          GROUP BY StateProvinceID, StateProvince, Country
196      ) s
197  ORDER BY Year, Month, CountryName, StateName
198
199 --Número de estados com vendas por país (Trimestral):
200 WITH T AS (
201     SELECT
202         YEAR(OrderDate) AS [Year],
203         DATEPART(QUARTER, OrderDate) AS [Quarter],
204         Country,
205         COUNT(DISTINCT StateProvinceID) AS StatesInQuarter
206     FROM #panel_Project
207     WHERE StateProvinceID IS NOT NULL
208     GROUP BY YEAR(OrderDate), DATEPART(QUARTER, OrderDate), Country
209 )
210 SELECT
211     [Year], [Quarter],
212     SUM(CASE WHEN Country = 'Australia' THEN StatesInQuarter
213             ELSE 0 END) AS Australia,
214     SUM(CASE WHEN Country = 'Canada' THEN StatesInQuarter
215             ELSE 0 END) AS Canada,
216     SUM(CASE WHEN Country = 'France' THEN StatesInQuarter
217             ELSE 0 END) AS France,
218     SUM(CASE WHEN Country = 'Germany' THEN StatesInQuarter
219             ELSE 0 END) AS Germany,
220     SUM(CASE WHEN Country = 'United Kingdom' THEN StatesInQuarter
221             ELSE 0 END) AS [United Kingdom],
222     SUM(CASE WHEN Country = 'United States' THEN StatesInQuarter
223             ELSE 0 END) AS [United States]
224     FROM T
225     GROUP BY [Year], [Quarter]
226     ORDER BY [Year], [Quarter]
227
228 --Top 10 estados com maiores lucros:
229 SELECT TOP (10)
230     StateProvince,
231     Country,
232     SUM(LineTotal) AS Revenue,
233     SUM(UnitProfit * OrderQty) AS Profit,
234     SUM(UnitProfit * OrderQty) / (SUM(LineTotal)) AS ProfitMargin
235     FROM #panel_Project
236     WHERE StateProvinceID IS NOT NULL
237     GROUP BY StateProvince, Country
238     ORDER BY Profit DESC
239
240 --Receita e lucro total de cada país durante o período 2011-2014:
241 SELECT
242     Country,
243     SUM(LineTotal) AS Revenue,
244     SUM(UnitProfit * OrderQty) AS Profit,
245     SUM(UnitProfit * OrderQty) / SUM(LineTotal) AS ProfitMargin
246     FROM #panel_Project
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241 GROUP BY Country
242 ORDER BY Profit desc
243
244 --Análise por categoria
245 --Categorias mais lucrativas:
246 SELECT
247     CategoryName,
248     SubCategoryName,
249     SUM(LineTotal - (OrderQty * StandardCost)) AS TotalProfit
250 FROM #panel_Project
251 GROUP BY CategoryName, SubCategoryName
252 ORDER BY TotalProfit DESC
253
254 --Top 5 das subcategories mais lucrativas:
255 SELECT top 5
256     CategoryName,
257     SubCategoryName,
258     SUM(LineTotal - (OrderQty * StandardCost)) AS TotalProfit
259 FROM #panel_Project
260 GROUP BY CategoryName, SubCategoryName
261 ORDER BY TotalProfit DESC
262
263 --Top 5 das subcategorias mais vendidas:
264 SELECT top 5
265     CategoryName,
266     SubCategoryName,
267     SUM(OrderQty) AS TotalUnitsSold
268 FROM #panel_Project
269 GROUP BY CategoryName, SubCategoryName
270 ORDER BY TotalUnitsSold DESC
```