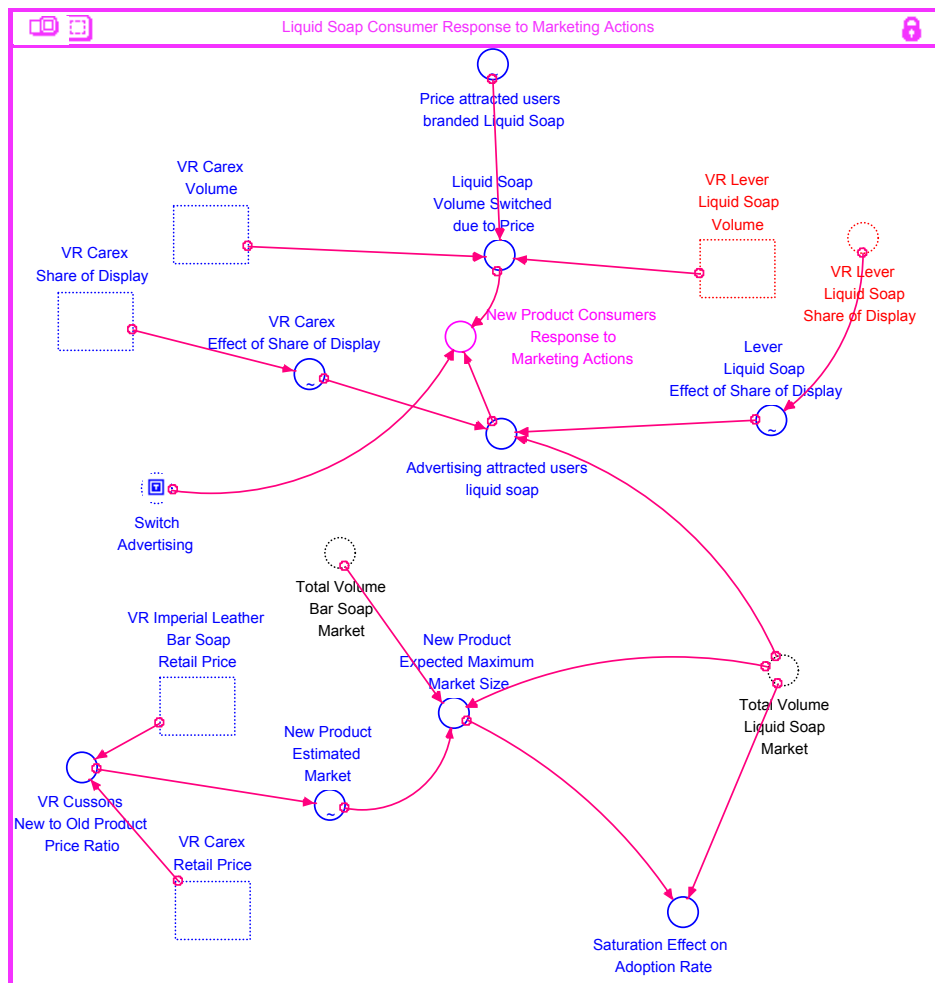


APPENDIX – SECTOR MAP AND EQUATION LISTING

The model was built using itthink (High Performance Inc, 2003). All parameter values were deleted for confidentiality purposes. The equations are ordered by sector.

Market



$$\text{Price_attracted_users_branded_Liquid_Soap} = \text{GRAPH}(((\text{VR_Carex_Effective_Retail_Price}/\text{VR_Lever_Liquid_Soap_Effective_Retail_Price}))$$

$$\text{Liquid_Soap_Volume_Switched_due_to_Price} = \text{IF}(\text{Price_attracted_users_branded_Liquid_Soap} \geq 0) \text{ THEN}(-\text{VR_Lever_Liquid_Soap_Volume} * \text{Price_attracted_users_branded_Liquid_Soap}) \text{ ELSE}(-\text{VR_Carex_Volume} * \text{Price_attracted_users_branded_Liquid_Soap})$$

$$\text{New_Product_Consumers_Response_to_Marketing_Actions} = \text{Advertising_attracted_users_liquid_soap} + \text{Liquid_Soap_Volume_Switched_due_to_Price}$$

Advertising_attracted_users_liquid_soap = Total_Volume_Liquid_Soap_Market *
 (VR_Lever_Liquid_Soap_Expected_Effect_of_Advertising*
 ((Lever_Faberge_Liquid_Soap_Effect_of_Share_of_Display))-
 VR_Carex_Expected_Effect_of_Advertising * (VR_Carex_Effect_of_Share_of_Display))

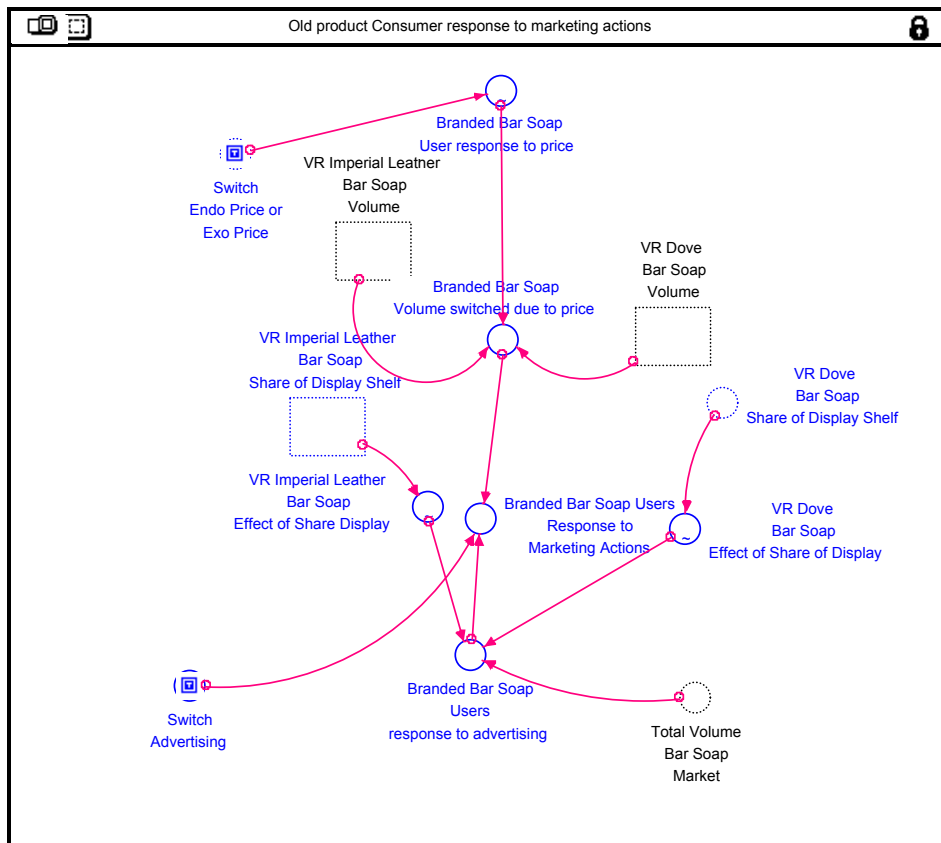
VR_Carex_Effect_of_Share_of_Display = GRAPH(VR_Carex_Share_of_Display)

VR_Lever_Liquid_Soap_Effect_of_Share_of_Display =
 GRAPH(VR_Lever_Liquid_Soap_Share_of_Display)

Saturation_Effect_on_Adoption_Rate = (Total_Volume_Liquid_Soap_Market)/
 New_Product_Expected_Maximum_Market_Size

VR_Cussons_New_to_Old_Product_Price_Ratio =
 VR_Carex_Retail_Price/VR_Imperial_Leather_Bar_Soap_Retail_Price

New_Product_Estimated_Market = GRAPH(VR_Cussons_New_to_Old_Product_Price_Ratio)



Branded_Bar_Soap_User_response_to_price =
 GRAPH((VR_Imperial_Leather_Bar_Soap_Effective_Retail_Price /
 VR_Dove_Bar_Soap_Effective_Retail_Price))

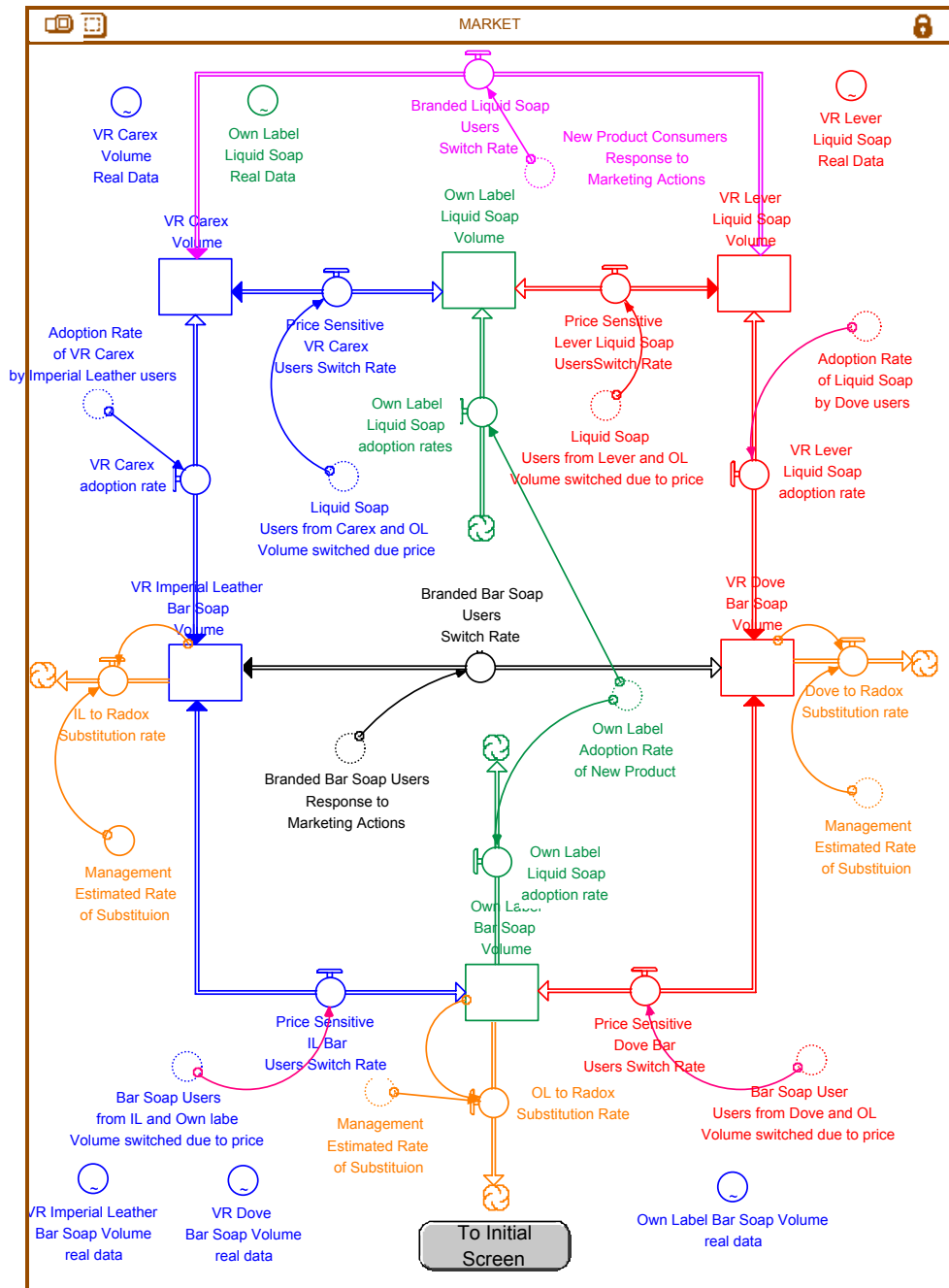
Branded_Bar_Soap_Volume_switched_due_to_price = IF
 (Branded_Bar_Soap_User_response_to_price >= 0) THEN(-
 VR_Dove_Bar_Soap_Volume * Branded_Bar_Soap_User_response_to_price)
 ELSE(-VR_Imperial_Leather_Bar_Soap_Volume * Branded_Bar_Soap_User_response_to_price)

Branded_Bar_Soap_Users_Response_to_Marketing_Actions =
 Branded_Bar_Soap_Users_response_to_advertising + Branded_Bar_Soap_Volume_switched_due_to_price

$$\text{Branded_Bar_Soap_Users_response_to_advertising} = \text{Total_Volume_Bar_Soap_Market} * (\text{VR_Dove_Expected_Effect_of_Adverstising} * ((\text{VR_Dove_Bar_Soap_Effect_of_Share_of_Display}) - \text{VR_Imperial_Leather_Expected_Effect_of_Advertising} * (\text{VR_Imperial_Leather_Bar_Soap_Effect_of_Share_Display})))$$

$$\text{VR_Imperial_Leather_Bar_Soap_Effect_of_Share_Display} = \text{GRAPH}(\text{VR_Imperial_Leather_Bar_Soap_Share_of_Display_Shelf})$$

$$\text{VR_Dove_Bar_Soap_Effect_of_Share_of_Display} = \text{GRAPH}(\text{VR_Dove_Bar_Soap_Share_of_Display_Shelf})$$



$$\text{VR_Carex_Volume}(t) = \text{VR_Carex_Volume}(t - dt) + (\text{VR_Carex_adoption_rate} - \text{Branded_Liquid_Soap_Users_Switch_Rate} - \text{Price_Sensitive_VR_Carex_Users_Switch_Rate}) * dt$$
 INIT VR_Carex_Volume =

INFLOWS:

VR_Carex_adoption_rate = Adoption_Rate_of_VR_Carex_by_Imperial_Leather_users

OUTFLOWS:

Branded_Liquid_Soap_Users_Switch_Rate =

New_Product_Consumers_Response_to_Marketing_Actions

Price_Sensitive_VR_Carex_Users_Switch_Rate =

Liquid_Soap_Users_from_Carex_and_OL_Volume_switched_due_price

$$\text{Own_Label_Liquid_Soap_Volume}(t) = \text{Own_Label_Liquid_Soap_Volume}(t - dt) +$$

(Price_Sensitive_VR_Carex_Users_Switch_Rate +

Price_Sensitive_Lever_Liquid_Soap_UsersSwitch_Rate +

Own_Label_Liquid_Soap_adoption_rates) * dt

INIT Own_Label_Liquid_Soap_Volume =

INFLOWS:

Price_Sensitive_VR_Carex_Users_Switch_Rate =

Liquid_Soap_Users_from_Carex_and_OL_Volume_switched_due_price

Price_Sensitive_Lever_Liquid_Soap_UsersSwitch_Rate =

Liquid_Soap_Users_from_Lever_and_OL_Volume_switched_due_to_price

Own_Label_Liquid_Soap_adoption_rates = Own_Label_Adoption_Rate_of_New_Product

$$\text{VR_Lever_Liquid_Soap_Volume}(t) = \text{VR_Lever_Liquid_Soap_Volume}(t - dt) +$$

(VR_Lever_Liquid_Soap_adoption_rate + Branded_Liquid_Soap_Users_Switch_Rate -

Price_Sensitive_Lever_Liquid_Soap_UsersSwitch_Rate) * dt

INIT VR_Lever_Liquid_Soap_Volume =

INFLOWS:

VR_Lever_Liquid_Soap_adoption_rate = Adoption_Rate_of_Liquid_Soap_by_Dove_users

Branded_Liquid_Soap_Users_Switch_Rate =

New_Product_Consumers_Response_to_Marketing_Actions

OUTFLOWS:

Price_Sensitive_Lever_Liquid_Soap_UsersSwitch_Rate =

Liquid_Soap_Users_from_Lever_and_OL_Volume_switched_due_to_price

$$\text{VR_Imperial_Leather_Bar_Soap_Volume}(t) = \text{VR_Imperial_Leather_Bar_Soap_Volume}(t - dt) + (-$$

Branded_Bar_Soap_Users_Switch_Rate - Price_Sensitive_IL_Bar_Users_Switch_Rate -

IL_to_Radox_Substitution_rate - VR_Carex_adoption_rate) * dt

INIT VR_Imperial_Leather_Bar_Soap_Volume =

OUTFLOWS:

Branded_Bar_Soap_Users_Switch_Rate =

Branded_Bar_Soap_Users_Response_to_Marketing_Actions

Price_Sensitive_IL_Bar_Users_Switch_Rate =

Bar_Soap_Users_from_IL_and_Own_labe_Volume_switched_due_to_price

IL_to_Radox_Substitution_rate =

VR_Imperial_Leather_Bar_Soap_Volume*Management_Estimated_Rate_of_Substituion

VR_Carex_adoption_rate = Adoption_Rate_of_VR_Carex_by_Imperial_Leather_users

$$\text{Own_Label_Bar_Soap_Volume}(t) = \text{Own_Label_Bar_Soap_Volume}(t - dt) +$$

(Price_Sensitive_IL_Bar_Users_Switch_Rate + Price_Sensitive_Dove_Bar_Users_Switch_Rate -

OL_to_Radox_Substitution_Rate - Own_Label_Liquid_Soap_adoption_rate) * dt

INIT Own_Label_Bar_Soap_Volume =

INFLOWS:

Price_Sensitive_IL_Bar_Users_Switch_Rate =

Bar_Soap_Users_from_IL_and_Own_labe_Volume_switched_due_to_price

Price_Sensitive_Dove_Bar_Users_Switch_Rate =

Bar_Soap_User_Users_from_Dove_and_OL_Volume_switched_due_to_price

OUTFLOWS:

OL_to_Radox_Substitution_Rate =

Own_Label_Bar_Soap_Volume*Management_Estimated_Rate_of_Substituion

Own_Label_Liquid_Soap_adoption_rate = Own_Label_Adoption_Rate_of_New_Product

$VR_Dove_Bar_Soap_Volume(t) = VR_Dove_Bar_Soap_Volume(t - dt) +$
 $(Branded_Bar_Soap_Users_Switch_Rate - Price_Sensitive_Dove_Bar_Users_Switch_Rate -$
 $Dove_to_Radox_Substitution_rate - VR_Lever_Liquid_Soap_adoption_rate) * dt$
INIT VR_Dove_Bar_Soap_Volume =
INFLOWS:
Branded_Bar_Soap_Users_Switch_Rate =
 Branded_Bar_Soap_Users_Response_to_Marketing_Actions
OUTFLOWS:
Price_Sensitive_Dove_Bar_Users_Switch_Rate =
 Bar_Soap_User_Users_from_Dove_and_OL_Volume_switched_due_to_price
Dove_to_Radox_Substitution_rate =
 VR_Dove_Bar_Soap_Volume * Management_Estimated_Rate_of_Substitution
VR_Lever_Liquid_Soap_adoption_rate = Adoption_Rate_of_Liquid_Soap_by_Dove_users

Management_Estimated_Rate_of_Substitution =

Own_Label_Bar_Soap_Volume_real_data = GRAPH(TIME)

Own_Label_Liquid_Soap_Real_Data = GRAPH(TIME)

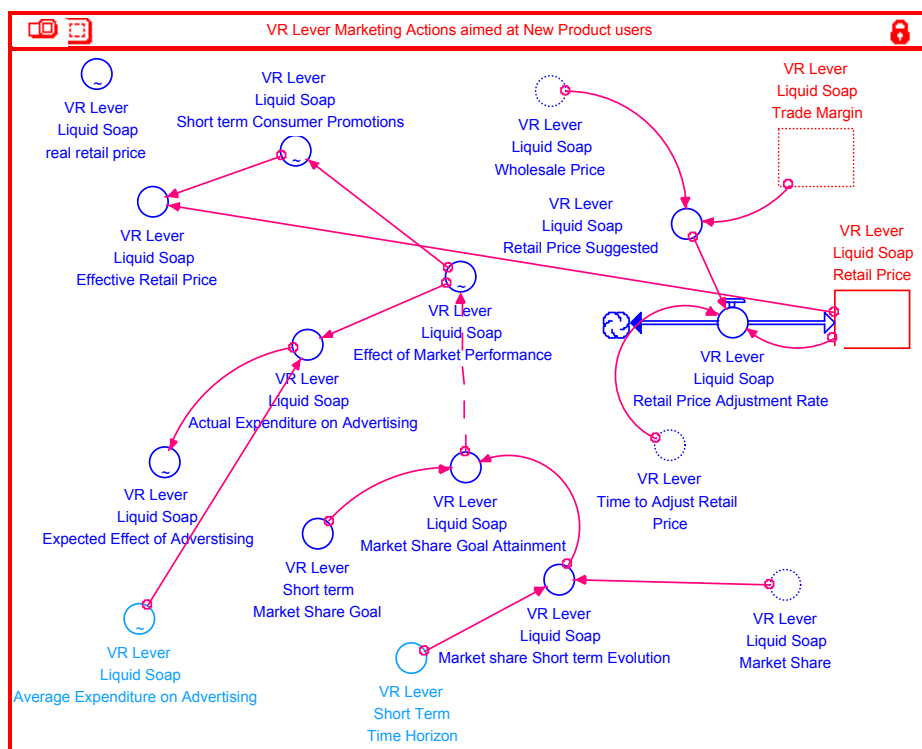
VR_Carex_Volume_Real_Data = GRAPH(TIME)

VR_Dove_Bar_Soap_Volume_real_data = GRAPH(TIME)

VR_Imperial_Leather_Bar_Soap_Volume_real_data = GRAPH(TIME)

VR_Lever_Liquid_Soap_Real_Data = GRAPH(TIME)

VR-Lever



$$\text{VR_Lever_Liquid_Soap_Retail_Price}(t) = \text{VR_Lever_Liquid_Soap_Retail_Price}(t - dt) + (\text{VR_Lever_Liquid_Soap_Retail_Price_Adjustment_Rate}) * dt$$

INIT VR_Lever_Liquid_Soap_Retail_Price =
 INFLOWS:

$$\text{VR_Lever_Liquid_Soap_Retail_Price_Adjustment_Rate} = (\text{VR_Lever_Liquid_Soap_Retail_Price_Suggested} - \text{VR_Lever_Liquid_Soap_Retail_Price}) / \text{VR_Lever_Time_to_Adjust_Retail_Price}$$

$$\text{VR_Lever_Liquid_Soap_Retail_Price_Suggested} = \text{VR_Lever_Liquid_Soap_Wholesale_Price} * (1 + \text{VR_Lever_Liquid_Soap_Trade_Margin})$$

$$\text{VR_Lever_Liquid_Soap_Market_Share_Goal_Attainment} = \text{VR_Lever_Liquid_Soap_Market_share_Short_term_Evolution} / \text{VR_Lever_Short_term_Market_Share_Goal}$$

$$\text{VR_Lever_Liquid_Soap_Market_share_Short_term_Evolution} = \text{SMTH1}(\text{VR_Lever_Liquid_Soap_Market_Share}, \text{VR_Lever_Short_Term_Time_Horizon})$$

$$\text{VR_Lever_Short_Term_Time_Horizon} =$$

$$\text{VR_Lever_Short_term_Market_Share_Goal} =$$

$$\text{VR_Lever_Liquid_Soap_Effect_of_Market_Performance} = \text{GRAPH}(\text{VR_Lever_Liquid_Soap_Market_Share_Goal_Attainment})$$

$$\text{VR_Lever_Liquid_Soap_Short_term_Consumer_Promotions} = \text{GRAPH}(\text{VR_Lever_Liquid_Soap_Effect_of_Market_Performance})$$

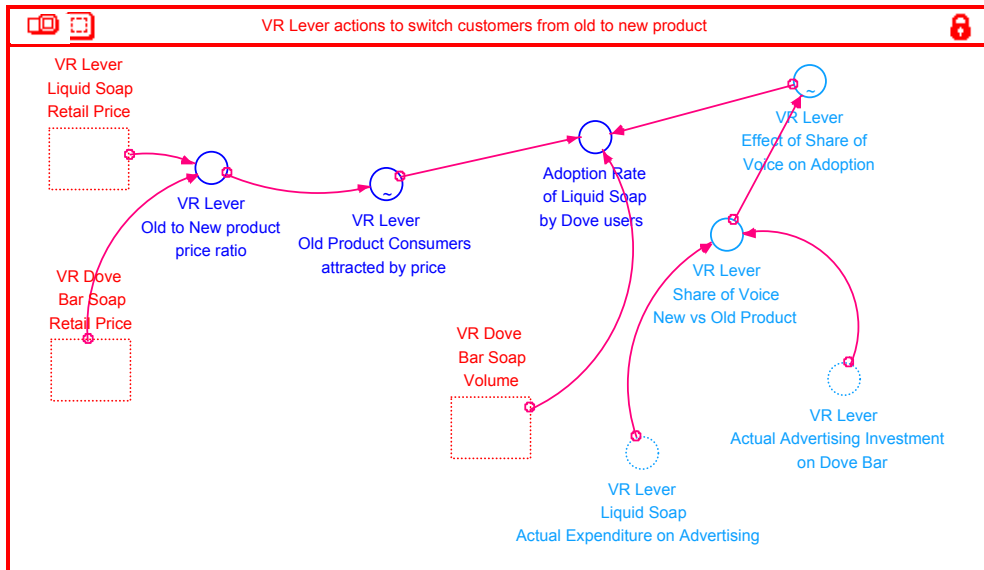
$$\text{VR_Lever_Liquid_Soap_Effective_Retail_Price} = \text{VR_Lever_Liquid_Soap_Retail_Price} * (1 - \text{VR_Lever_Liquid_Soap_Short_term_Consumer_Promotions})$$

$$\text{VR_Lever_Liquid_Soap_Actual_Expenditure_on_Advertising} = \text{VR_Lever_Liquid_Soap_Average_Expenditure_on_Advertising} * \text{VR_Lever_Liquid_Soap_Effect_of_Market_Performance}$$

$$\text{VR_Lever_Liquid_Soap_Average_Expenditure_on_Advertising} = \text{GRAPH}(\text{TIME})$$

$$\text{VR_Lever_Liquid_Soap_Expected_Effect_of_Adverstising} = \text{GRAPH}(\text{SMTH1}(\text{VR_Lever_Liquid_Soap_Actual_Expenditure_on_Advertising},))$$

$$\text{VR_Lever_Liquid_Soap_real_retail_price} = \text{GRAPH}(\text{TIME})$$



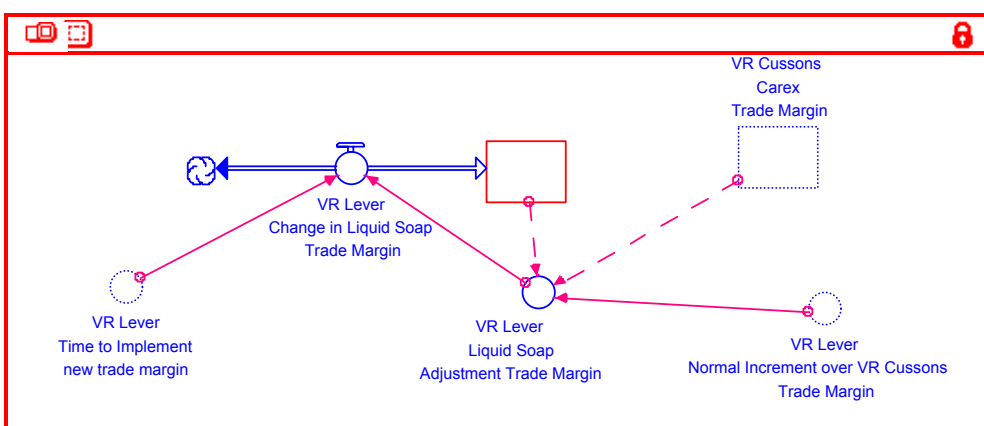
$$\text{Adoption_Rate_of_Liquid_Soap_by_Dove_users} = (\text{VR_Dove_Bar_Soap_Volume} * \text{VR_Lever_Old_Product_Consumers_attracted_by_price} * \text{VR_Lever_Effect_of_Share_of_Voice_on_Adoption}) * (1 - \text{Saturation_Effect_on_Adoption_Rate})$$

$$\text{VR_Lever_Old_Product_Consumers_attracted_by_price} = \text{GRAPH}(\text{VR_Lever_Old_to_New_product_price_ratio})$$

$$\text{VR_Lever_Old_to_New_product_price_ratio} = \frac{\text{VR_Lever_Liquid_Soap_Retail_Price}}{\text{VR_Dove_Bar_Soap_Retail_Price}}$$

$$\text{VR_Lever_Effect_of_Share_of_Voice_on_Adoption} = \text{GRAPH}(\text{VR_Lever_Share_of_Voice_New_vs_Old_Product})$$

$$\text{VR_Lever_Share_of_Voice_New_vs_Old_Product} = \frac{\text{VR_Lever_Liquid_Soap_Actual_Expenditure_on_Advertising}}{\text{VR_Lever_Actual_Advertising_Investment_on_Dove_Bar}}$$

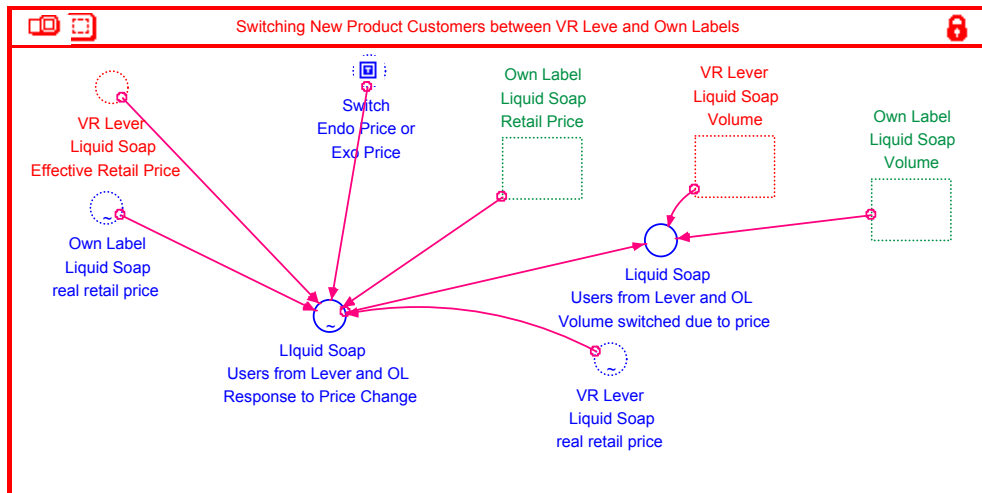


$$\text{VR_Lever_Liquid_Soap_Trade_Margin}(t) = \text{VR_Lever_Liquid_Soap_Trade_Margin}(t - dt) + (\text{VR_Lever_Change_in_Liquid_Soap_Trade_Margin}) * dt$$

INIT VR_Lever_Liquid_Soap_Trade_Margin =
 INFLOWS:
 VR_Lever_Change_in_Liquid_Soap_Trade_Margin =

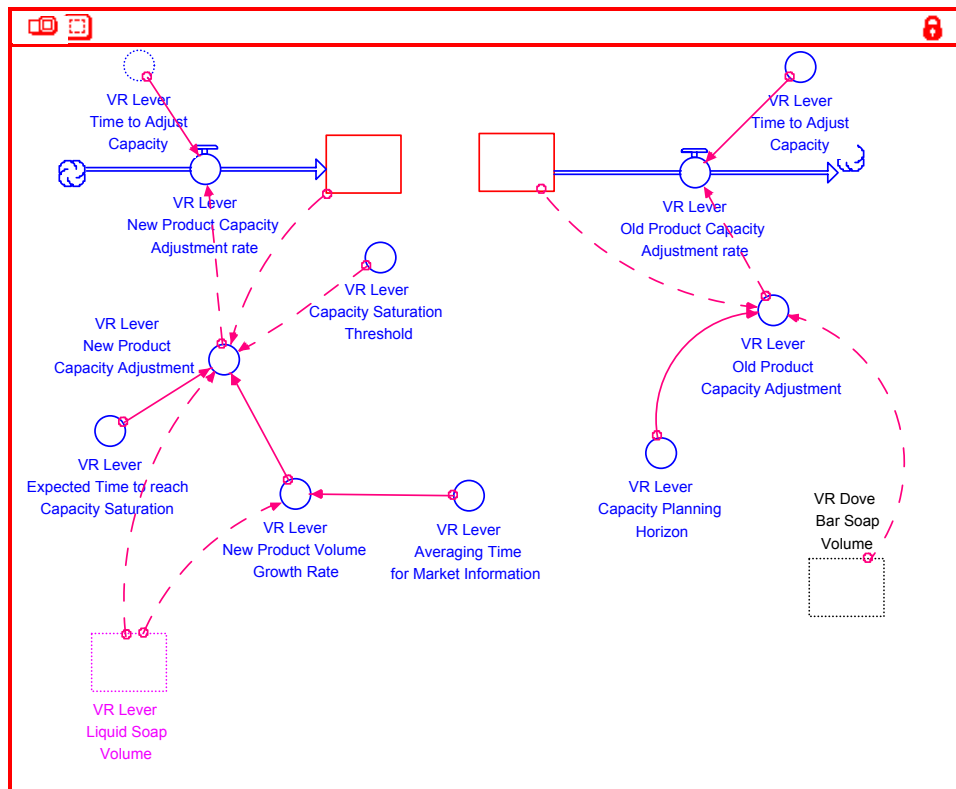
$$\frac{\text{VR_Lever_Liquid_Soap_Adjustment_Trade_Margin}}{\text{VR_Lever_Time_to_Implement_new_trade_margin}}$$

$$\text{VR_Lever_Liquid_Soap_Adjustment_Trade_Margin} = (\text{VR_Cussons_Carex_Trade_Margin} + \text{VR_Lever_Normal_Increment_over_VR_Cussons_Trade_Margin}) - \text{VR_Lever_Liquid_Soap_Trade_Margin}$$



$$\text{Liquid_Soap_Customers_from_Lever_and_OL_Response_to_Price_Change} = \text{GRAPH}((\text{VR_Lever_Liquid_Soap_Effective_Retail_Price} / \text{Own_Label_Liquid_Soap_Retail_Price}))$$

$$\begin{aligned} \text{Liquid_Soap_Users_from_Lever_and_OL_Volume_switched_due_to_price} = & \text{IF}(\text{Liquid_Soap_Customers_from_Lever_and_OL_Response_to_Price_Change} \geq 0) \\ & \text{THEN} -(\text{Own_Label_Liquid_Soap_Volume} * \\ & \text{Liquid_Soap_Users_from_Lever_and_OL_Response_to_Price_Change}) \\ & \text{ELSE} -(\text{VR_Lever_Liquid_Soap_Volume} * \\ & \text{Liquid_Soap_Users_from_Lever_and_OL_Response_to_Price_Change}) \end{aligned}$$



$$\begin{aligned} \text{VR_Lever_New_Product_Capacity}(t) = & \text{VR_Lever_New_Product_Capacity}(t - dt) + \\ & (\text{VR_Lever_New_Product_Capacity_Adjustment_rate}) * dt \\ \text{INIT VR_Lever_New_Product_Capacity} = & \end{aligned}$$

INFLOWS:

$$\text{VR_Lever_New_Product_Capacity_Adjustment_rate} = \frac{\text{VR_Lever_New_Product_Capacity_Adjustment}}{\text{VR_Lever_Time_to_Adjust_Capacity}}$$

$$\text{VR_Lever_New_Product_Capacity_Adjustment} = ((\text{VR_Lever_Liquid_Soap_Volume} * (1 + \text{VR_Lever_New_Product_Volume_Growth_Rate} * \text{VR_Lever_Expected_Time_to_reach_Capacity_Saturation})) - (\text{VR_Lever_New_Product_Capacity} * \text{VR_Lever_Capacity_Saturation_Threshold}))$$

$$\text{VR_Lever_New_Product_Volume_Growth_Rate} = \text{TREND}(\text{VR_Lever_Liquid_Soap_Volume}, \text{VR_Lever_Averaging_Time_for_Market_Information})$$

$$\text{VR_Lever_Old_Product_Capacity}(t) = \text{VR_Lever_Old_Product_Capacity}(t - dt) + (-\text{VR_Lever_Old_Product_Capacity_Adjustment_rate}) * dt$$

INIT VR_Lever_Old_Product_Capacity =

OUTFLOWS:

$$\text{VR_Lever_Old_Product_Capacity_Adjustment_rate} = \frac{\text{VR_Lever_Old_Product_Capacity_Adjustment}}{\text{VR_Lever_Time_to_Adjust_Capacity}}$$

$$\text{VR_Lever_Old_Product_Capacity_Adjustment} = \text{VR_Lever_Old_Product_Capacity} - \text{SMTH1}(\text{VR_Dove_Bar_Soap_Volume}, \text{VR_Lever_Capacity_Planning_Horizon}, \text{VR_Lever_Old_Product_Capacity})$$

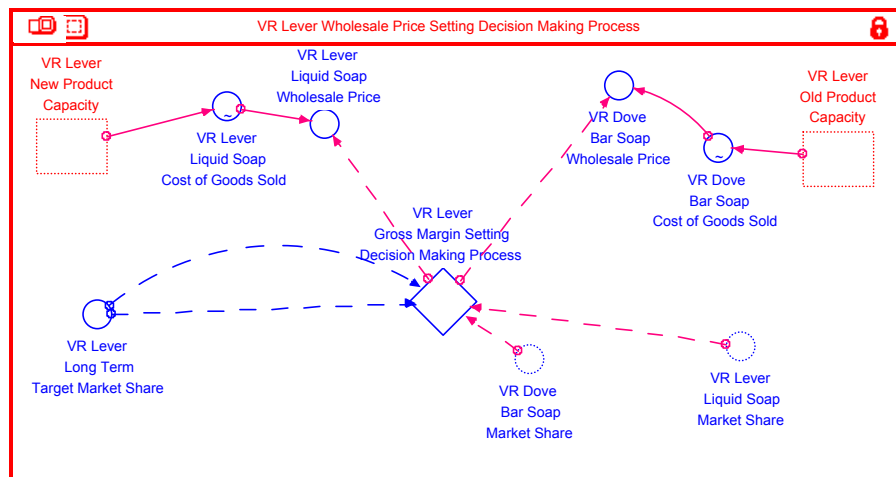
$$\text{VR_Lever_Time_to_Adjust_Capacity} =$$

$$\text{VR_Lever_Expected_Time_to_reach_Capacity_Saturation} =$$

$$\text{VR_Lever_Averaging_Time_for_Market_Information} =$$

$$\text{VR_Lever_Capacity_Planning_Horizon} =$$

$$\text{VR_Lever_Capacity_Saturation_Threshold} =$$



$$\text{VR_Dove_Bar_Soap_Wholesale_Price} = \text{VR_Dove_Bar_Soap_Cost_of_Goods_Sold} * (1 + \text{VR_Lever_Old_Product_Actual_Gross_Margin})$$

$$\text{VR_Dove_Bar_Soap_Cost_of_Goods_Sold} = \text{GRAPH}(\text{VR_Lever_Old_Product_Capacity})$$

$$\text{VR_Lever_Liquid_Soap_Wholesale_Price} = \text{VR_Lever_Liquid_Soap_Cost_of_Goods_Sold} * (1 + \text{VR_Lever_New_Product_Actual_Gross_Margin})$$

$$\text{VR_Lever_Liquid_Soap_Cost_of_Goods_Sold} = \text{GRAPH}(\text{VR_Lever_New_Product_Capacity})$$

VR_Lever__Long_Term_Target_Market_Share =

VR Lever Gross Margin Setting Decision Making Process

VR_Lever_New_Product_Actual_Gross_Martin =
 VR_Lever_New_Product_Initial_Gross_Margin*
 VR_Lever_New_Product_Goal_Attainment_effect_Initial_Gross_Margin

VR_Lever_New_Product_Initial_Gross_Margin =

VR_Lever_New_Product_Goal_Attainment_effect_Initial_Gross_Margin =
 GRAPH(VR_Lever_New_Product_Goal_Attainment)

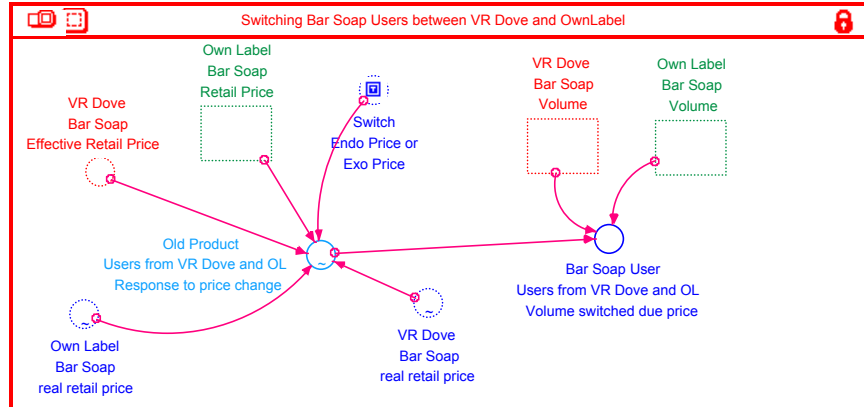
VR_Lever_New_Product_Goal_Attainment =
 VR_Lever_New_Product_Long_term_Market_Share/
 VR_Lever__Long_Term_Target_Market_Share

VR_Lever_Old_Product_Actual_Gross_Margin =
 VR_Lever_Old_Product_Initial_Gross_Margin*
 VR_Lever_Old_Product_Goal_Attainment_effect_Initial_Gross_Margin

VR_Lever_Old_Product_Initial_Gross_Margin =

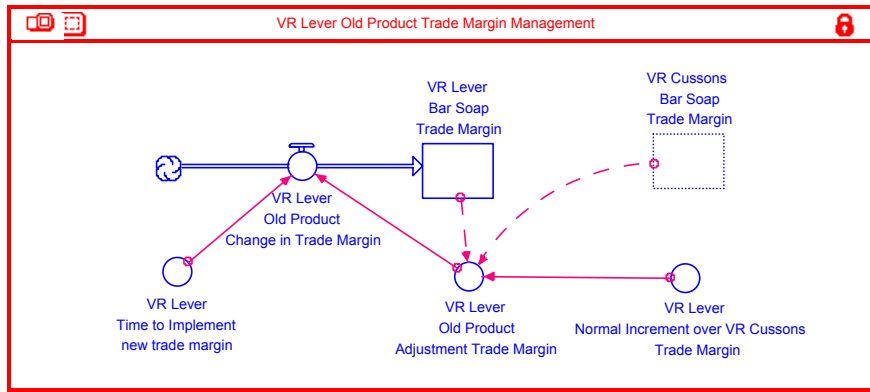
VR_Lever_Old_Product_Goal_Attainment_effect_Initial_Gross_Margin =
 GRAPH(SMTH1(VR_Dove_Bar_Soap_Market_Share /
 VR_Lever__Long_Term_Target_Market_Share,VR_Lever_Long_Term_Horizon))

VR_Lever_Long_Term_Horizon =



Bar_Soap_User_Users_from_VR_Dove_and_OL_Volume_switched_due_price =
 IF(Old_Product_Users_from_VR_Dove_and_OL_Response_to_price_change>=0)
 THEN (-Own_Label_Bar_Soap_Volume*
 Old_Product_Users_from_VR_Dove_and_OL_Response_to_price_change)
 ELSE (-VR_Dove_Bar_Soap_Volume*
 Old_Product_Users_from_VR_Dove_and_OL_Response_to_price_change)

Old_Product_Users_from_VR_Dove_and_OL_Response_to_price_change =
 GRAPH((VR_Dove_Bar_Soap_Effective_Retail_Price/Own_Label_Bar_Soap_Retail_Price))



$$VR_Lever_Bar_Soap_Trade_Margin(t) = VR_Lever_Bar_Soap_Trade_Margin(t - dt) + (VR_Lever_Old_Product_Change_in_Trade_Margin) * dt$$

INIT VR_Lever_Bar_Soap_Trade_Margin =

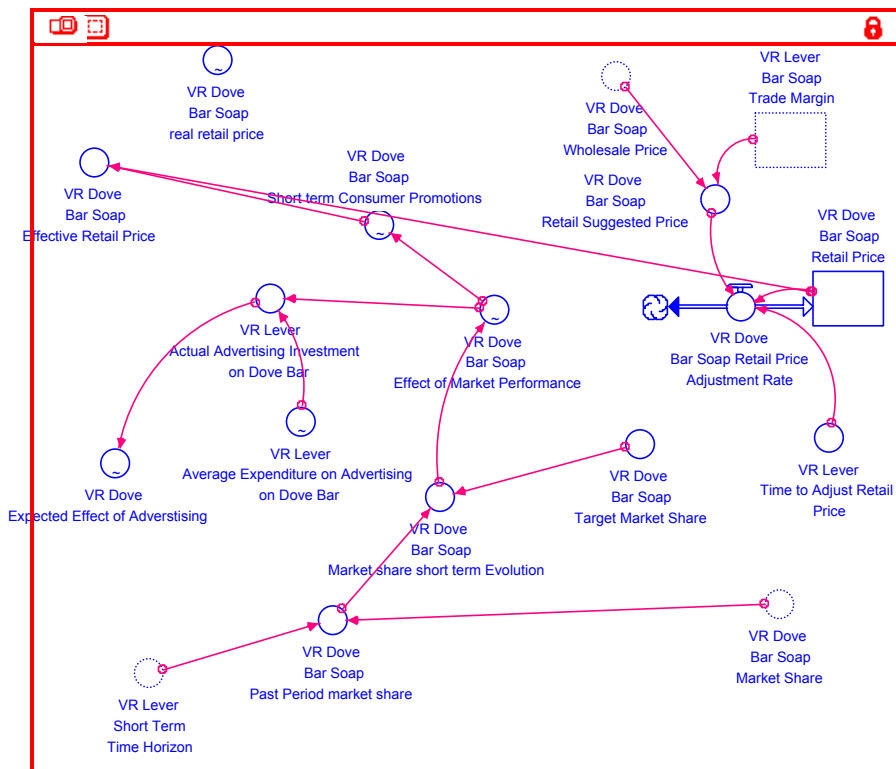
INFLOWS:

$$VR_Lever_Old_Product_Change_in_Trade_Margin = \frac{VR_Lever_Old_Product_Adjustment_Trade_Margin}{VR_Lever_Time_to_Implement_new_trade_margin}$$

$$VR_Lever_Old_Product_Adjustment_Trade_Margin = (VR_Cussons_Bar_Soap_Trade_Margin + VR_Lever_Normal_Increment_over_VR_Cussons_Trade_Margin) - VR_Lever_Bar_Soap_Trade_Margin$$

$$VR_Lever_Normal_Increment_over_VR_Cussons_Trade_Margin =$$

$$VR_Lever_Time_to_Implement_new_trade_margin =$$



$$\text{VR_Dove_Bar_Soap_Retail_Price}(t) = \text{VR_Dove_Bar_Soap_Retail_Price}(t - dt) + (\text{VR_Dove_Bar_Soap_Retail_Price_Adjustment_Rate}) * dt$$

$$\text{INIT VR_Dove_Bar_Soap_Retail_Price} =$$

$$\text{INFLOWS:}$$

$$\text{VR_Dove_Bar_Soap_Retail_Price_Adjustment_Rate} = (\text{VR_Dove_Bar_Soap_Retail_Suggested_Price} - \text{VR_Dove_Bar_Soap_Retail_Price}) / \text{VR_Lever_Time_to_Adjust_Retail_Price}$$

$$\text{VR_Dove_Bar_Soap_Retail_Suggested_Price} = \text{VR_Dove_Bar_Soap_Wholesale_Price} * (1 + \text{VR_Lever_Bar_Soap_Trade_Margin})$$

$$\text{VR_Lever_Time_to_Adjust_Retail_Price} =$$

$$\text{VR_Dove_Bar_Soap_Market_share_short_term_Evolution} = \text{VR_Dove_Bar_Soap_Past_Period_market_share} / \text{VR_Dove_Bar_Soap_Target_Market_Share}$$

$$\text{VR_Dove_Bar_Soap_Target_Market_Share} =$$

$$\text{VR_Dove_Bar_Soap_Past_Period_market_share} = \text{SMTH1}(\text{VR_Dove_Bar_Soap_Market_Share}, \text{VR_Lever_Short_Term_Time_Horizon})$$

$$\text{VR_Dove_Bar_Soap_Effect_of_Market_Performance} = \text{GRAPH}(\text{VR_Dove_Bar_Soap_Market_share_short_term_Evolution})$$

$$\text{VR_Dove_Bar_Soap_Short_term_Consumer_Promotions} = \text{GRAPH}(\text{VR_Dove_Bar_Soap_Effect_of_Market_Performance})$$

$$\text{VR_Dove_Bar_Soap_Effective_Retail_Price} = \text{VR_Dove_Bar_Soap_Retail_Price} * (1 - \text{VR_Dove_Bar_Soap_Short_term_Consumer_Promotions})$$

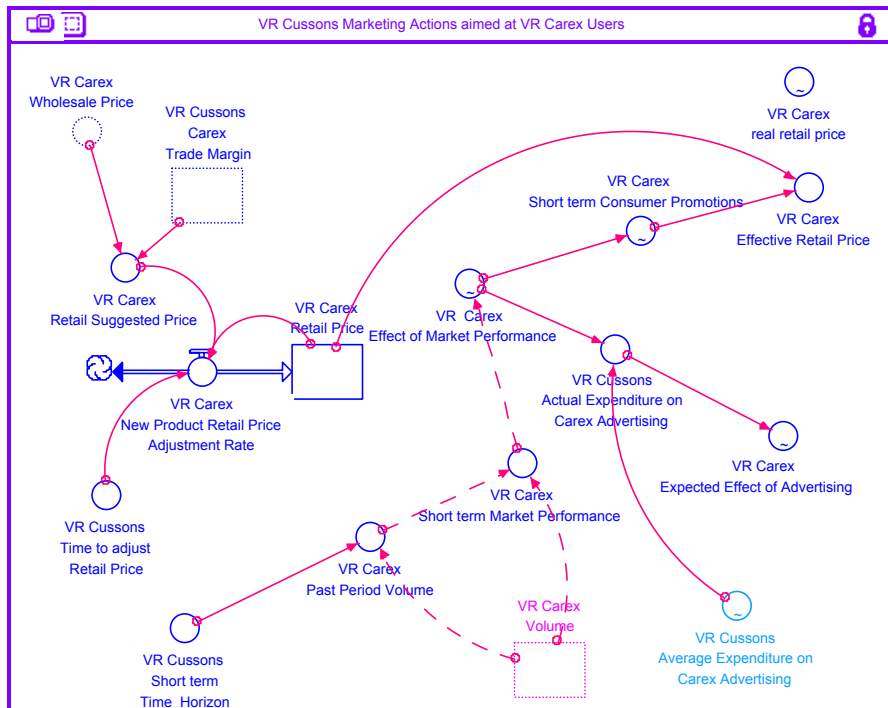
$$\text{VR_Lever_Actual_Advertising_Investment_on_Dove_Bar} = \text{VR_Dove_Bar_Soap_Effect_of_Market_Performance} * \text{VR_Lever_Average_Expenditure_on_Advertising_on_Dove_Bar}$$

$$\text{VR_Lever_Average_Expenditure_on_Advertising_on_Dove_Bar} = \text{GRAPH}(\text{TIME})$$

$$\text{VR_Dove_Expected_Effect_of_Adverstising} = \text{GRAPH}(\text{SMTH1}(\text{VR_Lever_Actual_Advertising_Investment_on_Dove_Bar},))$$

$$\text{VR_Dove_Bar_Soap_real_retail_price} = \text{GRAPH}(\text{TIME})$$

VR-Cussons



$$VR_Carex_Retail_Price(t) = VR_Carex_Retail_Price(t - dt) + (VR_Carex_New_Product_Retail_Price_Adjustment_Rate) * dt$$

INIT VR_Carex_Retail_Price =

INFLOWS:

$$VR_Carex_New_Product_Retail_Price_Adjustment_Rate = (VR_Carex_Retail_Suggested_Price - VR_Carex_Retail_Price) / VR_Cussons_Time_to_adjust_Retail_Price$$

$$VR_Carex_Retail_Suggested_Price = VR_Carex_Wholesale_Price * (1 + VR_Cussons_Carex_Trade_Margin)$$

$$VR_Cussons_Time_to_adjust_Retail_Price =$$

$$VR_Carex_Short_term_Market_Performance = VR_Carex_Volume / VR_Carex_Past_Period_Volume$$

$$VR_Carex_Past_Period_Volume = SMTH1(VR_Carex_Volume, VR_Cussons_Short_term_Time_Horizon)$$

$$VR_Cussons_Short_term_Time_Horizon =$$

$$VR_Carex_Effect_of_Market_Performance = GRAPH(VR_Carex_Short_term_Market_Performance)$$

$$VR_Carex_Short_term_Consumer_Promotions = GRAPH(VR_Carex_Effect_of_Market_Performance)$$

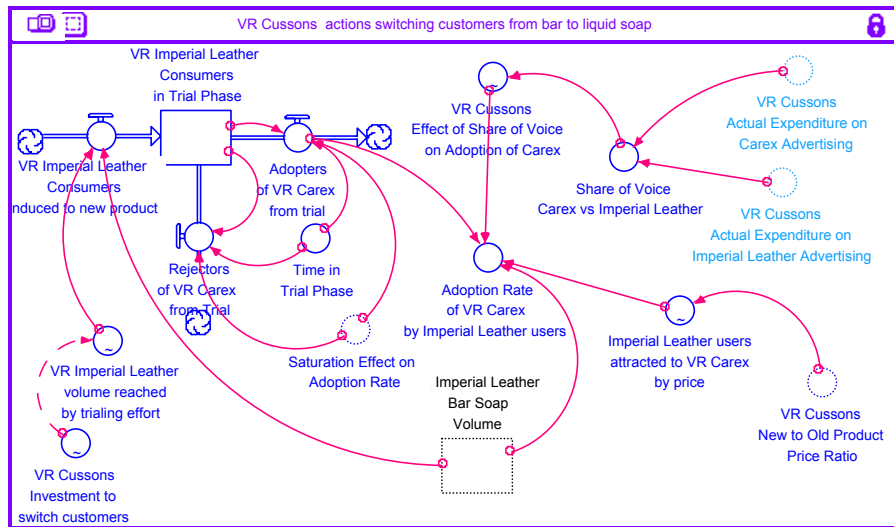
$$VR_Carex_Effective_Retail_Price = VR_Carex_Retail_Price * (1 - VR_Carex_Short_term_Consumer_Promotions)$$

$$VR_Carex_real_retail_price = GRAPH(TIME)$$

$$VR_Cussons_Actual_Expenditure_on_Carex_Advertising = VR_Cussons_Average_Expenditure_on_Carex_Advertising * VR_Carex_Effect_of_Market_Performance$$

$$VR_Cussons_Average_Expenditure_on_Carex_Advertising = GRAPH(TIME)$$

VR_Carex_Expected_Effect_of_Advertising =
 GRAPH(SMTH1(VR_Cussons_Actual_Expenditure_on_Carex_Advertising,))



VR_Imperial_Leather_Consumers_in_Trial_Phase(t) =
 VR_Imperial_Leather_Consumers_in_Trial_Phase(t - dt) +
 (VR_Imperial_Leather_Consumers_induced_to_new_product -
 Adopters_of_VR_Carex_from_trial - Rejectors_of_VR_Carex_from_Trial) * dt
 INIT VR_Imperial_Leather_Consumers_in_Trial_Phase =
 INFLOWS:

VR_Imperial_Leather_Consumers_induced_to_new_product =
 VR_Imperial_Leather_Bar_Soap_Volume*VR_Imperial_Leather_volume_reached_by_trialling_effort

OUTFLOWS:

Adopters_of_VR_Carex_from_trial =
 (VR_Imperial_Leather_Consumers_in_Trial_Phase/Time_in_Trial_Phase)*(1-
 Saturation_Effect_on_Adoption_Rate)

Rejectors_of_VR_Carex_from_Trial =
 (VR_Imperial_Leather_Consumers_in_Trial_Phase/Time_in_Trial_Phase)
 *Saturation_Effect_on_Adoption_Rate

Time_in_Trial_Phase =

VR_Imperial_Leather_volume_reached_by_trialling_effort =
 GRAPH(VR_Cussons_Investment_to_switch_customers)

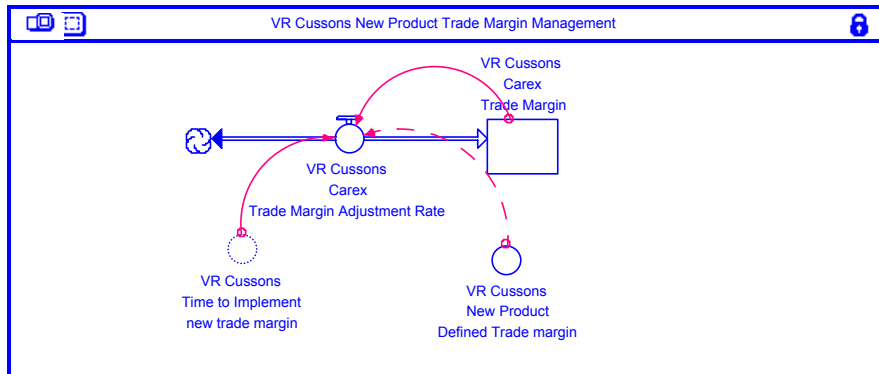
VR_Cussons_Investment_to_switch_customers = GRAPH(VR_Carex_Market_Size_Attainment)

Adoption_Rate_of_VR_Carex_by_Imperial_Leather_users =
 (VR_Imperial_Leather_Bar_Soap_Volume*Imperial_Leather_users_attracted_to_VR_Carex_by_p
 rice* VR_Cussons_Effect_of_Share_of_Voice_on_Adoption_of_Carex)*(1-
 Saturation_Effect_on_Adoption_Rate) + Adopters_of_VR_Carex_from_trial

Share_of_Voice_Carex_vs_Imperial_Leather =
 VR_Cussons_Actual_Expenditure_on_Carex_Advertising/
 VR_Cussons_Actual_Expenditure_on_Imperial_Leather_Advertising

Imperial_Leather_users_attracted_to_VR_Carex_by_price =
 GRAPH(VR_Cussons_New_to_Old_Product_Price_Ratio)

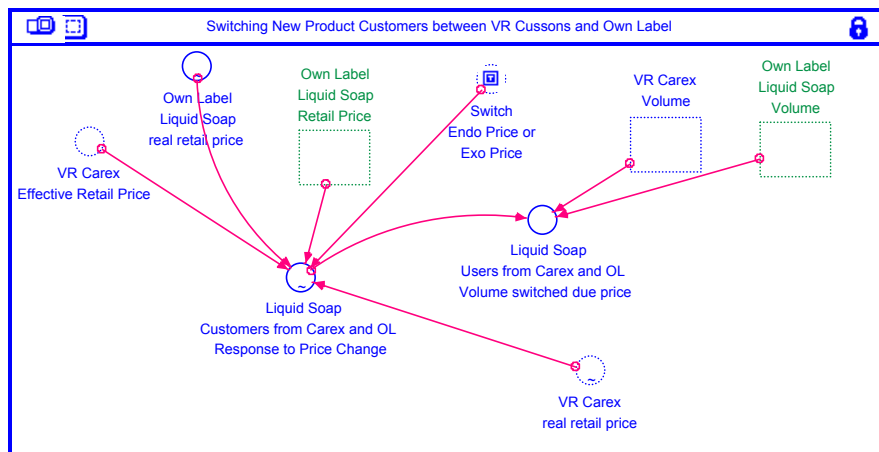
VR_Cussons_Effect_of_Share_of_Voice_on_Adoption_of_Carex =
 GRAPH(Share_of_Voice_Carex_vs_Imperial_Leather)



$$\text{VR_Cussons_Carex_Trade_Margin}(t) = \text{VR_Cussons_Carex_Trade_Margin}(t - dt) + (\text{VR_Cussons_Carex_Trade_Margin_Adjustment_Rate}) * dt$$
 INIT VR_Cussons_Carex_Trade_Margin =
 INFLOWS:

$$\text{VR_Cussons_Carex_Trade_Margin_Adjustment_Rate} = (\text{VR_Cussons_New_Product_Defined_Trade_margin} - \text{VR_Cussons_Carex_Trade_Margin}) / \text{VR_Cussons_Time_to_Implement_new_trade_margin}$$

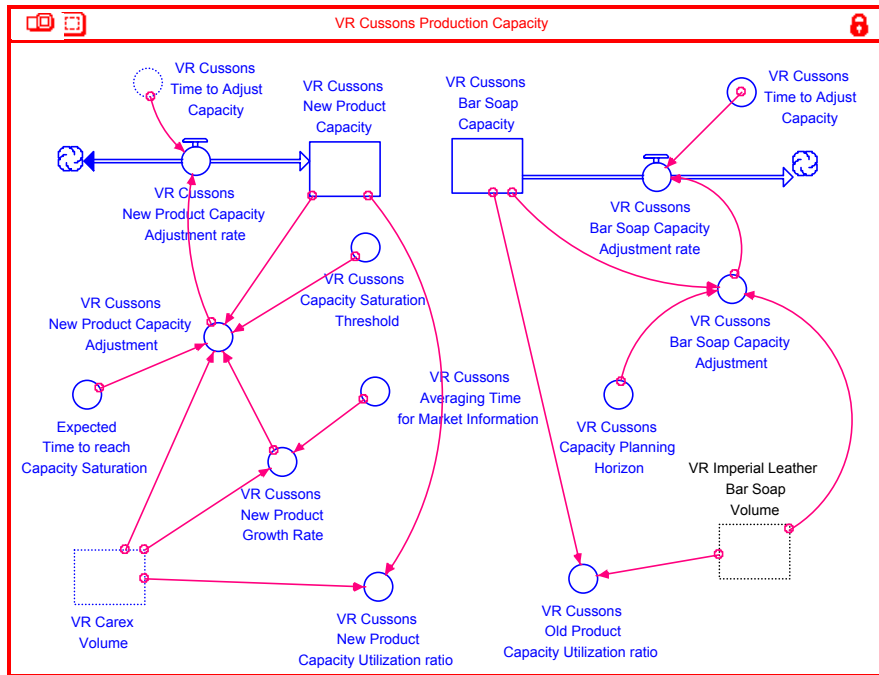
VR_Cussons_New_Product_Defined_Trade_margin =



$$\text{Liquid_Soap_Users_from_Carex_and_OL_Volume_switched_due_price} = \text{IF}(\text{New_Product_Customers_from_Carex_and_OL_Response_to_Price_Change} >= 0) \text{ THEN}(-\text{Own_Label_Liquid_Soap_Volume} * \text{Liquid_Soap_Customers_from_Carex_and_OL_Response_to_Price_Change}) \text{ ELSE}(-\text{VR_Carex_Volume} * \text{New_Product_Customers_from_Carex_and_OL_Response_to_Price_Change})$$

$$\text{New_Product_Customers_from_Carex_and_OL_Response_to_Price_Change} = \text{GRAPH}((\text{VR_Carex_Effective_Retail_Price} / \text{Own_Label_Liquid_Soap_Retail_Price}))$$

Own_Label_Liquid_Soap_real_retail_price = GRAPH(TIME)



$$VR_Cussons_New_Product_Capacity(t) = VR_Cussons_New_Product_Capacity(t - dt) + (VR_Cussons_New_Product_Capacity_Adjustment_rate) * dt$$

INIT VR_Cussons_New_Product_Capacity =

INFLOWS:

$$VR_Cussons_New_Product_Capacity_Adjustment_rate = \frac{VR_Cussons_New_Product_Capacity_Adjustment}{VR_Cussons_Time_to_Adjust_Capacity}$$

$$VR_Cussons_New_Product_Capacity_Adjustment = ((VR_Carex_Volume * (1 + VR_Cussons_New_Product_Growth_Rate * Expected_Time_to_reach_Capacity_Saturation)) - (VR_Cussons_New_Product_Capacity * VR_Cussons_Capacity_Saturation_Threshold))$$

$$VR_Cussons_New_Product_Growth_Rate = TREND(VR_Carex_Volume, VR_Cussons_Averaging_Time_for_Market_Information)$$

$$Expected_Time_to_reach_Capacity_Saturation =$$

$$VR_Cussons_Averaging_Time_for_Market_Information =$$

$$VR_Cussons_New_Product_Capacity_Utilization_ratio = \frac{VR_Carex_Volume}{VR_Cussons_New_Product_Capacity}$$

$$VR_Cussons_Bar_Soap_Capacity(t) = VR_Cussons_Bar_Soap_Capacity(t - dt) + (-VR_Cussons_Bar_Soap_Capacity_Adjustment_rate) * dt$$

INIT VR_Cussons_Bar_Soap_Capacity =

OUTFLOWS:

$$VR_Cussons_Bar_Soap_Capacity_Adjustment_rate = \frac{VR_Cussons_Bar_Soap_Capacity_Adjustment}{VR_Cussons_Time_to_Adjust_Capacity}$$

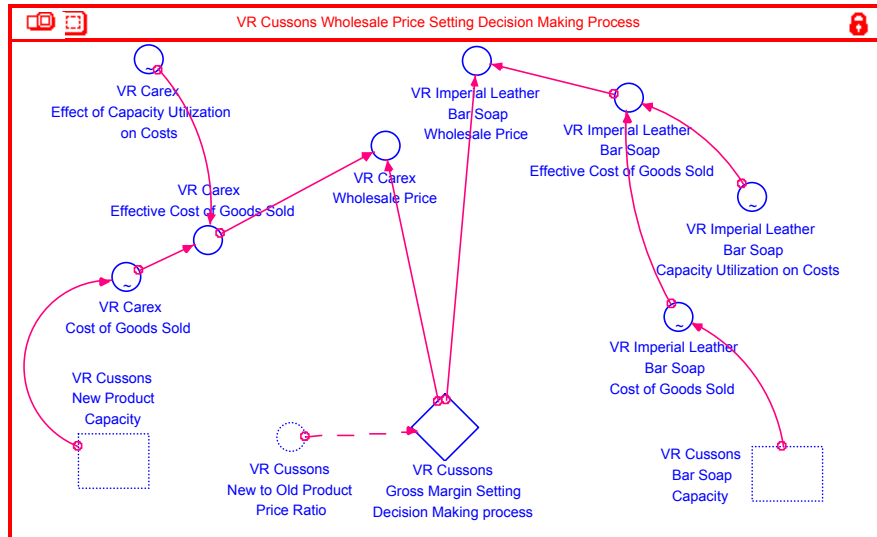
$$VR_Cussons_Bar_Soap_Capacity_Adjustment = VR_Cussons_Bar_Soap_Capacity - SMTH1(VR_Imperial_Leather_Bar_Soap_Volume, VR_Cussons_Capacity_Planning_Horizon, VR_Cussons_Bar_Soap_Capacity)$$

$$VR_Cussons_Capacity_Planning_Horizon =$$

$$VR_Cussons_Capacity_Saturation_Threshold =$$

$$\text{VR_Cussons_Old_Product_Capacity_Utilization_ratio} = \frac{\text{VR_Imperial_Leather_Bar_Soap_Volume}}{\text{VR_Cussons_Bar_Soap_Capacity}}$$

$$\text{VR_Cussons_Time_to_Adjust_Capacity} =$$



$$\text{VR_Imperial_Leather_Bar_Soap_Wholesale_Price} = \text{VR_Imperial_Leather_Bar_Soap_Effective_Cost_of_Goods_Sold} * (1 + \text{Firm_A_Old_product_Actual_Gross_Margin})$$

$$\text{VR_Imperial_Leather_Bar_Soap_Effective_Cost_of_Goods_Sold} = \text{VR_Imperial_Leather_Bar_Soap_Cost_of_Goods_Sold} * (1 + \text{VR_Imperial_Leather_Bar_Soap_Capacity_Utilization_on_Costs})$$

$$\text{VR_Imperial_Leather_Bar_Soap_Cost_of_Goods_Sold} = \text{GRAPH}(\text{VR_Cussons_Bar_Soap_Capacity})$$

$$\text{VR_Imperial_Leather_Bar_Soap_Capacity_Utilization_on_Costs} = \text{GRAPH}(\text{VR_Cussons_Old_Product_Capacity_Utilization_ratio})$$

$$\text{VR_Carex_Wholesale_Price} = \text{VR_Carex_Effective_Cost_of_Goods_Sold} * (1 + \text{VR_Carex_Gross_Margin})$$

$$\text{VR_Carex_Effective_Cost_of_Goods_Sold} = \text{VR_Carex_Cost_of_Goods_Sold} * (1 + \text{VR_Carex_Effect_of_Capacity_Utilization_on_Costs})$$

$$\text{VR_Carex_Cost_of_Goods_Sold} = \text{GRAPH}(\text{VR_Cussons_New_Product_Capacity})$$

$$\text{VR_Carex_Effect_of_Capacity_Utilization_on_Costs} = \text{GRAPH}(\text{VR_Cussons_New_Product_Capacity_Utilization_ratio})$$

VR Cussons Gross Margin Setting Decision Making process

$$\text{VR_Carex_Gross_Margin}(t) = \text{VR_Carex_Gross_Margin}(t - dt) + (-\text{VR_Carex_Change_in_Gross_Margin}) * dt$$

INIT VR_Carex_Gross_Margin =

OUTFLOWS:

$$\text{VR_Carex_Change_in_Gross_Margin} = ((\text{VR_Carex_Gross_Margin} * \text{VR_Cussons_New_Product_Gross_Margin_Adjust_from_Size_Attainment}) - \text{VR_Carex_Gross_Margin}) / \text{VR_Cussons_Time_to_Adjust_New_product_Gross_Margin}$$

$$\text{VR_Cussons_Time_to_Adjust_New_product_Gross_Margin} =$$

$$\text{VR_Cussons_New_Product_Gross_Margin_Adjust_from_Size_Attainment} = \frac{\text{VR_Cussons_New_to_Old_Product_Price_Ratio}}{\text{VR_Cussons_Defined_Price_Ratio_New_to_Old_Product}}$$

$$\begin{aligned} \text{VR_Cussons_Defined_Price_Ratio_New_to_Old_Product}(t) = & \text{VR_Cussons_Defined_Price_Ratio_New_to_Old_Product}(t - dt) + \\ & (-\text{VR_Cussons_Change_in_Defined_Price_Ratio}) * dt \\ \text{INIT VR_Cussons_Defined_Price_Ratio_New_to_Old_Product} = & \end{aligned}$$

OUTFLOWS:

$$\begin{aligned} \text{VR_Cussons_Change_in_Defined_Price_Ratio} = & \\ \text{VR_Cussons_Adjustment_of_Defined_Price_Ratio}/ & \\ \text{VR_Cussons_Time_to_Adjust_Ratio} & \end{aligned}$$

$$\text{VR_Cussons_Time_to_Adjust_Ratio} =$$

$$\begin{aligned} \text{VR_Cussons_Adjustment_of_Defined_Price_Ratio} = & \\ \text{VR_Cussons_Defined_Price_Ratio_New_to_Old_Product} * & \\ \text{VR_Cussons_New_product_Effect_of_Market_Size_Attainment_on_Ratio} & \end{aligned}$$

$$\begin{aligned} \text{VR_Cussons_New_product_Effect_of_Market_Size_Attainment_on_Ratio} = & \\ \text{GRAPH}(\text{VR_Carex_Market_Size_Attainment}) & \end{aligned}$$

$$\begin{aligned} \text{VR_Carex_Market_Size_Attainment} = & \text{VR_Cussons_New_Product_Long_term_Market_Size} \\ & / \text{Management_Expected_New_Product_Market_Size} \end{aligned}$$

$$\begin{aligned} \text{VR_Cussons_New_Product_Long_term_Market_Size}(t) = & \\ \text{VR_Cussons_New_Product_Long_term_Market_Size}(t - dt) + & \\ (\text{VR_Cussons_New_Product_Adjustment_of_Market_Size}) * dt & \\ \text{INIT VR_Cussons_New_Product_Long_term_Market_Size} = & \end{aligned}$$

INFLOWS:

$$\begin{aligned} \text{VR_Cussons_New_Product_Adjustment_of_Market_Size} = & (\text{VR_Carex_Volume} - \\ \text{VR_Cussons_New_Product_Long_term_Market_Size}) / & \text{VR_Cussons_Long_Term_Horizon} \\ \text{on} & \end{aligned}$$

$$\text{Management_Expected_New_Product_Market_Size} =$$

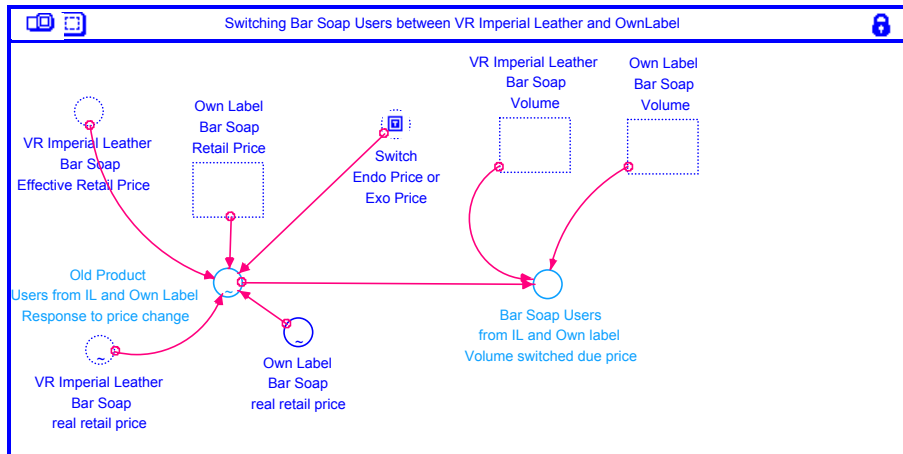
$$\text{VR_Cussons_Long_Term_Horizon} =$$

$$\begin{aligned} \text{VR_Cussons_Old_product_Actual_Gross_Margin} = & \\ \text{VR_Cussons_Old_Product_Initial_Gross_Margin} * & \\ \text{VR_Cussons_Old_Product_Effect_of_Market_Evolution_on_Gross_Margin} & \end{aligned}$$

$$\begin{aligned} \text{VR_Cussons_Old_Product_Effect_of_Market_Evolution_on_Gross_Margin} = & \\ \text{GRAPH}(\text{VR_Imperial_Leather_Bar_Soap_Volume} / \text{VR_Imperial_Leather_Bar_Soap_Long} & \\ \text{Term_Market_Size_Evolution}) & \end{aligned}$$

$$\text{VR_Cussons_Old_Product_Initial_Gross_Margin} =$$

$$\begin{aligned} \text{VR_Imperial_Leather_Bar_Soap_Long_Term_Market_Size_Evolution} = & \\ \text{SMTH1}(\text{VR_Imperial_Leather_Bar_Soap_Volume}, \text{VR_Cussons_Long_Term_Horizon}) & \end{aligned}$$



```

Bar_Soap_Users__from_IL_and_Own_label_Volume_switched_due_price =
  IF(Old_Product_Users_from_IL_and_Own_Label_Response_to_price_change>=0)
  THEN(-Own_Label_Bar_Soap_Volume*
  Old_Product_Users_from_IL_and_Own_Label_Response_to_price_change)
  ELSE(-VR_Imperial_Leather_Bar_Soap_Volume*
  Old_Product_Users_from_IL_and_Own_Label_Response_to_price_change)

```

```

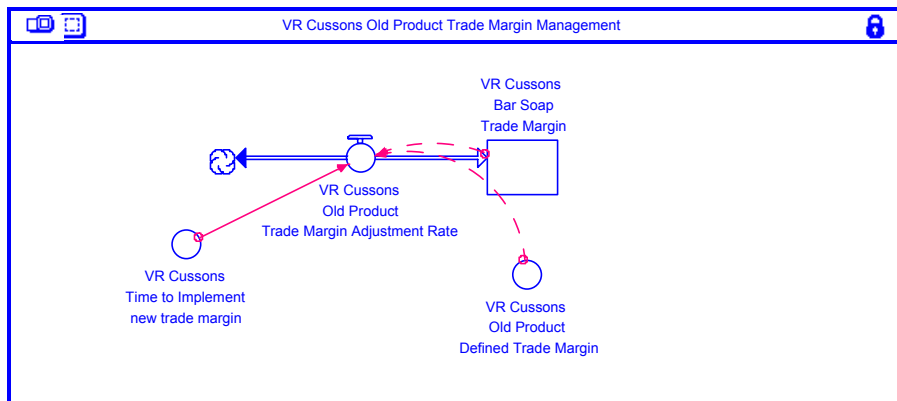
Old_Product_Users_from_IL_and_Own_Label_Response_to_price_change =
  GRAPH((VR_Imperial_Leather_Bar_Soap_Effective_Retail_Price/Own_Label_Bar_Soap__Retail_Price))

```

```

Own_Label_Bar_Soap__real_retail_price = GRAPH(TIME)

```



```

VR_Cussons_Bar_Soap_Trade_Margin(t) = VR_Cussons_Bar_Soap_Trade_Margin(t - dt) +
  (VR_Cussons_Old_Product_Trade_Margin_Adjustment_Rate) * dt
INIT VR_Cussons_Bar_Soap_Trade_Margin =
INFLOWS:
VR_Cussons_Old_Product_Trade_Margin_Adjustment_Rate =
  (VR_Cussons_Old_Product_Defined_Trade_Margin-VR_Cussons_Bar_Soap_Trade_Margin)/
  VR_Cussons_Time_to_Implement_new_trade_margin

```

```

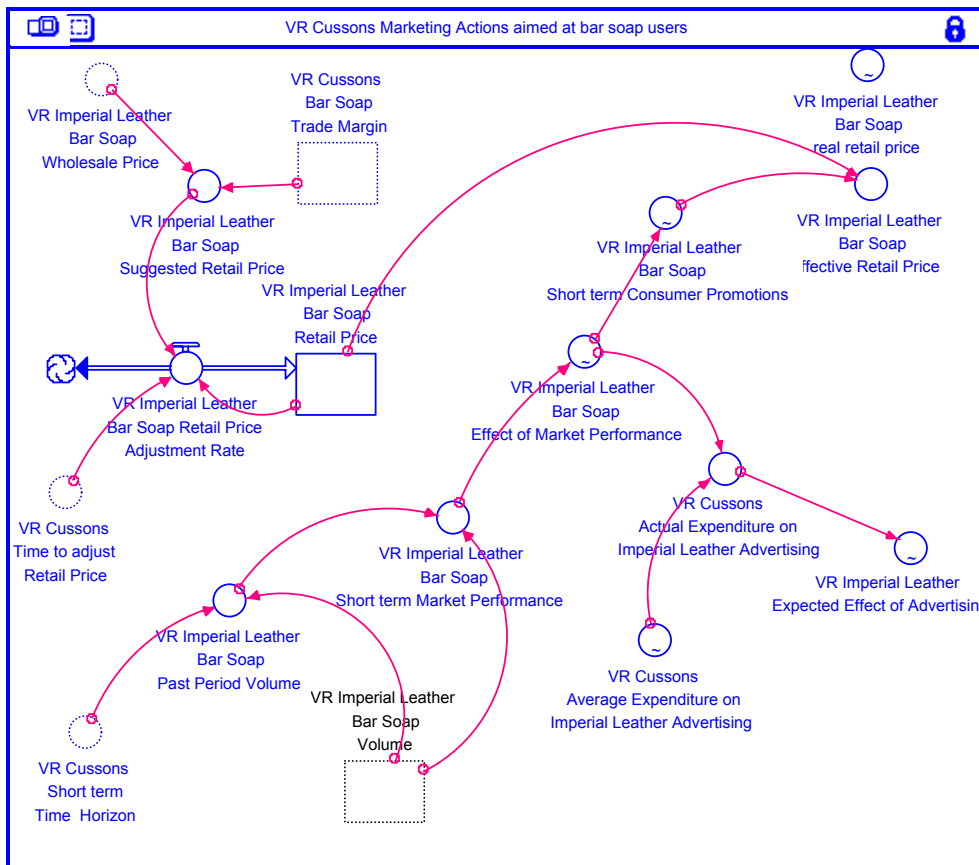
VR_Cussons_Old_Product_Defined_Trade_Margin =

```

```

VR_Cussons_Time_to_Implement_new_trade_margin =

```



$VR_Imperial_Leather_Bar_Soap_Retail_Price(t) = VR_Imperial_Leather_Bar_Soap_Retail_Price(t - dt) + (VR_Imperial_Leather_Bar_Soap_Retail_Price_Adjustment_Rate) * dt$
 INIT VR_Imperial_Leather_Bar_Soap_Retail_Price =

INFLOWS:

$VR_Imperial_Leather_Bar_Soap_Retail_Price_Adjustment_Rate = (VR_Imperial_Leather_Bar_Soap_Suggested_Retail_Price - VR_Imperial_Leather_Bar_Soap_Retail_Price) / VR_Cussons_Time_to_adjust_Retail_Price$

$VR_Imperial_Leather_Bar_Soap_Suggested_Retail_Price = VR_Imperial_Leather_Bar_Soap_Wholesale_Price * (1 + VR_Cussons_Bar_Soap_Trade_Margin)$

$VR_Imperial_Leather_Bar_Soap_Short_term_Market_Performance = VR_Imperial_Leather_Bar_Soap_Volume / VR_Imperial_Leather_Bar_Soap_Past_Period_Volume$

$VR_Imperial_Leather_Bar_Soap_Past_Period_Volume = SMTH1(VR_Imperial_Leather_Bar_Soap_Volume, VR_Cussons_Short_term_Time_Horizon)$

$VR_Imperial_Leather_Bar_Soap_Effect_of_Market_Performance = GRAPH(VR_Imperial_Leather_Bar_Soap_Short_term_Market_Performance)$

$VR_Imperial_Leather_Bar_Soap_Short_term_Consumer_Promotions = GRAPH(VR_Imperial_Leather_Bar_Soap_Effect_of_Market_Performance)$

$VR_Imperial_Leather_Bar_Soap_Effective_Retail_Price = VR_Imperial_Leather_Bar_Soap_Retail_Price * (1 - VR_Imperial_Leather_Bar_Soap_Short_term_Consumer_Promotions)$

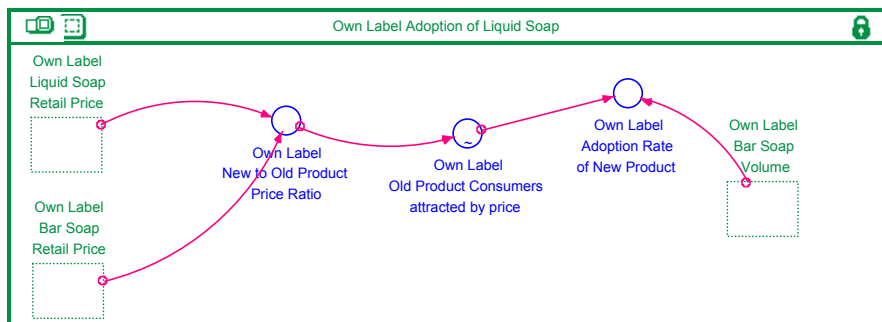
$VR_Imperial_Leather_Bar_Soap_real_retail_price = GRAPH(TIME)$

VR_Cussons_Actual_Expenditure_on_Imperial_Leather_Advertising =
 VR_Cussons_Average_Expenditure_on_Imperial_Leather_Advertising*
 VR_Imperial_Leather_Bar_Soap_Effect_of_Market_Performance

VR_Cussons_Average_Expenditure_on_Imperial_Leather_Advertising = GRAPH(TIME)

VR_Imperial_Leather_Expected_Effect_of_Advertising =
 GRAPH(SMTH1(VR_Cussons_Actual_Expenditure_on_Imperial_Leather_Advertising,))

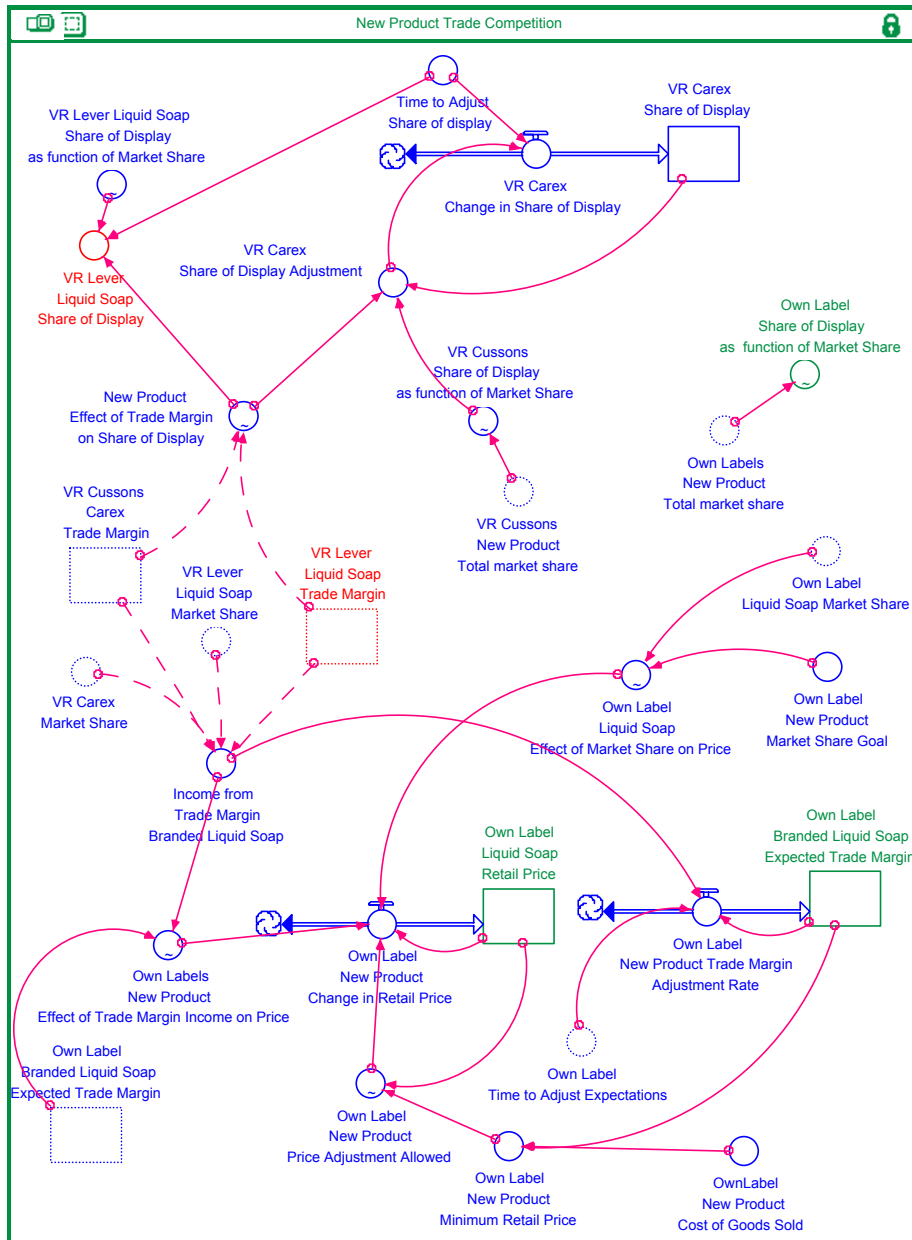
Own-labels



Own_Label_Adoption_Rate_of_New_Product =
 (Own_Label_Bar_Soap_Volume*Own_Label_Old_Product_Consumers_attracted_by_price)*(1-
 Saturation_Effect_on_Adoption_Rate)

Own_Label_Old_Product_Consumers_attracted_by_price =
 GRAPH(Own_Label_New_to_Old_Product_Price_Ratio)

Own_Label_New_to_Old_Product_Price_Ratio =
 Own_Label_Liquid_Soap_Retail_Price/Own_Label_Bar_Soap_Retail_Price



$$VR_Carex_Share_of_Display(t) = VR_Carex_Share_of_Display(t - dt) +$$

$$(VR_Carex_Change_in_Share_of_Display) * dt$$

INIT VR_Carex_Share_of_Display =

INFLOWS:

$$VR_Carex_Change_in_Share_of_Display =$$

$$VR_Carex_Share_of_Display_Adjustment/Time_to_Adjust_Share_of_display$$

$$Time_to_Adjust_Share_of_display =$$

$$VR_Carex_Share_of_Display_Adjustment =$$

$$(VR_Cussons_Share_of_Display_as_function_of_Market_Share * \\ New_Product_Effect_of_Trade_Margin_on_Share_of_Display) - VR_Carex_Share_of_Display$$

$$VR_Cussons_Share_of_Display_as_function_of_Market_Share =$$

$$GRAPH(VR_Cussons_New_Product_Total_market_share)$$

$$New_Product_Effect_of_Trade_Margin_on_Share_of_Display =$$

$$GRAPH(VR_Cussons_Carex_Trade_Margin/VR_Lever_Liquid_Soap_Trade_Margin)$$

VR_Lever_Liquid_Soap_Share_of_Display =
 SMTH1(New_Product_Effect_of_Trade_Margin_on_Share_of_Display *
 VR_Lever_Liquid_Soap_Share_of_Display_as_function_of_Market_Share,
 Time_to_Adjust_Share_of_display)

VR_Lever_Liquid_Soap_Share_of_Display_as_function_of_Market_Share =
 GRAPH(VR_Lever_New_Product_Total_market_share)

Own_Label_Share_of_Display_as_function_of_Market_Share =
 GRAPH(Own_Labels_New_Product_Total_market_share)

Own_Label_Liquid_Soap_Retail_Price(t) = Own_Label_Liquid_Soap_Retail_Price(t - dt) +
 (Own_Label_New_Product_Change_in_Retail_Price) * dt
 INIT Own_Label_Liquid_Soap_Retail_Price =
 INFLOWS:
 Own_Label_New_Product_Change_in_Retail_Price = (Own_Label_Liquid_Soap_Retail_Price*
 Own_Labels_New_Product_Effect_of_Trade_Margin_Income_on_Price)*
 Own_Label_New_Product_Price_Adjustment_Allowed +
 (Own_Label_Liquid_Soap_Retail_Price*Own_Label_Liquid_Soap_Effect_of_Market_Share_on_
 Price) *Own_Label_New_Product_Price_Adjustment_Allowed

Own_Labels_New_Product_Effect_of_Trade_Margin_Income_on_Price =
 GRAPH((Income_from_Trade_Margin_Branding_Liquid_Soap/
 Own_Label_Branding_Liquid_Soap_Expected_Trade_Margin))

Own_Label_New_Product_Price_Adjustment_Allowed =
 GRAPH(Own_Label_Liquid_Soap_Retail_Price/Own_Label_New_Product_Minimum_Retail_Price
)

Own_Label_New_Product_Minimum_Retail_Price =
 OwnLabel_New_Product_Cost_of_Goods_Sold*
 (1+Own_Label_Branding_Liquid_Soap_Expected_Trade_Margin)

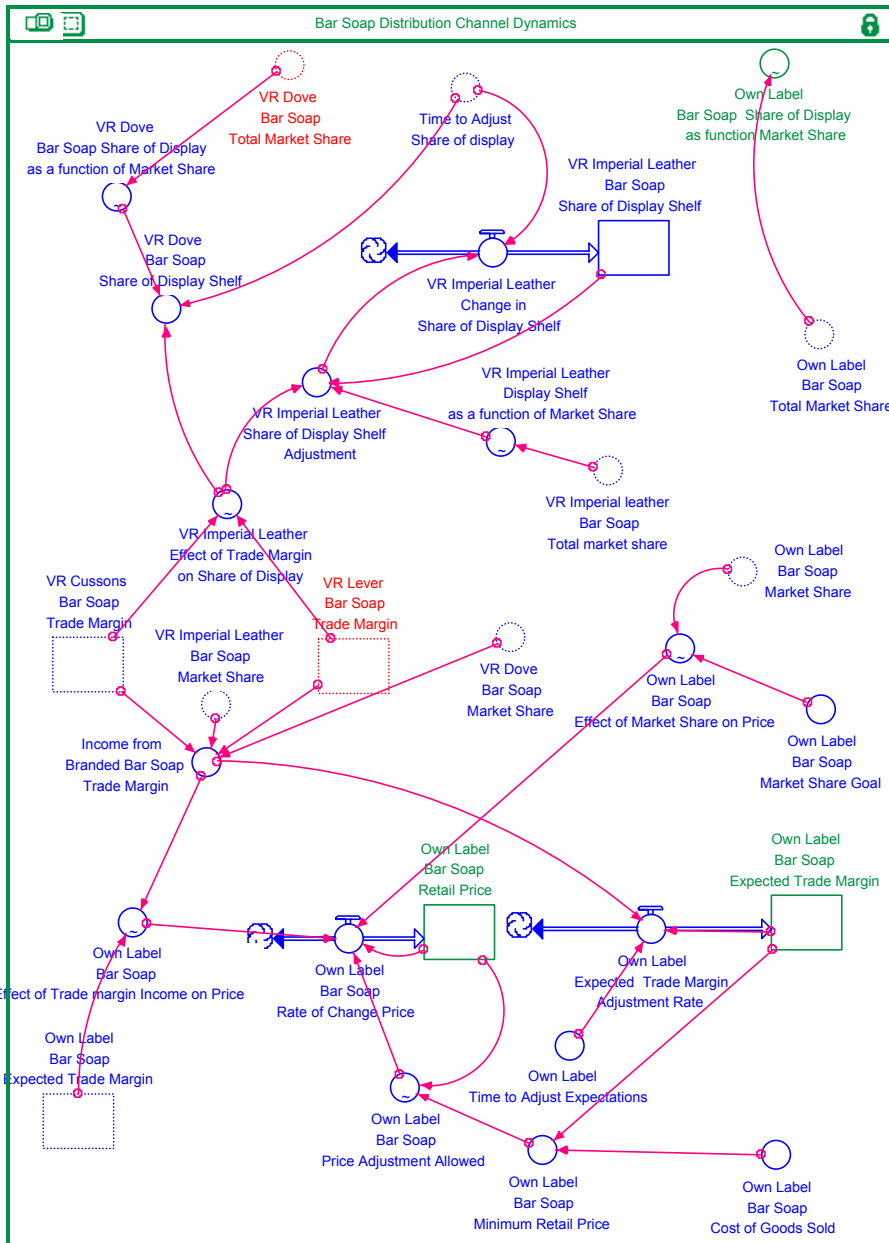
OwnLabel_New_Product_Cost_of_Goods_Sold =

Own_Label_Liquid_Soap_Effect_of_Market_Share_on_Price =
 GRAPH(Own_Label_Liquid_Soap_Market_Share/Own_Label_New_Product_Market_Share_Goal
)

Own_Label_New_Product_Market_Share_Goal =

Own_Label_Branding_Liquid_Soap_Expected_Trade_Margin(t) =
 Own_Label_Branding_Liquid_Soap_Expected_Trade_Margin(t - dt) +
 (Own_Label_New_Product_Trade_Margin_Adjustment_Rate) * dt
 INIT Own_Label_Branding_Liquid_Soap_Expected_Trade_Margin =
 INFLOWS:
 Own_Label_New_Product_Trade_Margin_Adjustment_Rate =
 (Income_from_Trade_Margin_Branding_Liquid_Soap-
 Own_Label_Branding_Liquid_Soap_Expected_Trade_Margin) /
 Own_Label_Time_to_Adjust_Expectations

Income_from_Trade_Margin_Branding_Liquid_Soap =
 (VR_Cussons_Carex_Trade_Margin*VR_Carex_Market_Share)
 +(VR_Lever_Liquid_Soap_Trade_Margin*VR_Lever_Liquid_Soap_Market_Share)



$$\begin{aligned}
 &VR_Imperial_Leather_Bar_Soap_Share_of_Display_Shelf(t) = \\
 &VR_Imperial_Leather_Bar_Soap_Share_of_Display_Shelf(t - dt) + \\
 &(VR_Imperial_Leather_Change_in_Share_of_Display_Shelf) * dt \\
 &INIT VR_Imperial_Leather_Bar_Soap_Share_of_Display_Shelf = \\
 &INFLOWS: \\
 &VR_Imperial_Leather_Change_in_Share_of_Display_Shelf = \\
 &VR_Imperial_Leather_Share_of_Display_Shelf_Adjustment/Time_to_Adjust_Share_of_display
 \end{aligned}$$

$$\begin{aligned}
 &VR_Imperial_Leather_Share_of_Display_Shelf_Adjustment = \\
 &(VR_Imperial_Leather_Display_Shelf_as_a_function_of_Market_Share* \\
 &VR_Imperial_Leather_Effect_of_Trade_Margin_on_Share_of_Display)- \\
 &VR_Imperial_Leather_Bar_Soap_Share_of_Display_Shelf
 \end{aligned}$$

$$\begin{aligned}
 &VR_Imperial_Leather_Effect_of_Trade_Margin_on_Share_of_Display = \\
 &GRAPH(VR_Cussons_Bar_Soap_Trade_Margin/VR_Lever_Bar_Soap_Trade_Margin)
 \end{aligned}$$

$$\begin{aligned}
 &VR_Imperial_Leather_Display_Shelf_as_a_function_of_Market_Share = \\
 &GRAPH(VR_Imperial_leather_Bar_Soap_Total_market_share)
 \end{aligned}$$

VR_Dove_Bar_Soap_Share_of_Display_Shelf =
 SMTH1(VR_Dove_Bar_Soap_Share_of_Display_as_a_function_of_Market_Share*
 VR_Imperial_Leather_Effect_of_Trade_Margin_on_Share_Display,Time_to_Adjust_Share_of_displ
 ay)

VR_Dove_Bar_Soap_Share_of_Display_as_a_function_of_Market_Share =
 GRAPH(VR_Dove_Bar_Soap_Total_Market_Share)

Own_Label_Bar_Soap_Share_of_Display_as_function_Market_Share =
 GRAPH(Own_Label_Bar_Soap_Total_Market_Share)

Own_Label_Bar_Soap_Retail_Price(t) = Own_Label_Bar_Soap_Retail_Price(t - dt) +
 (Own_Label_Bar_Soap_Rate_of_Change_Price) * dt
 INIT Own_Label_Bar_Soap_Retail_Price =

INFLOWS:

Own_Label_Bar_Soap_Rate_of_Change_Price = ((Own_Label_Bar_Soap_Retail_Price*
 Own_Label_Bar_Soap_Effect_of_Trade_margin_Income_on_Price)+
 Own_Label_Bar_Soap_Retail_Price*
 Own_Label_Bar_Soap_Effect_of_Market_Share_on_Price)*
 Own_Label_Bar_Soap_Price_Adjustment_Allowed

Own_Label_Bar_Soap_Effect_of_Trade_margin_Income_on_Price =
 GRAPH(Income_from_Branded_Bar_Soap_Trade_Margin/
 Own_Label_Bar_Soap_Expected_Trade_Margin)

Own_Label_Bar_Soap_Price_Adjustment_Allowed =
 GRAPH(Own_Label_Bar_Soap_Retail_Price/Own_Label_Bar_Soap_Minimum_Retail_Price)

Own_Label_Bar_Soap_Minimum_Retail_Price = Own_Label_Bar_Soap_Cost_of_Goods_Sold*
 (1+Own_Label_Bar_Soap_Expected_Trade_Margin)

Own_Label_Bar_Soap_Cost_of_Goods_Sold =

Own_Label_Bar_Soap_Effect_of_Market_Share_on_Price =
 GRAPH(Own_Label_Bar_Soap_Market_Share/Own_Label_Bar_Soap_Market_Share_Goal)

Own_Label_Bar_Soap_Market_Share_Goal =

Own_Label_Bar_Soap_Expected_Trade_Margin(t) =
 Own_Label_Bar_Soap_Expected_Trade_Margin(t - dt) +
 (Own_Label_Expected_Trade_Margin_Adjustment_Rate) * dt
 INIT Own_Label_Bar_Soap_Expected_Trade_Margin =
 INFLOWS:
 Own_Label_Expected_Trade_Margin_Adjustment_Rate =
 (Income_from_Branded_Bar_Soap_Trade_Margin-
 Own_Label_Bar_Soap_Expected_Trade_Margin)/ Own_Label_Time_to_Adjust_Expectations

Income_from_Branded_Bar_Soap_Trade_Margin = (VR_Cussons_Bar_Soap_Trade_Margin*
 VR_Imperial_Leather_Bar_Soap_Market_Share)+(VR_Lever_Bar_Soap_Trade_Margin*
 VR_Dove_Bar_Soap_Market_Share)

Own_Label_Time_to_Adjust_Expectations =