

Oracle® Retail AI Foundation Cloud Services Promotion Markdown and Offer Optimization User Guide



Release 22.2.302.0

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The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

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Oracle Retail AI Foundation Cloud Services Promotion Markdown and Offer Optimization User Guide,
Release 22.2.302.0

F61483-01

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Preface

This guide describes the Oracle Retail AI Foundation Cloud Services Promotion markdown and Offer Optimization user interface. It provides step-by-step instructions to complete most tasks that can be performed through the application.

Audience

This User Guide is intended for retailers and analysts.

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Related Documents

For more information, see the following documents in the Oracle AI Foundation Cloud Services documentation set:

- *Oracle Retail AI Foundation Cloud Services Administration Guide*
- *Oracle Retail AI Foundation Cloud Services Implementation Guide*
- *Oracle Retail AI Foundation Cloud Services Release Notes*
- *Oracle Retail AI Foundation Cloud Services Data Interface*
- *Oracle Retail AI Foundation Cloud Services User Guide*
- *Oracle Retail Analytics and Planning Cloud Services Assortment and Space Optimization User Guide*
- *Oracle Retail AI Foundation Cloud Services Inventory Optimization User Guide*
- *Oracle Retail AI Foundation Cloud Services Promotion Markdown and Offer Optimization User Guide*

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- Detailed step-by-step instructions to re-create
- Exact error message received
- Screen shots of each step you take

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An updated version of the applicable Oracle Retail AI Foundation document is indicated by Oracle part number, as well as print date (month and year). An updated version uses the same part number, with a higher-numbered suffix. For example, part number E123456-02 is an updated version of a document with part number E123456-01.

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<https://docs.oracle.com/en/industries/retail/index.html>

(Data Model documents are not available through Oracle Help Center. You can obtain these documents through My Oracle Support.)

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Offer Optimization

This chapter describes the Offer Optimization (OO) module. In general, this chapter describes both modules that are offered: Promotions and Markdowns Cloud Service (PMO) and Offer Optimization Cloud Service (OO). Throughout the document, for the ease of describing the components, the term "Offer Optimization" will be used to refer to these two combined services. However, when referring to a specific component that is only available in one particular service, the complete service name will be used.

Introduction

Offer Optimization is used to determine the optimal pricing recommendations for promotions, markdowns, or targeted offers. Promotions and markdowns are at the location level (for example, price-zone), and targeted offers consider the location and can be specific to each customer. The timing and depth of promotions, markdowns, or targeted offers are important levers for managing the inventory over the life cycle of the product.

The module can be useful in the following scenarios:

- Bring inventory to the desired level, not only during the full-price selling period but also during the clearance period.
- Maximize the total gross margin amount over the entire product life cycle.
- Assess in-season performance.
- Update recommendations each week. This facilitates decision-making based on recent data, including new sales, inventory, price levels, planned promotions, and other relevant data.
- Provide targeted price recommendations at the segment-level.

This section provides information to help you understand the functionality of Offer Optimization.

Administering Offer Optimization

For information about the administration of Offer Optimization, see *Oracle Retail AI Foundation Cloud Services Administration Guide*.

Users and Roles

The following five user login roles are available and can be assigned at the time of user creation:

- Pricing Analyst—main business user responsible for day-to-day pricing optimization activities. This user is responsible for working through price recommendations.
- Pricing Manager (or Analytical Super User)—responsible for analytical configuration, testing, and model diagnosis.

- Targeted Offer User—this user is responsible for working through the targeted price recommendations.
- Buyer—user who is responsible for a department or departments, who submits, approves, or rejects the OO recommendations, and who is responsible for the translation of data between OO and Oracle Retail Price Management (RPM) and Oracle Retail Customer Engagement (CE).
- Pricing Administrator—responsible for the general system setup and configuration tasks related to the business.

Table 1-1 provides a description of the privileges that are available in the application. Subsequent tables describe privileges that are allowed based on the user role, data access, and the run status.

Note that data access for a particular user can be restricted based on location and/or merchandise hierarchy. For example, if a user has access to only one department, that user will be able to see only the OO recommendations or runs from that department.

Table 1-1 Privileges

Privilege	Description
Create new OO run	Set up and execute optimizations. All steps on the main train can be carried out, including creating a new run via the copy run functionality.
Modify the name and description of an existing OO run	Open an existing run and modify the name and description of that run.
Modify the General Strategy of an existing OO run	Ability to modify the General Strategy for that run.
Modify the Custom Strategy of an existing OO run	Ability to modify or specify the Custom Strategy for that run.
View existing OO run	Open an existing run and visit any step in the main train. The user can view data and search/aggregate/filter but cannot change anything.
Optimize an OO run	Optimize a new or modified run or a failed run.
Review or Undo Review OO recommendations	Review recommendations. Reviewed recommendations can be submitted or approved.
Submit OO recommendations	Submit recommendations for flat files or RPM web service. When integrated with RPM, it sends recommendations in Submitted status.
Approve OO recommendations	Approve recommendations for flat files or RPM web service. When integrated with RPM, it sends recommendations in Approved status.
Modify Promotion or Markdown Recommendations	Ability to accept, reject, override, or add promotion or markdown price recommendations.
Modify Targeted Recommendations	Ability to accept, reject, or override targeted recommendations for that run.
Delete saved runs	Delete run setup information and results from the database.

Table 1-2 User Roles and Permissions

Privilege	Data Access	Analyst	Buyer	Administrator	Analytical Superuser	Targeted Offer User
Create new OO run	All runs				X	
View existing OO run	All runs				X	
Modify the name and description of an existing OO run.	Runs they created		X	X	X	
Modify the General Strategy of an existing OO run	Runs they created				X	
	Batch runs				X	
Modify the Custom Strategy of an existing OO run	Runs they created or batch runs				X	
Optimize or re-optimize OO run	Runs they created				X	
	All runs with technical failures			X		
Modify Promotion or Markdown Recommendation	Runs they created or batch runs	X			X	
Modify Targeted Recommendations	Runs they created or batch runs					X
Recalculate OO recommendations	Runs they created or batch runs	X				
Review OO recommendations	Runs they created or batch runs	X			X	
Submit OO recommendations	All runs		X			
Approve OO recommendations	All runs		X			
Delete saved OO runs	Runs they created				X	
	All runs			X		

Table 1-3 Run and Recommendation Status Constraints

Role	Privilege	Object	Status
Users	cannot modify existing OO run	when run is	running
Users	cannot optimize OO runs	when run is	running or autorun
Users	cannot delete saved OO runs	when run is	running
Administrator	cannot delete saved OO runs	when run is	submitted

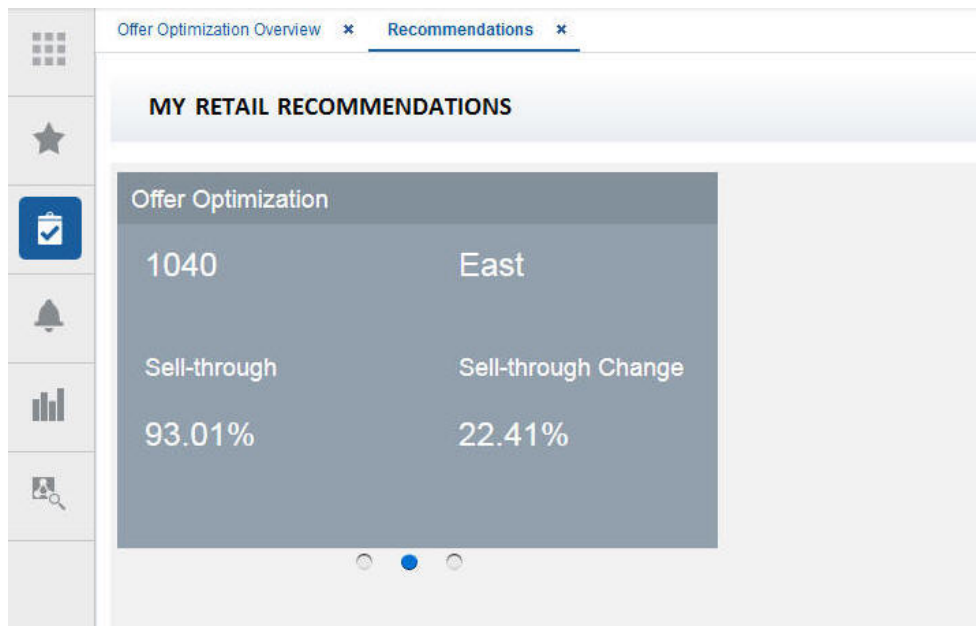
Table 1-3 (Cont.) Run and Recommendation Status Constraints

Role	Privilege	Object	Status
Users	cannot optimize batch runs	when run is	any status
Users	cannot modify recommendations	when recommendation is	reviewed, submitted, or approved
Users	cannot modify recommendations	when recommendation is	pending calculation or changes
Users	cannot recalculate	when recommendation is	reviewed, submitted, or approved

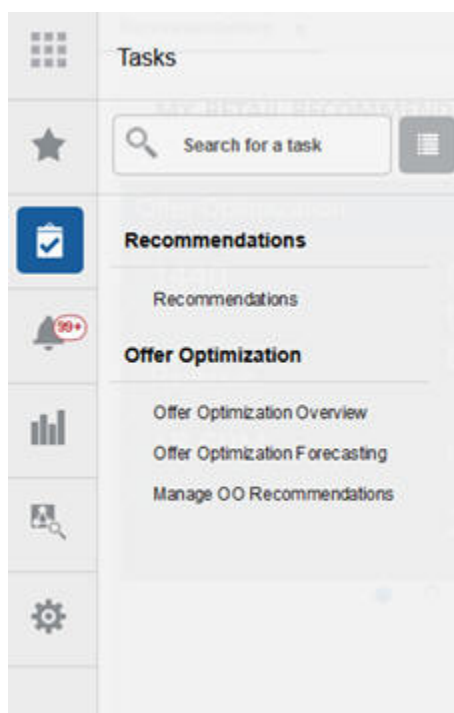
Overview of the User Interface

The OO user interface, at a high level, consists of the following:

- **My Retail Recommendations Tab.** When you log into the application, this tab provides a quick view of the latest run that has completed optimization. If you subscribe to other AI Foundation applications, then the corresponding tiles for each application are shown. The Offer Optimization tile consists of a link to the Offer Optimization Overview screen and the last completed run (that is, the run that is in Ready for Review status) information. This tile provides three cards that show the absolute numbers and percentage change compared to the current price policy for revenue, sell-through, and gross margin. The user can click Offer Optimization to navigate to the Overview tab. Alternatively, the user can click the Run ID or Run Name to open the run tab, which opens the Results screen.

Figure 1-1 My Retail Recommendations Tab

- **Task Pane.** Located on the left side of the application. Use this to navigate between Offer Optimization Overview, Offer Optimization Forecasting, and Manage OO Recommendations. Users can also use this to navigate between the applications.

Figure 1-2 Tasks

- Offer Optimization Overview Tab. You can access run management in this screen.
- Offer Optimization Run Tab. The main tab for application work such as setting up the business rules, optimizing a run, or viewing and editing the results. There are three main steps in this tab: Scope, Strategy, and Results.
- Contextual BI information. This tab is located on the right side of the application. It provides information in graphical format that can be used in setting up runs and interpret the optimization results.
- Oracle Digital Assistant (or Chatbot). This tab is located on the right side of the application. This functionality provides the user with voice or conversation-based assistance. The user can ask the chatbot queries (see "[Integration with Oracle Digital Assistant](#)") and Offer Optimization provides answers.

Icons

The following icons are used in user interface. Certain icons have slightly different definitions, depending on the context.

Table 1-4 Icons




















Icon	Description
	Copy a run.
	Create. Create a row. Create a run.
	Detach
	Delete. The object deleted depends on the context.

Table 1-4 (Cont.) Icons

Icon	Description
	Edit. Change status.
	Embedded help.
	Export to Excel. Export all.
	Freeze.
	Go to top.
	Go up.
	Go to bottom.
	Go down.
	Move selected item to another list.
	Progress indicator. The indicator changes mode when the application is processing data.
	Query by example.
	Refresh.
	Remove all items form list.
	Remove selected items from list.
*	Required.
	Select date.
	Wrap.

Buttons

Buttons are used to perform certain actions and for navigation.

Table 1-5 Buttons

Button	Description
Action	Provides access to the following actions: Save, Optimize, Re-Optimize, Reviewed, Save, Recalculate, and Submit.
Back	Used to return to the previous train stop.
Cancel	Used to close a dialog box without making a selection.
Clear Selection	Clears the selected rows list.
Next	Moves to the next train stop.
Save	Saves the existing settings.

Table 1-5 (Cont.) Buttons

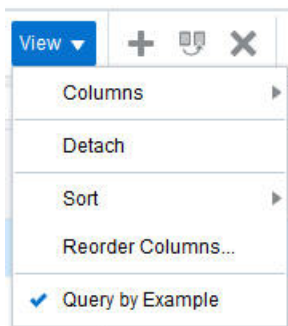
Button	Description
Select All	In Business Rules - Product Groups, selects the entire set of rows displayed.
Accept All	In Results, accepts all the price recommendations.

Pull-Down Menus

The user interface has three pull-down menus that provide access to a variety of functionality.

The View pull-down menu can be used to adjust how the display is organized. The options provided are:

- Columns provide the ability to manage columns. You can choose to hide certain columns from display. Or you can re-order how the columns are shown.
- Detach a table from the interface. This maximizes the table to fit your browser.
- Sort provides the ability to specify up to three columns to sort the data in ascending or descending order for each column.
- Reorder Columns provides the ability to specify the order for the columns displayed.
- Query by Example can be turned off or on by unchecking or checking. This is the top row of empty text boxes that is shown over any table by default. The user can filter the display based on specified values for each column.

Figure 1-3 Query by Example

The Actions pull-down menu provides functionality that you use to manipulate the application data. Some of the following functionality is also provided by the icons described in [Table 1-4](#).

Figure 1-4 Actions Pull-Down Menu**Table 1-6 Actions Pull-Down Menu Functionality**

Action	Description
Create Run	In Overview, takes user to Optimization Setup train stop.
Copy Run	In Overview, used to create a duplicate of an existing run.
Delete Run	In Overview, used to delete a run.
Export to Excel	Used to export the set of rows displayed to Excel.
Add	In Business Rules–Product Groups, used to add data.
Edit	In Business Rules–Product Groups, used to edit data.
Delete	In Business Rules–Product Groups, used to delete data.
Create	In Fixture and Product Data, used to create.

Charts

Certain stages have associated charts available on the right-hand side of the display that list data in a tabular format.

Process Train

The process train displays the stages of Offer Optimization. The current stage is highlighted.

Embedded Help

Embedded help, which you access by clicking the Question Mark icon, provides additional information about the details required by certain fields.

Process Indicator

At the top of the user interface, the red horizontal line is a process indicator (that goes from left to right) that you can use to monitor the status of a user action such as clicking Refresh to refresh the table or screen.

Search

In certain cases, you can customize your search, using advanced search capabilities to specify the search criteria.

Workflow

OO is used to optimize a buyer's business strategy for a group of items/locations (for example, department/region/season) by generating optimal price recommendations. The buyer has a business strategy (for example, maximize revenue) and wants to determine when to offer a promotion, the depth of the promotion, which items to be considered as part of a promotion, and similar questions regarding markdown, keeping in mind the business rules and inventory levels. Business rules are sent through the interfaces and can be associated with a strategy (for example, Christmas Strategy). By default, there is always a DEFAULT_SET strategy. The application runs through the different price combinations for each item, considering the gain when offering a promotion or markdown and whether to offer any customer-specific promotion (if the user subscribed to targeted offers) in an efficient manner that best achieves the optimization objective. Every week or on a regular schedule, batch runs are created and populated using the business rules specified in the DEFAULT_SET strategy. Once the optimization is complete, the item recommendation goes into a Ready for Review status. By default, recommendations from all the batch runs are sent to Manage Recommendations screen. An analyst can review the recommendations at each item-level and decide to accept, reject, or override any recommendation. Once the analyst finishes the review, the item recommendation status is changed to Reviewed. Reviewed item recommendations go to the user with the buyer role for approval. If the buyer likes the recommendations, then the buyer can either Submit or Approve the recommendations. Submit or Approve means that the price recommendations are sent to a export interface and as well as a through a web service to a price execution system such as RPM in Submitted or Approved status. If the analyst or the user wants a new set of recommendations, then the user can create a new run or a what-if run by modifying the business rules or by selecting a different strategy. Once the run is optimized, if the user likes the results from the run, the user can choose to finalize this new run, and when finalized, the recommendations from this what-if run replace the recommendations from the corresponding batch run.

Optimization

An optimization can be carried out at the configured setup (or run) location or a price-zone, merchandise level, and calendar level. The user has option of configuring the use of either price-zone or a node in the location hierarchy (but not both in the same instance). Once the optimization is complete, the recommendations can be generated at a lower level than the setup level (called recommendation levels for merchandise level and location or price-zone level). The location and merchandise level can be any level in the location hierarchy and merchandise hierarchy, respectively. Alternatively, price-zone can be used to define a set of stores (and/or online locations) and items. An example of a price zone is women's apparel in all university-based stores, grouped into one price-zone. The usual levels for the run are Region or Price-zone, Department, and Week, and, for the recommendation, the levels are Region or Price-zone and Style/Color. If Targeted Offers is available, then the recommendations will also be generated at the Customer-Segment level, along with location or price-zone and merchandise level. The Promotions and Markdowns are always at the location or price-zone and merchandise level.

The optimization is set up as follows:

- Optimization is done at either setup level or at one level below the run's merchandise level. For example, if the run merchandise level is Department, then each optimization job can be either at the Department or the Class level.
- Inventory is rolled up to the desired recommendation merchandise level. Further, the inventory is aggregated across all the locations to the run's location level.
- Price recommendations are generated at the configured recommendation level for merchandise, location or price zone, and calendar level and the customer segment level.

For example, if the run location level is Price-zone, the run merchandise level is Department, the run calendar level is Week, and the recommendation level for merchandise is Style/Color, then the recommendations are generated at the Price-zone, Style/Color, Week, and Segment (when TO) levels.

Offer Optimization Overview

The Offer Optimization Overview is the dashboard for the OO runs. In this tab, you can see a list of all existing runs, along with details that describe each run. The list includes runs created by other users, which you can open in read-only mode. You can create a run, copy a run, open a run, or delete a run.

This screen has three components, Search, Tiles, and the Table of Runs.

The search panel is collapsed by default. You can bring up the Search panel by clicking Search under the Actions Menu. The search panel lets you filter the runs to be seen on a regular basis. It filters the run based on Department, Location, Created By, and Created Date. You can filter the runs to satisfy all the above criteria or any subset of the above criteria.

The Tiles dashboard provides quick access to the number of runs by run status. It shows the runs that are in the following status: Ready for Review, Worksheet, Failed, and All.

The table of runs provides relevant information on all the runs in a tabular format; you can perform operations such as create, copy, and delete runs in this table. For each run with a successfully completed optimization, certain KPIs such as Revenue, Gross Margin, and Sell-Through are shown in absolute numbers as well as by percent gain. Note that each run can be in its own currency. When a user selects a row or run in the table, the contextual panel shows the pie-charts for the price status and price change summary. Price status can be Approved, Submitted, Reviewed, or Ready for Review. Price change can be Accepted, Rejected, Overridden, or User-added.

This table also provides the information about the batch runs. Batch runs are prefixed with a "Batch" in the run name, and the run status will say "Auto run" when created. A user cannot optimize the batch runs individually as they are scheduled for optimization as part of batch process. However, when a user wants to execute batch optimizations on demand, the user can leverage the POM UI to submit the ad hoc batch job for optimization. Rather, the batch runs are run at a regular frequency specified by the batch process. For example, each batch run extracts the latest sales data, updates the relevant inputs, and sends the run for optimization. If the batch run is successfully executed, the results will be shown and the run will be finalized. Note that the run statuses are not automatically updated; you must click Refresh to update the table.

Figure 1-5 Offer Optimization Overview

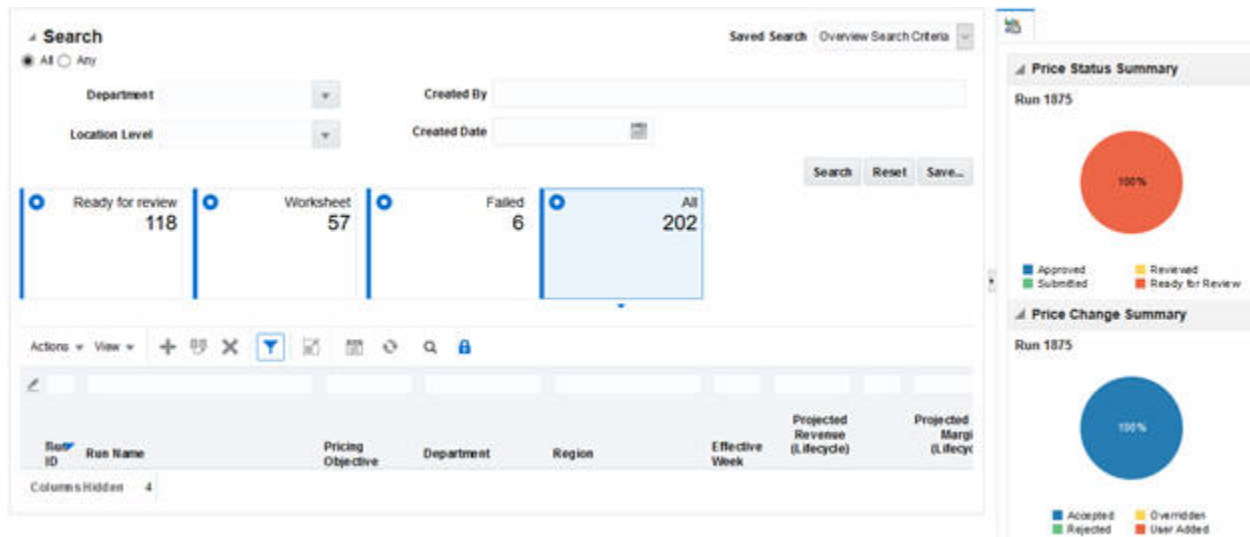


Table 1-7 Optimization List

Field	Description
Run ID	System-generated unique identifier for the run.
Run Name	The Run Name is the user-provided name.
Pricing Objective	A description of the objective used for the run.
Season	A description of the Season.
Department	A description of the Department.
Price Zone	A description of the price zone used for the run.
Location	The location selected for optimization.
Run Status	The current status of the run. Values include Worksheet, Running, Ready for Review, Auto Run, and Failed.
Status Update	The date when the status was last updated.
Created Date	The date when the run was first created.
Optimized On	The date when the run was optimized.
Effective Week	The week ending date for which the run was executed.
Created By	Login ID of the user who created the run
Projected Revenue	Projected Revenue (AMT) for the run is the revenue generated by optimization in the run's currency, and Projected Revenue (%CHG) is the percent revenue gain compared to the current price policy.
Projected Gross Margin	Projected Gross Margin (AMT) for the run is the gross margin generated by optimization in the run's currency and Projected Gross Margin (&CHG) is the percent gross margin gain compared to the current price policy.
Projected Sell Through	Projected Sell Through (PCT) for the run is the sell-through generated by optimization, and Projected Sell Through (%CHG) is the percent gain in sell-through over the current price policy.

Table 1-7 (Cont.) Optimization List

Field	Description
Finalized	This flag indicates that recommendations from this run are used in the Manage Recommendation screen. If the user wants to send recommendations from another run, user must finalize that run. By default, batch runs are finalized.

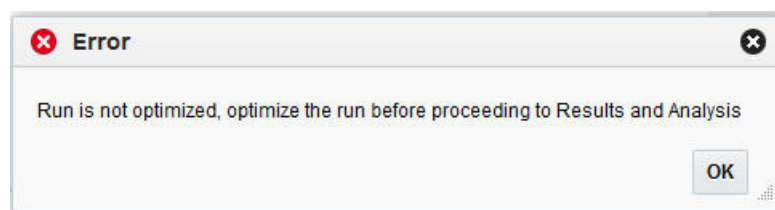
Table 1-8 Run and Item Recommendation Status

Status	Description
Worksheet	User is setting up the run, which has not yet been sent for optimization.
Running	The run has been sent for execution, and the process of collecting data and optimization is currently running. When the user selects re-calculate, the run enters into running status as well, but here it will be recalculating all the metrics based on the user price overrides (no re-optimization).
Ready for Review	The optimization process is complete, and the run status and item recommendations are ready for review.
Reviewed	The analyst finished reviewing the price recommendations and changes the item recommendation status to Reviewed so that it goes to the Buyer for approvals.
Submitted or Approved	The recommendations have been reviewed and submitted or approved for execution. The recommendations are ready for export to other applications.
Auto run	This status indicates that the run is a batch run and will be executed as part of batch process.
Failed	Run execution was aborted due to technical or data errors.

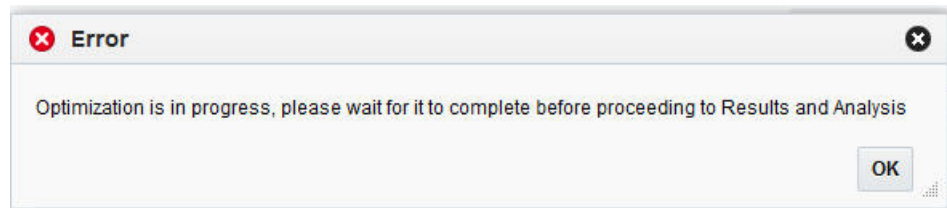
When the run is in Ready for Review status, clicking on the run name in the overview screen will automatically take you to the Results stage.

When the run is in Worksheet status, you cannot go to Results stage since the optimization is not complete, and instead you will see the error message.

Figure 1-6 Run Not Optimized



When the run is in Running status, you cannot go to Results nor make any more edits. The UI is locked from further edits until the optimization is completed. If you try to go to Results, the error message is displayed.

Figure 1-7 Running Status

When the run is in Submitted status, you cannot accept, reject, or override any price recommendations. The UI is locked from making any further changes or edits.

Create a Run

To create a new run, click the Create Run icon. You are taken to the Setup stage in the Run tab.

In order to create a run, you must have either OO analyst permission or OO super user permission.

Copy a Run

To copy an existing run, highlight that run in the displayed list from the Overview screen and click the Copy Run icon. You will be prompted to continue with the existing effective week or you can select a new effective week from the drop-down list shown in [Figure 1-8](#). Then, you see the Scope stage in the Run tab. The fields are populated with copies of all inputs and data. Any existing results are not included. The list of runs is updated with a run that has a new ID. The Run Name is prefixed with "Copy Of." All other fields match the existing run.

Figure 1-8 Copy Run

Open a Run

To edit an existing run, highlight that run in the displayed list and click the run name. Any user can open a run; however, edit mode is only allowed for runs that a user created with appropriate roles and only when the run does not have a status of Running, Reviewed, or Submitted. All other runs are opened in read-only mode.

Delete a Run

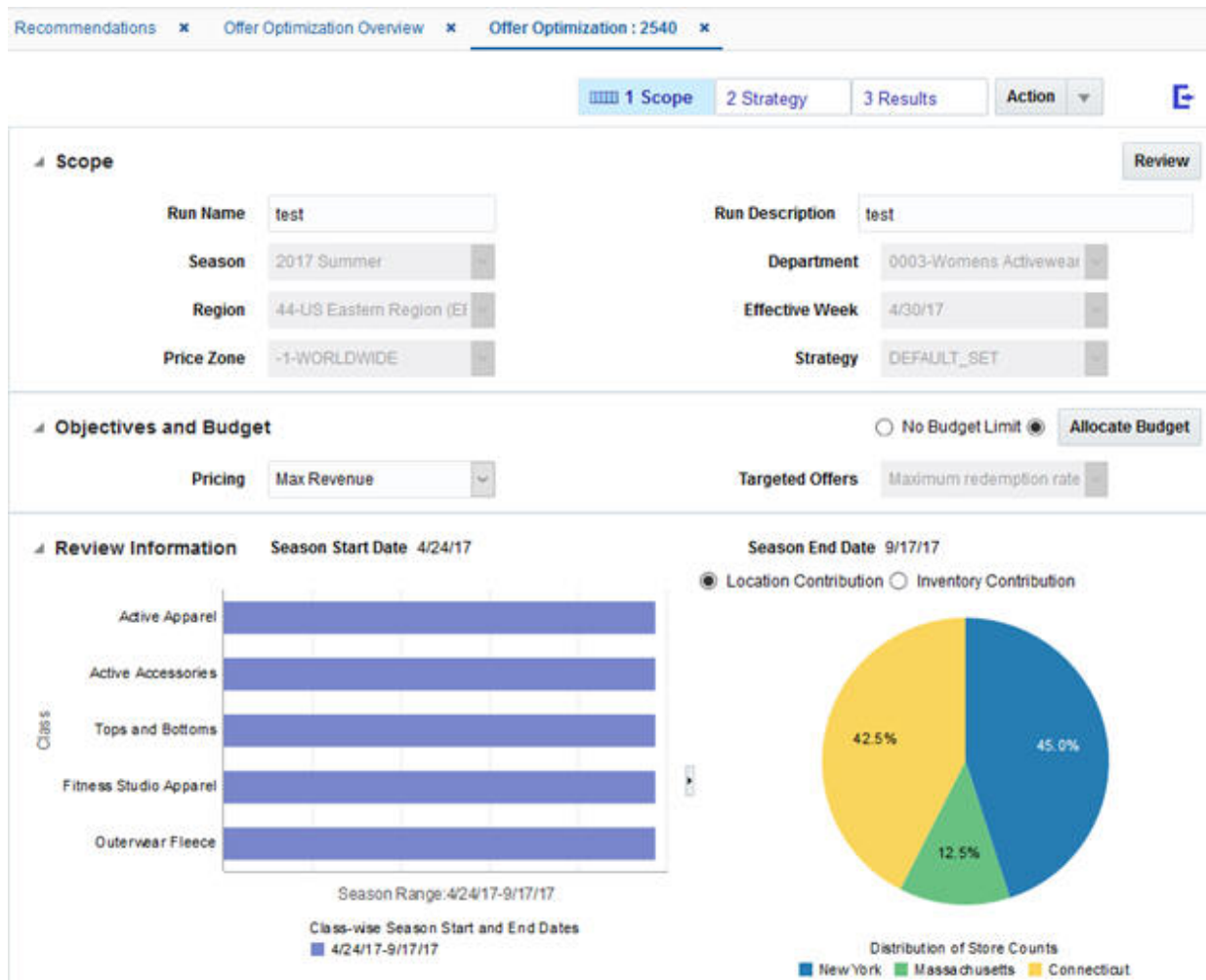
Runs can be deleted, depending on the status of the run and the permissions a specific user has. A user with Administrator permissions can delete any run except for one that has a status of Running. Users can delete any runs they have created that do not have a status of Running. They cannot delete runs created by another user or runs with an Auto run status. More than one run can be selected for deletion at the same time.

Offer Optimization Run Tab

Every run is opened in an Offer Optimization Run tab. The title of the tab is Offer Optimization: <Run ID>. The Run tab opens whenever you create a new run or click an existing run. This is the main tab where you can specify the business rules and goals for the run. It provides a series of three stages that you progress through in order to set up, execute, and analyze the results of the optimization run.

- Scope. Used to select a season, location (for example, region) or price zone, merchandise (for example, department), effective week, and strategy. It is also used to select the objectives and specify the budgets.
- Strategy. Used to view or change business rules.
- Results. Used to view results, and override, accept or reject, or revisit prior steps in order to make changes.

Figure 1-9 Offer Optimization Run Tab



Scope

The Scope stage is used to define the scope of the optimization. It is used to pick a Season, Merchandise (for example, Department), and Location (for example, Region), or Prize Zone. It is organized into three major panels: the Setup section, the Objectives and Budget section, and the Review Information section.

You can go to the next stage only after the run is saved. If you want to send the run for optimization, click Optimize (or Re-optimize), using the buttons in the Action menu. You can choose not to make any changes to business rules in next stage, Strategy; in this case, the rules associated with the strategy selected are used for optimization.

Setup

The Setup section, shown in [Figure 1-10](#), is used to select the Season, Merchandise (for example, Department), Location or Price Zone, Effective Week, and Strategy for the run. Click Save to save changes to the Name and Description fields. You can also use this button to save changes made in the Objectives and Budget section. You do not need to click save if you simply want to review the information for the selected season, location or price zone, merchandise combination. You can click Review, which populates the bottom Review Information section. This is helpful if you are interested in understanding how much inventory is remaining for the selections in the Setup. However, once the run is saved, the review panel is automatically populated.

Figure 1-10 Setup

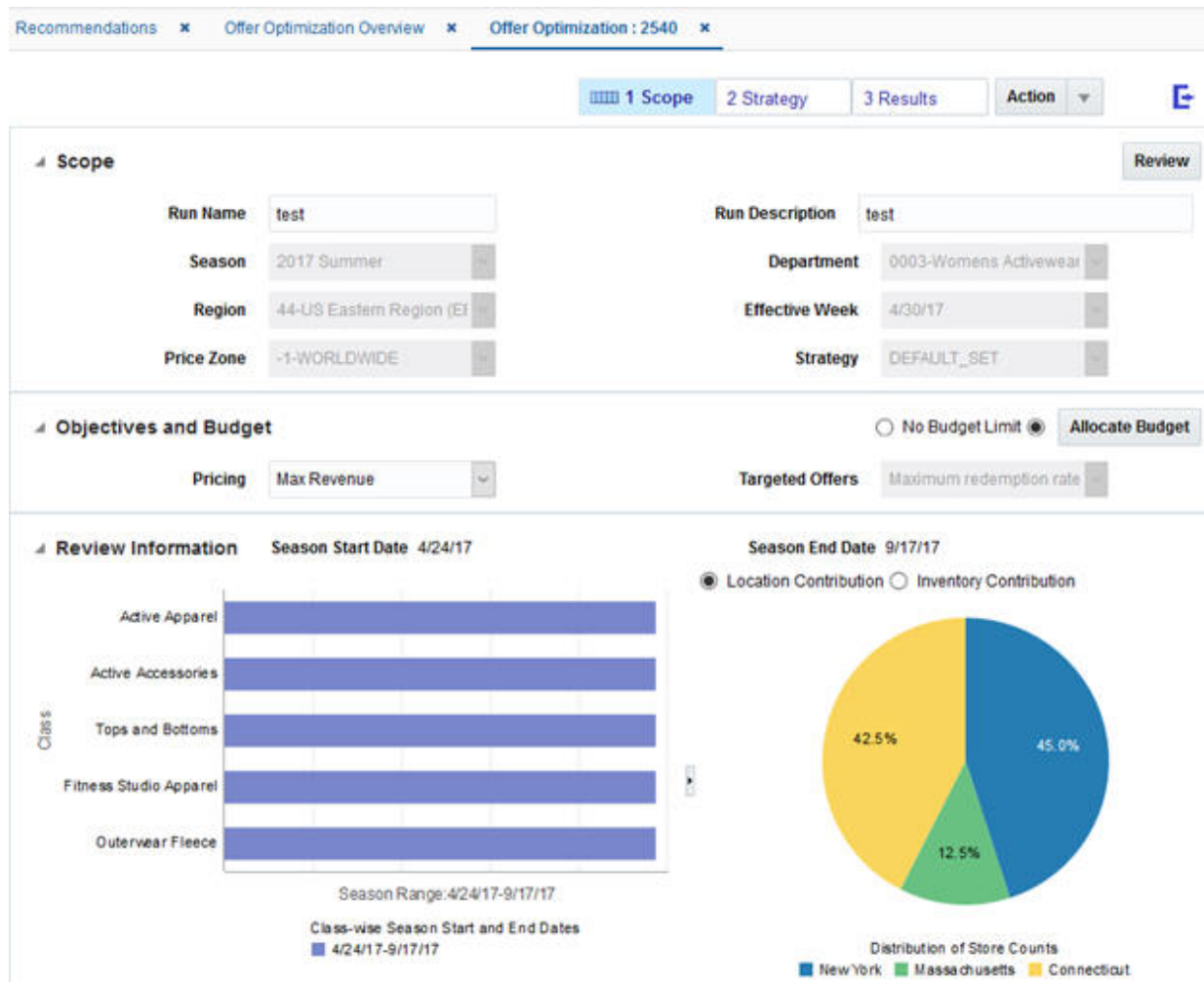


Table 1-9 Setup

Field	Description
Name	The name identifying the run. The name must be 80 characters or less and use alphanumeric characters only. It is case sensitive.
Description	A brief description of the run. The value must be 200 characters or less and use alphanumeric characters only.
Season	You can choose from the drop-down list of seasons available for the run, based on PRO_PROD_HIER_RUN_SETUP_LVL.
Merchandise	You can choose from the drop-down list of merchandise available for the run.
Location	You can choose from the drop-down list of locations available for the run, based on PRO_LOC_HIER_PROCESSING_LVL.
Effective Week	You can choose from the drop-down list of effective weeks available for the run. Effective weeks in the past compared to the last pull of sales data (whenever the batch process was successfully executed) are not displayed.

Table 1-9 (Cont.) Setup

Field	Description
Strategy	You can choose from the drop-down list of strategies available. You can define the set of business rules and associate the set with a strategy (for example, Christmas Specials). By default, there is always strategy named DEFAULT_SET.

Objectives and Budget

This section, shown in [Figure 1-10](#), can be used to specify the objective for Pricing and Targeted Offers problems. You can specify whether there is a Budget Limit or No Budget Limit for the Pricing problem. Four objectives are available for the user: Max Revenue, Max GM Amount, Max Revenue with Salvage, or Max GM Amount with Salvage for the pricing problem. Targeted Offers support only one objective, maximize redemption rate. You must click Save under the Action button to save any changes made in this section.

Table 1-10 Objectives and Budget

Field	Description
Pricing Objective	You can choose between Max Revenue, Max GM Amount, Max Revenue with Salvage, and Max GM Amount with Salvage from the drop-down list of values. You can set the default pricing objective using the strategy interface.
Targeted Offers Objective	Supports only Maximize Redemption Rate.
No Budget Limit	Indicates no budget limit for promotions and markdowns for the run.
Allocate Budget	Use the radio button before this button to toggle to put a limit on the budget for the run. When you click this button, it brings up a pop-up that you can use to specify allocation mechanism and budget limit for promotions and markdowns.

As shown in [Figure 1-11](#), you can click Allocate Budget to access the utility that you can use to allocate the run's product setup level (for example, Department-level) budget to the run's product processing level (for example, classes). The run's product setup and processing level are configured using these two flags, PRO_PROD_HIER_RUN_SETUP_LVL and PRO_PROD_HIER_PROCESSING_LVL, respectively. You can choose to enter the budget available either through the UI or send, using the budget interface regularly.

- Total Budget, Promotion Budget, Markdown Budget. Total budget represents the budget available over the entire of the life of the item and across all items in the run for both Promotions and Markdowns.
- Use separate Promotion and Markdown Budgets. User can check this option in order to use separate budgets for Promotions and Markdowns.
- Feed. When you send in the budget through the interface and send the budget values at the run's product processing level (for example, Class), the default option selected is Feed. This option is not available when the budget is not sent through the interface at the run's product processing level.
- Optimally. When you send in the budget through the interface at the run's product setup level, (for example, Department) then the default option selected is Optimally.

- Inventory Value. This option allocates the budget in proportion to the inventory value (current price * unsold inventory) of the run's product processing level (for example, Class).
- Custom. You can choose to specify the allocation percentage. Allocation percentages must add up to 100 percent as shown in the figure.

Figure 1-11 Allocation Scheme

Budget Allocation

Total Budget (USD)

Promotion Budget (USD) Markdown Budget (USD)

Use separate Promotion and Markdown Budgets

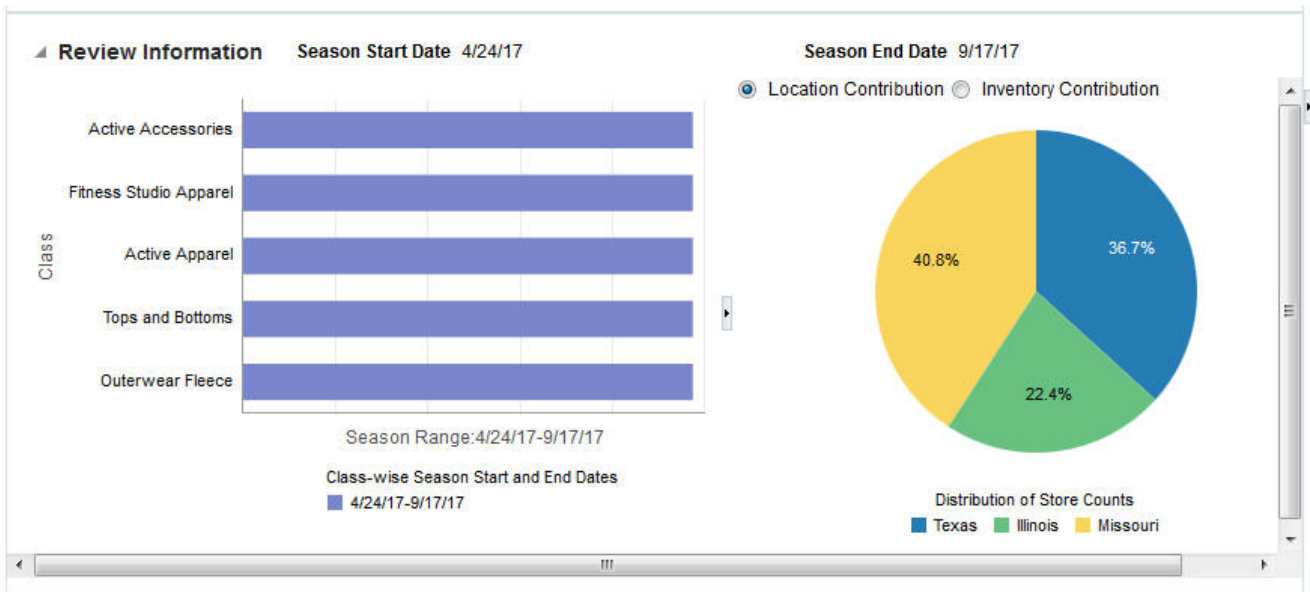
Please select a scheme for allocation Feed Optimally Inventory Value Custom

Class	Inventory Value (as %)	Promotion Budget (Feed)	Markdown Budget (Feed)	Promotion Budget (Custom %)	Markdown Budget (Custom %)
Active Accessories	1.3%	0.00	0.00	<input type="text" value="20.0%"/>	<input type="text" value="20.0%"/>
Tops and Bottoms	0.1%	0.00	0.00	<input type="text" value="20.0%"/>	<input type="text" value="20.0%"/>
Outerwear Fleece	3.6%	0.00	0.00	<input type="text" value="20.0%"/>	<input type="text" value="20.0%"/>
Fitness Studio Apparel	0.2%	0.00	0.00	<input type="text" value="20.0%"/>	<input type="text" value="20.0%"/>
Active Apparel	94.8%	0.00	0.00	<input type="text" value="20.0%"/>	<input type="text" value="20.0%"/>
Total				100.0% ✓	100.0% ✓

Review Information

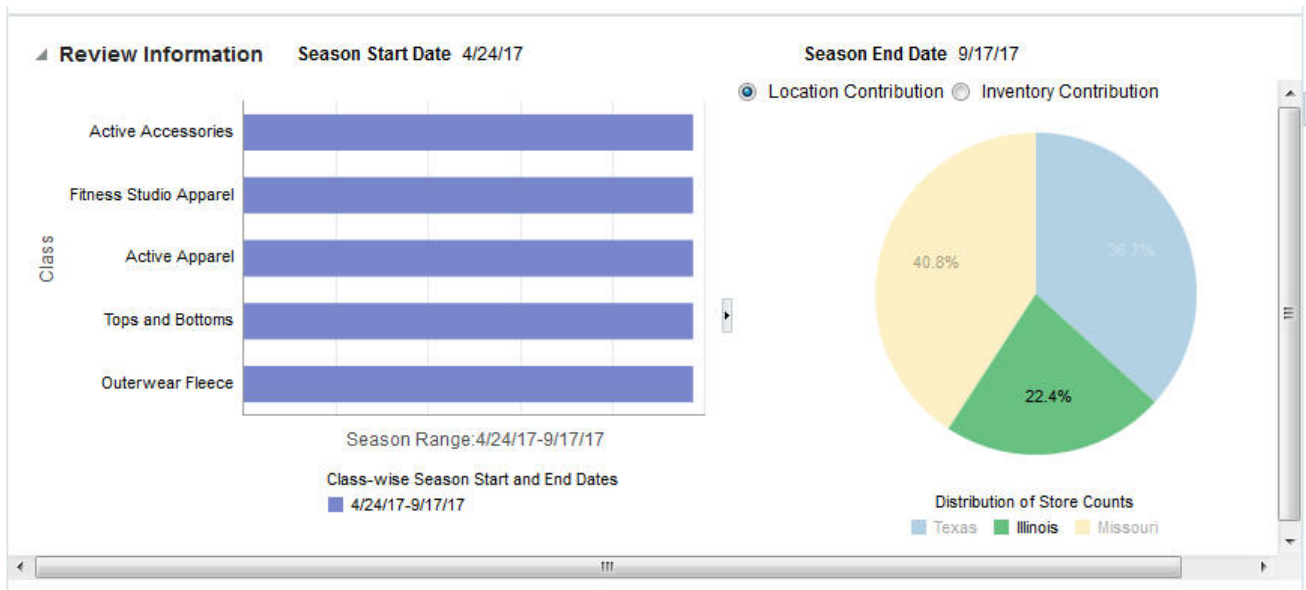
This section provides information on the start and end dates by PRO_PROD_HIER_PROCESSING_LVL (for example, class), a season's start and end date, and pie-charts of store counts by the immediate child location of the location selected in the setup. For example, if a region such as US Central was selected in the setup, then this displays the contribution by District (Texas, Illinois, Missouri). You can toggle between the Location Contribution pie-chart and the Inventory Contribution pie-chart. The inventory contribution shows the distribution of unsold inventory by the child location. This information is useful as it provides the status of unsold inventory at different locations.

Figure 1-12 Review Allocation Information



When you hover over a component in the chart, the corresponding legend item becomes highlighted. You can also hover over a legend item to see the corresponding chart component highlighted. For example, in [Figure 1-13](#), Illinois is highlighted.

Figure 1-13 Highlight Chart Component

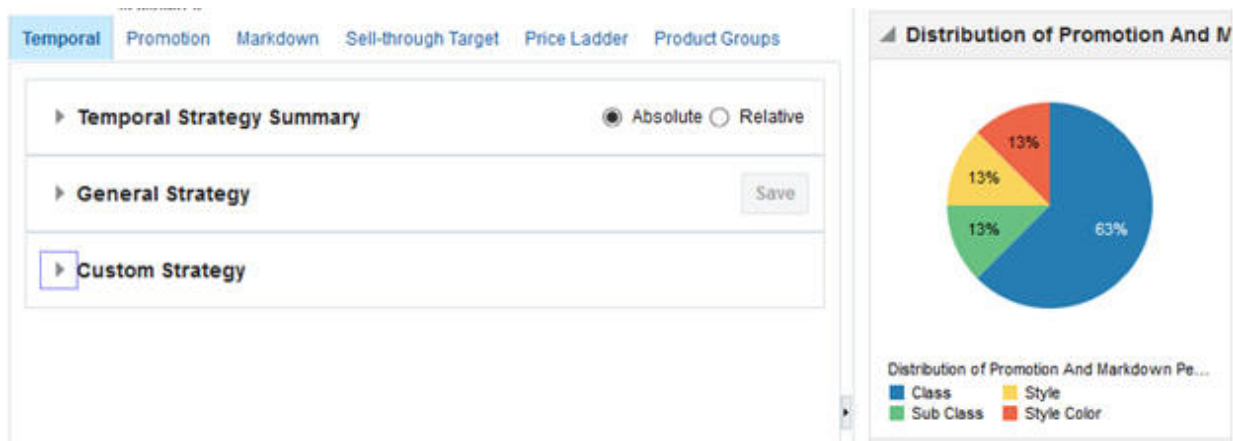


Strategy

Business Rules correspond to the different constraints that are imposed on a pricing optimization problem. Business rules can be delivered through the interfaces and associated

with a strategy (for example, Christmas Strategy). By default, there is always a DEFAULT_SET strategy, which is used to populate Strategy screens. The Strategy stage is divided into five different tabs: Temporal, Promotion, Markdown, Sell-Through Target, Price Ladder and Product Groups. As shown in [Figure 1-14](#), each screen is generally divided into three panels: Summary at the top, General Strategy in the middle, and Custom Strategy at the bottom. On the right, in the contextual area, the pie chart shows the percentage of rules specified at different merchandise levels.

Figure 1-14 Strategy



The Summary panel displays the summary of all rules specified at different merchandise levels. By default, all rules are specified at the run's product processing level (for example, Class). When the run is saved (or optimized), the default values are used to populate at the run's product processing level (for example, Class). This panel is read-only and not editable.

In the General Strategy section, you can specify the constraint at the run-level, which means that the rule is applied to all locations and all product processing levels (for example, all classes) in the run. All product processing levels (for example, all classes) obtain the same values mentioned in the General Strategy section. The Save button is enabled only when you make any changes in the related portion of the screen.

Custom Strategy is divided into Custom Strategy Selector and specific UI-related to the rule. This section can be used to modify the rule at a specific merchandise level. In the Custom Strategy Selector portion, you select the merchandise level to apply the constraint.

- The set of available merchandise levels shown in the drop-down list depends on the selected merchandise (for example, Department) in the Scope screen.
- The merchandise level that can be selected is up to three merchandise levels, based on Class, Sub-class, and Style. The UI displays all the child nodes for the selected merchandise level. For example, if you select a Class, then the child nodes that will be displayed are the subclasses for that class.
- Based on the selected levels, the bottom half of the screen is dynamically populated. Custom Strategy is always specified at a lower level than the run's product processing level (for example, Sub-class).
- The save button is disabled if you have not made any changes in the related portion of the screen.

When the strategies are sent to optimization, the rules are applied based on the concept that lower merchandise-level rules override higher merchandise-level rules. That is, the strategies screens allow you to manage rules by exception. Consider the following example. Suppose the General Strategy says that the first min discount percent cannot be lower than 10 percent. This means that all items in all Classes are assigned this 10 percent criterion. If you decide to add a Custom Strategy for a specific Style, say, 20 percent, then all the items in all Classes are assigned the 10 percent rule and the items in this particular Style are assigned the 20 percent rule.

Temporal Rules

This screen, shown in [Figure 1-15](#), is used to specify the business rules associated with temporal aspects of the pricing problem. There are two ways you can specify the temporal rules. The first approach is called "Absolute Calendar" and the second approach is called "Relative Calendar". The key difference between the two approaches is that the retailer uses actual dates to specify the rules in the former and in the later uses relative weeks from start (that is, from when the item started selling based on certain criteria).

By default, Absolute Calendar is used to display the rules screens. You can make a change to the relative calendar only on the Temporal screen. You can switch and use Relative Calendar only once, and the functionality is further disabled for that run. A pop-up alerts you that "This selection is final and cannot be reversed for this run."

When you specify using the Absolute Calendar (default option selected):

- Default values at the run merchandise processing level (for example, class) are populated based on the interface.
- The interface allows you to specify the general promo, markdown, or and ineligible periods at the run's product processing level. That is, for each period, the kind of pricing change that is allowed is specified through this interface. The user can also input exceptions at lower merchandise levels through this interface.
- Note that you cannot edit the run's product processing level (for example, class) in the UI. You can override by specifying the rules at lower levels of merchandise.
- You can modify no-touch at the beginning and at the end of life for all classes in the UI.

When you specify using the Relative Calendar:

- Default rules at the run's product processing level (for example, class) are specified based on the default length of the promotion (60 percent) and default length of the markdown (40 percent).
- You can edit the defaults for all of product processing level merchandise (for example, for all classes) by modifying in the General Strategy panel.
- This calendar option is useful when the retailer introduces merchandise frequently into the store and a fixed or absolute calendar cannot be applied to all items that are in different phase (for example, regular vs. markdown) of the life.

The Absolute Calendar is useful when most of the items are introduced and exit at almost the same time. The Relative Calendar is useful when the retailer introduces items at frequent intervals and having a fixed calendar for all items is restrictive and pushes items into promotion or markdown too quickly within the items' life.

Figure 1-15 Temporal Strategy

Temporal Promotion Markdown Self-through Target Price Ladder Product Groups

Temporal Strategy Summary

Promotion and Markdown Item Limits Per Period

Week Ending Date	Merchandise	Merchand Level	Max. No. of Promo Items
4/30/17	Fitness Studio A...	Class	6
5/7/17	Fitness Studio A...	Class	6
5/14/17	Fitness Studio A...	Class	6
5/21/17	Fitness Studio A...	Class	6

Planned Promotions Summary

Promo Start Date	Promo End Date	Merchandise	Merchandis Level
6/28/17	7/4/17	Active Accessori...	Class
6/28/17	7/4/17	Active Apparel	Class
6/28/17	7/4/17	Fitness Studio A...	Class
6/28/17	7/4/17	Outerwear Fleece	Class

General Strategy

There are unsaved changes Save

BEGINNING OF SEASON END OF SEASON

No-touch at beginning of life No-touch at end of life

Custom Strategy

Distribution of Pro...

Distribution of Promotion and ...
■ Class ■ Style Color Size

Distribution of Plan...

Distribution of Planned Promot...
■ Class

Figure 1-16 Custom Strategy

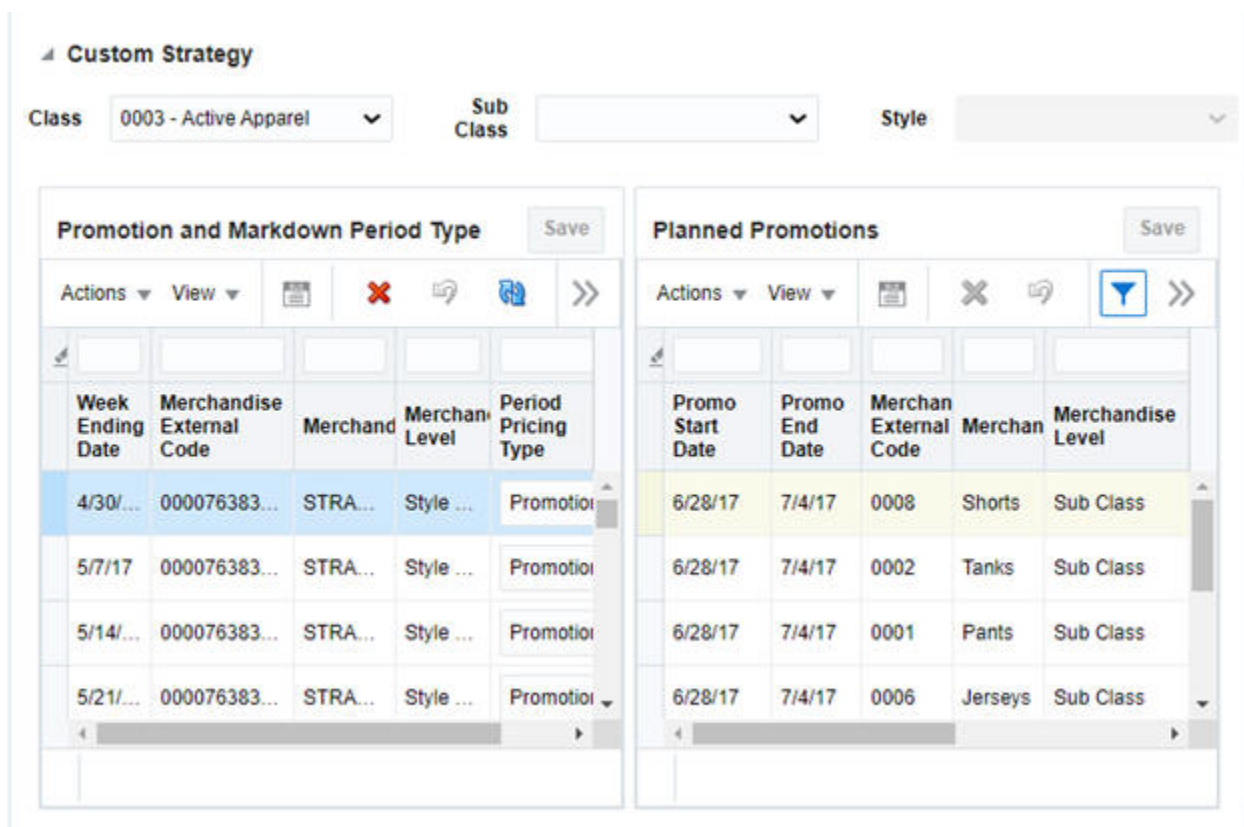


Table 1-11 Temporal Rules

Field	Description
Week Ending Date	The week ending date for the period. Non-editable field.
Weeks From Start	This field is non-editable and runs from Week 1 to Maximum no. of weeks available for the selected merchandise level.
Merchandise	Description of the merchandise.
Merchandise Level	Merchandise level of the rule. This can be from PRO_PROD_HIER_PROCESSING_LVL (for example, Class) to Subclass or Style/Color.
Product External Code	Merchandise level's external code that can be identified by the retailer.
Period Pricing Type	Indicates whether the period is marked as Promotion Allowed or Markdown Allowed or ineligible.
Max No. of Promo Items	This feature is not editable and provides the ability to limit how many items can be promoted for that period. Default value is the number of items at that merchandise level and name. When a period is marked as Promotion Allowed, then the Max No. of Markdown Items is disabled and set to 0. When a period is marked as ineligible, then this field is disabled and set to 0.

Table 1-11 (Cont.) Temporal Rules

Field	Description
Max No. of Markdown Items	This feature is not editable and provides the ability to limit how many items can be marked down for that period. Default value is the number of items at that merchandise level and name. When a period is marked as Markdown Allowed, then the Max No. of Promotion Items is disabled and set to 0. When a period is marked as ineligible, then this field is disabled and set to 0.
Planned Promotion Event	Name of the planned promotion event. UI does not provide the ability to modify or edit the events. They are loaded as part of data interface loads.
Apply Planned Promotion?	Indicates whether to apply the planned promotion event to the items in that merchandise level. The user can turn off planned promotions if a particular merchandise level (and selected stores) is not considered for planned promotions. Default value is that planned promotions are always turned on.
No Touch After Landing	Default value is 0 weeks and is applied at the item level (and for all the locations). Indicates that price of an item cannot be changed from the initial full price until 0 weeks have been completed after the item start selling (also referred to as model start date).
No Touch at End of Life	Default value is 0 weeks and is applied at the item level (and for all the locations). Indicates that price of an item cannot be changed in the last 0 weeks before the exit date.
Length of Regular Season	Default value is 60 percent and is applied at the item level (and for all the locations). Indicates that if the total season length of an item is 25 weeks, 15 weeks are allocated for promotions (also called regular season). Regular season occurs towards the beginning of the season. This field is enabled only for relative calendar and not for absolute calendar.
Length of Markdown Season	Default value is 40 percent and is applied at the item level (and for all selected locations). Indicates that if the total season length of an item is 25 weeks, 10 weeks are allocated for markdowns (also called clearance season). Clearance season occurs towards the end of the season. This field is enabled only for relative calendar and not for absolute calendar.
Min No. of Promotion Items	This feature is editable and provides the ability to specify minimum number of items to be promoted for that period. Default value is 0. When a period is marked as Markdown Allowed, then the Min No. of Promotion Items is disabled and set to 0. When a period is marked as ineligible, then this field is disabled and set to 0.
Min No. of Markdown Items	This feature is editable and provides the ability to specify minimum number of items to be marked down for that period. Default value is 0. When a period is marked as Promotion Allowed, then the Min No. of Markdown Items is disabled and set to 0. When a period is marked as ineligible, then this field is disabled and set to 0.

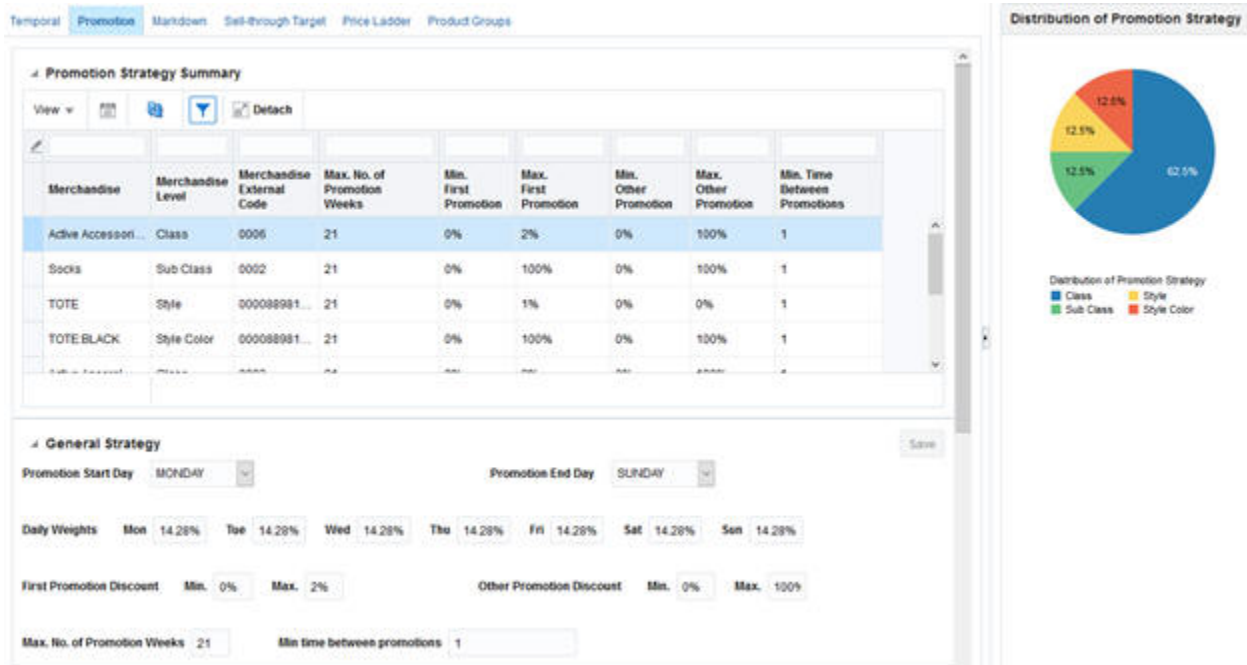
Promotion Strategy

In this screen, as shown in [Figure 1-17](#), you can specify the rules associated with promotions, specifically the reactive promotions (and not the planned promotions).

The default values that are populated for this run, such as General Strategy or Custom Strategy, are based on the DEFAULT_SET strategy or selected strategy in the Scope stage.

Contextual area shows the percentage of rules specified by the merchandise-level, that is, percentage specified at Class-level vs. Subclass vs. Style/Color level.

Figure 1-17 Promotion Strategy



The fields available are described in [Table 1-12](#).

Table 1-12 Promotion Strategy

Field	Description
Merchandise	Description of the merchandise.
Merchandise Level	Merchandise level of the rule. This can be from PRO_PROD_HIER_PROCESSING_LVL (for example, Class) to Subclass, or Style/Color.
Merchandise External Code	The merchandise's external code that can be identified by the retailer.
Max No. of Promotion Weeks	Default is the total number of weeks in the season. This allows the user to limit how many weeks are available for promotions for a particular merchandise.
Min First Promotion Discount	The minimum discount that is allowed for the first promotion in the season. Default value (for example, 0%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Max First Promotion Discount	The maximum discount that is allowed for the first promotion in the season. Default value (for example, 100%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.

Table 1-12 (Cont.) Promotion Strategy

Field	Description
Min Other Promotion Discount	The minimum discount that is allowed for the subsequent promotions (except the first) in the season. Default value (for example, 0%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Max Other Promotion Discount	The maximum discount that is allowed for the subsequent promotions (except the first) in the season. Default value (for example, 100%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Min Time Between Promotions	The minimum time (in periods or weeks) between consecutive promotions in the season. If there are four months in the promotion season, and the min time is four weeks, then roughly one promotion week is available per month. Default value (for example, one week) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Promotion Start Day	Indicates when the promotion can start within a week. Default value (for example, Monday) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Promotion End Day	Indicates when the promotion can end within a week. Default value (for example, Sunday) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Daily Weights	These values represent the proportion of weekly demand for each day of the week. This helps spread the weekly forecast into daily forecasts depending on when the promotion is applicable (for example, Thu-Sun) for that week. These are generated internally by OO forecasting or can be supplied through an interface.

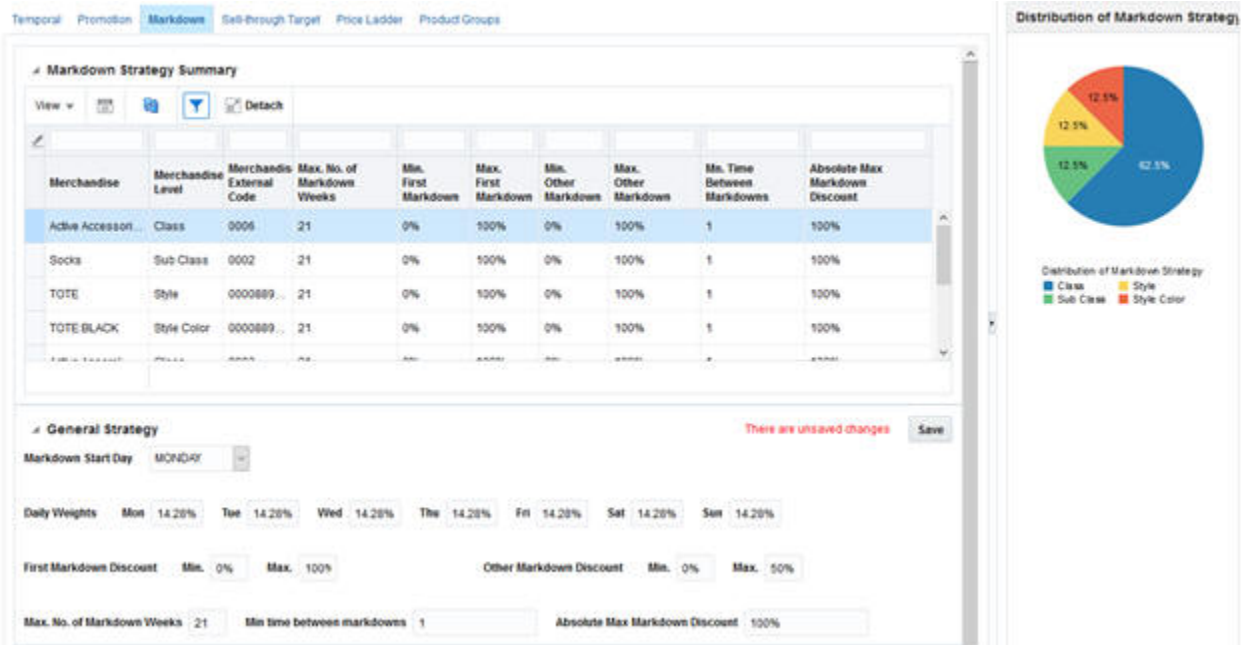
Markdown Strategy

In this screen, as shown in [Figure 1-18](#), you can specify the rules associated with markdowns.

The default values that are populated for this run, such as General Strategy and Custom Strategy, are based on the DEFAULT_SET strategy or selected strategy in the Scope stage. The retailer can choose to modify the values during implementation.

Contextual area shows the percentage of rules specified by the merchandise level (for example, the percentage specified at Class vs. Subclass vs. Style/Color level).

Figure 1-18 Markdown Rules



The fields available are described in [Table 1-13](#).

Table 1-13 Markdown Strategy

Field	Description
Merchandise	Description of the merchandise.
Merchandise Level	Merchandise level of the rule. This can be from PRO_PROD_HIER_PROCESSING_LVL (for example, Class) to Subclass, or Style/Color.
Merchandise External Code	The merchandise's external code that can be identified by the retailer.
Max No. of Markdown Weeks	Default is the total number of weeks in the season. This allows the user to limit how many weeks are available for markdowns for a particular merchandise.
Min First Markdown Discount	The minimum discount that is allowed for the first promotion in the season. Default value (for example, 0%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Max First Markdown Discount	The maximum discount that is allowed for the first markdown in the season. Default value (for example, 100%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Min Other Markdown Discount	The minimum discount that is allowed for the subsequent markdowns (except the first) in the season. Default value (for example, 0%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.

Table 1-13 (Cont.) Markdown Strategy

Field	Description
Max Other Markdown Discount	The maximum discount that is allowed for the subsequent markdowns (except the first) in the season. Default value (for example, 100%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Min Time Between Markdowns	The minimum time (in periods or weeks) between consecutive markdowns in the season. If there are four months in the markdowns season, and the min time is four weeks, then roughly one markdown week is available per month. Default value (for example, one week) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Markdown Start Day	Indicates when the markdown can start within a week. Default value (for example, Thursday) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Daily Weights	These values represent the proportion of weekly demand for each day of the week. This helps spread the weekly forecast into daily forecasts depending on when the promotion is applicable (for example, Thu-Sun) for that week. These are generated internally by OO forecasting or can be supplied through an interface.
Max Absolute Markdown Discount	The maximum discount (of full price) that is allowed for any markdown in the season. Default value (for example, 100%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.

Min Other Markdown and Max Other Markdown Discount need further explanation. Consider the following example. Suppose the user sets these values to 25 percent and 50 percent, respectively, for an item with full price of \$100. If the first markdown was 20 percent, then the item's ticket price drops to \$80. Because of the Min Other and Max Other Markdown Discount, the second markdown will be limited to a value between $\$80 * (1 - 0.25) = \60 (or 40 percent off) and $\$80 * (1 - 0.50) = \40 (or 60 percent off). Of course, if there was a Max Absolute Markdown Discount of 50 percent, then the second markdown would be further constrained to be between \$60 and \$50.

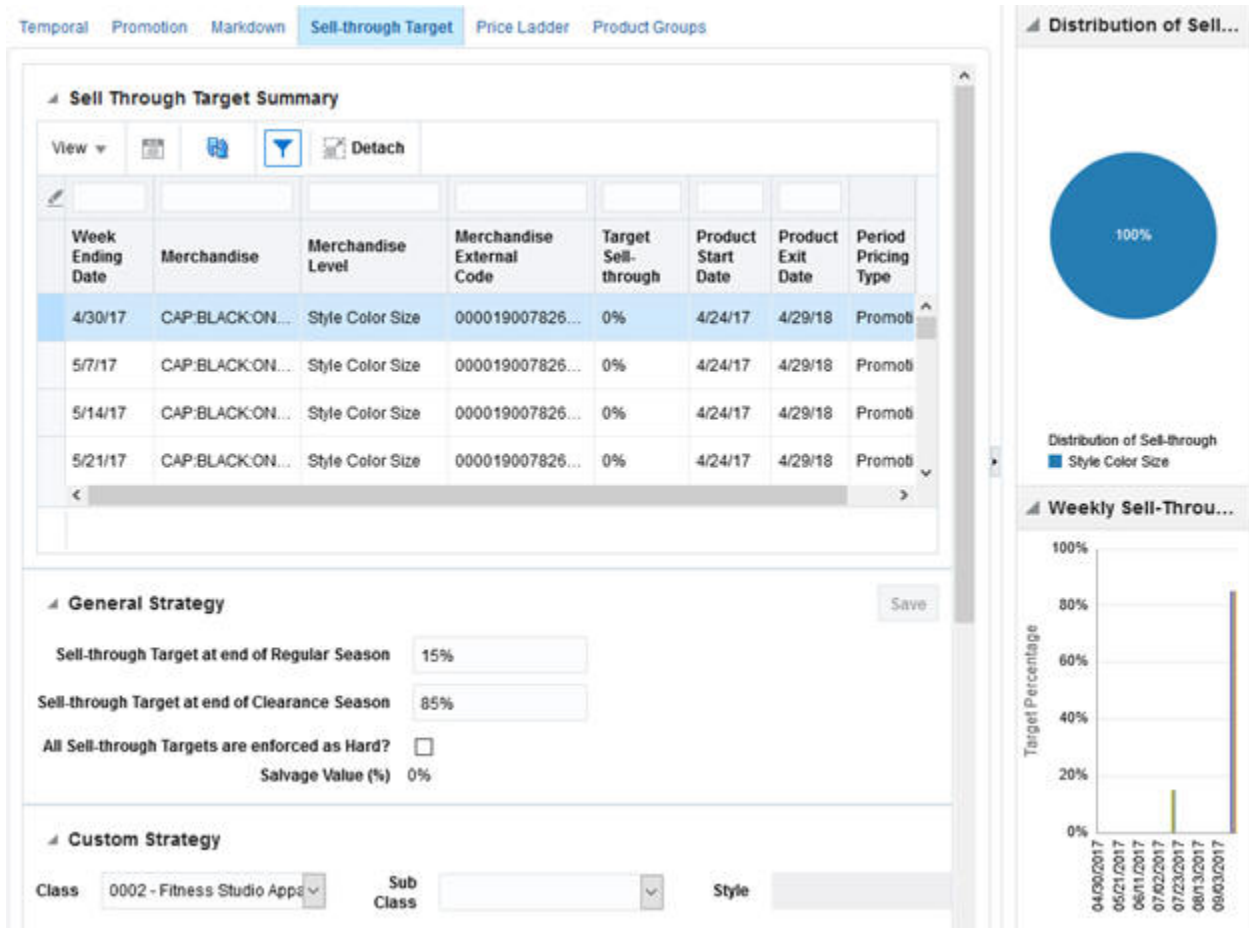
Sell-Through Target

In this screen, as shown in [Figure 1-19](#), you can specify the sell-through targets by week and by merchandise. The default values that are populated for this run, such as General Strategy and Custom Strategy, are based on the DEFAULT_SET strategy or selected strategy in the Scope stage. The retailer can choose to modify the values during implementation.

Contextual area shows the percentage of rules specified by the merchandise-level (for example, the percentage specified at Class vs. Subclass vs. Style/Color level).

Depending on the calendar option selected in the Temporal Strategy Screen, this screen will use either the Absolute Calendar or the Relative Calendar option. The Absolute Calendar is useful when most of the items are introduced and exit at almost the same time. The Relative Calendar is useful when the retailer introduces items at frequent intervals and having a fixed calendar for all items is restrictive and pushes items into promotion or markdown too quickly during the items' life.

Figure 1-19 Sell-Through Target



The fields available are described in [Table 1-14](#).

Table 1-14 Sell-Through Target

Field	Description
Week Ending Date	The week ending date for the period. Not editable.
Weeks From Start	This field is non-editable and it runs from Week 1 to the maximum number of weeks available for the selected merchandise level. Available only with the Relative Calendar option.
Merchandise	Description of the merchandise.
Merchandise Level	Merchandise level of the rule. This can be from PRO_PROD_HIER_PROCESSING_LVL (for example, Class) to Subclass, or Style/Color.
Merchandise External Code	The merchandise's external code that can be identified by the retailer.
Target Sell-through	Sell-through target at the end of the specified period for the merchandise as percentage (0% - 100%). If enforced as Hard, then this sell-through target must be met; otherwise, the optimization will not return any solution.

Table 1-14 (Cont.) Sell-Through Target

Field	Description
Sell-through target at end of Regular Season	The sell-through target that must be achieved by the end of the regular season. Default value (for example, 0%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Sell-through target at end of Clearance Season	The sell-through target that must be achieved by the end of the clearance season. Default value (for example, 85%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
All Sell-through Targets are enforced as Hard?	If enforced as Hard (checked), then all the sell-through targets must be met; otherwise, the optimization will not return any solution. Default value (for example, not hard) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage.
Salvage Value (%)	The salvage value for an item is calculated using this percentage: Salvage value percentage multiplied by the full price of the item. Default value (for example, 0%) is based on a parameter specified in the DEFAULT_SET strategy or the selected strategy in the Scope stage. Non-editable field.
Product Start Date	This represents the calculated start date for an item based on the logic used for the model start date.
Product Exit Date	This represents the date by which an item is expected to stop selling.
Period Pricing Type	Indicates whether the period is marked as Promotion Allowed or Markdown Allowed or Ineligible.

Price Ladder

In this screen, shown in [Figure 1-20](#), you can assign price ladders that have been loaded and are available for the selection location and merchandise levels from (PRO_PROD_HIER_PROCESSING_LVL (for example, Class). You can load as many price ladders at different merchandise levels (Class and above). By default, the system assigns one price ladder for promotion and one for markdown at the PRO_PROD_HIER_PROCESSING_LVL (for example, Class level) that is closest to PRO_PROD_HIER_PROCESSING_LVL.

The contextual area shows the percentage of rules specified by the merchandise level (for example, the percentage specified at Class level vs. Subclass vs. Style/Color level).

Figure 1-20 Price Ladders

Temporal Promotion Markdown Sell-through Target **Price Ladder** Product Groups

Price Ladder Summary

View

Merchandise	Merchandise Level	Merchandise External Code	Price Ladder Name	Price Ladder Type	Price Ladder
Active Accessori...	Class	0006	Mkdn Ladder for DEPT-0003-REGION-44	M	(Price Point - \$) .07, .17, .27, .37, .47, .57,
Active Accessori...	Class	0006	Promo % Off Ladder for DEPT-0003-RE...	P	(% Off from Original Price) 0%, 5%, 10%, 1...
Active Apparel	Class	0003	Mkdn Ladder for DEPT-0003-REGION-44	M	(Price Point - \$) .07, .17, .27, .37, .47, .57,
Active Apparel	Class	0003	Promo % Off Ladder for DEPT-0003-RE...	P	(% Off from Original Price) 0%, 5%, 10%, 1...

Custom Strategy

Class Sub Class Style

Price Ladders for 0003-Active Apparel

View

Merchandise External Code	Merchandise	Merchandise Level	Price Ladder Id	Price Ladder Name	Price Ladder Type	Price Ladder
0003	Active Apparel	Class	1002	Mkdn Ladder for DEPT-0003...	M	(Price Point - \$) .07, .17, .27, .37, .47, .57, .67, .77, .87,

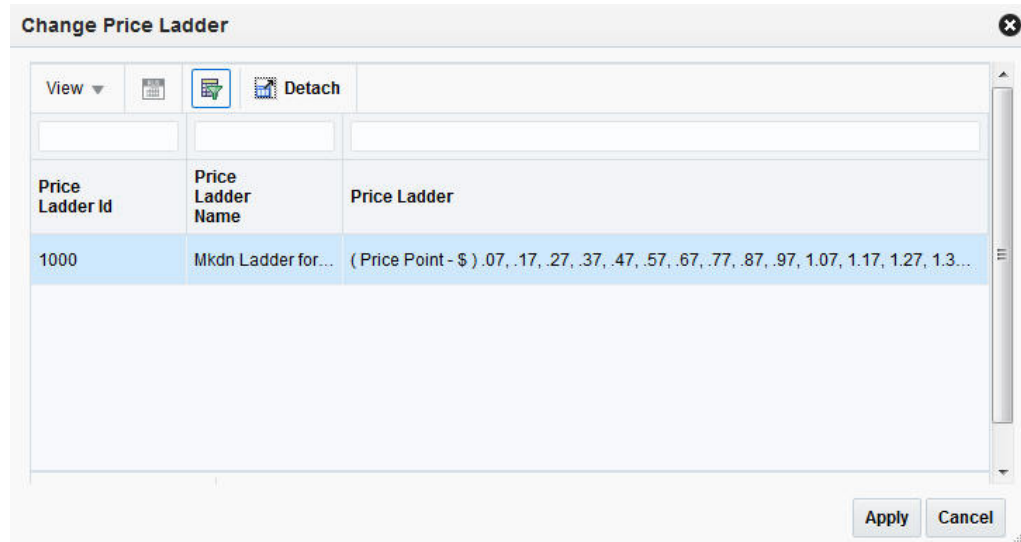
The fields available are described in [Table 1-15](#).

Table 1-15 Price Ladders

Field	Description
Merchandise	Description of the merchandise.
Merchandise Level	Merchandise level of the rule. This can be from PRO_PROD_HIER_PROCESSING_LVL (for example, Class) to Subclass, or Style/Color.
Merchandise External Code	The merchandise external code that can be identified by the retailer.
Price Ladder Name	Name for the price ladder.
Price Ladder Type	Type indicates whether price ladder is for Promotions (P) or Markdowns (M).
Price Ladder Values	Values available for this price ladder. Price Ladder can be a percentage ladder (off full price or current ticket price) or a price-point ladder. Currency for the run shown depends on the locale loaded during the implementation.

As shown in [Figure 1-21](#), in the Custom Strategy, you can pick one price ladder for Promotion and one for Markdown, based on the set of available ladders at that merchandise level. You can select one row and click Edit to override the price ladder for that merchandise and price ladder type. You can select any price ladder in the Change Price Ladder pop-up and click Apply.

Figure 1-21 Change Price Ladder



Product Groups

In this screen, shown in [Figure 1-22](#), you can group products within a run's product processing level (for example, class) and categorize them as one of the following eight types.

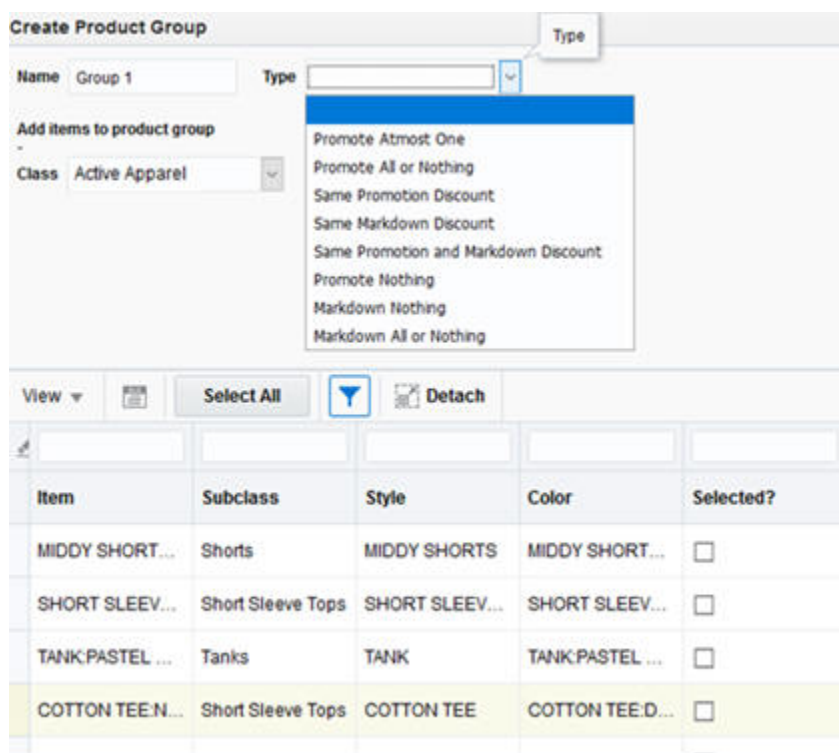
- **Promote At most One.** In this group, at most one product of the group can be promoted in a given week or time period. For example, competing brands such as Levis vs. Calvin Klein cannot be promoted in the same week or time period.
- **Promote All or Nothing.** In this group, all the items must be promoted if any one item of the group is promoted in a given week or time period; otherwise, no item from the group is promoted in a given week or time period.
- **Markdown All or Nothing.** In this group, all the items must be marked down if any one item of the group is marked down in a given week or time period; otherwise, no item from the group is marked down in a given week or time period.
- **Same Promotion Discount.** In this group, all the items are not only promoted together in a given week or time period (if promoted), but they also must get the same discount. Note that the recommended prices can be different for each item in this group.
- **Same Markdown Discount.** In this group, all the items are not only marked down together in a given week or time period (if marked down), but they also must get the same discount. Note that the recommended prices can be different for each item in this group.
- **Same Promotion and Markdown Discount.** All the items receive the same percentage off recommendations over the life of the item. Note that the

recommended price can be different for items within this group. For example, items with full price of \$100 and \$150 can receive a recommended price of \$80 and \$120. (Note that both got same discount of 20% off.)

- Promote Nothing. All the items in this group do not receive any promotions.
- Markdown Nothing. All the items in this group do not receive any markdowns.

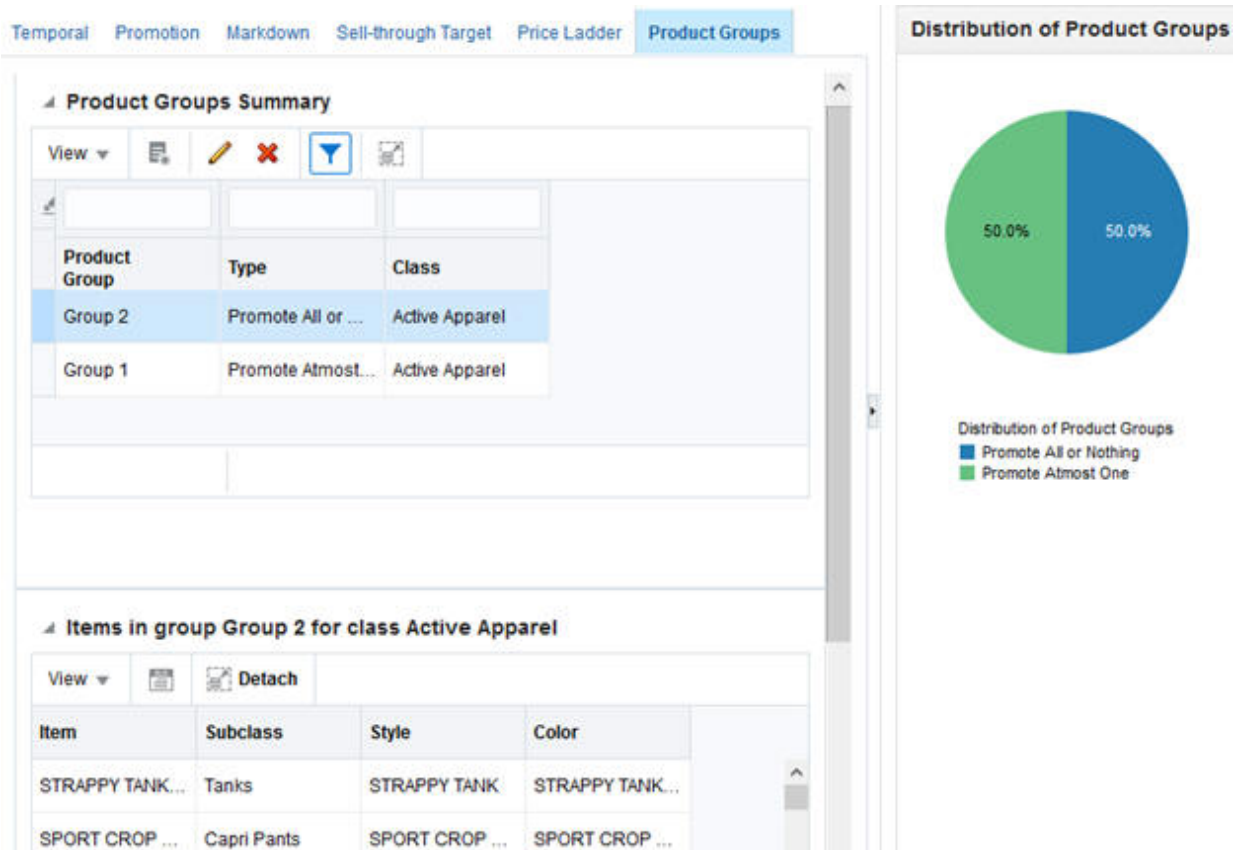
You can click **Create New** and access the Create Product Group screen. You must enter a group name and the group type from the drop-down list. You can select each product, one at a time, and add it to the group. Alternatively, you can filter the products using Query by Example. Use Select All to add the products to the group, and then click **Save**. There is limited conflict checking or validation in place, so you must be careful when adding products in two conflicting groups (for example, Promote At most one and Promote All or Nothing). Alternatively, you can load product group definitions and define the group types through the interface PRO_OPTIMIZATION_RULES_STG. These groups will appear in the corresponding run. You can choose to modify the items in the group or group type.

Figure 1-22 Create Product Group



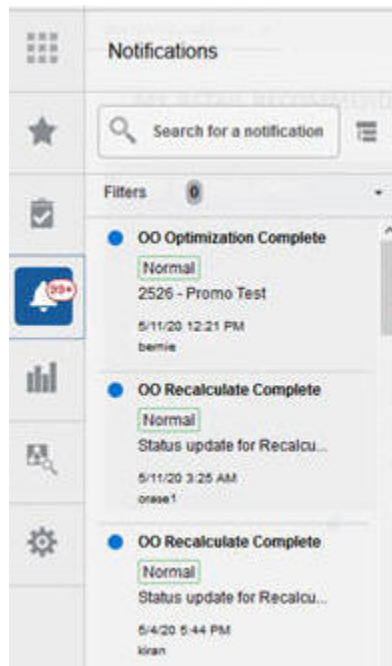
All the groups created are shown in the Product Groups Summary. You can select any group, and the set of products within that group are displayed. You can edit or delete any group shown in the Summary panel. The contextual area shows the percentage of groups specified by the group type.

Figure 1-23 Product Groups Summary



Results

After the optimization run is complete, the results are displayed in the Results stage. A notification is also pushed to the user informing the status of the optimization as shown in [Figure 1-24](#). In this stage, you can accept, reject, override any price recommendation, or add a promotion or markdown for non-recommended items. After you make substantive changes, you can change the appropriate settings or recalculate all the projected metrics.

Figure 1-24 Optimization Complete Notification

The results are displayed in five tiles: Revenue Tile, Promotion Tile, Markdown Tile, Targeted Tile, and Offers Tile.

Possible Actions

From the Results stage, you can:

- Recalculate the projected metrics after making price overrides.
Revisit earlier stages in order to make changes to various settings and then re-optimize the run.
- Leave the run in the optimization list without taking any actions. You cannot delete the run; you must be in Overview in order to delete a run.

Revenue Tile

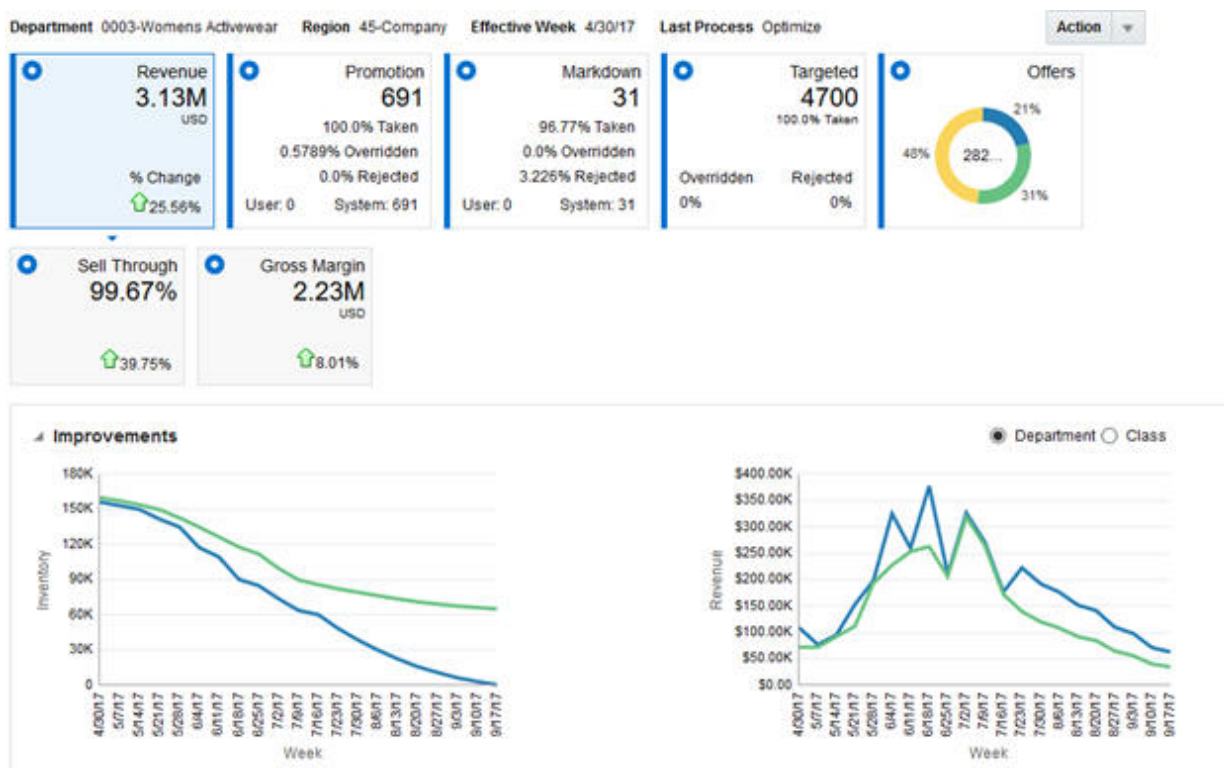
As shown in [Figure 1-25](#), the revenue tile displays the overall summary of the run in forms of tiles as well as in BI charts. Information displayed in this tile is non-editable.

- Revenue. This is the projected revenue over the life of the items, assuming that you accept all recommendations. This is displayed in the local currency defined for the location of the run.
- Revenue % Change. This is the percentage gain or loss in revenue compared to staying at the current price for all items over their entire life.
- Sell Through. This is the projected sell through at the end of the life, assuming that you accept all recommendations. This is shown as a percentage of initial inventory (or inventory at the beginning of the season).
- Sell Through % Change. This is the percentage gain or loss in end of life sell-through, compared to staying at the current price for all items over their entire life.

- Gross Margin. This is the projected gross margin over the life of the items, assuming that you accept all recommendations. This is shown in the local currency defined for the location of the run.
- Gross Margin % Change. This is the percentage gain or loss in gross margin, compared to staying at the current price for all items over their entire life.

The bottom panel displays the improvements as two BI charts: Inventory vs. Time and Revenue vs. Time. By default, the information in the chart is at the run's setup level (for example, Department). However, you can do a deep dive into a particular run's product processing level by toggling the radio button. For example, if run is set up at Department level, then user can toggle radio button to Class and can do a deep dive by selecting a class from the drop-down list of classes.

Figure 1-25 Revenue Tile



Promotion Tile

This tile displays the promotion recommendations for the effective week selected. In the tile, it shows the total number of system-recommended promotion recommendations (items), percentage of recommendations taken or accepted, percentage of recommendations overridden, and percentage of recommendations rejected. It also displays the total number of user-added promotions (items).

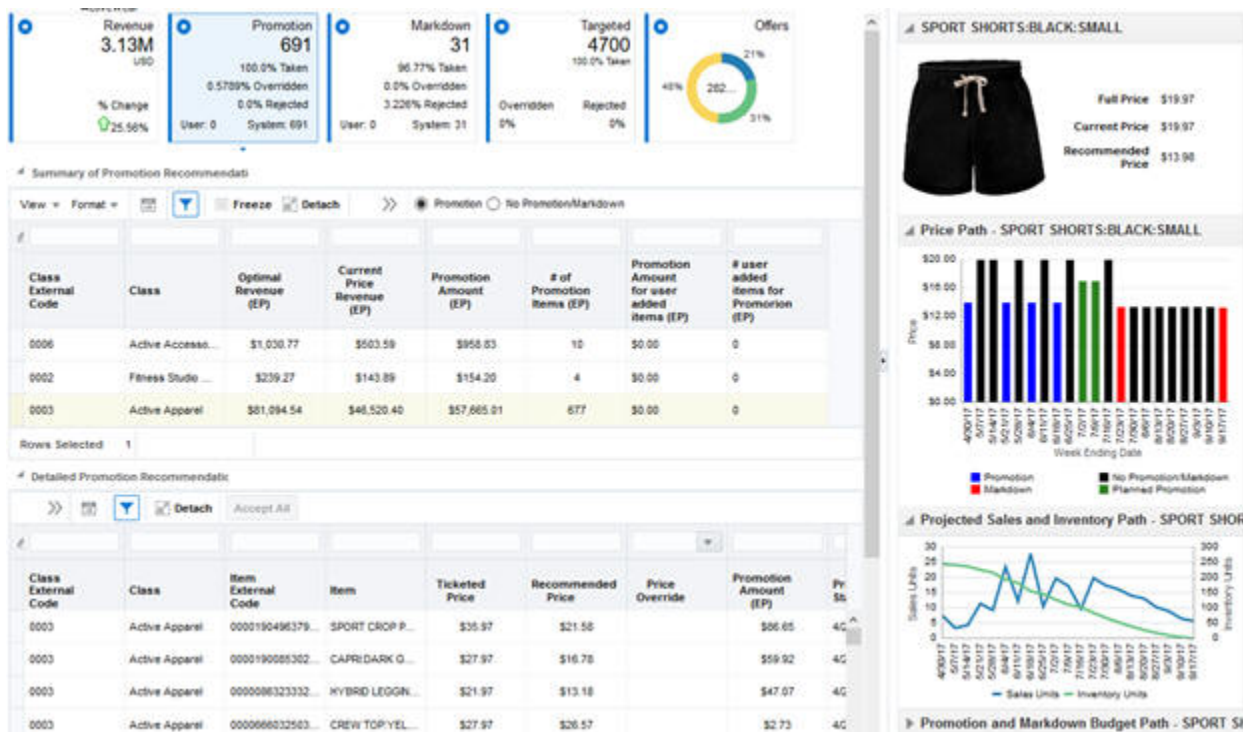
In the summary panel, the Class-level overview of the promotion recommendations is displayed. It contains the following metrics (non-editable):

- Optimal Price Revenue. Projected optimal price revenue for this week over all items with promotion recommendation at the class level.

- Current Price Revenue. Projected revenue at current price for this week over all items with promotion recommendation at the class level.
- Promotion Amount. This is calculated as the amount spent due to the discount offered multiplied by the projected sales units at the class level. This is the amount given towards promotions at the class level.
- # of Promotion Items. This is the total number of items at class level that have received a promotion recommendation.
- Promotion Amount for User Added Items (EP). This is calculated as the amount spent due to the discount offered multiplied by the projected sales units at the class level. This is the amount given towards promotions at the class level.
- # User Added Items for Promotion. This is the total number of user-added items for promotions at the class level that the system did not recommend any promotion or markdown for.

You can select a class in the top summary panel; then the detailed panel is populated. The Detailed Panel displays all the item promotion recommendations (system-added or user-added) for the selected effective week. To add promotion for a non-recommended item, you must first select the radio button **No Promotion/Markdown** in the Summary Panel. The non-recommended items will then be displayed in the Detailed Panel. You must select recalculate to update the metrics for such items. Once you add a promotion, this item will no longer be displayed under the No Promotion/Markdown option.

Figure 1-26 Promotion Tile



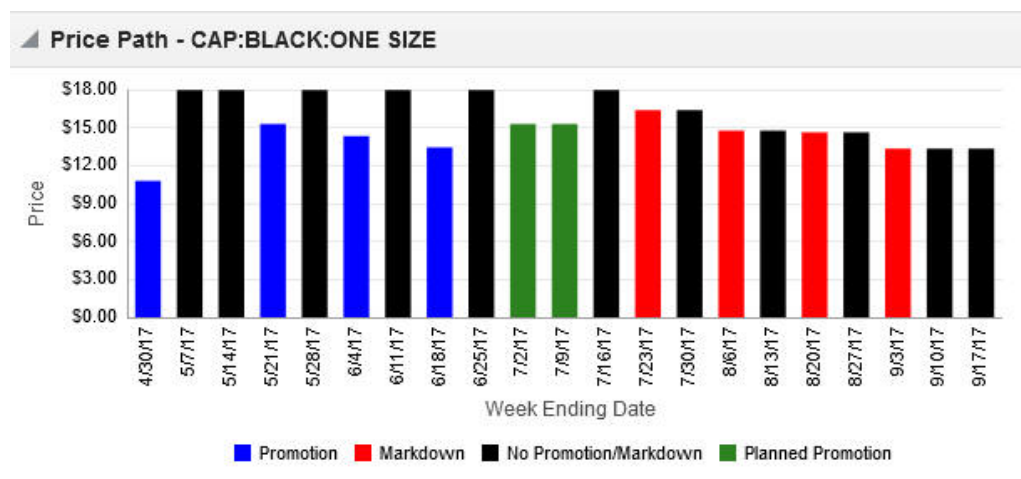
In the detailed panel, you can accept, reject, or override the price recommendation for the effective week. It contains the following information:

- Class. Name of the class.

- Item. Description of the item.
- Ticket Price. Current ticket price of the item.
- Recommended Price. Price recommended by the optimization.
- Price Override. You can click the box and it displays a price ladder assigned for that item. You can choose a price from the price ladder. The price override is applied only to the effective week. Any price overrides are not reflected in the projected metrics until the user selects re-calculate button.
- Promotion Amount. This is calculated as the amount spent due to the discount offered multiplied by the projected sales units at the item level. This is the amount given towards promotions.
- Accepted. You can uncheck or check the box to indicate whether to accept or reject the recommendation. When the recommendation is rejected, it reverts to the current ticket price.
- Recommended Discount %. This field is non-editable. This shows the percentage discount offered with respect to the full price for the item selected, based on the recommended price.
- Price Override Discount %. This field is non-editable. This shows the percentage discount offered with respect to the full price for the item selected, based on the Price Override column.

In the BI/Contextual area on right, you can see the item image and the full price path for an item. Each price type is shown in different color: Black - No Promotion/Markdown Price, Grey - Override, Blue - Promotion, Red - Markdown, Green - Planned Event. You can also see the Projected Sales and Inventory Path and Projected Budget Usage for the selected item.

Figure 1-27 Price Path



Markdown Tile

The Markdown Tile displays the markdown recommendations for the effective week selected. In the tile, it shows the total number of system markdown recommendations (items), percentage of recommendations taken or accepted, percentage of

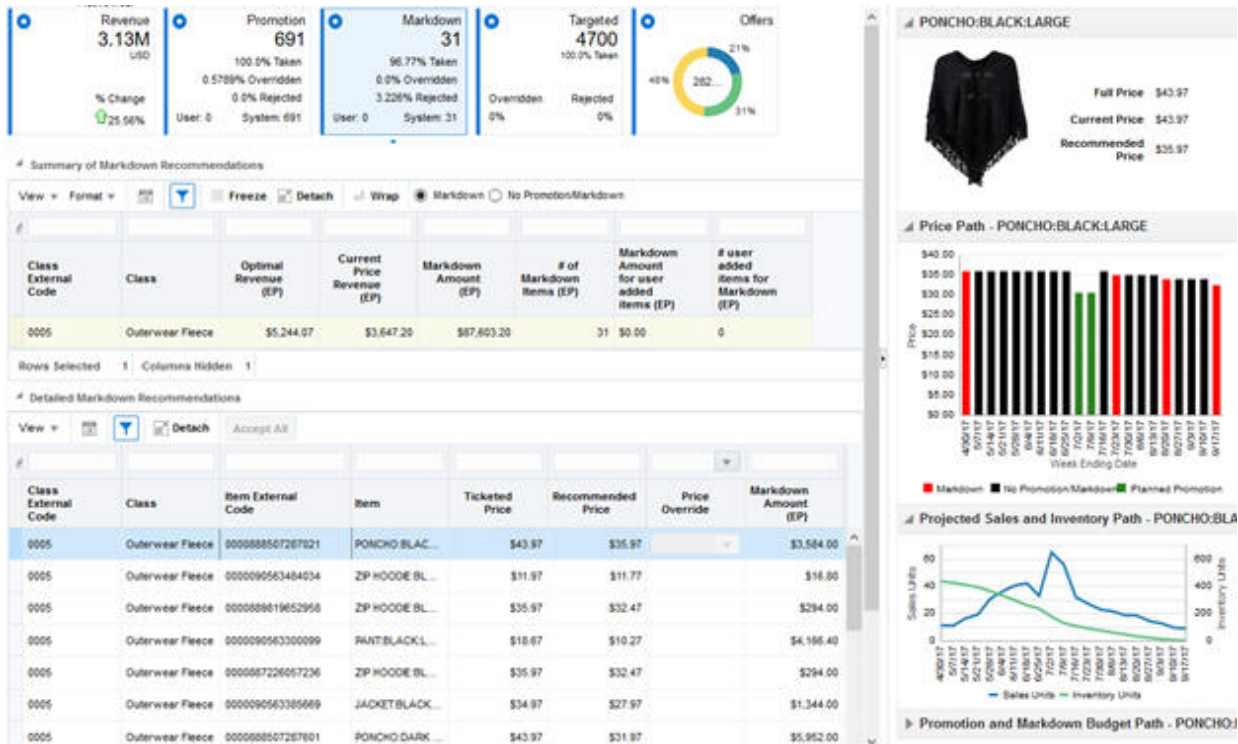
recommendations overridden, and percentage of recommendations rejected. It also displays the total number of user-added markdowns (items).

In the summary panel, it displays the class level overview of the markdown recommendations. It shows the following metrics (non-editable):

- **Optimal Price Revenue.** Projected optimal price revenue for this week over all items with markdown recommendation at the class level.
- **Current Price Revenue.** Projected revenue at current price for this week over all items with markdown recommendation at the class level.
- **Markdown Amount.** This is calculated as the amount spent due to the discount offered multiplied by the unsold inventory units at the class level. This is the amount given towards markdowns at the class level.
- **# of Markdown Items.** This is the total number of items at the class level that have received a markdown recommendation.
- **Markdown Amount for User Added Items (EP).** This is calculated as the amount spent due to the discount offered multiplied by the unsold inventory units at the class level. This is the amount given towards user-added markdowns at the class level.
- **# User Added Items for Markdown.** This is the total number of user-added items for markdowns at the class level that the system did not recommend any markdown or promotion for.

You can select a class in the top summary panel, and the detailed panel is populated. The Detailed Panel displays all the item markdown recommendations for the selected effective week. To add a markdown for a non-recommended item, you must first select the radio button **No Promotion/Markdown** in the Summary Panel. The non-recommended items will then be displayed in the Detailed Panel. You must select recalculate to update the metrics for such items. Once you add a markdown, the item will no longer be displayed under the No Promotion/Markdown option.

Figure 1-28 Markdown Tile



In the detailed panel, the user can accept, reject, or override the price recommendation for the effective week. It contains the following information:

- Class. Name of the class.
- Item. Description of the item.
- Ticket Price. Current ticket price of the item.
- Recommended Price. Price recommended by the optimization.
- Price Override. You can click the box and it displays a price ladder assigned to that item. You can select a price from the price ladder. The price override is applied to the effective week and propagated appropriately to future weeks. Any price overrides are not reflected in the projected metrics until the user selects the recalculate button.
- Markdown Amount. This is calculated as the amount spent due to the discount offered multiplied by the unsold inventory units at the item-level. This is the amount given towards markdowns.
- Accepted. You can uncheck or check the box to denote whether to accept or reject the recommendation. When the recommendation is rejected, it reverts to the current ticket price.

In the BI/Contextual area on right, you can see the item image and the full price path for an item. Each price type is shown in a different color: Black - Regular Price, Grey - Override, Red - Markdown, Green - Planned Promotion. You can also see the Projected Sales and Inventory Path and Projected Budget Usage for the selected item.

Targeted Tile

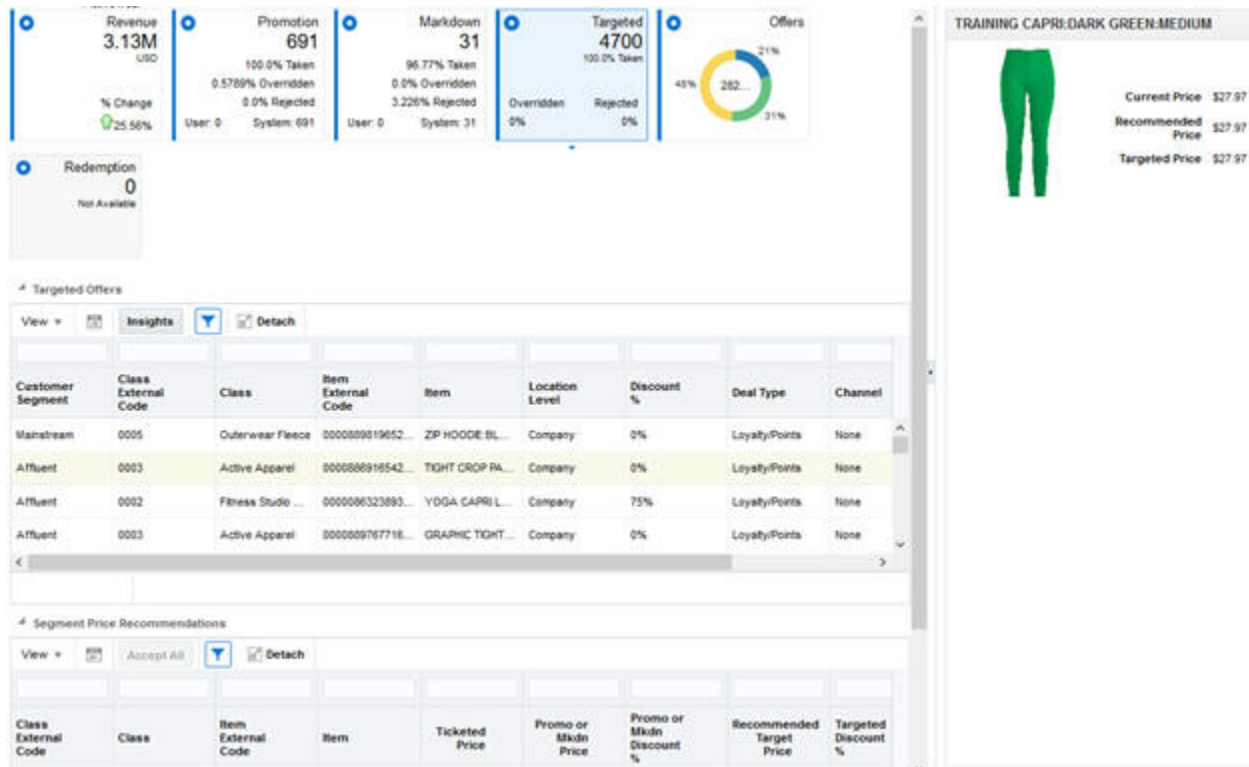
The Targeted Tile displays the targeted recommendations for the effective week selected. In the tile, it shows the total number of targeted recommendations (items), percentage of recommendations taken or accepted, percentage of recommendations overridden, and percentage of recommendations rejected.

In the Targeted Offers panel, it displays Item, Deal type, and Channel offers by class and customer segment that result in the best redemption rate. It displays the following metrics (non-editable):

- Customer Segment. Name of the customer segment.
- Class. Name of the class.
- Location. Name of the selected location.
- Discount %. Recommended discount percentage for the item.
- Deal Type. Deal type (for example, Z% Off, Loyalty Points) associated with this item that result in a high redemption rate for this segment.
- Channel. Channel (for example, Email, Mobile) associated with this item that result in a high redemption rate for this segment.
- Redemption Rate. Predicted redemption rate for this offer.

You can select a class segment in the top targeted offers panel. The bottom Segment price recommendations panel is then populated with all the item level price recommendations for this effective week at the customer segment level. You can override the targeted price recommendations in this panel.

Figure 1-29 Targeted Tile



In the bottom panel, you can accept, reject, or override the targeted price recommendation for the effective week. It contains the following information:

- Class. Name of the class.
- Item. Description of the item.
- Ticket Price. Current ticket price of the item.
- Promo or Markdown Price.
- Promo or Markdown Discount %.
- Recommended Target Price. Price recommended by the optimization.
- Targeted Discount %.
- Targeted Price Override. You can click the box, and it displays a price ladder assigned for that item. You can select a price from the price ladder.
- Targeted Amount. This is calculated as the amount spent due to the discount offered multiplied by the projected sales units at the item-level. This is the amount given towards targeted offers.
- Price Type. Denotes whether the price recommendation is regular, markdown, promotion, or targeted.
- Accepted. You can uncheck or check the box to denote whether to accept or reject the targeted recommendation. When recommendation is rejected, it reverts to location-level price recommendation or override.

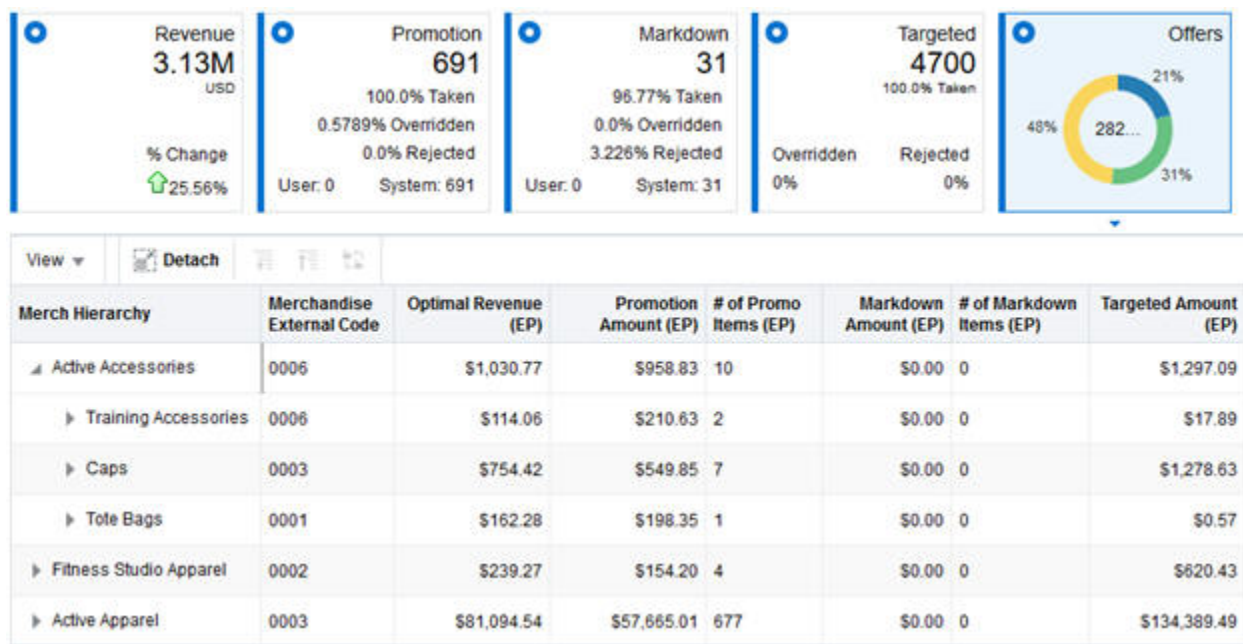
You can see the product image (if loaded) and the current price, recommended price, and targeted price for the item in the contextual BI area.

Offers Tile

The Offers Tile displays all the recommendations for the effective week selected. In the tile, it displays the percentage of the amount used for promotions, the percentage of amount used for markdowns, and the percentage of amount used for targeted offers.

In the tree table below, it shows the number of promotion recommendations, the number of markdown recommendations, and the corresponding amounts by merchandise hierarchy.

Figure 1-30 Offers Tile



Export

The item recommendations that are in Submitted or Approved status are sent for export. If you decide to send another recommendation for the same item in a given Department, Location, Season, and Effective Week, then the new recommendations will override the old recommendations. See the interface guide for details on the export interface.

Innovation Workbench

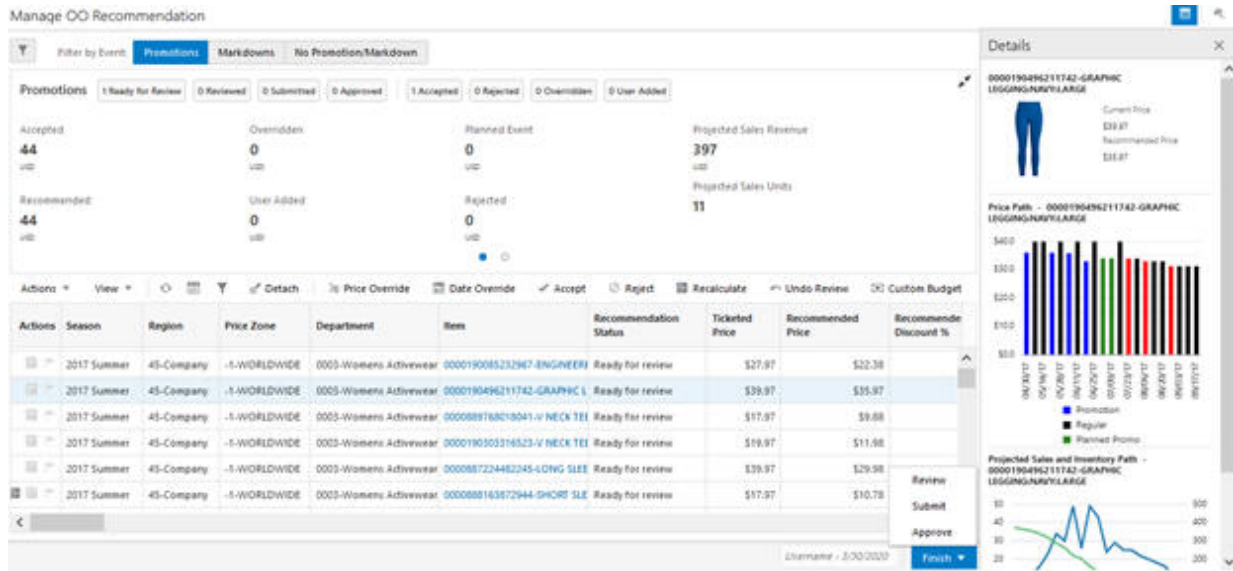
See the Innovation Workbench chapters for details. Apart from the core hierarchy tables, the following validation and result tables that are applicable for offer optimization are exposed in read-only mode. You can slice and dice the results table for reporting purposes and examine the validation table to determine why a particular run has ended in Failed status. The tables are:

- PRO_RUN_SANITY_CHECK_RES_VW contains information on the errors/alerts/warnings generated.
- PRO_RUN_RECOM_OPT_RESULT contains all the results associated with Offer Optimization: promotions, markdowns, and targeted pricing recommendations.

Manage OO Recommendations

The Manage OO Recommendation screen is used to review the recommendations, modify the recommendations, and send the recommendations to a price execution system. It consists of five components as shown in Figure 1-31: Filter by Event, User Filter, Summary Metrics, Item Recommendations table with bulk operations, and BI/Contextual area.

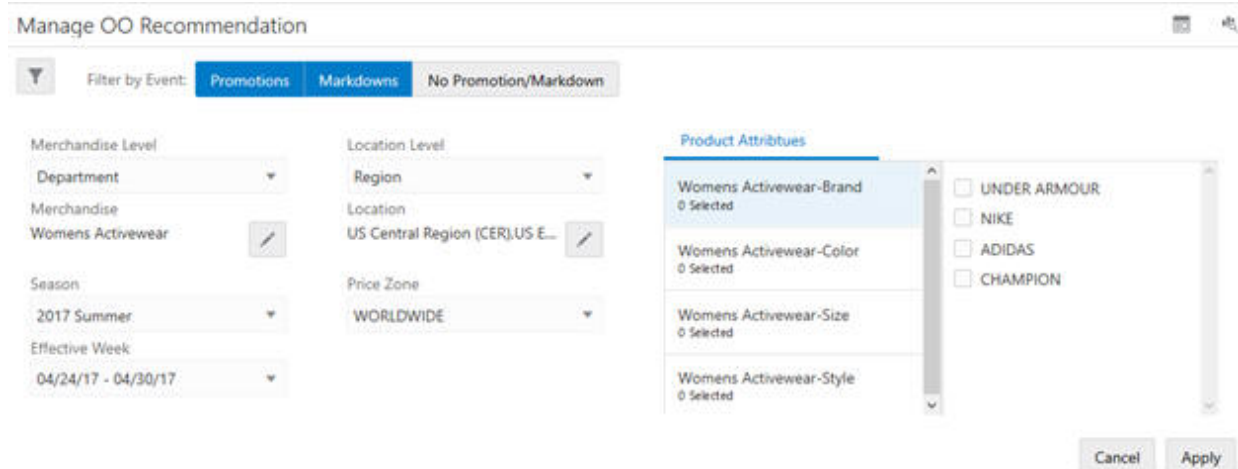
Figure 1-31 Manage Recommendations



User Filter

The User Filter, shown in Figure 1-32, is used to filter by location, merchandise, price zone, and product attributes. Note that this filter can be set and saved separately for each user. You can click the filter icon at the top to expand the panel. This panel is collapsed by default except for the first time you log in. When you log in for first time, you must set the filter and select **Apply**. The set of merchandise or locations that will be available to you are based on the data security set for your user ID. For example, if a particular user ID cannot access the Europe locations, then that user will not be able to see any recommendations for Europe locations.

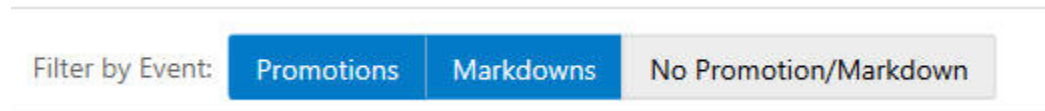
Figure 1-32 User Filter



Filter by Event

Filter by Event, shown in [Figure 1-33](#), is used to filter the recommendations by events such as Promotion, Markdown, or No Promotion/Markdown. Clicking on each type will add the recommendations of that type to the table and summary panels below.

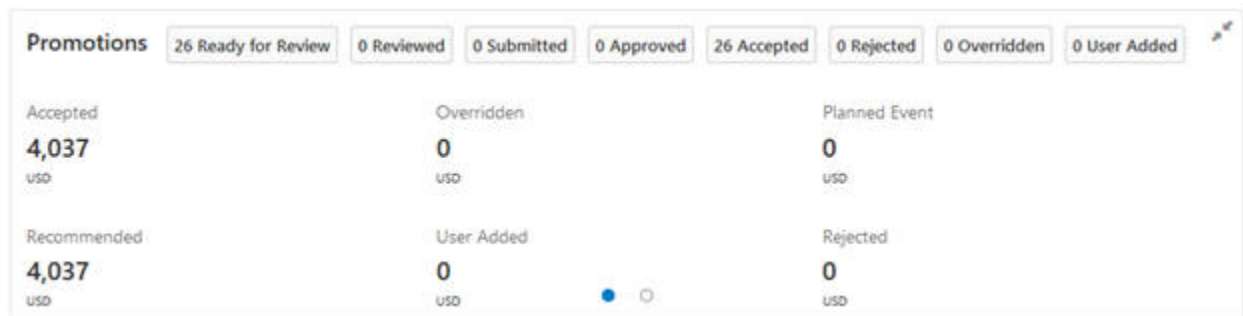
Figure 1-33 Filter by Event



Summary Metrics

Summary Metrics, shown in [Figure 1-34](#), displays the metrics in a film strip style, for Promotions and Markdowns recommendations separately. It shows projected amount (budget used) for Accepted, Overridden, Recommended, User Added, Planned, and Rejected Promotion or Markdown recommendations. It also shows the count of recommendations (items) by recommendation status: Ready for Review, Reviewed, Submitted, and Approved and count of recommendations (items) by price change status: Accepted, Rejected, Overridden or User Added. Further, this panel shows the running total of all selected item recommendations from the table below.

Figure 1-34 Summary Metrics



Item Recommendations with Bulk Actions

The Item Recommendations table, shown in [Figure 1-35](#), shows relevant information for each item. The table actions are used to select multiple items for a price change operation such as accept, reject, override, or add a promotion or markdown. A user can also move the effective start/end dates for a promotion/markdown. Once you make the necessary price or date changes, you can select **Recalculate**, which updates all the projected metrics for the modified items. When you are satisfied with the recommendations, you can perform recommendation status operation such as Review, Submit, or Approve. Submit or Approve not only send recommendation to the Export Interface, but when integrated with RPM, also push recommendations in corresponding statuses through a webservice.

Figure 1-35 Item Recommendations

Actions	Season	Region	Price Zone	Department	Item	Recommendation Status
	2017 Summer	45-Company	-1-WORLDWIDE	0003-Womens Activewear	0000888163872944-SHORT SLEEVE TEE/NOT SPECIFIED:X L	Ready for review
	2017 Summer	45-Company	-1-WORLDWIDE	0003-Womens Activewear	0000884776630650-TANK/HARVEST PUMPKIN/LARGE	Ready for review
	2017 Summer	45-Company	-1-WORLDWIDE	0003-Womens Activewear	000086323332653-HYBRID LEGGING/NOT SPECIFIED/LAR	Ready for review
	2017 Summer	45-Company	-1-WORLDWIDE	0003-Womens Activewear	0000190496379336-SPORT CROP PANT/OXFORD BLUE/LA	Ready for review
	2017 Summer	45-Company	-1-WORLDWIDE	0003-Womens Activewear	0000887225809539-CREW SHORTS/MEDIUM BLUE/X LARC	Ready for review
	2017 Summer	45-Company	-1-WORLDWIDE	0003-Womens Activewear	0000190496159174-TEELIGHT GREY/X LARGE	Ready for review
	2017 Summer	45-Company	-1-WORLDWIDE	0003-Womens Activewear	0000889134694909-SHORT SLEEVE TEE/NOT SPECIFIED:X L	Ready for review
	2017 Summer	45-Company	-1-WORLDWIDE	0003-Womens Activewear	0000190085361322-SHORT SLEEVE TEE/NOT SPECIFIED:X L	Ready for review

Table 1-16 Item Recommendations

Field	Description
Action	Click the Note icon to add any text comment to the recommendation. Flag icon is used to flag a recommendation. These two icons are also displayed in Review Exception screen.
Actions	Price or Date override operation for the item is successful. Recalculate icon is added to denote that the recalculation of projected metrics is pending.
Actions	Price or Date override operation for the item is not successful. You must either modify the rounding criteria/tolerance used or modify the pricing logic (percentage vs. price point).
Season	Name of the Season.
Location	Location at which optimization is executed. For example, Region. Location name is prefixed with location external code.
Price Zone	Price zones, if the optimization is executed at price-zone, instead of a location node. Price zone name is prefixed with price zone external code.
Merchandise	Merchandise level at which optimization is executed. For example, Department. Merchandise name is prefixed with merchandise external code.

Table 1-16 (Cont.) Item Recommendations

Field	Description
Item	This displays the item name prefixed with item external code. This clickable link takes you to the Review Forecast screen for the selected item.
Recommendation Status	This can be Ready for Review, Reviewed, Submitted or Approved.
Ticketed Price	Current Ticket Price of the item.
Recommended Price	System-generated optimal price recommendation for the item.
Recommended Discount %	Discount % for the recommended price, calculated using the current ticket price.
Recommended Price Type	This can be either Promotion, Markdown, or No Promotion/Markdown
Recommended Price Accepted?	This can be Accepted or Rejected.
Effective Start Date	This is the date when either the promotion or the markdown for this item begins.
Effective end Date	This is the date when the promotion for this item will end. Markdowns do not have an effective end date.
Price Override	This column shows the overridden price for the item.
Price Override Discount %	This column shows the discount % corresponding to the price override, as % off the current ticket price.
Price Override Type	This can be Promotion or Markdown. Represents the type used price override.
Markdown Number	Indicates whether it is 0th, 1st, 2nd, and so on, markdown for this item. For example, 2 means that this would be the second markdown for the item in the season.
Promotion Number	Indicates whether it is 0th, 1st, 2nd, and so on, promotion for this item. For example, 3 means that this would be the third promotion for the item in the season.
Projected Sales Units (>X)	Item's Sales Units for the effective period. Items with optimal sales units for the effective period strictly higher than X (X=PRO_UI_MIN_SALES_UNITS_VALUE) are displayed.
Projected Revenue	Item's Revenue for the effective period.
Remaining Inventory (at BOP > Y)	Unsold inventory at the end of the effective period. Items with remaining inventory at the beginning of the effective period strictly higher than Y (Y=PRO_UI_MIN_INVENTORY_VALUE) are displayed.
Promotion Budget Used	Budget consumed towards promotion for the effective period for the item.
Markdown Budget Used	Budget consumed towards markdown for the item.
Exit Date	Denotes the date by which an item is expected to stop selling. The item will not receive any recommendations beyond this date.
Run Id and Name	Indicates which underlying run was used to generate this recommendation. This clickable link takes you to that particular run.

Table 1-16 (Cont.) Item Recommendations

Field	Description
Changed By	User ID corresponding to the user who makes changes to the recommendations.
Optimization Date	Date when the recommendation for the item was optimized.
Recalculation Date	Date when the item metrics were recalculated based on user changes.
Merchandise Hierarchy Information	These columns correspond to merchandise hierarchy information for the item (for example, Division, Group, Department, Class, Subclass, Style, Style-Color).
Location Hierarchy Information	These columns correspond to location hierarchy information for the item (for example, Chain, Area, Region, District).
Product Attributes 1-5	Up to five product attributes can be displayed for the item. The product attributes selected are based on the user selections in the User Filter.
Currency Attributes 1-20	Twenty currency type attributes that can be provided by the user.
Date Attributes 1-5	Five date type attributes that can be provided by the user.
Number Attributes 1-10	Ten number type attributes that can be provided by the user.
Number Attributes 1-10	Ten number type attributes that can be provided by the user.
Percentage Attributes 1-5	Five percentage type attributes that can be provided by the user.
Text Attributes 1-10	Ten text type attributes that can be provided by the user.

Accept or Reject

Accept or Reject can be used to accept or reject the recommended price. Accept means that recommended price will be used for that item. Reject means that the item will be kept at its current ticket price. Accept or Reject operations can only be performed on items that do not have a Recalculate pending icon and are in Ready for Review status only; otherwise, it throws an error as shown in [Figure 1-36](#) and [Figure 1-37](#).

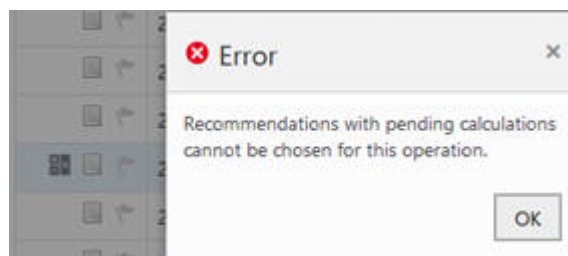
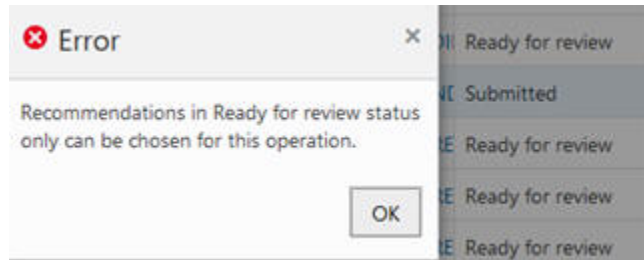
Figure 1-36 Reject

Figure 1-37 Accept



Price Override

Price Override is used to either modify the discount (or price) for an item that system recommends a promotion or markdown or add a promotion or markdown to an item that did not receive a promotion or markdown. The former is counted towards Overrides and the latter is counted towards User Added.

When you select recommendations and click **Price Override**, it displays a Price Override screen. You can select Price Type as Promotion or Markdown. Then, you can use either a Percentage logic or a Price point logic. Depending on the supplied price ladders (options are: price point or percent off ladder), the price override is applied as follows:

Table 1-17 Price Override

Price Type	Logic	Price Ladder Assigned	Calculation of Override Price
Promotion	Percentage	Percent Off Original or Ticket Price ladder (for example, 5%, 10%, ...)	First % off ladders are converted into amounts either using the original or current price specified in the UI. After applying the discount as specified, nearest price on the ladder subject to rounding criteria and tolerance is used.
Promotion	Percentage	Price point ladder (for example, 13.97, 15.97, 16.97, ...)	After applying the discount as specified, nearest price on the ladder subject to rounding criteria and tolerance is used.
Promotion	Price point	Price point ladder (for example, 13.97, 15.97, 16.97, ...)	Price point is applied as selected from the drop-down. If a price point higher than the current ticket price is selected, then that item's price override will not be successful.
Markdown	Percentage	Percent off Original Price or Current ticket price ladder (for example, 10%, 20%, 30%,...)	First % off ladders are converted into amounts either using the original or current price specified in the UI. After applying the discount as specified, nearest price on the ladder subject to rounding criteria and tolerance is used.

Table 1-17 (Cont.) Price Override

Price Type	Logic	Price Ladder Assigned	Calculation of Override Price
Markdown	Percentage	Price point ladder (for example, 13.97, 15.97, 16.97,...)	After applying the discount as specified, nearest price on the ladder subject to rounding criteria and tolerance is used.
Markdown	Price point	Price point ladder (for example, 13.97, 15.97, 16.97, ...)	Price point is applied as selected from the drop-down. If a price point higher than the current ticket price is selected, then that item's price override will not be successful.

This can be illustrated through an example. Consider Original Price as 159.99 and Ticket Price as 127.99 (20% Off). Suppose the price ladder supplied is of type PT (Percentage Off Ticket Price), with points {0%, 5%, 15%, 20%, 25%, 30%}. If the user requests 22% and uses Original Price, then translating the PT ladder with % off from the Original Price provides the following results: 159.99, 151.99, 135.99, 127.99, 119.99, 111.99}. So, 22% off on the Original Price would give us 124.792. Depending on the tolerance and rounding criteria, different results are possible, as explained below.

- If tolerance is 0%, then 124.792 is not on the price ladder and the price override is unsuccessful.
- If tolerance is 3%, then the tolerance is $3\% * 159.99 = 4.7997$. 124.792 ± 4.7997 gives a lower bound of 119.99 and upper bound of 129.59. This means that price points 119.99, 127.99 are available for to be selected, depending on the rounding logic. If rounding is up, then best price that is close to 124.792 and within tolerance of 3% would give 127.99. If rounding is down, then best price that is close to 124.792 and within tolerance of 3% would give 119.99

Similar to Accept/Reject operation errors, the price override can only be done on items that do not have pending calculations and are in Ready for Review status only.

Figure 1-38 Override Price Percentage

The image shows a dialog box titled "Override Price" with a close button (X) in the top right corner. The dialog contains the following configuration options:

- Price Type:** A dropdown menu currently set to "Markdown".
- Selection:** Two radio buttons: "Percentage" (which is selected) and "Price Point".
- Percentage of:** A dropdown menu currently set to "Original Price".
- Percent:** A numeric input field containing "13", with "down" and "up" arrow buttons to its right.
- Rounding:** Two radio buttons: "Down" (which is selected) and "Up".
- % Tolerance:** A numeric input field containing "5", with "down" and "up" arrow buttons to its right.

Figure 1-39 Override Price: Price Point

Override Price

Price Type
Markdown

Percentage Price Point

Price Ladder
Mkdn Ladder...

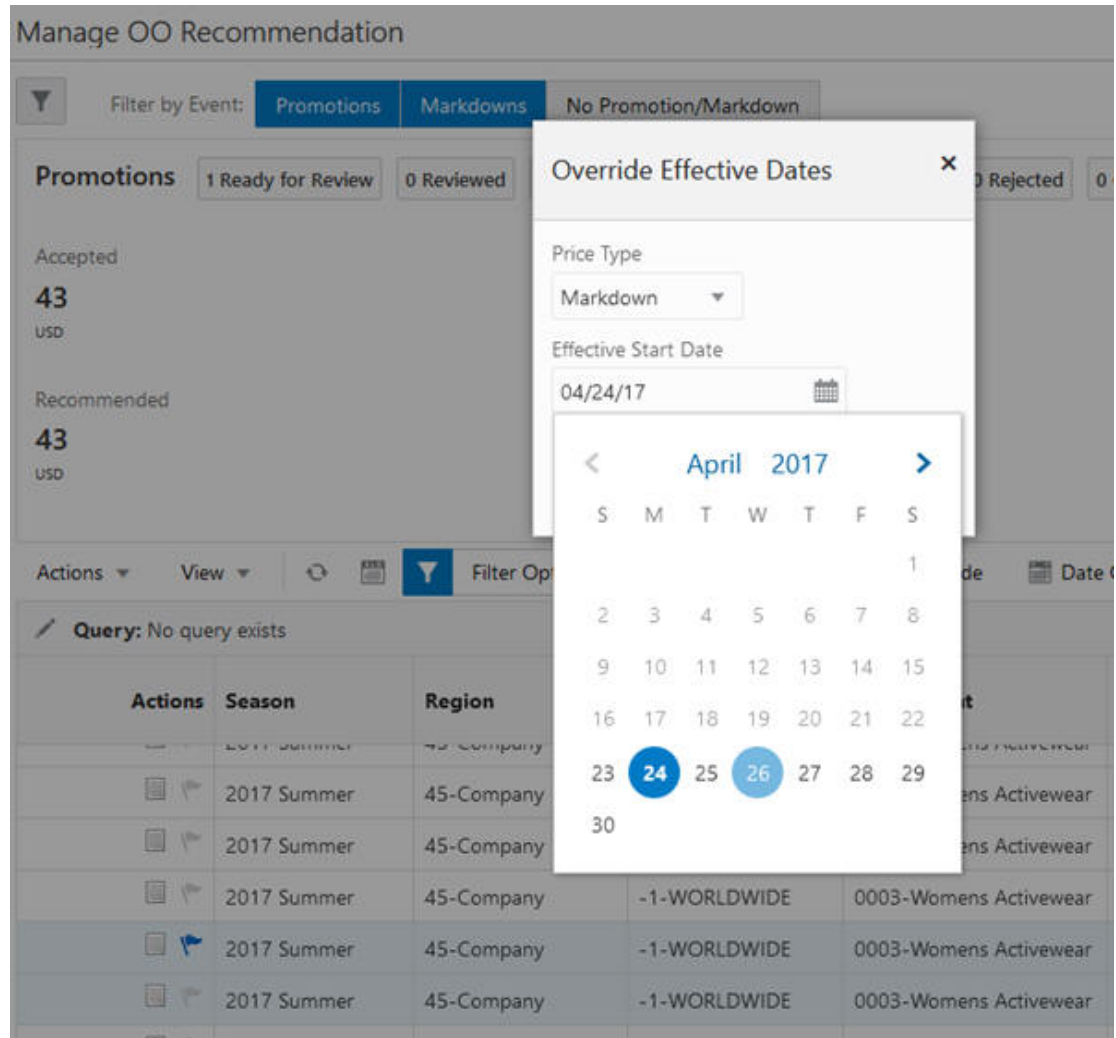
Price
16.47
16.57
16.67

Cancel Ok

Date Override

Date Override is used to adjust the effective start and end dates for a promotion or the effective start date for a markdown recommendation. A user can select the recommendation(s) that are in Ready for Review status and click the **Date Override** button, which displays Override Effective Dates screen, as shown in [Figure 1-40](#). A user can select **Price Type** and then pick the corresponding dates from the date picker. The Price Type can be either Promotion or Markdown.

Figure 1-40 Date Override



If a user wanted to modify the effective start date for a Markdown recommendation, but accidentally selected both Promotion and Markdown recommendations, after the Date Override operation, the system will return a failure for Promotion recommendation, as shown in Figure 1-41. Successful date overrides are shown with a green tick and a recalculate icon; the later indicates that this item must be submitted for a recalculation in order to adjust the projected metrics due to the date override.

Figure 1-41 Results for Date Override Action

Actions	Item	Recommendation Status	Recommended Price Type	Effective Start Date	Effective End Date	Projected Price	Projected Revenue	Projected Profit
	000019008540356S-LONG SLEEVE TEE-BABY BLUESMALL	Ready for review	Promotion	04/24/17	04/30/17	\$35.97	\$21.58	
✓	0000190085328769-ZIP HOODIENOT SPECIFIED-SMALL	Ready for review	Markdown	04/26/17		\$35.97	\$31.47	
✗	0000190085302776-SHINY SHORTS:NOT SPECIFIEDX LARC	Ready for review	Promotion	04/24/17	04/30/17	\$19.97	\$11.98	
	0000190086913902-TRAINING CAPRLAVENDERX LARGE	Ready for review	Promotion	04/24/17	04/30/17	\$27.97	\$16.78	

Custom Budget

The Custom Budget functionality allows a user to pick recommendations that meet the budget for the specified time frame. For example, a user might know the markdown budget for just the effective period or perhaps for the next two months and would like the system to pick recommendations that meet these criteria.

The user is not required to select recommendations for this operation, as this functionality considers all the items that satisfy the criteria specified in the User Filter. Clicking the **Custom Budget** button opens the Custom Optimize to Budget screen. Here, the user can specify a budget for both promotions and markdowns together or separately, specify the time frame for this budget, specify the objective, and specify whether the user would like to retain any of the work done on the recommendations. By default, all the work done, such as Overrides, Accepted, Reviewed, and Submitted are retained and Planned Promotions are not included. Note that the Approved recommendations are always retained. Reset lets the user reset prices back to the batch recommendations.

Figure 1-42 Custom Optimize to Budget

Custom Optimize to Budget

Specify the budgets and necessary flags and hit optimize.

Total Budget

Promotion Budget

Starting Week
04/24/17 - 04/30/17

Budget Objective

Separate budgets

Markdown Budget

Ending Week

Retain Overridden Promotions

Include Planned Promotions

Retain Reviewed

Retain Overridden Markdowns

Retain Accepted

Retain Submitted

Reset Optimize Cancel

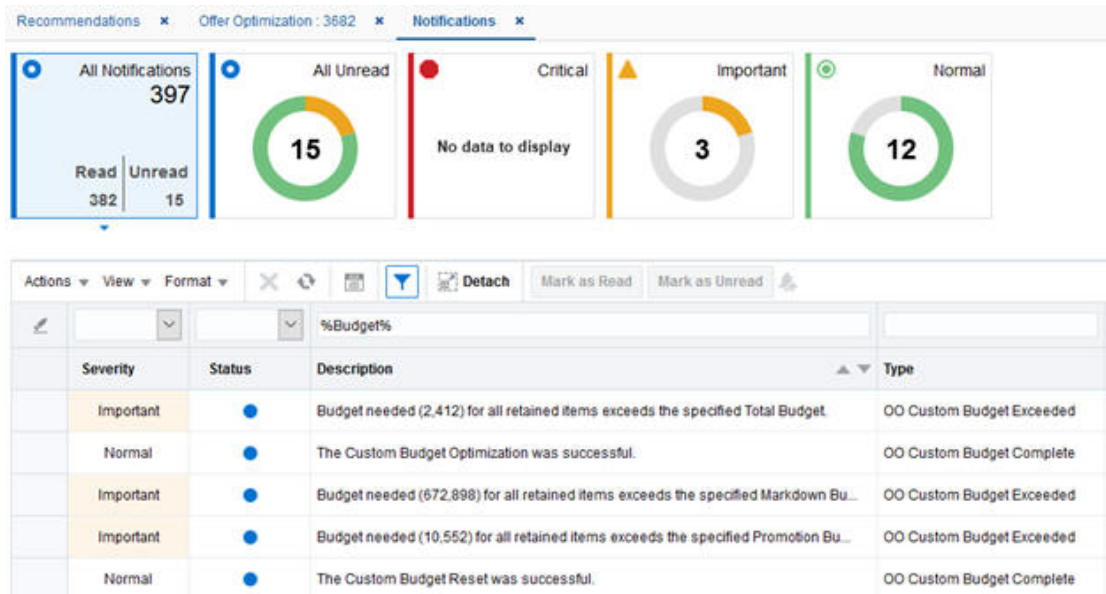
(Last Optimize Request by orase1 on 06-Apr-21 1:02 PM; check notifications for status)

When the user selects Reset or Optimize, the custom budget optimization job is submitted, and a push notification is sent to the user to indicate the status of this job. It can be one of the following:

1. Custom Budget Reset was successful
2. The Custom Budget Optimization was successful

3. Budget needed (1,234,567) for all retained items exceeds the specified Total Budget
4. Budget needed (1,234,567) for all retained items exceeds the specified Promotion Budget
5. Budget needed (1,234,567) for all retained items exceeds the specified Markdown Budget
6. The Custom Budget operation encountered a system error

Figure 1-43 Custom Budge Notifications



Query Builder

The Query Builder allows the users to build a complex query, with a grouping of columns in the Manage Recommendation and AND/OR logical operators within and between groups (for example, Recommended Price Type = Markdown and (Brand = Nike or Markdown Number <= 2) and Remaining Inventory (at BOP>5) between 10 and 20).

Figure 1-44 Access Query Builder

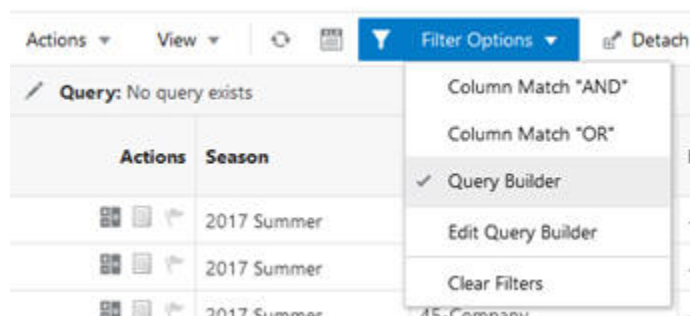
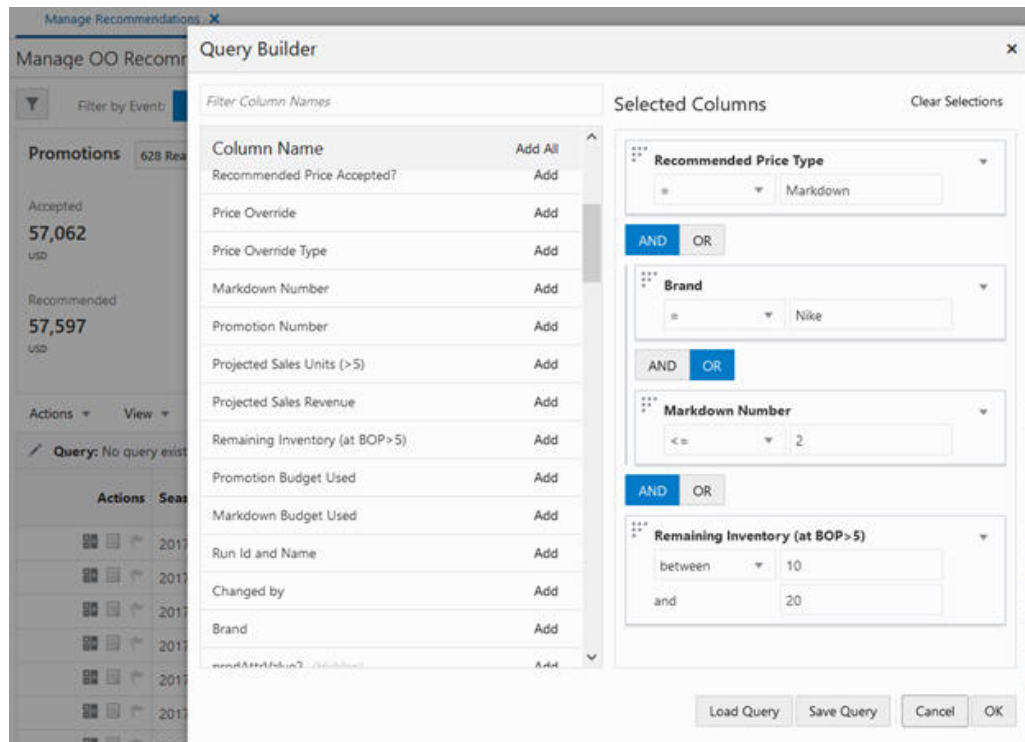


Figure 1-45 Query Builder



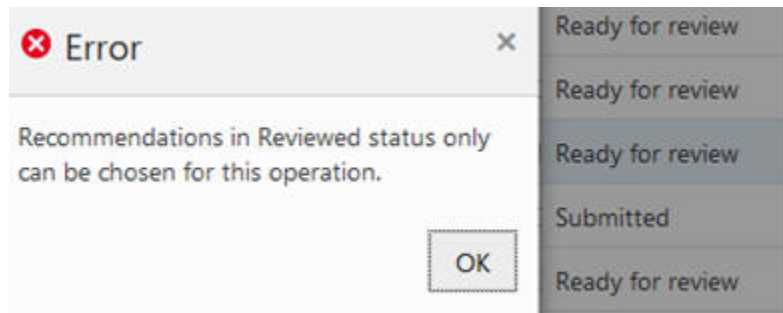
Review or Undo Review

Once the review of recommendations is complete by users with the role of Analyst or Super User, the users can select the recommendations (items) and click **Review**. All reviewed recommendations are sent to the users with the Buyer role for Submit or Approve operations. When the user wants to make further changes to the recommendations, the user has the option to select the recommendations and click the **Undo Review** button, which will revert the recommendation status to Ready for Review.

Submit or Approve

Users with the Buyer role can Submit or Approve recommendations. An item that is in Reviewed status can only be Submitted or Approved; otherwise, it throws an error, as shown in [Figure 1-46](#):

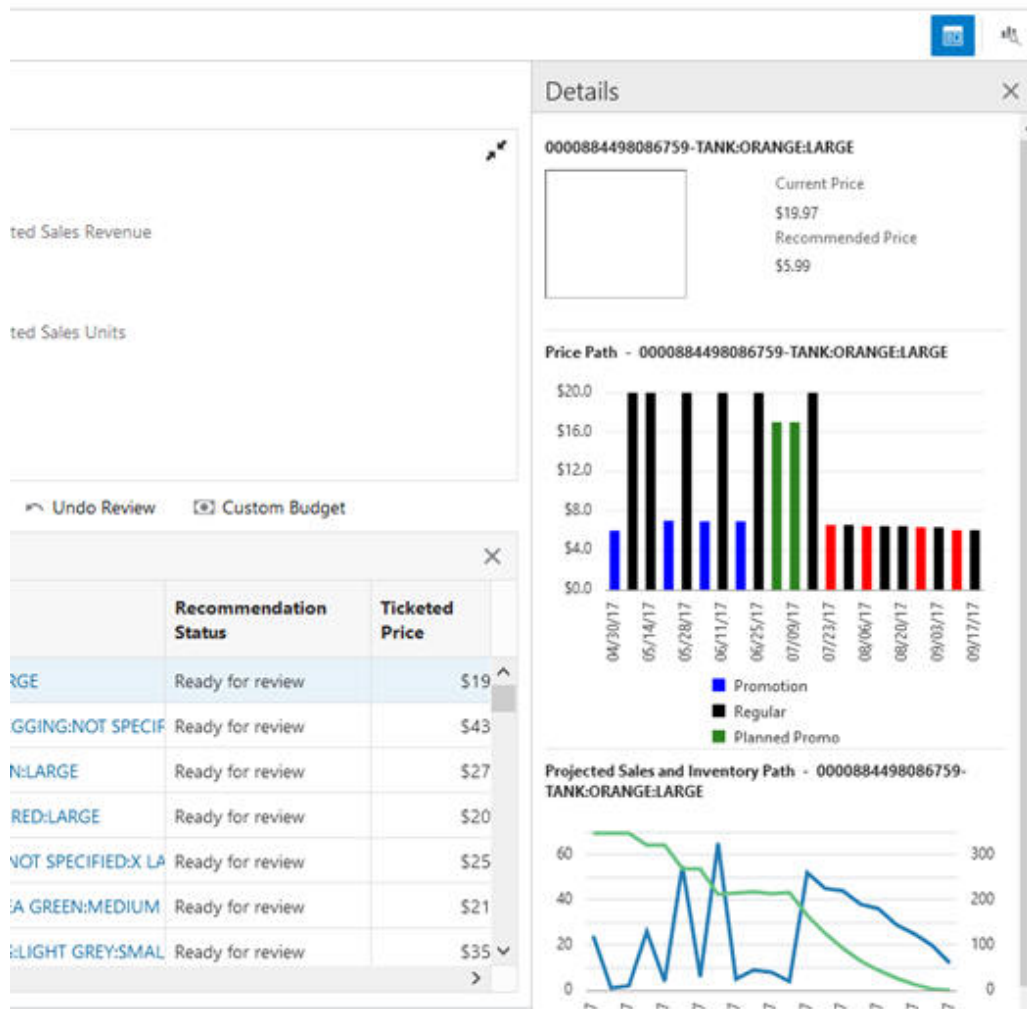
Figure 1-46 Reviewed Status



BI/Contextual Area

For the selected item, you can see the image of the item, projected price path, projected sales and inventory path, and projected budget usage over the life of the item. This can be expanded whenever you select the item and click the **Details** icon on the top right corner of the screen as shown in [Figure 1-47](#).

Figure 1-47 Details Panel for the Selected Item



Offer Optimization Forecasting

Offer optimization forecasting is used to review the sales forecasts, returns forecasts, and exceptions of a successfully executed offer optimization run.

To access the forecast information, click the Task icon on the login screen and then select Offer Optimization from the list of tasks shown in the following image. You see three options, Offer Optimization Overview, Manage OO Recommendations, and Offer Optimization Forecasting, as shown in Figure 2.

Figure 1-48 Offer Optimization Task

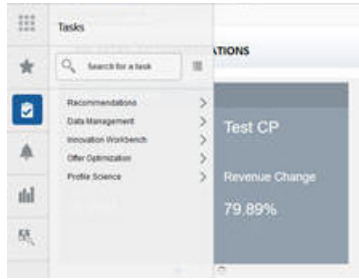
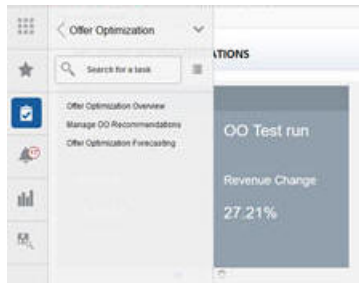
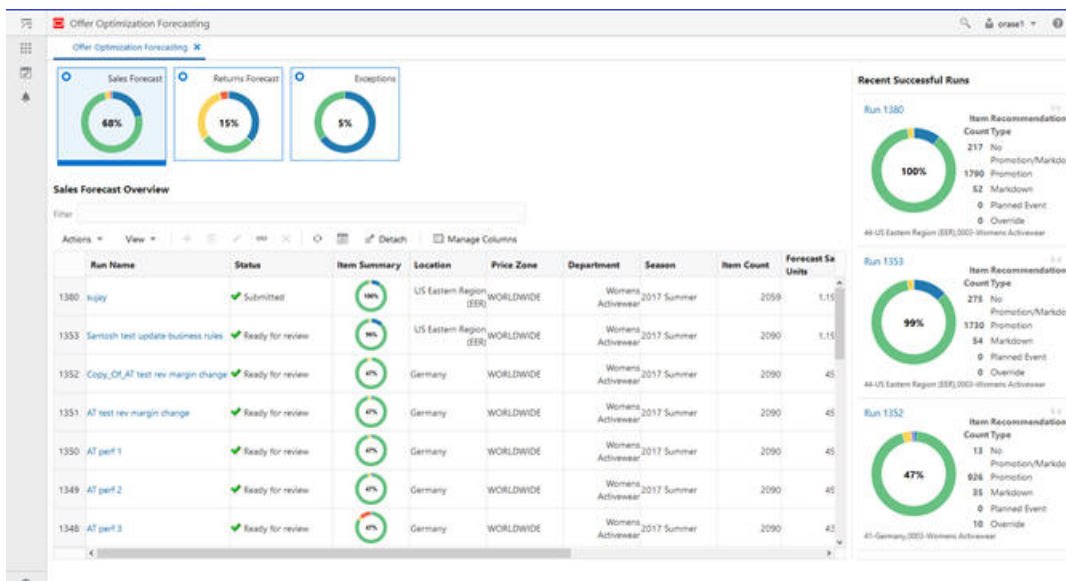


Figure 1-49 Offer Optimization Options



Select Offer Optimization Forecasting. You see the Offer Optimization Forecasting tab. This tab has three tiles, Sales Forecast, Returns Forecast, and Exceptions. When you open a new Offer Optimization Forecasting window, shown in Figure 3, the Sales Forecast tile is highlighted and the sales forecast summary metrics are shown for all the successfully executed Offer optimization runs. The Notification Bar is displayed on the right.

Figure 1-50 Offer Optimization Forecasting



Sales Forecast Tile

The Sales Forecast tile displays the following information across all OO runs for the next effective date.

- The pie chart displays the various price changes recommended by the Offer Optimization system for the effective date.
- The center content of the pie chart displays the percentage of items/products receiving a forecast.

The notification bar on the right displays the same information as the Sales Forecast tile for the most recent successful runs. For each run in the notification bar, the top left corner displays the run ID and the bottom left corner displays the Location and Department for the run.

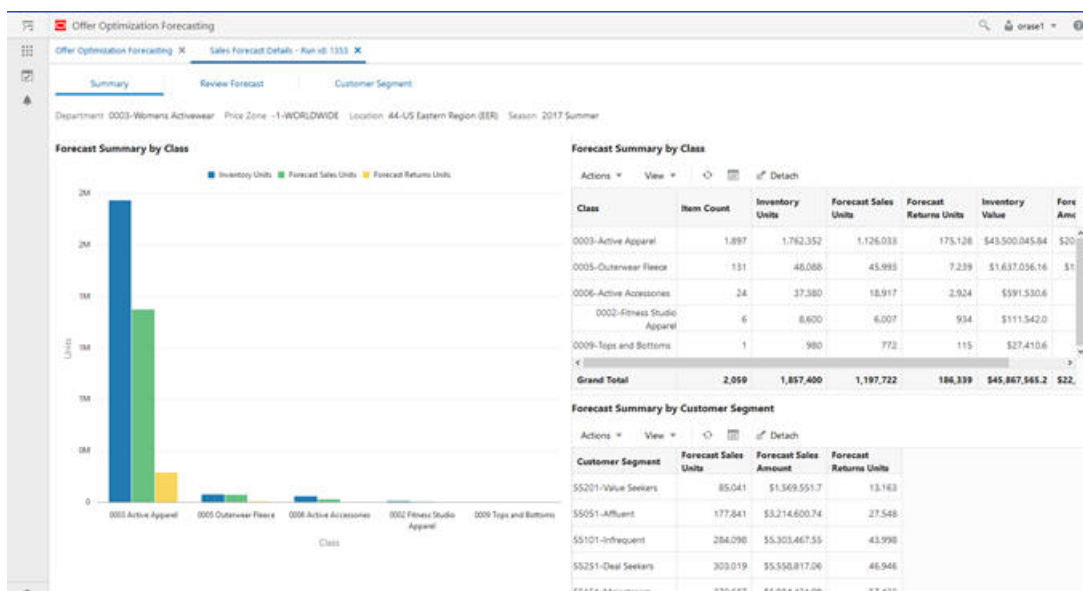
The sales forecast overview table displays the run information corresponding to the run ID from Offer Optimization, along with additional metrics such as item count, forecast sales units, returns units, total buy, and projected end of life sell thru.

From the sales forecast run overview table, you can select an individual run by clicking the run name. This opens a new tab, Sales Forecast Details - Run id < ID#>, with three sub-tabs: Summary, Review Forecast, and Customer Segment.

Summary Tab

The Summary tab, shown in [Figure 1-51](#), displays additional details at the class level and customer segment level for the selected run ID. It provides aggregate metrics by class and customer segment.

Figure 1-51 Summary Tab



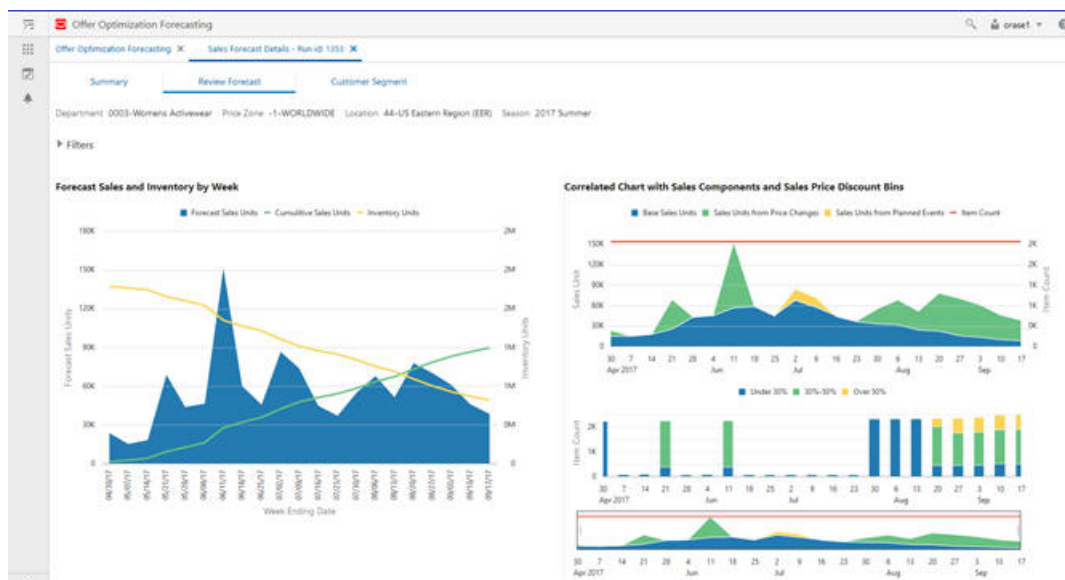
The Summary tab has the following three components:

- Chart for forecast summary by class. This displays the following metrics by class: Inventory units, Forecast sales units, and Forecast return units. The forecast horizon represents all weeks in the future until the exit date for a product.
 - Inventory units represent the total number of unsold inventory units the optimization system is trying to clear, based on the latest sales and inventory information for the run.
 - Forecast sales units is the sum of the forecast sales units over the entire forecast horizon.
 - Forecast return units is the sum of all future expected returns over the entire forecast horizon.
- Table for forecast summary by class. In addition to the metrics displayed in the chart, the following metrics are displayed in the table: item count, unsold inventory value, and forecast sales amount.
 - Item count is the number of products in the class.
 - Inventory value is the total value of unsold inventory units that the optimization system is trying to clear, based on the latest sales and inventory information for the run.
 - Forecast sales amount is the sum of the forecast sales amount over the entire forecast horizon.
- Table for forecast summary by customer segment. This displays the forecast sales units, forecast sales amount, and forecast returns unit by customer segment.

Review Forecast Tab

The Review Forecast tab, shown in [Figure 1-52](#), is used to view the forecast information at the week level. It displays a breakdown of the sales forecast into multiple components such as base sales units, sales units from price cuts and sales units from promotion events, and the count of products at various discount levels. This tab displays information for the selected merchandise and customer segment.

Figure 1-52 Review Forecast Tab



You can review the forecast information for the selected merchandise and customer segment combination. By default, this chart shows the information at the department level for the merchandise hierarchy and across all customer segments. Use the Filters to display and select a specific merchandise and customer segment.

All the merchandise levels below the offer optimization run level can be selected. In this example, you see Class, Subclass, Style, Color, and Size. The selection of merchandise using the filters follows a hierarchical path. First, select a specific class. Then, click **Apply** to review the information for this class or choose a specific subclass within the class and click **Apply**. After selecting a specific subclass, you can choose the styles within the subclass, and so on.

The Review Forecast tab has the following three components:

- Chart for forecast sales and inventory by week, as shown in [Figure 1-52](#).
 - Forecast sales units, Inventory units, and Cumulative sales units by week for the merchandise and customer segment selection made in the filters.
- Correlated chart with sales components and discount bins, as shown in [Figure 1-52](#).
 - It breaks down the forecasted sales units into the following components:
 - * Base sales units: future sales at the current ticket price
 - * Sales units from price changes: additional sales units driven by recommended price changes (that is, promotions and markdowns)
 - * Sales units from planned events: additional sales units driven by traffic associated with planned promotion/holiday event.
 - It shows the breakdown of items into various discount bins for each week. Discount bins are calculated using the forecast sales price and full price.
 - The bottom window of the chart is used to select the time frame used for displaying the top two charts. Use this to focus on the relevant weeks when the forecast horizon is long.
- Table with weekly sales inventory and revenue metrics, as shown in [Figure 1-53](#), can be used to:
 - Examine the weekly metrics displayed in the charts, as shown in [Figure 1-51](#) and [Figure 1-52](#).
 - Use Manage columns, shown in [Figure 1-53](#), to select the metrics displayed in the table.
 - Use the Detach button to expand the table into a pop-up window for ease of use, as shown in [Figure 1-54](#).

Figure 1-53 Manage Columns

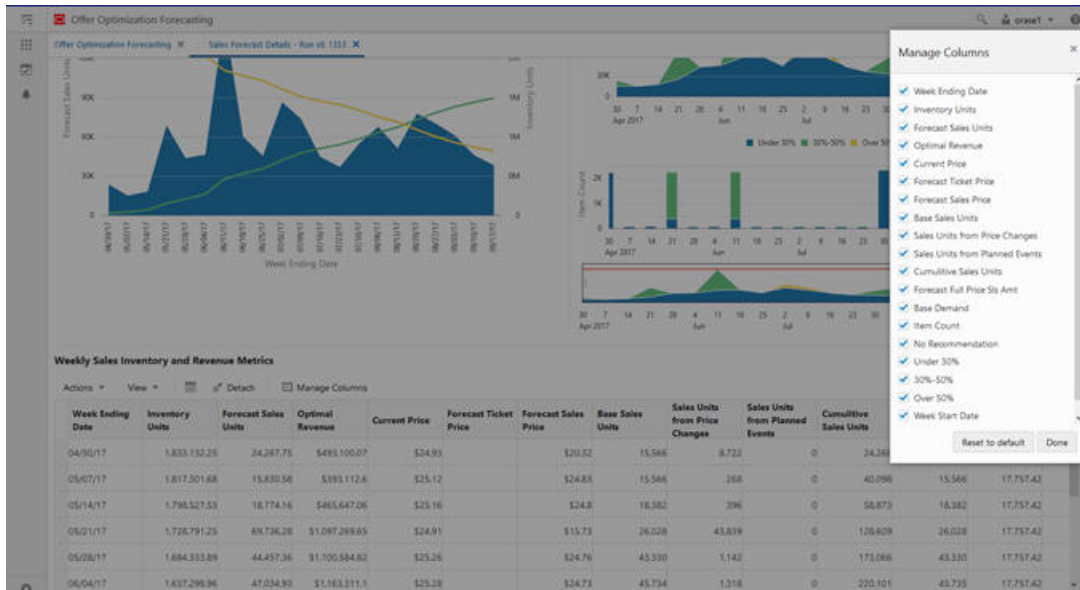


Figure 1-54 Review Forecast Table

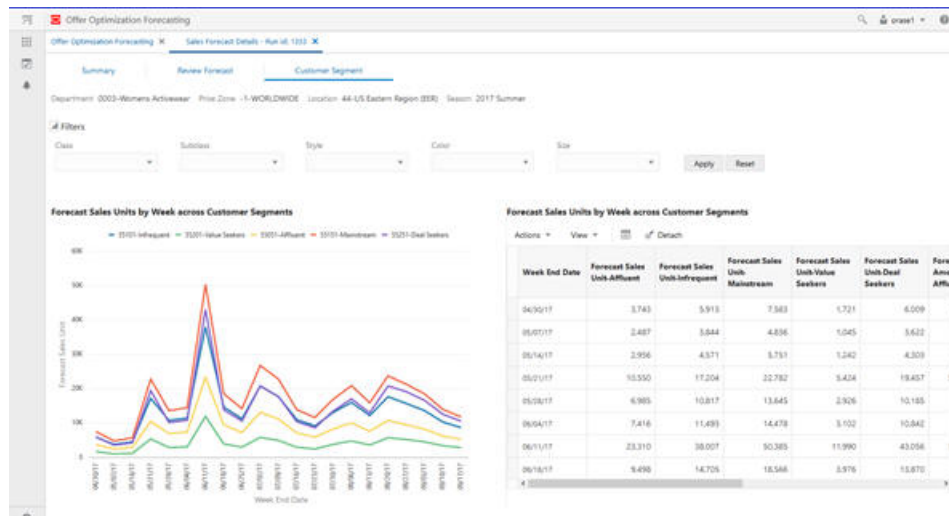
Weekly Sales Inventory and Revenue Metrics

Week Ending Date	Inventory Units	Forecast Sales Units	Optimal Revenue	Current Price	Forecast Ticket Price	Forecast Sales Price	Base Sales Units	Sales Units from Price Changes	Sales Units from Planned Events	Cumulative Sales Units	Forecast Full Price Sit Amt	Base Den
04/30/17	1,833,132.25	24,287.75	\$493,100.07	\$24.93	\$20.32	\$24.83	15,566	8,722	0	24,288	15,566	17
05/07/17	1,817,301.68	15,830.58	\$393,112.6	\$25.12	\$24.83	\$24.83	15,566	268	0	40,098	15,566	17
05/14/17	1,798,527.53	18,774.16	\$465,647.06	\$25.16	\$24.8	\$24.8	16,382	396	0	58,873	16,382	17
05/21/17	1,726,791.25	88,736.28	\$1,097,269.65	\$24.91	\$15.73	\$15.73	26,028	43,839	0	128,809	26,028	17
05/28/17	1,684,333.89	44,457.36	\$1,100,584.82	\$25.26	\$24.76	\$24.76	43,330	1,142	0	173,066	43,330	17
06/04/17	1,637,298.96	47,034.93	\$1,163,311.1	\$25.28	\$24.73	\$24.73	45,734	1,318	0	220,101	45,735	17
06/11/17	1,603,723.91	153,575.04	\$2,414,045.15	\$24.94	\$15.72	\$15.72	57,070	96,805	0	373,676	57,083	17
06/18/17	1,423,140.40	60,583.49	\$1,499,618.28	\$25.27	\$24.75	\$24.75	39,029	1,604	0	434,360	39,060	17
06/25/17	1,376,741.00	46,399.39	\$1,148,263.87	\$25.29	\$24.79	\$24.79	45,160	1,296	0	480,658	45,202	17
07/02/17	1,289,406.64	87,334.37	\$1,838,301.87	\$21.48	\$21.05	\$21.05	85,133	-16,866	17,067	567,993	46,999	17
07/09/17	1,215,134.06	74,272.57	\$1,562,404.35	\$21.47	\$21.04	\$21.04	72,388	-14,279	14,527	642,266	48,007	17
07/16/17	1,169,743.62	45,390.44	\$1,122,167.4	\$25.24	\$24.72	\$24.72	44,238	1,354	0	687,656	44,426	17
07/23/17	1,132,026.86	37,718.78	\$932,494.76	\$25.25	\$24.72	\$24.72	36,739	1,233	0	725,373	36,982	17
07/30/17	1,076,504.26	55,522.60	\$1,094,219.63	\$24.92	\$19.71	\$19.71	33,691	22,213	0	780,896	34,006	17
08/06/17	1,007,970.43	68,533.62	\$1,234,819.37	\$24.79	\$17.87	\$17.87	32,376	36,623	0	849,430	32,735	17
08/13/17	955,783.55	67,186.88	\$837,345.13	\$24.79	\$17.66	\$17.66	24,616	37,496	0	901,616	24,941	17

Customer Segment Tab

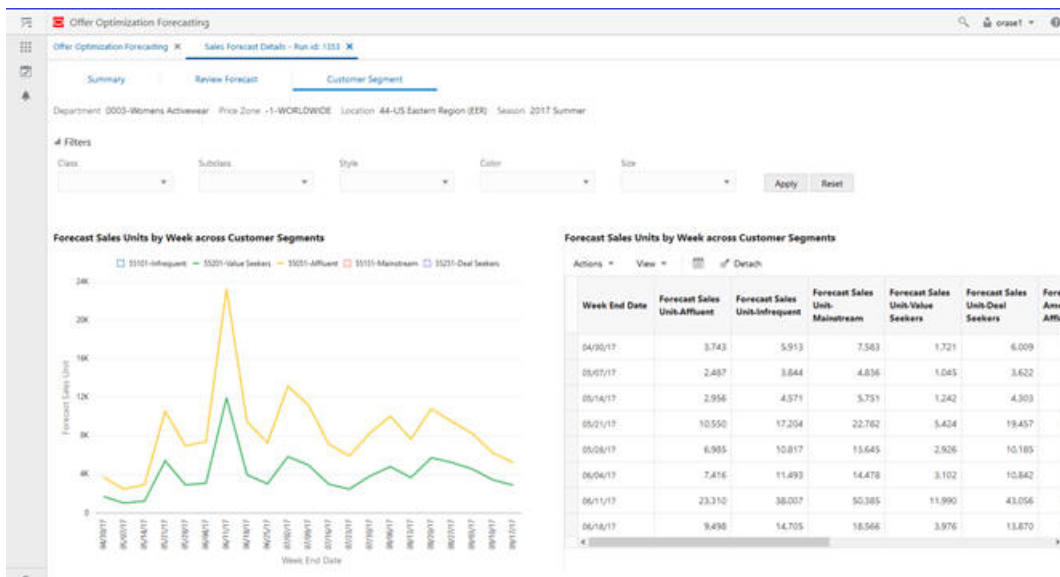
The Customer Segment tab, shown in Figure 1-55, is used to compare the sales trends across the various segments.

Figure 1-55 Customer Segment Tab



Use this tab to compare the sales trends across various customer segments. Similar to Forecast review tab, you can view the customer segment comparison for selected merchandise. The filtering functionality for merchandise works in the same way as in the Forecast review. In the chart, individual customer segments can be selected and un-selected by clicking on the legend. The chart is rescaled automatically based on the new selection, as shown in Figure 1-56. Rescaling is useful for reviewing patterns for customer segments with low sales volume.

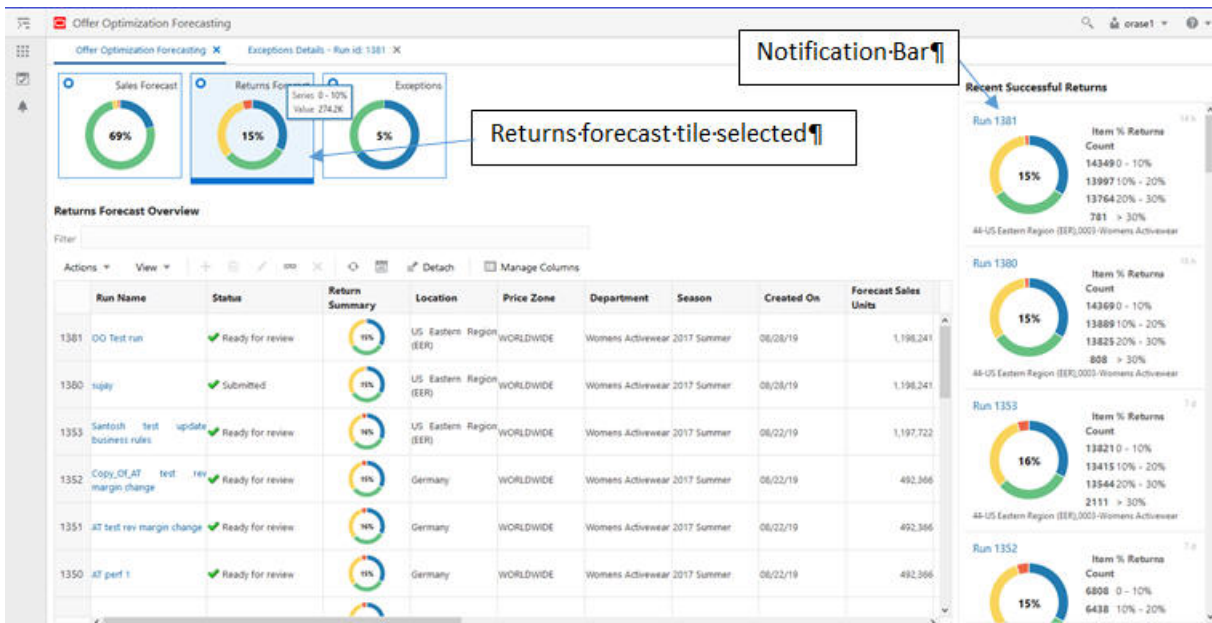
Figure 1-56 Rescaling Based on New Selection



Returns Forecast Tile

The Returns Forecast tile, shown in Figure 1-57, displays the following information across all OO runs for the next effective date.

Figure 1-57 Returns Forecast Tile



- The pie chart represents the count of products in the different returns percentage bins for the effective date. For example, in Figure 1-57, 274,200 products have a forecast returns percentage between 10% and 20%.
- The center content of the pie chart displays the forecast returns as percentage of forecast sales from all products across all Offer Optimization runs for the most recent effective date.

The notification bar on the right displays the same information as the Returns Forecast tile for the most recent successful runs. For each run in the notification bar, the top left corner displays the run ID and the bottom left corner displays the Location and Department for the run.

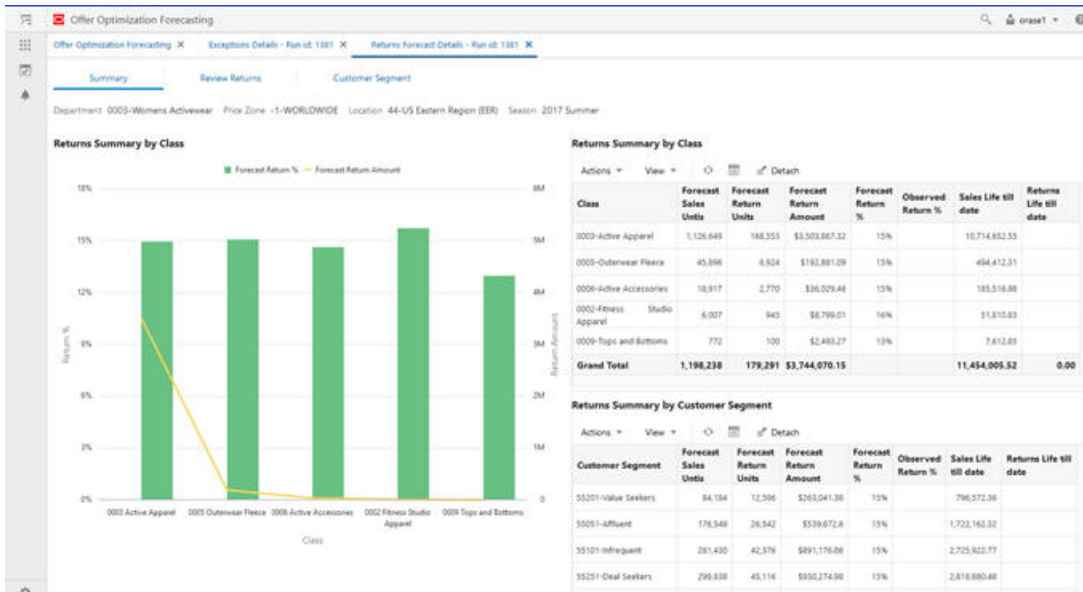
The returns forecast overview table displays the run information corresponding to the run ID from Offer Optimization, along with additional metrics such as forecast returns units, forecast return percentage, return units life till date, and return % life till date.

From the returns forecast overview table, you can select an individual run by clicking on the run name. This opens up a new tab, Returns Forecast Details - Run id <ID #>, with the three sub-tabs: Summary, Review Returns, and Customer Segment.

Summary Tab

The Summary tab, shown in Figure 1-58, displays additional details at the class level and customer segment level for the selected run ID. It provides aggregate metrics by class and customer segment.

Figure 1-58 Summary Tab



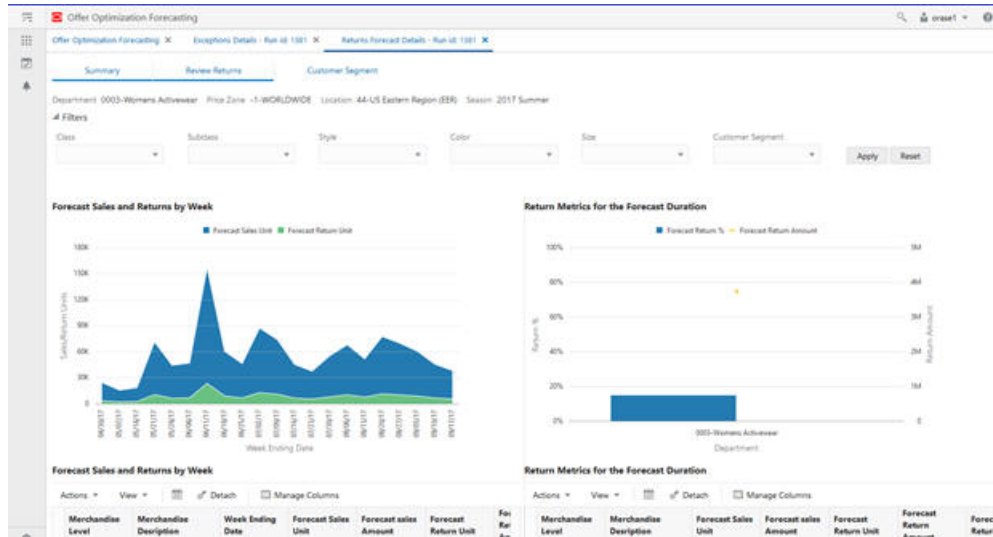
The Summary tab has the following three components

- Chart for returns summary by class. This displays the following metrics by class across the entire forecast horizon: forecast return % and forecast return amount. The forecast horizon represents all weeks in the future until the exit date for a product.
 - Forecast return % represents the ratio of sum of forecast returns units over the entire forecast horizon across all products to sum of forecast sales units over the entire forecast horizon across all products in the class.
 - Forecast return amount represents the total value of the returned merchandise over the entire forecast horizon across all products in the class.
- Table for returns summary by class. In addition to the metrics displayed in the chart, the following metrics are displayed in the table for every class: forecast sales units, forecast return units, sales units life till date, returns life till date, and observed return %.
 - Forecast sales units is the sum of forecast sales units over the entire forecast horizon across all products.
 - Forecast return units is the sum of forecast return units over the entire forecast horizon across all products.
 - Sales units life till date is the sum of actual sales units from the first sale date until the most recent week with sales data across all products.
 - Returns life till date is sum of actual return units from the first sale date until the most recent week with sales data across all products.
 - Observed return % is the ratio of returns life till date to Sales units life till date.
- Table for returns summary by customer segment. This displays the following metrics by customer segment: forecast sales units, forecast return units, forecast return amount, forecast return %, sales units life till date, returns life till date, and observed return %.

Review Returns Tab

The Review Returns tab, shown in [Figure 1-59](#), is used to view the returns information for the selected merchandise and customer segment.

Figure 1-59 Review Returns Tab



You can review the returns information for the selected merchandise and customer segment combination. By default, this chart shows the information at the department level for the merchandise hierarchy and across all customer segments. Use the Filters to display the available options to select a specific merchandise and customer segment. Filtering works in the way that it does in the Review forecast tab, where the merchandise selection is made in the order of the merchandise hierarchy.

The Review Forecast tab has the following four components:

- Chart for forecast sales and returns by week, as shown in [Figure 1-59](#) and [Figure 1-60](#).
 - It displays aggregate forecast sales units and forecast returns units by week for the merchandise and customer segment selection.
- Chart to compare the return percentage and return amount across merchandise, as shown in [Figure 1-59](#) and [Figure 1-60](#).
 - Displays the forecast return % and forecast return amount for the selected merchandise along with other merchandise under the same parent. For example, when class 0009 tops and bottoms are selected, this chart displays the above metrics for all classes within the department corresponding to 0009 tops and bottoms.
 - The forecast return % is the ratio of the sum of forecast returns units over the entire forecast horizon across all products to the sum of forecast sales units over the entire forecast horizon across all products from the selected merchandise and customer segment.
 - The forecast return amount is the total value of the returned merchandise over the entire forecast horizon across all products in the selected merchandise and customer segment.

- Table with forecast sales and returns by week, as shown in [Figure 1-59](#), [Figure 1-60](#), and [Figure 1-61](#).
 - Displays the following additional metrics compared to the chart: forecast sales amount, forecast return amount, forecast return %, and item count by week for the selected merchandise and segment combination.
- Table that compares returns metrics across merchandise, as shown in [Figure 1-59](#), [Figure 1-60](#), and [Figure 1-62](#).
 - Displays the following additional metrics compared to the chart: forecast sales units, forecast sales amount, forecast return units, item count, sales life till date, returns life till date, and actual return percentage across all products for the selected merchandise and customer segment.

Use Manage columns to select the metrics displayed in the table. Use the Detach button to expand the table into a pop-up window for ease of use, as shown in [Figure 1-61](#) and [Figure 1-62](#).

Figure 1-60 Compare Return Metrics

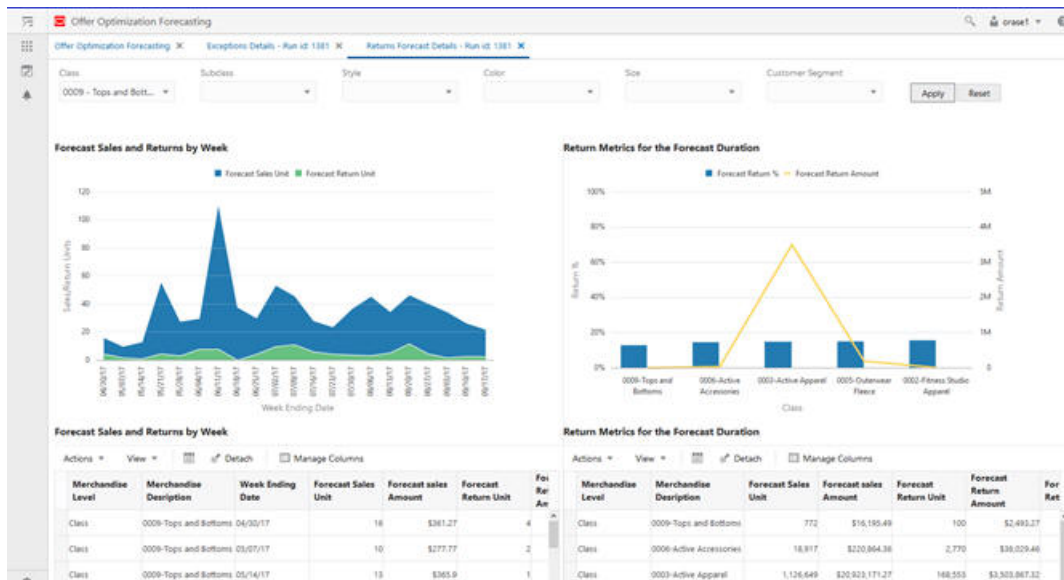


Figure 1-61 Review Sales and Returns by Week Table

Forecast Sales and Returns by Week

Merchandise Level	Merchandise Description	Week Ending Date	Forecast Sales Unit	Forecast sales Amount	Forecast Return Unit	Forecast Return Amount	Forecast Return %	Item Count
Class	0009-Tops and Bottoms	04/30/17	18	\$361.27	4	\$116.08	27%	1
Class	0009-Tops and Bottoms	05/07/17	10	\$277.77	2	\$51.94	17%	1
Class	0009-Tops and Bottoms	05/14/17	13	\$363.9	1	\$29.2	7%	1
Class	0009-Tops and Bottoms	05/21/17	36	\$941.03	4	\$90.34	8%	1
Class	0009-Tops and Bottoms	05/28/17	28	\$76.1	3	\$97.32	11%	1
Class	0009-Tops and Bottoms	06/04/17	30	\$833.1	8	\$262.72	26%	1

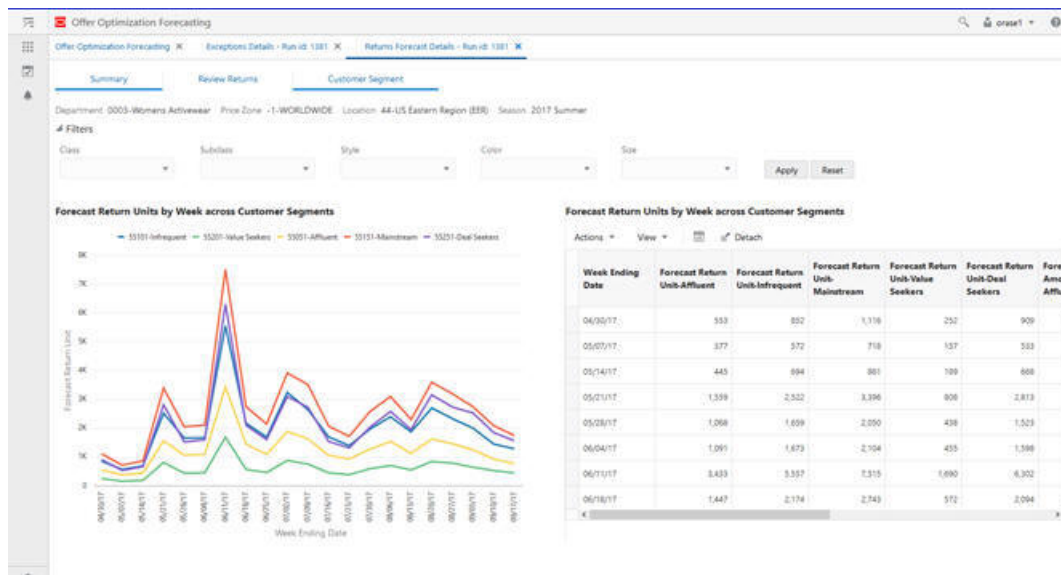
Figure 1-62 Review Return Metrics Across Merchandise Hierarchy Table

Merchandise Level	Merchandise Description	Forecast Sales Unit	Forecast sales Amount	Forecast Return Unit	Forecast Return Amount	Forecast Return %	Item Count	Actual Return %	Sales Life till date	Returns Life till date
Class	0009-Tops and Bottoms	773	\$16,185.48	100	\$2,493.27	13%	21		7,812.85	
Class	0009-Active Accessories	18,817	\$320,864.36	2,776	\$16,509.46	13%	304		125,316.96	
Class	0000-Active Apparel	1,126,649	\$20,922,171.27	148,553	\$3,503,947.32	13%	39,837		30,714,632.50	
Class	0000-Outerwear Pieces	43,836	\$1,142,549.47	8,304	\$132,881.09	13%	2,731		494,412.31	
Class	0002-Fitness Modis Apparel	6,007	\$32,275.31	945	\$8,799.01	16%	128		\$1,810.83	

Customer Segment Tab

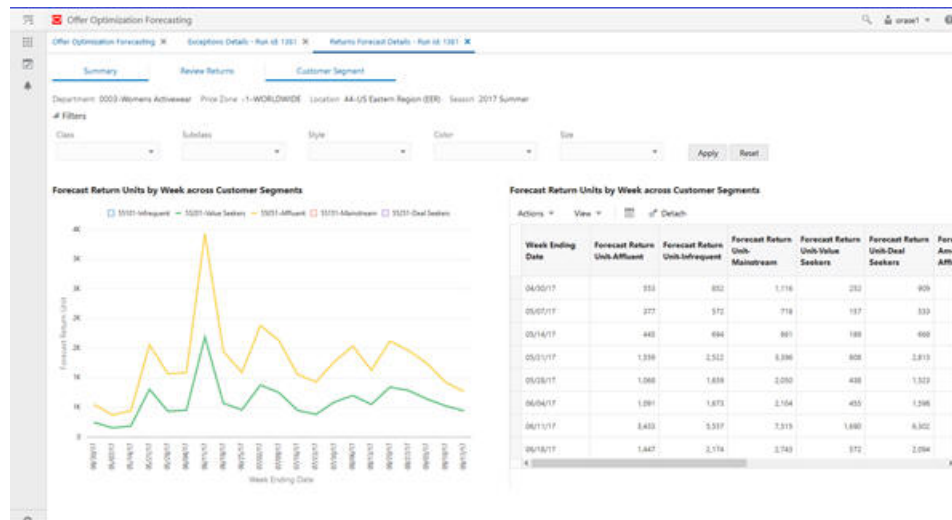
The Customer Segment tab, shown in [Figure 1-63](#), is used to compare the forecast returns trends across the various segments.

Figure 1-63 Customer Segment Tab



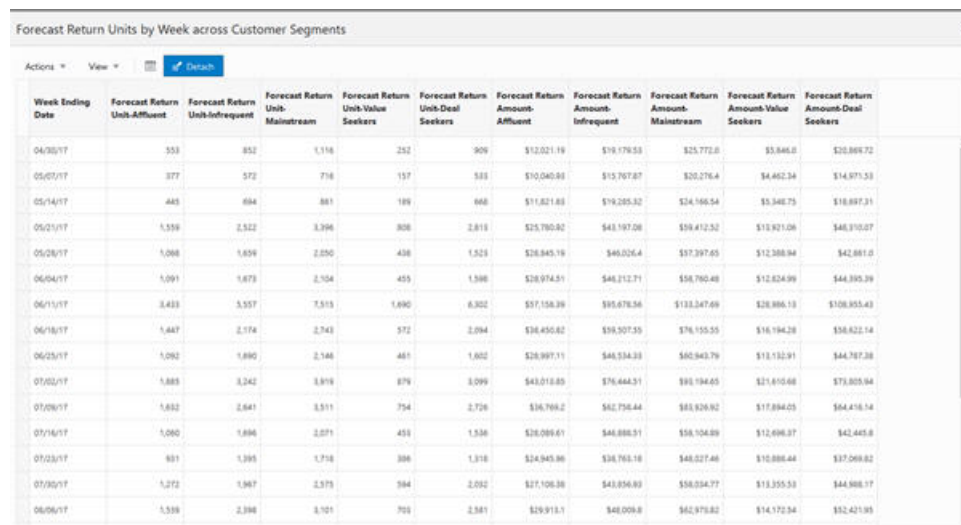
Use this tab to compare the forecast return units trends across various customer segments. Similar to Forecast Review and Returns Review tabs, you can view the customer segment comparison for the selected merchandise. The filtering functionality for merchandise works in the same way as in the Forecast Review and Returns Review tabs. In the chart, individual customer segments can be selected and un-selected by clicking the legend. The chart is rescaled automatically based on the new selection, as shown in [Figure 1-64](#). Rescaling is useful for reviewing patterns for customer segments with low sales volume.

Figure 1-64 Rescaling Based on New Selection



The table on the right displays the forecast return units and the forecast return amount for all customer segments. The Detach button can be used to expand the table into a pop-up window for ease of use, as shown in Figure 1-65.

Figure 1-65 Customer Segment Table



Exceptions Tile

Offer Optimization Forecasting supports exceptions based on sell thru and returns. This includes the following:

- Sell thru exception. When the Sell thru end of life is lower than the sell thru exception threshold for any product.
- Returns exception. When the Forecast return % is greater than the return exception threshold for any product.

The sell thru exception threshold and return exception threshold are set in the RSE_CONFIG table and are global settings. By leveraging these settings, you can identify products that display outlier behavior, review forecast and returns information corresponding to the product, and take appropriate action.

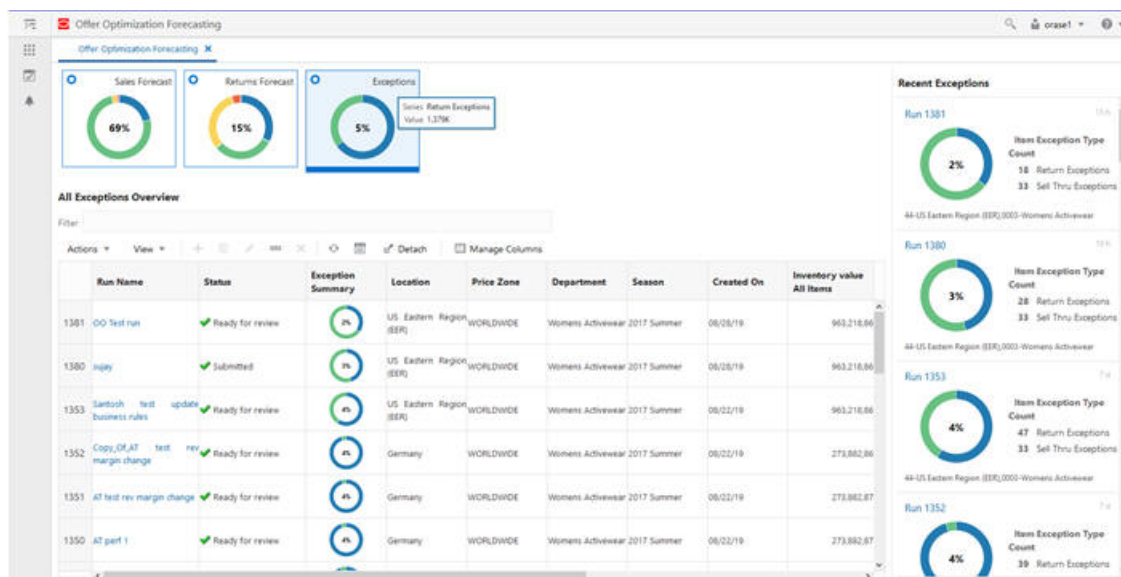
The Exceptions tile displays the following information across all OO runs for the next effective date:

- The pie chart represents the count of products with sell thru exceptions and returns exceptions based on the optimal price changes recommended by the Offer optimization system for the effective date. The center content of the pie chart displays the percentage of items/products with exceptions across all runs for the earliest effective date.

The notification bar on the right displays the same information as the Exceptions tile for the most recent successful runs. For each run in the notification bar, the top left corner displays the run ID and the bottom left corner displays the location and department corresponding to the run.

The All Exceptions Overview table displays the run information corresponding to the run ID from Offer Optimization, along with additional metrics such as item count, forecast sales units, returns units, total buy, and projected end of life sell thru.

Figure 1-66 All Exceptions Overview



From the All Exceptions Overview table, you can select an individual run by clicking the run name. This opens up a new tab called "Exception Details - <Run Id: 1381>" with the following two sub-tabs: Summary and Review Exception.

The Summary tab provides a breakdown of the exceptions by class for the select run ID.

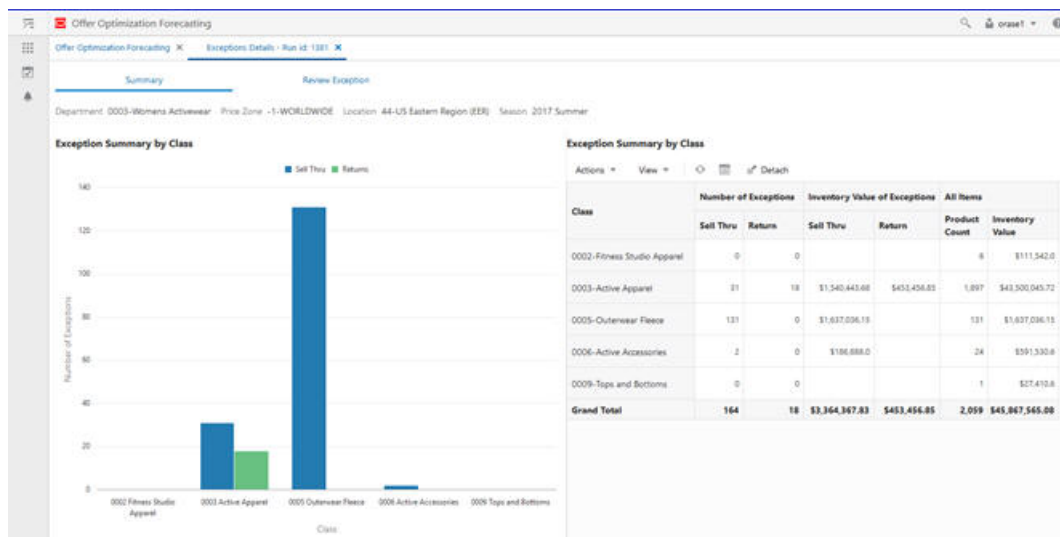
You can use the Review Exception tab to view all the products that satisfy the exception criteria. Use the filter selection to shortlist the products based on their merchandise hierarchy. The Review Exception table provides hyperlinks to the Review Forecast and Review Returns charts that correspond to the product for further analysis. Based on the analysis, you can add comments for every product that is shown in the exceptions. You can also flag the product. Both the comments and flag information from this screen are available in the Manage Recommendations screen within OO.

Summary Tab

The Summary tab provides aggregate metrics by Class. It has the following two components:

- Chart for Exception summary by class: Chart displays the count of sell thru exceptions and returns exceptions by class. Table for Exception summary by class. In addition to the count of exceptions displayed in the chart, the inventory value of the exceptions, product count, and inventory value of all products are present in the table. You can compare the inventory value of exceptions with inventory value of all items.

Figure 1-67 Exception Summary by Class



Review Exception by Class

The Review Exceptions table displays all the products that satisfy either the sell thru or return exception criteria. By default, the table displays all the exceptions from the selections run, shortlist products based on the merchandise hierarchy by leveraging the filter criteria. By expanding the Filters icon you can see the available options for selecting a specific merchandise (in a similar manner to Review forecast and Review returns screen).

The forecast sales units and forecast return units columns in Exception review table act as hyperlinks to the Review Forecast tab and the Review Returns tabs that correspond to the product, as shown in Figure 1-68. These links are used to take the user directly to the corresponding product's information related for forecast and returns, as shown in Figure 1-69 and Figure 1-70. After reviewing the information, you can add comments for future reference using the Note icon under the Action column titled Action, as shown in Figure 1-71. The Action column also has a flag icon, which you can use to flag some of the exceptions, as shown in Figure 1-72. The comments and the flag information are passed to the Manage Recommendations screen in OO. For example, for a product with a sell thru exception, after reviewing the review forecast information, you may decide to override the price recommendation with a

deeper promotion, since the model was restricted by the max first promotion business rule.

From the review exceptions tab, users can also navigate to the Manage recommendations screen directly by clicking the description on the product column, as shown in [Figure 1-68](#) and [Figure 1-73](#).

Manage columns can be used to select the metrics displayed in the table. The Detach button expands the table into a pop-up window for ease of use.

Figure 1-68 Review Exceptions

Actions	Product	Total Buy	Unsold Inventory Units	Forecast Sales Units	Forecast Return Units	Optimal Revenue	Revenue at Current Retail	Sell Thru Life till Date	Optimal Sell Thru End of Life	Forecast Return %	Current Remaining Inventory	Optimal Remaining Inventory	Current Sell Thru End of Life
	0000190085398120-SHORT SLEEVE TEE:BABY BLUE:LARGE	1,604	2,471	2,470	867	\$28,522.32	\$13,408.07	-54%	100%	35%	1,266	0	21%
	0000763838023930-TANK:QA:NOT SPECIFIED	1,684	2,677	2,677	793	\$39,906.76	\$21,341.18	-42%	100%	30%	1,374	0	27%
	0000190496015210-FLY SHORTS:OXFORD BLUE:MEDIUM	1,600	2,377	2,377	777	\$22,819.41	\$11,651.02	-49%	100%	33%	1,201	0	25%
	0000190085232981-ENGINEERED SHORTS:LAVENDER:MEDIUM	1,428	2,182	2,182	754	\$30,461.39	\$15,942.33	-53%	100%	35%	1,050	0	26%
	0000884776630667-TANK:HARVEST PUMPKIN:SMALL	1,508	2,227	2,227	719	\$20,924.15	\$10,441.57	-48%	100%	32%	1,148	0	24%
	0000823233407237-RACER PANT:BLUE:SMALL	1,472	2,180	2,179	708	\$56,192.35	\$31,673.89	-48%	100%	32%	1,018	0	31%
	0000190086884547-TEE:NOT SPECIFIED:X LARGE	1,348	2,054	2,054	706	\$21,316.46	\$9,709.28	-52%	100%	34%	1,080	0	20%
	0000190303040466-TIGHT CAPRI LEGGING:NOT SPECIFIED:LARGE	1,528	2,218	2,217	690	\$29,733.29	\$13,540.47	-45%	100%	31%	1,231	0	19%

The forecast sales units and forecast return units act as hyperlinks to access the corresponding review forecast and review return screens. The product description acts as a hyperlink to the Manage the Recommendations screen.

Figure 1-69 Review Forecast

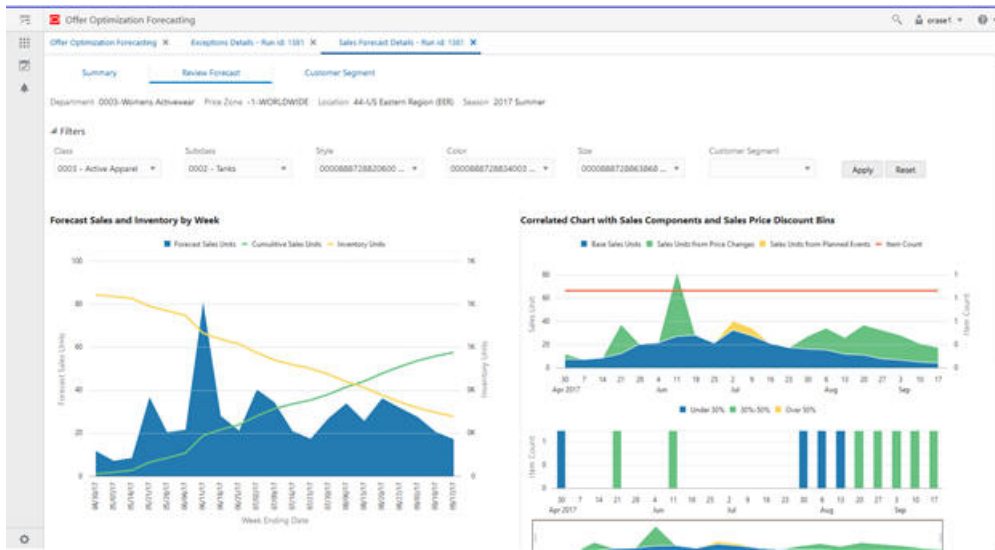


Figure 1-70 Review Returns

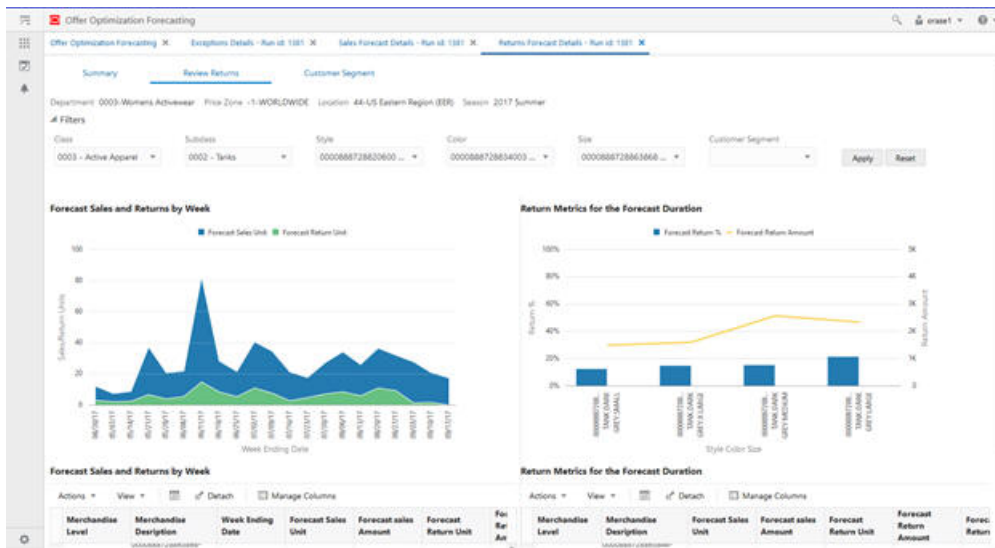


Figure 1-71 Comments

The screenshot shows the Oracle Offer Optimization Forecasting interface. At the top, there are tabs for 'Summary' and 'Review Exception'. Below this, the department is '0003-Women's Activewear', Price Zone is '-1-WORLDWIDE', Location is '44-US Eastern Region (ER)', and Season is '2017 Summer'. There are filters for Class, Subclass, Style, Color, and Size. The main section is 'Review Exceptions' with a table of product data. An 'Information' tooltip is displayed over the 'Forecast Return' column for the product '00008873893889-STREAKER TANK-DARK GREY-LARGE'. The tooltip text reads: 'Information recommendation to 40% as the projected sell thru end of life is lower'. The table columns include: Actions, Product, Total Buy, Unsold Inventory Units, Forecast Sales Units, Forecast Return, Optimal Revenue, Revenue at Current Retail, Sell Thru Life till Date, Optimal Sell Thru End of Life, Forecast Return %, Current Remaining Inventory, Optimal Remaining Inventory, and Current Sell Thru End of Life.

Figure 1-72 Flag Exceptions

The screenshot shows the Oracle Offer Optimization Forecasting interface, similar to Figure 1-71. The 'Review Exceptions' table is visible. The product '00008873893889-STREAKER TANK-DARK GREY-LARGE' has a blue flag icon next to its 'Forecast Return' value of 124. This indicates a flagged exception. The tooltip from Figure 1-71 is no longer present. The table structure and other data points are consistent with the previous figure.

Figure 1-73 Manage Recommendations

The screenshot displays the 'Manage Recommendations' interface in Oracle Offer Optimization. At the top, there are tabs for 'Forecasting', 'Exceptions Details - Run ID: 2601', and 'Manage Recommendations'. Below the tabs, there are filters for 'Promotions', 'Markdowns', and 'No Promotion/Markdown'. A summary section shows counts for 'Accepted' (1,714,375 USD), 'Overridden' (135,044 USD), 'Planned Event' (0 USD), 'Recommended' (1,854,213 USD), 'User Added' (0 USD), and 'Rejected' (4,794 USD). Below the summary is a table with columns: Item, Recommendation Status, Ticketed Price, Recommended Price, Recommended Discount %, Recommended Price Type, Recommended Price Status, and Price Override. The table lists various apparel items with their respective recommendation statuses and financial metrics.

Item	Recommendation Status	Ticketed Price	Recommended Price	Recommended Discount %	Recommended Price Type	Recommended Price Status	Price Override
000090563484041-ZIP HOODIE-BLACKLARGE	Ready for review	\$11.97	\$7.07	40%	Markdown	Rejected	
000190496294684-FLEECE CROP PANT:OXFORD BLUEMEX	Reviewed	\$43.97	\$15.27	65%	Markdown	Rejected	
000090563484027-ZIP HOODIE-BLACKSMALL	Ready for review	\$11.97	\$7.77	35%	Markdown	Accepted	
000090563607181-ZIP HOODIE-FUSCHIASMALL	Ready for review	\$11.97	\$8.27	30%	Markdown	Accepted	
0000887226057342-ZIP HOODIE-BLACKLARGE	Ready for review	\$47.97	\$29.97	37%	Markdown	Accepted	
000190078751789-ZIP HOODIE-DARK GREY-LARGE	Approved	\$32.97	\$20.47	37%	Markdown	Accepted	
000090563480913-FLEECE CREW-BLACKX-LARGE	Ready for review	\$6.97	\$4.57	34%	Markdown	Accepted	
000088728373985-ZIP HOODIE-HONEYMEDIUM	Ready for review	\$43.97	\$29.97	31%	Markdown	Accepted	
000089819700178-PANT-BLACKX-LARGE	Ready for review	\$43.97	\$27.97	36%	Markdown	Accepted	
000190086447612-FLEECE CREW-BLACKLARGE	Ready for review	\$32.97	\$13.57	58%	Markdown	Accepted	
0000888376582500-ZIP HOODIE-DARK PINKMEDIUM	Ready for review	\$43.97	\$26.97	38%	Markdown	Accepted	
000190078751550-FLEECE CREW-TURQUOISEX-LARGE	Ready for review	\$43.97	\$22.47	48%	Markdown	Accepted	
0000889819823822-ZIP HOODIE:OXFORD BLUE-LARGE	Ready for review	\$37.47	\$21.47	42%	Markdown	Accepted	
000190078751642-FLEECE CREW-DARK BLUE-LARGE	Ready for review	\$32.97	\$20.47	37%	Markdown	Accepted	
000190085535648-ZIP HOODIE-NOT SPECIFIEDX-LARGE	Ready for review	\$47.97	\$31.47	34%	Markdown	Accepted	
000090563481033-FLEECE CREW-FUSCHIASMALL	Ready for review	\$6.97	\$4.37	37%	Markdown	Accepted	
000190086447704-FLEECE CREW-DEEP SEA GREEN-LARGE	Ready for review	\$43.97	\$39.97	9%	Markdown	Accepted	
000090563481309-FLEECE CREW-VIOLET-LARGE	Ready for review	\$6.97	\$2.87	58%	Markdown	Accepted	
000190085367355-FLEECE SLOUCHY PANT-NOT SPECIFIED	Ready for review	\$35.97	\$20.47	43%	Markdown	Accepted	
000090563481064-FLEECE CREW-FUSCHIA-X-LARGE	Ready for review	\$6.97	\$4.37	37%	Markdown	Accepted	

Integration with Oracle Digital Assistant

Offer Optimization is integrated with a voice assistant such as Oracle Digital Assistant to handle complex workflow and business process questions. The functionality integrates voice assistants, machine learning techniques such as NLP, and a pricing solution such as Offer Optimization. This reduces the workflow for a typical user of such software and helps in handling complex business process use cases. For example, buyers or managers who manage price recommendations for retail apparel might be interested in use cases such as:

- Chain/country-level view. For example, a user can ask to see the performance of a department or all departments at the country level.
 - Exception management. For example, a user can ask to see the locations for a department where the margin improvements are lower than 5%.
- Approval process. A few use cases are possible. A user can approve all batch runs or select specific runs for approval. For example, a user can reject the price recommendations for runs that have a discount higher than 40% or approve all batch runs that show an improvement of 5% for revenue.

- Recalculate the key performance metrics. For example, a user can reject recommendations that have a discount higher than 70% and recalculate the metrics.
- Q&A. This integration helps in answering a user's most frequently asked questions. For example, a user can ask about promotions and the Q&A tab brings up the relevant questions and answers related to the term "promotions."

A user can enable the Oracle Digital Assistant by clicking the microphone symbol. A user can say a particular question (utterance) to a voice-enabled device, and the utterance is converted into text and mapped to an intent/entity using existing Natural Language Processing algorithms such as Oracle Intelligent Bots. Once the intent/entity has been identified, it is sent to a pricing solution such as Offer Optimization, which then performs the appropriate processes and returns information.

Some examples of the conversation for the above use cases are provided below. The user utterance is prefixed with "User" and the response from ODA is prefixed as "Bot."

Sample Conversation: Country-Level View for All Departments

User: "I would like to see how my stores in US are performing."

Bot: "Okay. It seems as if you want to take a look at the country-level metrics for stores. Please specify the location from the following: <America, Europe, E-commerce US>?"

User: "America."

Bot: "Do you want to review a specific department or all departments?"

User: "All departments."

Bot: "Aggregated metrics for the specified location(s) and all departments are: Revenue is 2756451.736, Change in Revenue is -1.49%, Gross Margin is 1868901.003, Change in Gross Margin is -3% , Sell Through is 0.6861, Change in Sell Through is 1.28%."

Sample Conversation: Country-Level View for Selected Departments

User: "I would like to see how my stores in US are performing."

Bot: "Okay. It seems as if you want to take a look at the country-level metrics for stores. Please specify the location from the following: <America, Europe, E-commerce US>?"

User: "America."

Bot: "Do you want to review a specific department or all departments?"

User: "Specific Department."

Bot: "Which department are you interested in?"

User: "Womens Activewear"

Bot: "Aggregated metrics for the specified location(s) and department(s) are: Revenue is 2756451.736, Change in Revenue is -1.49%, Gross Margin is 1868901.003, Change in Gross Margin is -3% , Sell Through is 0.6861, Change in Sell Through is 1.28%."

Sample Conversation: Exception Management

User: "I want to see the locations that do not meet the approval criteria."

Bot: "Okay. It seems as if you are interested in finding exceptions. First, which department are you interested in?"

User: "Womens Activewear."

Bot: "What metric are you looking for: Revenue Improvement, Margin Improvement, Sellthrough Improvement, or Sellthrough?"

User: "Sellthrough."

Bot: "Please specify the threshold (for example, 15%) for identifying the poorly performing locations."

User: "10%."

Bot: "The location for Department Womens Activewear with Sellthrough below 10% is Company."

Bot: "Would you like to see the run summary for this Department and the location?"

User: "Yes."

Bot: "The metrics for run Copy_Of_test are: Revenue is 2756451.736, Change in revenue is -1.49%, Gross Margin is 1868901.003, Change in gross Margin is -3% , Sell through is 0.6861, Change in sell through is 1.28%."

Bot: "Would you like to approve the run - Yes/No?"

Depending on what the user answers here, the flow will be different. If the user says "Yes," then the user is taken to the Approval Use Case. If the user says "No," then the user is taken to Recalculate Use Case.

Sample Conversation: Approval Use Case–Single Run

User: "I want to review the metrics and would like to take care of run approvals today."

Bot: "Okay. It seems as if you are interested in approving runs. Do you want to approve all batch runs or a single location?"

User: "Single location."

Bot: "Which location are you interested in?"

User: "Company."

Bot: "Which department are you interested in?"

User: "Womens Activewear."

Bot: "The metrics for the run Weekly Run 04242017 are: Revenue is 2756451.736, Change in Revenue is -1.49%, Gross Margin is 1868901.003, Change in Gross Margin is -3% , Sell Through is 0.6861, Change in Sell Through is 1.28%."

Bot: "Would you like to approve the run - Yes/No?"

User: "Yes."

Bot: "The run has been approved, and the offers have been sent to the customers."

Bot: "Please let me know how can I help you with the Offer Optimization application."

Sample Conversation: Approval Use Case–All Batch Runs

User: "I want to review the metrics and would like to take care of run approvals today."

Bot: "Okay. It seems as if you are interested in approving runs. Do you want to approve all batch runs or a single location?"

User: "All batch runs."

Bot: "Which department are you interested in?"

User: "Womens Activewear."

Bot: "All five batch runs have been approved."

Bot: "Please let me know how can I help you with the Offer Optimization application."

Sample Conversation: Recalculate Use Case

User: "I want to review the metrics and would like to see whether to make any changes to the recommendations."

Bot: "Okay. It seems as if you are interested in accepting or rejecting recommendations. First, which location are you interested in?"

User: "Company."

Bot: "Which department are you interested in?"

User: "Womens Activewear."

Bot: "The metrics for run Copy_Of_test are Revenue is 2756451.736, Change in revenue is -1.49%, Gross Margin is 1868901.003, Change in gross Margin is -3% , Sell through is 0.6861, Change in sell through is 1.28%."

Bot: "Would you like to approve the run - Yes/No?"

User: "No."

Bot: "Would you like to ACCEPT/REJECT available recommendations? - ACCEPT/REJECT."

User: "ACCEPT."

Bot: "Would you like to ACCEPT promotion/markdown recommendation? - PROMOTION/MARKDOWN."

User: "Promotion."

Bot: "What is the maximum percent discount criterion to accept Promotion recommendations?"

User: "40%."

Bot: "Promotion Price recommendations below 40% have been accepted."

Bot: "Would you like to recalculate the metrics again - Yes/No?"

User: "Yes."

Bot: "The run has been submitted for recalculating the metrics. To see the new metrics, please query the bot."

Bot: "Please let me know how I can help you next with the Offer Optimization application."

A

Appendix: Oracle Retail AI Foundation Cloud Services Overview

Oracle Retail AI Foundation Cloud Services provides advanced analytical insights to drive the end-to-end retail process. The foundation provides out-of-the-box analytics that are purpose built for end business users with a workflow and a user experience. The foundation also provides the ability to create a retailer's own AI/ML models and then invoke and infuse those results into the business process as well as create application extensions with Oracle's Application Express.

Oracle Retail AI Foundation Cloud Services includes the features described below.

Advanced Clustering utilizes machine learning techniques to cluster stores based upon similar selling patterns, providing a more customer-centric set of clusters to drive assortment decisions. The capability also provides the ability to cluster based upon other metrics and attributes such as space to drive assortment space optimization.

Customer Segmentation provides the ability to utilize historical performance, customer loyalty information and demographics to segment customers to utilize in downstream processes.

Attribute Extraction automates the attribution process by extracting attributes from product descriptions.

Customer Decision Trees provide the ability to understand exactly how your customer is shopping their assortment. Are they coming in for a specific brand, product, size? This then enables you to utilize these insights within planning as dynamic attributes to pivot from your static merchandise hierarchy to analyze your assortment decisions in the way in which your customer is shopping.

Demand Transference drives insights into the overall uniqueness of items and the potential demand transferable to other items which is then utilized in assortment recommendations for both assortment planning as well as space optimization.

Profile Science helps retailers understand how to break their buys by size, looking at not just historical sales but also where there were stock outs and missed opportunities.

Affinity Analysis identifies associations across products and product types such as halo and cannibalization. These insights can help drive the overall decisioning of process of promotion planning and impact analysis.

Innovation Workbench enables data scientists to create their own AI/ML models with open source programming language as well as SQL.

Each of these capabilities can further fuel data-driven decisions for retailers.