



Procurement and Benchmark - Order Management System with main goal to access the tools available in the market that better fits the Oracle Retail Suite

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Resumo

O ramo do retalho, assim como a maioria dos outros ramos, tem estado em constante mudança ao longo dos anos, especialmente devido a grandes avanços tecnológicos, que abrem as portas a novas maneiras de evoluir as capacidades de modo a ganhar a vantagem no mercado, apresentando uma silhueta completamente diferente do que era há umas décadas atrás.

Assim sendo, um dos vetores para o qual se tem virado mais atenção nos últimos anos e que apresenta cada vez mais importância no mercado, é o de interação com o cliente. Atender às necessidades do cliente nunca foi tão crítico para as empresas se manterem competitivas no mercado. Para isso, é praticamente obrigatória a utilização de ferramentas que auxiliem esse plano, especialmente em retalhistas de grande escala espalhados por grandes áreas. Nessas situações a quantidade de informação a ser tratada é interminável e da qual se torna impossível tirar o melhor partido sem ferramentas bem otimizadas que permitam aglomerar e analisar toda a informação recolhida e até mesmo sugerir ações a tomar de maneira a agradar ao consumidor e garantir a sua satisfação.

Este documento procura analisar as principais ferramentas que facilitam o tratamento de informação e que permitem aos retalhistas interagir com os seus clientes de uma maneira única que permite ao retalhista ver o cliente como um só, através de todos os canais de contacto e atender às suas necessidades. Verificando quais as mais preparadas não só para lidar com as necessidades atuais do cliente, mas também com novas tendências que possam surgir nessa vertente.

Abstract

The retail branch, just like most branches, has been constantly changing over the years, especially due to major technological improvements, which opens a door to new ways of developing capabilities in order to gain market advantage, presenting a completely different skyline from a couple decades ago.

That said, one of the sections that has been getting more attention in the last few years and has been getting more and more importance is the customer experience. Meeting customer needs has never been so critical for companies to remain competitive in the market. For this reason, it is practically mandatory to use tools that support this plan, especially in large-scale retailers spread over large areas. In this situation the quantity of information to be treated is nearly endless and impossible to take the best advantage of, without tools well optimized that allow to agglomerate and analyse all information collected and even suggest actions to perform in order to please the customer and assure his satisfaction.

This document seeks to analyse the main tools that facilitate this kind of information processing and that suits retailers' interaction with their customers in a unique way that allows the retailer to see each customer as one through all channels of contact and attend to their needs, checking which ones are better prepared, not only to deal with the current needs of the client, but also with new trends that may arise in this aspect.

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“Deus quer, o homem sonha, a obra nasce”

Fernando Pessoa

Contents

1	Intro	1
1.1	Company Presentation	1
1.2	Project Description	2
1.3	Used Methodology	2
1.4	Document Organization	3
2	OmniChannel	5
2.1	Road to OmniChannel	5
2.2	State of the Art	6
2.2.1	The Customer	6
2.2.2	E-Commerce	7
2.2.3	Point of Sale	8
2.2.4	Inventory Management	8
2.2.5	Order Management	9
2.3	Possible Future Tendencies	10
3	Oracle Retail Suite	13
3.1	General Overview	13
3.2	Omnichannel Module	16
3.3	Order Management System	20
3.4	Fulfilable Omnichannel Scenarios	20
4	Alternatives to Benchmark	27
4.1	IBM	27
4.1.1	Architecture and Features	27
4.1.2	Future Improvements	33
4.2	SalesForce	33
4.2.1	Architecture and Features	34
4.2.2	Future Improvements	36
5	Omnichannel Solutions Benchmark	37
5.1	Oracle - Oracle Retail Suite	37
5.1.1	Strengths	38
5.1.2	Challenges	38
5.2	IBM - Watson Commerce	39
5.2.1	Strengths	40
5.2.2	Challenges	40
5.3	Salesforce - Unified Cloud Commerce	41

5.3.1	Strengths	41
5.3.2	Challenges	42
6	Conclusion and Future Work	43
6.1	Results Satisfaction	43
6.2	Future Work	44
A	Remaining Omnichannel Scenarios	47
	References	67

List of Figures

1.1	Wipro Logo [1]	2
1.2	Wipro Assets	3
1.3	Wipro Portugal Clients	4
3.1	Oracle Retail Logo [2]	13
3.2	Oracle Retail Suite Architecture	14
3.3	Oracle Commerce Cloud Architecture	17
3.4	Oracle Retail Customer Engagement - Customer Profile	18
3.5	Oracle Retail X-Store Suite - Hardware Alternatives	19
3.6	Scenario 1: Order Online/Fulfil at Store/ Pickup in Store via POS	21
3.7	Scenario 11: Order via POS/Fulfil at Warehouse/ Ship to Customer	23
3.8	Scenario 15: Return to Store	25
4.1	IBM Logo [3]	27
4.2	IBM Digital Commerce Starter Store demo [4]	28
4.3	IBM Digital Commerce Back Office Demo [4]	29
4.4	IBM Store Engagement Mobile App Demo [5]	30
4.5	IBM Watson Commerce Insights Demo [6]	31
4.6	IBM Watson Customer Experience Analytics Dashboard [7]	32
4.7	IBM Watson Order Optimizer Demo [8]	33
4.8	Salesforce Logo [9]	33
A.1	Scenario 2: Order Online/ Fulfil at Store/ Ship to Customer	47
A.2	Scenario 3: Order Online/ Fulfil at Warehouse/ Ship to Customer	49
A.3	Scenario 4: Order Online/ Fulfil at Vendor/ Ship to Customer	50
A.4	Scenario 5: Order Online/ Source From Warehouse/ Pickup at Store Via SIM	52
A.5	Scenario 6: Order Online/ Source From Warehouse/ Fulfil at Store/ Ship to Customer	54
A.6	Scenario 7: Order Online/ Source From Store A/ Pickup at Store B Via SIM	56
A.7	Scenario 8: Order Online/ Source From Store A/ Ship to Customer from Store B	58
A.8	Scenario 9: Order Online/ Source From Vendor/ Pickup at Store	60
A.9	Scenario 10: Order Online/ Source From Vendor/ Ship to Customer From Store	62
A.10	Scenario 12: Customer Order Cancellation Process	64
A.11	Scenario 13: Customer Returns Order to Warehouse Via RMA	65
A.12	Scenario 14: Customer Returns Order to Warehouse Via Paperwork	66

List of Tables

Abbreviations and Symbols

AI	Artificial Intelligence
API	Application Programming Interface
AR	Augmented Reality
ASN	Advanced Shipment Notification
B2B	Business to Business
B2C	Business to Customer
CMS	Content Management System
CRM	Customer Relationship Management
CXA	Customer Experience Analytics
CSR	Customer Service Representative
IoT	Internet of Things
IT	Information and Technology
OMS	Order Management System
OCC	Oracle Commerce Cloud
OR	Oracle Retail
ORCE	Oracle Retail Customer Engagement
ORI	Order Initiation
OROB	Oracle Retail Order Broker
ORS	Oracle Retail Suite
PO	Purchase Order
POS	Point of Sale / Point of Service
ReIM	Retail Invoice Matching
ReSA	Retail Sales Audit
RMA	Return Merchandise Authorization
RMS	Retail Merchandise System
ROCCP	Retail Omnichannel Commerce Platform
RPM	Retail Price Management
RWMS	Retail Warehouse Management System
SaaS	Software as a Service
SIM	Store Inventory Management
SO	Store Order
WIP	Work in Progress
WMS	Warehouse Management System

Chapter 1

Intro

This dissertation was developed in company environment, namely at Wipro, and in this introductory chapter will be done a brief presentation of Wipro as a global company and as a Portuguese office individually, an overview of the problem in hands, the methodology used to attack the problem and, to end this chapter, an explanation of the organization of this document.

1.1 Company Presentation

Wipro is an information and technology, consulting and business process services company based in India. Its brand, as represented in figure 1.1, shows a vibrant, colourful and elegant set of dots organized as rings, representing the fluidity, resourcefulness, optimism and creativity with which Wipro approaches everything, a company in sync with the world and aware of the connections and interactions present in everything we do. Spread across the globe, Wipro counts on, over one hundred and sixty offices in over sixty-two countries with a workforce of around one hundred and sixty thousand employees. Ethically Wipro is an example to follow, according to BusinessWire [10], Ethisphere Institute has elected Wipro, for the seventh year in a row, as the world's most ethical company, this achievement is, in part, due to the importance given to Spirit of Wipro, a set of four principles taken to heart by Wipro's employees, those being, "Be passionate about clients' success", "Be global and responsible", "Treat each person with respect" and "Unyielding integrity in everything we do". In order to improve and expand its capabilities, Wipro acquired important assets like Wipro Holmes, an artificial intelligence platform that looks to hyper automate some processes to improve overall efficiency, Topcoder, a recently acquired crowd-sourcing community, Appirio, who delivers cloud solutions and DesignIT, part of Wipro Digital seeks to improve user experience and digital processes, figure 1.2[11, 1].

Wipro Portugal, the Wipro office located in Maia, actually started as Enabler in nineteen ninety-seven as a spin-off of SONAE, only being acquired by Wipro in two thousand six. Counting on over one hundred and eighty employees with over ten years of experience in IT on average, Wipro Portugal is looking to grow, not just in revenue, but also in number of projects and employees, expecting to double its workforce by two thousand and twenty.



Figure 1.1: Wipro Logo [1]

Wipro Portugal has references all over the globe having worked with big clients in different business industries, some of them are represented in figure 1.3. Business transformation services, implementation and roll-out services, fast track implementation, application support and maintenance, product upgrades and consulting are just some of the services offered to Wipro Portugal's clients.

Besides the internal growth just referenced, until twenty twenty, Wipro Portugal is looking to expand into new industries, support existing markets and improve its global coverage.

1.2 Project Description

Being as important as it is nowadays, Omnichannel needs to be seen as a necessity rather than an additional service for a company to stay competitive in the market. Not only apply it, but making sure it works in an efficient manner, assuring customer satisfaction while maintaining profitability on it.

At the moment, Wipro is assuring Omnichannel capabilities to its clients implementing Oracle Retail Suite's solution for Omnichannel, however Wipro wants to know if this solution is doing a good job providing all key features, like single view of inventory or a three hundred and sixty degrees view of the customer, that enables Omnichannel scenarios to work seamlessly and efficiently, with special focus in the order management system, which, as the name suggests, is the main Omnichannel module, responsible for managing all order related actions. This will be assured by doing a state of art for Omnichannel, studying with detail what OR's Omnichannel solution has to offer, in its current version as well as the soon to come version, and by looking at other competitors' solutions.

1.3 Used Methodology

To accomplish the task in hand, the Omnichannel state of art will be gathered by web research, article reading, by attending sessions about the subject given mainly by Wipro personnel and



Figure 1.2: Wipro Assets

by comparing the concepts of Omnichannel defined by Oracle Retail and its competitors while looking for any breakthroughs on the matter.

To study what ORS is offering, Omnichannel-wise, will be done a detailed analysis of the documentation available, with access to specific documents only available to Oracle partners, as well as a four day session provided by Wipro employees, Teresa Ferraz, Felipe Barros and Sangeeta Das which offered an overview over the modules composing this Omnichannel solution, with detailed information about each one's functions, capabilities and integrations with an hands-on component which allowed for an enlightening experience where was possible to observe the system behaviour in action while simulating real Omnichannel scenarios with all kinds of variables to explore the limits of the software, making it possible to identify strengths and weaknesses of this tool.

Unfortunately, the documentation about the next version of this tool is scarce and was difficult to find which will be the improvements in this version since most of them were just rumours.

Regarding the competitors' solutions, firstly these competitors must be identified, only reviewing the most interesting solutions, chosen by criteria like key features offered, market position, tool stability and customization or even price. After this step each one will be analysed in the best possible way, which in this case won't go much further than online research, article reading and possibly chat discussion with the competitors' personnel.

Lastly a comparison between all the solutions covered in this document will be done, having in account analysis discrepancies between each case, obtaining an overall picture of the market regarding Omnichannel and OR solution's position on it.

1.4 Document Organization

This document will be divided in six chapters, starting by this introductory chapter 1, followed by chapter 2 in which will be covered the evolution of Omnichannel through the years as well as its actual state of the art, including key features and scenarios that must be assured by Omnichannel solution providers, and possible future concepts of what Omnichannel definition will evolve to and which new necessities may arise in a near future. In chapter 3 will be documented a deep analysis performed over OR Omnichannel solution, starting by a general overview of ORS and its major



Figure 1.3: Wipro Portugal Clients

components, one of them being the Omnichannel part, followed by a closer look to this part, its integration to the other ORS components and its use as a standalone product and to a detailed look over each module inside Omnichannel, with special focus in the OMS module. Lastly a description of the behaviour of these tools when facing real Omnichannel scenarios. Chapter-4 is destined to analyse each competitor picked to be reviewed in this document individually, constructing a picture of the actual market. Chapter 5 will then gather all information treated so far and compare the solutions analysed checking if the different solutions accomplish well all main Omnichannel key features described in chapter 2 as well as a stand-out of the strengths and struggles of each solution. Chapter 6 will present the conclusions about the work done while referring difficulties and setbacks and referring also how to expand and improve on the project and possible work paths to be done over the information obtained with this document.

Chapter 2

OmniChannel

2.1 Road to OmniChannel

Through the years, Omnichannel has suffered several changes to its definition. In fact, it didn't even begin as Omnichannel. A few decades ago retail industry didn't have many ways to interact with the customer, almost everything retail related was done physically and the contact with the customer was made, mainly, at stores. With the development of technology, communication and transportation, new ways appeared to interact with the customer as well as new players using new channels in the race for market share. These interactions had now a much bigger digital component, the ability to consult catalogues online, to order something from home, to have it delivered at the door step or to have it returned the next day for whatever reason, were actions that rapidly any big retailer had to adopt to stay competitive. Not only traditional retailers started to consider to act through more channels like websites, while evaluating the impact of the implementations of these new channels in the business, like the possible loss in loyalty when customers change to the online channels argued by Melis et al. in this article [12], or the synergy created by the integration of this digital channels rather than the possible channel cannibalization as concluded by Herhausen et al. in this issue [13] but even some of the new players that functioned fully virtually began to consider if they should have physical channels available to the customer. This way, the customer began to be one of the biggest focus points of retailers, enhancing customer experience was now mandatory. All these channels of interaction with the customer originated the concept of multi-channel. [14]

At this point, the next step was to connect all this channels and customer touchpoints to improve customer experience while taking a step into branding by giving a personal touch to the contact points with the customer in order to establish a good impression on the brand even though a two thousand and twelve article [15] concludes that physical store touchpoints with the client to the best job on defining brand preference. To bring down the walls between channels is the new challenge merging all commerce experiences into a single one. The customer wants to have a single experience across channels which is a very basic definition of what Omnichannel is, a single channel across all platforms capable of offering a seamless experience to the customer no matter where the customer is or what action he wants to do. For example, a customer should be able to,

while being on a trip in another country, perform an order online, choose to pick it up at a nearby store of his choosing, while picking it up get a related product suggestion, he accepts the suggestion although the colour he wants isn't available at said store, so he can choose to have it delivered at his home address, he should also be able to return it at his home country, all of this in the most effortless way possible. When this Omnichannel concept first appeared, also known as, commerce anywhere, it was seen as a way of exceeding customer expectations, providing a service that was uncommon in retail. Retailers wanted to get the product to their customers in any way possible, leading, a lot of times, to non-efficient and costly processes, including workarounds, temporary solutions and manual processes. This stage can be referred to as the first stage of Omnichannel.

As time goes on, this uncommon service is not uncommon anymore, the customer expects this premium experience, anytime, anywhere. This is due, not only, to the replication of the service by the competitors, but also, because of the bleeding from industries like banking, entertainment or hospitality, creating additional pressure to deliver a better customer experience in the retail industry as well.

2.2 State of the Art

Right now we are at the second stage, where once the base concept is assured, it needs to become more efficient and profitable, turning the Omnichannel scheme a stable, well-oiled machine. That's where the systems analysed in this document come in, their objective is to provide the retailer with this Omnichannel functions in an easy to implement, easy to execute and easy to customize way that allows the retailer to improve its customers' experience in an efficient and profitable manner.

In today's time, it's all about data and how rapidly and efficiently it can be exchanged and synchronized to provide a seamless experience to the customer independently of the channel used, which implies a big turn of focus to the network due to the necessity of this data exchange, and the e-commerce that has grown at a much bigger pace than regular, store based commerce, noting that, in twenty-sixteen, commerce has grown one percent, while e-commerce has grown fifteen percent. Omnichannel is a vast concept deeply involved in the retailing process, from the supply chain, to the shelves and web sites and even to the customers' homes after the bought a product, all of that with a business managed system. Such a big system can be looked at from many angles that are all intertwined.

2.2.1 The Customer

Starting from base of it all, the customer, Omnichannel must ensure a three hundred and sixty degrees view of the customer, that means, having all information about a customer in a single centralized point. Not just that but also making sure the customer is viewed as one across channels, being recognized as the same if he makes a purchase online one day or if he calls the customer support the following day. No matter what channel the customer uses to interact with the retailer,

he must be engaged and recognized as the same person and be offered a seamless customer experience. At today's time, having to provide personal information each time a customer needs to interact with the retailer is just not acceptable.

This is merely the base of Omnichannel's CRM module, apart from that, Omnichannel goes much further, it must be able to gather all kind of data about the customer, from basic information like name and home address to much more complex data like buying, ordering and returning history to notes and situation descriptions about the customer, for example, of a bad service the customer experienced at a store, to social media listening to later be analysed to detect patterns or relevant information for example about a trend or a customer's complaint that can be addressed to please the customer and even minimize the negative impact of the prior complaint in social media.

All of this synchronized data gathering makes it possible to engage the customer in many different ways, like offering campaigns and deals fitted to the customers' behaviour right at their smartphones by e-mail or message, by post mail at home, at a Kiosk in store or, for example, at the retailer's website or application, rewarding the customer with the help of a loyalty and awards system, keeping track of gift card utilizations or giving a much more personalized help and product recommendation at customer support or right at the shop floor by having all information needed about the customer in need of help, at the fingertips with the help of mobile devices.

2.2.2 E-Commerce

As approached earlier in this chapter, over the last years, a huge growth was observed in the e-commerce area, especially in comparison to the growth of traditional commerce. It's crucial, in today's retailing system, to have a stable, user friendly way to provide an e-commerce channel to the customer although in today's standards these tools need to go much further than that.

Besides the basic actions an e-commerce website or application must do, like showing detailed product information, orchestrating orders or showing information about the customer's account, it's very important to account for other functionalities. For example, it's of most importance to have product information not just right but also in sync with store information. In a time where it's common for a customer to be checking product information online while he's shopping on the shop floor, having mismatching information like prices or product availability gives a bad image to the retailer and a poor customer experience to the customer.

An e-commerce option must also be personalized to the customer, easily letting him know of current or upcoming campaigns or even personalized deals available to the customer and recommending products that might be of interest to the customer, for example based on acquisitions he performed on a physical store.

Customer support is also an important function in e-commerce, in a virtual store where the customer can't easily clarify its doubts, this can be assured by FAQ or forums, by phone while talking to a retailer or by e-mail, although lately it's more and more usual for the customer to have at his disposition a chat where he can get a response to his doubts, sometimes by a bot, others by an actual retailer chatting in real-time.

2.2.3 Point of Sale

Even though e-commerce has been demonstrating a big growth, it does not mean stores are going out of fashion. Store sales are growing as well, just at a smaller pace, not forgetting that they still represent the biggest slice of total sales thus they should not be ignored. Also, here at the traditional sales point, Omnichannel has a big saying. Omnichannel enables the cashier to do so much more than just performing sales.

Starting from the hardware, with Omnichannel, all components are connected through the network and, desirably, wirelessly. These days POS are capable of managing shifts and knowing who's the cashier performing a sale. The POS system should now be able to use and manage the customer information allowing the cashier to learn about the customer being served enabling him to offer a more personalized customer experience with convenient recommendations and useful help without effort from the customer. Apart from sales the POS is able to consult, create and manage orders, easily perform returns and consult inventory, both in an out of store boundaries giving the customer another way to answer to their needs.

The immovable cash register is also another thing of the past, the employees are now empowered with mobile, hand held devices capable of performing all actions listed above, giving them the possibility to help customers in a personalized manner all over the shop floor improving, like that, the customer experience.

2.2.4 Inventory Management

Inventory Management plays a vital role in assuring the customer's satisfaction since telling a customer that the order he placed two weeks ago cannot be fulfilled gives a very bad impression of the retailer not only to the customer but, most times, with repercussions in the community, on the flip side if the retailer has inventory but does not allow the order to be placed, looking to reduce the risk of inventory rupture, even if it doesn't impact the customer with such a negative impression, it's still undesirable providing a bad customer experience and affecting business, situations which could be avoided with a tight, trustworthy inventory management system.

That's just a small example on what can go wrong when the inventory management is not well performed. The inventory management system is connected with most modules providing important actions and information. In terms of location, inventory can be distinguished in three blocks, inventory in store, inventory at the warehouse and inventory directly at the vendor that the retailer may or may not be able to promise to the customer based on the relationship with the vendor as well as the strategy used.

About the inventory in store, it can be divided between the back-floor inventory, used mostly to fulfil orders and replenish shelves, and the shop floor which is the inventory at the shelves itself, directly available to the customer and may also be used to fulfil picking orders. At the shop floor level the inventory management's main challenge is to account for the transactions, order fulfilments, trades, returns, and facilitate inventory checks since inventory is always affected by all kinds of shrinkage. At the back floor the main challenge is to keep track of the inventory,

facilitate picking actions to fulfil orders and replenish shelves, have an easy method to insert a new product in the system and manage all kinds of inventory status. Just because an item is in inventory does not mean he is available to promise to the customer since it may already be reserved to fulfil another customer's order for example.

At warehouse level it's important to keep track of incoming and outgoing deliveries and facilitate inventory checks at those delivery processes as well as keeping track of inventory location inside the warehouse to accelerate the picking process. It's also important to optimize inventory moving and placement taking into account the space available, as well as future inventory incoming and inventory dispatches with the objective to reduce the overall transportation time inside the warehouse since it's a non-added value process.

At the vendor it's important to know what the retailer can promise to the customer trusting the information provided by the vendor. The retailer can make a product available to order knowing the product is available to promise at the vendor as inventory or even as WIP and will be available in a near future or can even make the order directly fulfillable by the vendor, either to pick up at a designed location chosen by the customer or to pick at a store or warehouse should it be more comfortable to the customer.

A good inventory management system adapted to Omnichannel shall allow this and much more like sales strategies to help with inventory turnover, centralize the inventory across the entire business having all data synced minimizing the risk of not fulfilling customers' orders while making available virtually all inventory available from any store, warehouse and vendor all across the globe to the customer wherever he is or whatever channel he chooses to use.

2.2.5 Order Management

After exposing the concepts of customer management, POS, e-commerce and inventory management, comes order management the last pillar to complete the Omnichannel experience.

Deeply intertwined with the other pillars above mentioned, the order management system can be seen as the heart of Omnichannel pumping in synchrony with the other modules, not just by exchanging information from each one but also while working on that data and performing its main functions it also triggering commands to some of these other modules.

Regarding the customer management module, the order management one is mainly responsible for gathering useful information about a customer and link it to the orders or transactions performed by the same. If for some reason that information is incomplete, the OMS should be able to request that data to the customer via the appropriate channel, for example if a customer is ordering something online and his account is missing the address, that information should be requested from the customer through the website while creating the order, using that information not only to create the order but also to join the information to the customer's account for later reference, allowing the order to be fulfillable but also allowing CRM to be able to eventually suggest deals to said customer based on his location for example.

With E-commerce and points of sales, the communication by the order management system is very similar since on this matter, the OMS is responsible firstly for creating the orders regardless

of the channel used to do so, and keep every channel updated with the orders' status so either cleared employees or the customer itself can consult the order's stage while allowing the same to be customized either by adding or removing items or quantities, or changing the order pick up method or actually cancelling the order altogether.

With the inventory management system the exchange of triggers and data usually goes back and forth since the orders require item reservation and constant status updates to confirm things like item reservation, orders in transport, picked up or delivered orders or even item unavailability.

The order management system though, it's not just a communicator between modules, as it has very important functions of its own. Besides the described above and the obvious function of keeping track of orders and their statuses, a good OMS is usually responsible for defining the order fulfilment location in an optimized manner to reduce the resources allocated to fulfil the order by running a set of well-defined rules like the distance between stores, vendors and warehouses, the item availability at certain locations or the cost and time associated to the transport between locations in order to optimize the process efficiency, reducing the necessary cost to provide a good customer experience.

2.3 Possible Future Tendencies

Due to the high competition between businesses and also due to trend bleeding from other services besides retail, Omnichannel not only has developed a lot as seen in section 2.1 of the current chapter, as it still has a long way to go. At the present time the main concern is to optimize the processes to make them more viable by part of the competition, while the smaller companies are still struggling to get to the same level, Omnichannel-speaking. So, given this, the innovation segment is not at full charge right now.

That said there's still a big improvement leap to be taken to make Omnichannel more efficient. Omnichannel does not reach all customer segments in the same way and in most cases there is still a lack of knowledge by the consumer regarding its privileges which can be a challenging situation to counter, especially regarding the elderly customer segment who could take a big advantage from lots of Omnichannel customer experiences like shopping their daily groceries from home and having them delivered by the door step.

Getting in touch with the customer effectively is no easy task to perform being the main difficulty to present content of interest most of the times translating to personalized content to each customer segment or ideally to each customer itself.

Artificial intelligence has the possibility to play huge role in Omnichannel further development since there are a lot of areas that are not so easy to automate simply using the common methods, ending up needing human interaction to function properly. Some of the areas that can be heavily impacted by the introduction of AI are, for example, the processes of picking fulfilling locations and routing more efficiently, discover more personalized content for each customer, suggesting more impactful deals, gathering and analysing all kinds of data, especially on social media possibly analyzing emotions. Although it's already implemented by some, AI for chat support is

something that needs to be improved in order to help the customer on his problems and doubts while navigating a retailer website or app while reducing the human resources allocated to it. Taking it a step further it can even be considered using AI in actual call centres performing actual conversations with customers since AI as personal assistant is developing at a fast, steady pace with companies like Google breaking through the mould showcasing an AI capable of challenging the Turing test while scheduling appointments via phone call with a mind-blowing similarity to a human being voice and behaviour [16].

Also, with the development of the concept of Internet of Things there are a whole new area of opportunities to improve Omnichannel, starting from the implementation in the logistics areas to the home of the customer whom could for example have a fridge that would order groceries automatically. Or a Wardrobe mirror that allowed the customer to try new clothing models right in her bedroom through augmented reality. It would be a new channel of interacting with the customer.

From a strategy point of view, there is still a lot to analyse, the assortment strategy for example is a matter that goes on forever to figure what is the method to present any item to the customer, from localization to the specific shelf, height and surrounding products, every single parameter is taken into account. The price strategy is also target of discussion since there is no definite strategy to weather there should be no price differences between channels or localizations or if it should actually be enforced. Right now, the Omnichannel theory supports that the information about a product, value included, should stay consistent between all channels to enable single view of inventory and to offer the same customer experience regardless of the channel used, with exception to specific deals or campaigns that can look to promote a specific channel for example.

Chapter 3

Oracle Retail Suite

Oracle is a software, hardware and services provider with headquarters in Redwood, California. Founded in nineteen seventy seven, it has over a hundred and thirty six thousand employees globally and has deployments in over a hundred and forty five countries. Oracle Retail, figure 3.1, is at the moment, Wipro's main choice to implement on its clients, noting that, even though this last version has been out for about a year already, the vast majority of the retailers still use old Oracle Retail Suite versions that, in terms of Omnichannel capabilities, are near obsolete. As such, it's an important task to figure out the new advantages of this updated solution and how viable and robust are they. As most alternatives, OR unsurprisingly has taken a turn to Omnichannel by implementing several features for this matter in the latest versions out there as well as a big focus on transposing the system to the cloud in similarity with most competitors, this last point heavily influenced by the recent acquisition of the company Netsuite which is very experienced in the matter and brought all that Cloud knowledge and expertise to Oracle.



Figure 3.1: Oracle Retail Logo [2]

On what concerns this document, despite of these notable improvements, Wipro questions OR performance in the Omnichannel field, with special reference to the order management system.

With that in mind this chapter looks to give an overview of the overall Oracle Retail Suite on an higher level ending up scrutinizing the Omnichannel Module with main emphasis on the order management system's performance and capabilities as well as its problems and limitations.

3.1 General Overview

The full Oracle Retail Suite solution is organized in seven fully integrated and cooperative modules, figure 3.2 that work in synchrony to deliver to the retailer the Omnichannel capabilities he

expects to be able to execute in a profitable manner, as well as to deliver to the customer the expected customer experience with a seamless journey with the brand in order for the brand to grow its market footprint by consolidating the customer base loyalty. Each module is further composed by different segments which will be shortly addressed and explained with exception to the Omnichannel module which will be detailed in its own section of the document since it deserves a bigger insight according to the subject of this paper.

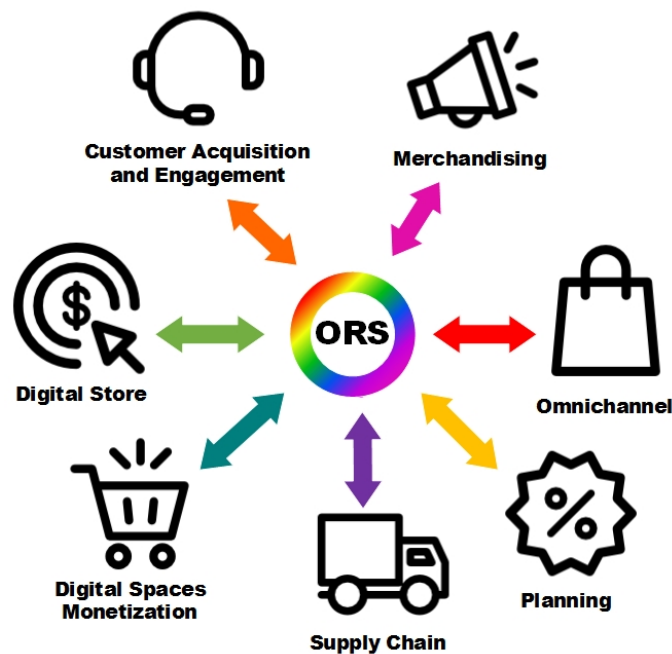


Figure 3.2: Oracle Retail Suite Architecture

Starting by the merchandising module, it's composed by OR Allocation, an inventory allocation tool responsible to optimize order fulfilments across locations assuring inventory where it's most needed, together with warehouse allocation optimization, accounting for deliveries as well as post deliveries. Retail Price Management is another section of the merchandising module a rule-based pricing engine responsible for managing profit margins across items and locations with support to promotional and clearance pricing across channels. Retail Invoice Matching is a tool that manages the matching, reconciliation and payment of suppliers' invoices as an automated solution customizable to business policies. Another section of the merchandising module is Retail Sales Audit which manages sales transactions from all channels assuring consistent sales information and highlights discrepancies and exceptions for further analysing. The Merchandising system manages and controls everyday merchandising activities like purchasing, distribution, order fulfilment and financial close to achieve a single version of the truth while Retail Merchandising Insights highlights merchandising opportunities across channels including back-orders and returns and price promotion analysis. To end the merchandising module Retail Trade Management is a tool that manages the import process like product classification assignments, purchase orders

and letters of credit. [17].

Next on the list are the Customer Acquisition and Engagement and Digital Spaces Monetization modules who share some of the same set of tools, those being, Bluekai, a data management platform that provides an insight to the customer journey to help marketers to target more precisely, create and deliver more effective media campaigns while helping to define customer segmentation, all of it with a structure available to share the data from day zero to over two hundred media partners, and the other common tool being Oracle Responsys, a cross-channel orchestration tool that interacts with the customer in near real-time to personalize its customer journey across channels, while helping to manage customer segments and orchestrate multi-channel campaigns. Retail Customer Insights is a tool from the Customer Acquisition and Engagement module that takes on customer data and retail performance data, analyses them and provides valuable insight to take action on. Moving to the Digital Spaces Monetization module, this can still count on Service Cloud to improve customer relationships and loyalty by unifying web, social, and contact centre experiences while taking the expected three hundred and sixty degrees view of the customer to action [18, 19].

The Retail Planning and Optimization module is a vast module on its own with a plethora of tools at its disposition, starting by Retail Advanced Clustering, a tool that evaluates sales and market share across stores and geographies to create dynamic store groupings and customer centric clusters and comparing the best options to drive sales and grow market share. Retail Assortment and Space Optimization maximizes planograms performance by optimizing assortment, analysing data to dynamically create, store and space clusters. With a long name, Retail Customer Decision Tree and Demand Transference Science creates customer segment-specific decision trees through transaction level data, understating items' value while analysing customer shopping decisions. To help minimizing overstock while maximizing sales. Retail Item Planning gathers purchase, inventory and profit data of an item's life cycle to help in item management and forecast, enabling receipt flow planning at a weekly level, all of it to help reduce lost sales, excessive markdowns and unprofitable exit strategies. Retail Size Profile Optimization with simulated techniques and data mining reduces supply chain costs through prepack optimization and provides recommendations on size range profiles by store and aligns inventory-allocation decisions with consumer demand. Retail Merchandise Financial Planning takes care of everyday decisions aligned with the retailers business plan while identifying profitable inventory investment opportunities and Retail Assortment Planning aligns assortments through highly visual workflows and defines assortments through selling patterns across seasons with a forecasting tool and assortment technique recommendations to predict demand for that period. The Retail Planning and Optimization module also counts on Macro Space Optimization to recommend optimal space allocation for departments, categories, sub-categories or planograms, Retail Markdown Optimization to get optimal markdown recommendation with risk based pricing to items with risk of being unsold at the end of the selling period to maximize profitability over the life cycle of the item and finally to end the Planning and Optimization module tool set there is Retail Regular Price Optimization, a tool that combines demand forecasts with cross-category and market basket effects to give an insight on the optimal

everyday pricing to maximize revenues and margins. [20]

Heading to Oracle Retail Supply Chain, this one counts with a set of six tools those being, Retail Brand Compliance Management which enables retailers to collaborate with their supply chain in the sourcing, development, marketing and quality control of their products through a transparent environment, ensuring compliance with label rules and industry best practices, Retail Demand Forecasting streamlines forecasting processes and highlights potential problematic situations as well as opportunities to be pursued. Retail Advanced Inventory Planning creates a time-phased guide accounting for allocation, replenishment and deliveries to all levels of the distribution network and, last but not least, Retail Replenishment Optimization helps balance inventory across the supply chain with optimized replenishment recommendations, identifying good deployment opportunities and overstock situations and what-if scenario analysis with automated approval and to end this module, Retail Warehouse Management System manages inventory movement, on-hand and order balances with support to all types of merchandise flows like cross-docking and flow-through, with complex algorithms optimizes picking efficiency through advanced wave management and a task management module with prioritisation rules as well as user proximity to coordinate all kinds of merchandise movement. [21].

Digital Store, the last module apart from the Omnichannel one which will be discussed in the next section counts with Customer Experience Solutions, which is, on his own, a vast component for all kinds of customer related insights and strategies that will be better detailed in the Omnichannel modules, since Omnichannel as a big role in Digital Store Management as well as in customer experience [22].

3.2 Omnichannel Module

Oracle Retail Suite presents its Omnichannel solution as this last and fairly complex module where its architecture is composed by five deeply intertwined blocks, Oracle Retail Customer Engagement, Oracle Commerce Cloud, X-Store Suite, Oracle Retail Order Broker and Store Inventory Management. This document will address every single one with a fair amount of detail and, in similarity with the previous section, the Oracle Retail Order Broker will be addressed in a section apart since it correlates deeply with the subject of this paper therefore needing a deeper analysis.

Starting by Oracle Commerce Cloud, figure 3.3, OCC is the block responsible for all Digital Commerce features, a tool that allows for a fast and easy Brand Online Store launch across devices, full of important out-of-the-box features to enhance customer experience. OCC also receives frequent updates for new features to stay in pair with competition, all of it with fully customizable templates that scale to fit all devices and compatibility to custom widgets to give full liberty to the retailer to make an e-commerce tool that fully identifies with the brand. As for the features, the retailer can count with key features like the indispensable commerce engine full with several built-in integrations with the most common payment gateways, Oracle Commerce guided search, catalogue and product content management, customer recommendations, agent console tool, SEO features, a critical support for twenty plus languages and currencies, promotions or reporting.

With an assisted selling application, OCC helps shoppers learn about products while recommending products to create cross-selling opportunities and assists customer with eventual problems or doubts, records the customer journey allowing to look up order history and update customer profile information. A/B testing allows retailers to understand customer behaviour and gain an insight on how to optimize the high-value elements of their website.



Figure 3.3: Oracle Commerce Cloud Architecture

Since the Omnichannel concept is developed all around the customer, the Oracle Retail Customer Engagement is an indispensable block that must be very well developed to ensure every other block runs smoothly. Oracle intends to grant that to their customers providing a tool that focus mainly in giving a three hundred and sixty degrees view of the customer and, above all, using it to build brand loyalty and add customer value. Using an ID card system along with a mobile app ORCE ensures features like customer identification and the card works as well as an award card, loyalty card and even a tender card, meaning gift card and merchandise return features. ORCE has a foundation is divided in four parts, those being customer management and segmentation foundation, campaign and deal management, loyalty and awards and gift cards, the first counts with features like the customer management module, gift registry, social listening, segmentation, clienteling and analytics, being the responsible part for organizing, consolidating, analysing and delivering all customer related information across the Oracle Retail Suite, it takes care of information like basic profile data, customer associations, sales and returns history and social networking like shown in figure 3.4.

Campaign and deal management takes care of campaign hierarchies and suggests strategic insights to create powerful deals and campaigns targeting specific customers based on flexible rules while tracking their effectiveness counting on email service providers to deal information fast with market automation and, opposed to common traditional promotion systems, ORCE is

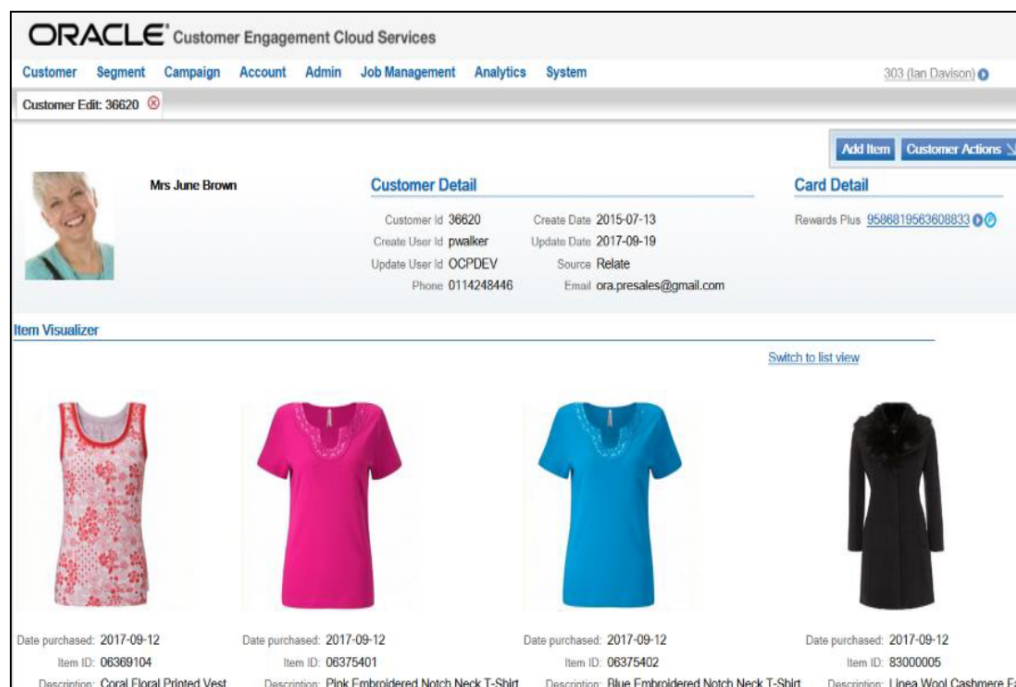


Figure 3.4: Oracle Retail Customer Engagement - Customer Profile

the only responsible for creating promotions allowing for an easy management of both, static and dynamic, promotional activities across channels which can be country, region or store specific and target specific customer segments.

As for the Loyalty and Awards part, it allows for a variety of points-based loyalty models with customizable points to awards conversion rules. With configurable loyalty levels and flexible calculation methods and award options, a single card complemented or not by a mobile app monitors all loyalty related information.

And lastly the gift cards part is a simple card system that works via traditional cards or can be executed through the customer's card and counts on a complete configurable rule-set with role-based security and works across channels or locations.

Going on to the Store Inventory Management block, this is a critical block that needs to run perfectly to ensure customer satisfaction, the retailer must be able to promise inventory to the customer with the maximum accuracy possible in order to avoid unpleasant customer journeys that can affect not only that customer's loyalty but also have a negative impact on the community. This block groups its features in four distinct groups, those being store inbound, inventory management, customer order fulfilment and store outbound. Store inbound gathers features like the management of warehouse deliveries as well as direct from supplier deliveries and inter-store transfers, that meaning all inventory that arrives to the store except customer returns, on the flip side, store outbound groups features related to inventory departing from the store like warehouse and supplier returns and again inter-store transfers. In the inventory management group are most core features like item look ups, stock adjustments, sequencing, an important and complex in-

ventory check features, as well as stock counts and shelf replenishment, pick lists, item requests, store ordering, price changes and ticketing and lastly in the customer order fulfilment group are the main order orchestration features like reserving, receiving returns or orders from another location, picking management with group picking capabilities for better efficiency, order shipping and reverse picking to take care of returns or cancellations. And that lists SIM features both in the back-floor and the shop-floor. With different privilege- based roles this system count with a desktop tool with admin, transaction approval and transaction management capabilities, more useful to store ops and inventory control and a hand-held device, mobile or tablet, with great usefulness to store associates walking on the shop-floor with scanning bar-codes and recording transaction information capabilities.

X-Store Suite, the last block before the section reserved for the Order Management system block, is the block responsible for enabling physical stores with Omnichannel capabilities and it's a full suite integrated in the Omnichannel module. Starting by X-Store Point of Service which can be considered the core of this suite it withstands, out-of-the-box, eleven languages and easy translation features, is fiscal capable for a set of fourteen countries so far and counts with localization formatting. In terms of hardware, Oracle presents four alternatives that complement each other, figure 3.5, the traditional POS, the portable POS that can be easily moved, the tablet POS easily brought by store associates in the shop-floor and the hand-held POS, a smaller device still capable of performing most features like transactions, item look-ups and commerce anywhere support. Both the tablet and the handheld device can be equipped with a barcode scanner and a card reader.



Figure 3.5: Oracle Retail X-Store Suite - Hardware Alternatives

All the devices are connected between each other through the network wired or wirelessly which allows for less cable management better portability and solutions like having only a few cash drawers simultaneously with several POS stations.

As for the software, X-Store POS offers a clear framework, colour-coded according to the respective roles and functions and besides the transaction system it counts with item look-up features, customer information like purchase history and ongoing orders, additional widgets and is able to deal with common sales, returns from any channel, layaway transactions, hold account features, create, consult, edit, cancel or complete orders, execute pre-sales features, perform work orders like tasks or repairs, manage warranties systems, send sales and create gift registries along with a vast set of reports creation.

3.3 Order Management System

As referred previously, the Order Management System is the heart of Omnichannel operations, every information related to orders, customers, inventory and locations goes through it, for it to play its central role in any Omnichannel scenario. In the Oracle Retail Suite that's no exception. Referred to as Oracle Retail Order Broker, this system running in the cloud, like most ORS products, has the challenge to enable, order anywhere, fulfil anywhere, deliver anywhere Omnichannel strategy.

As observed earlier, the single view of inventory together with a three hundred and sixty degrees view of the customer, both accomplished by the ORS as described previously, are fundamental pillars for a good OMS to work properly, with that checked it's now possible to analyse the OROB.

In its core, OROB is a rules-based engine that makes decisions, based on sales velocity, proximity to shipping locations and other business defined considerations in order to minimize lost sales due to inadequate inventory status. OROB works on a real-time basis on what concerns inventory updates, order capture and status updates as well as inventory reservation since all of this actions need to be performed as soon as possible in order to keep data truthful and consistent and correspond to customer expectations while making the whole process as transparent as possible. Gathering order creations across channels, OROB proceeds to search the fulfilment location based on geographic proximity along with inventory availability while having the ability to split orders and lines to increase the efficiency of the fulfilment and improve the customer experience. That done the next step is item reservation through communication with the Store Inventory Management system of the fulfilment location picked follow by a status tracking feature along with order maintenance functions like an override on the fulfilment location or order status change.

In order to pick the optimal fulfilment location OROB follows a set of rules customizable by the retailer, like the minimum inventory on-hand count, proximity or sales velocity with the capacity to play with the weight each rule has, to reach the optimal formula.

OROB also has the option to work as a standalone product outside of the ORS since it counts with a Store Connect module to work with third party POS systems allowing to fulfil order like pickup, delivery and ship-to-store scenarios.

OROB counts also with a Supplier Direct Fulfilment feature to fulfil orders directly from the vendor using available-to-promise inventory directly from the supply chain. This way, the retailer shares an order with the vendor as well as the related customer and shipping information

3.4 Fulfilable Omnichannel Scenarios

As for fulfillable Omnichannel scenarios, Oracle offers a decent set of scenarios. Dividing an order in four stages there is the order creation, the source of the order, the fulfilment of the order and the fulfilment type. In order to perform the order anywhere, fulfil anywhere, deliver anywhere Oracle defines two types of order creation, those being digital, via web, app or call centre for

example, and physical at the store, from there, there are three sources to fulfil the order, from the store, from the warehouse and directly from the vendor, as for the fulfilment location, it can be as well, a store, a warehouse or a vendor and lastly the fulfilment type can be a pickup at store via POS, pickup at store via SIM, ship to customer or even special cases like a return. The crossing between these variables originates all the available scenarios to fulfil an order through the ORS. In order to make the main reading content less extensive and tiring, there will be only three of those scenarios described down below, picked in a manner of demonstrating distinct situations and how the ORS deals with them, the schemes are organized in vertical swim-lanes to define well what each module does in those Omnichannel scenarios and it counts with two extra swim-lanes at the sides, one of the customer view and one of the order path to show visually what happens during the Omnichannel scenarios along with the complex processes. Following the scheme there will be a list further detailing each step of the process for better clarification. As for the remaining scenarios, those can be consulted at appendix A presented at the exact same manner as those in this chapter.

The first scenario represents a typical customer who creates an order online and chooses to pick it up at a nearby store, and the process goes as represented in figure 3.6.

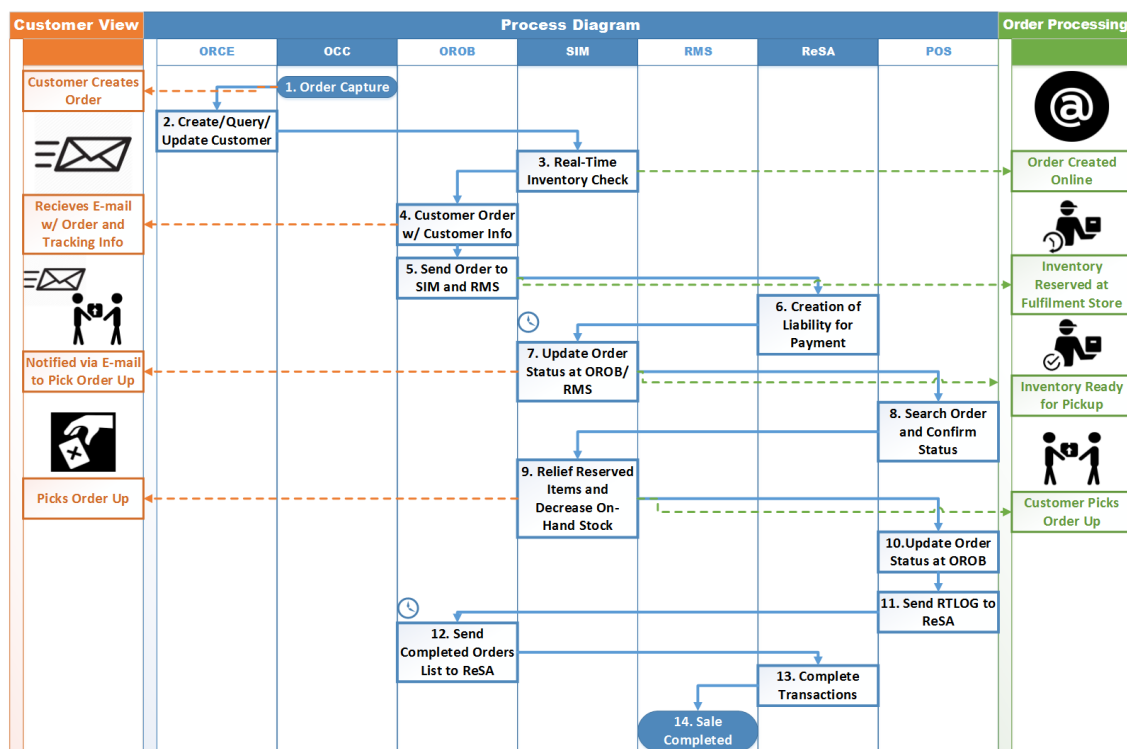


Figure 3.6: Scenario 1: Order Online/Fulfil at Store/ Pickup in Store via POS

1. The Order is captured Online through the OCC module, which could be via website, mobile app, call centre or any other digital channel.
2. OCC will query existing customer information from ORCE and associate it to an order as

part of the order capture process. If the customer doesn't already exist, then a new customer may be created and if it exists but the necessary information to create the order is missing the profile can be updated.

3. SIM checks item availability on its database in real-time. If the retailer wants, for high inventory level and low inventory turnover, OCC can check in a recently updated offline database to reduce the impact of data transfer.
4. Once created, the order is sent to OROB which will determine the source and fulfilment locations.
5. OROB sends the order to RMS and SIM for execution. The order information sent will include the pertinent information to execute the order, including items, quantities, pricing, fulfilment location, and customer information. Upon receipt of the order in RMS and SIM, inventory will be reserved.
6. OROB will send an Order Initiate (ORI) transaction to ReSA to capture a liability. Total ORI transactions will be periodically interfaced to the General Ledger from ReSA.
7. SIM will notify RMS and OROB via Stock Order Status (SO Status) once inventory is ready for customer pickup at store. Upon receipt of this update, OROB will also update the OCC and one of the applications will inform the customer that the order is ready for pickup.
8. When the customer arrives in the store, a cashier will look up the customer's order using a POS System which will call OROB therefore returning a list of customer orders matching the customer's information. The cashier will then select the appropriate order being picked up.
9. After the customer order pickup process is complete at the POS System, the POS System will notify SIM to relieve reserved inventory and decrement stock on hand.
10. POS will send an order complete transaction to OROB with the pickup details.
11. POS sends an RTLOG to ReSA for all sales transactions, including customer order pickups (ORD transaction type), periodically throughout the day.
12. OROB will periodically send ReSA RTLOG transactions to record all customer order fulfilments (ORD transaction type).
13. Total ORD transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.
14. When RMS receives the sales transaction associated with in-store fulfilment from ReSA, it will recognize that the sale occurred as a result of a customer order in a stock holding store and decrement customer order reserved quantity, as well as stock on hand.

Next is the eleventh scenario represented by ORS, this one starts with the customer creating an order with a cashier and wants to have the order delivered to his address, it's then defined that the order is available to be fulfilled and shipped from a warehouse and goes like represented in figure 3.7

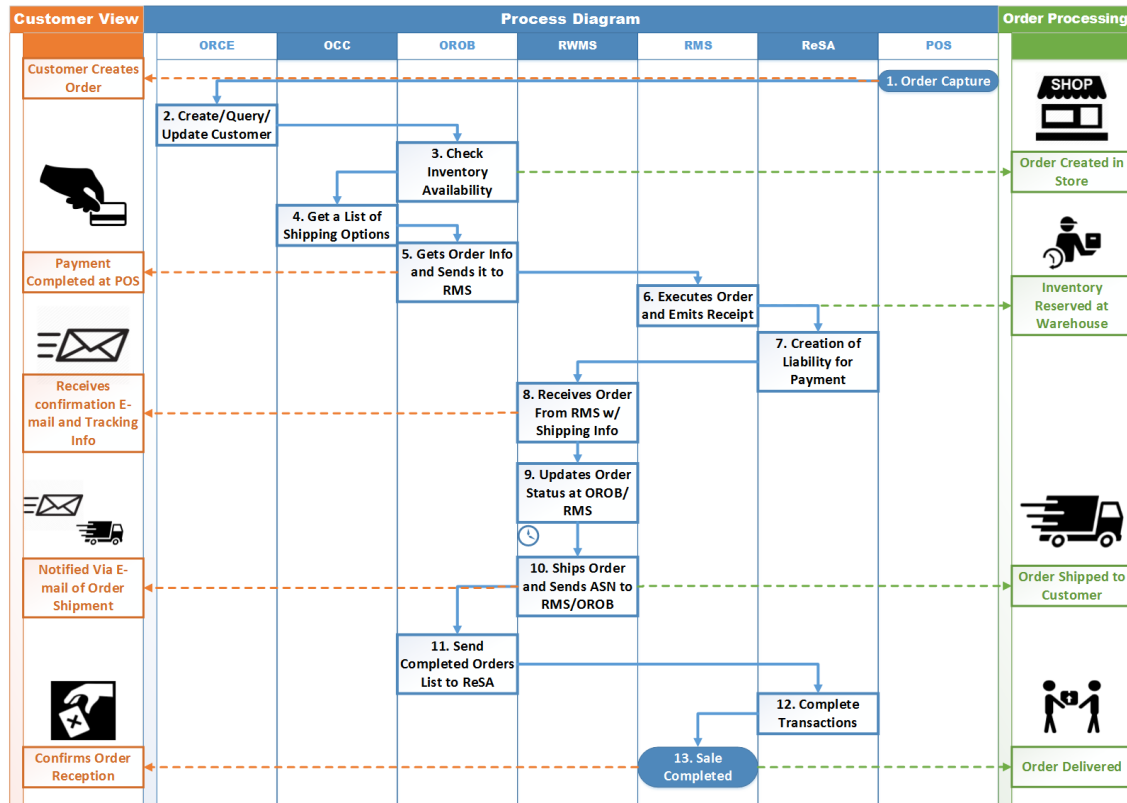


Figure 3.7: Scenario 11: Order via POS/Fulfil at Warehouse/ Ship to Customer

1. The Order is created in store via POS.
2. POS will query existing customer information from ORCE and associate it to an order as part of the order capture process. If the customer doesn't already exist, then a new customer may be created and if it exists but the necessary information to create the order is missing the profile can be updated.
3. POS checks item availability with OROB on its database in real-time. If the retailer wants, for high inventory level and low inventory turnover, POS can check in a recently updated offline database to reduce the impact of data transfer.
4. POS will call OCC, to get a list of shipping options to the customer.
5. The order, along with the customer information, will be sent to OROB for fulfilment. Orders created in POS will be fully funded at the time of order creation.

6. OROB sends order to RMS for execution. The order information will include the pertinent information to execute the order, including items, quantities, pricing, fulfillment location, and customer information. Upon receipt of the order in RMS, a warehouse to store customer order transfer will be created and inventory will be reserved.
7. OROB will send an Order Initiate (ORI) transaction to ReSA to capture a liability. Total ORI transactions will be periodically interfaced to the General Ledger from ReSA.
8. RMS will send the transfer created to the warehouse, including the customer order number and customer information, such as address and shipping method.
9. RWMS will notify OROB and RMS of order updates via Stock Order Status (SO Status) during processing.
10. Upon shipment to the customer, RWMS will send an outbound Advanced Shipment Notification (ASN) to RMS and OROB. RMS will use this information to ship and receive the transfer into the virtual store location. OROB will use this information to update the customer order.
11. OROB will periodically send ReSA RTLOG transactions to record all customer order fulfilments (ORD transaction type).
12. Total ORD transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.
13. When RMS receives the sales transaction associated with in-store fulfilment from ReSA, it will recognize that the sale occurred as a result of a customer order in a stock holding store and decrement customer order reserved quantity, as well as stock on hand.

Lastly on this chapter will be represented a simple return process from a customer to a store like shown in figure 3.8.

As said before in appendix A will be presented additional thirteen Omnichannel scenarios to show detailed how the ORS Omnichannel system works in face with diverse situations like a cancellation process or an item shipped from a store to another store fulfil a customer order exactly how the customer wants it.

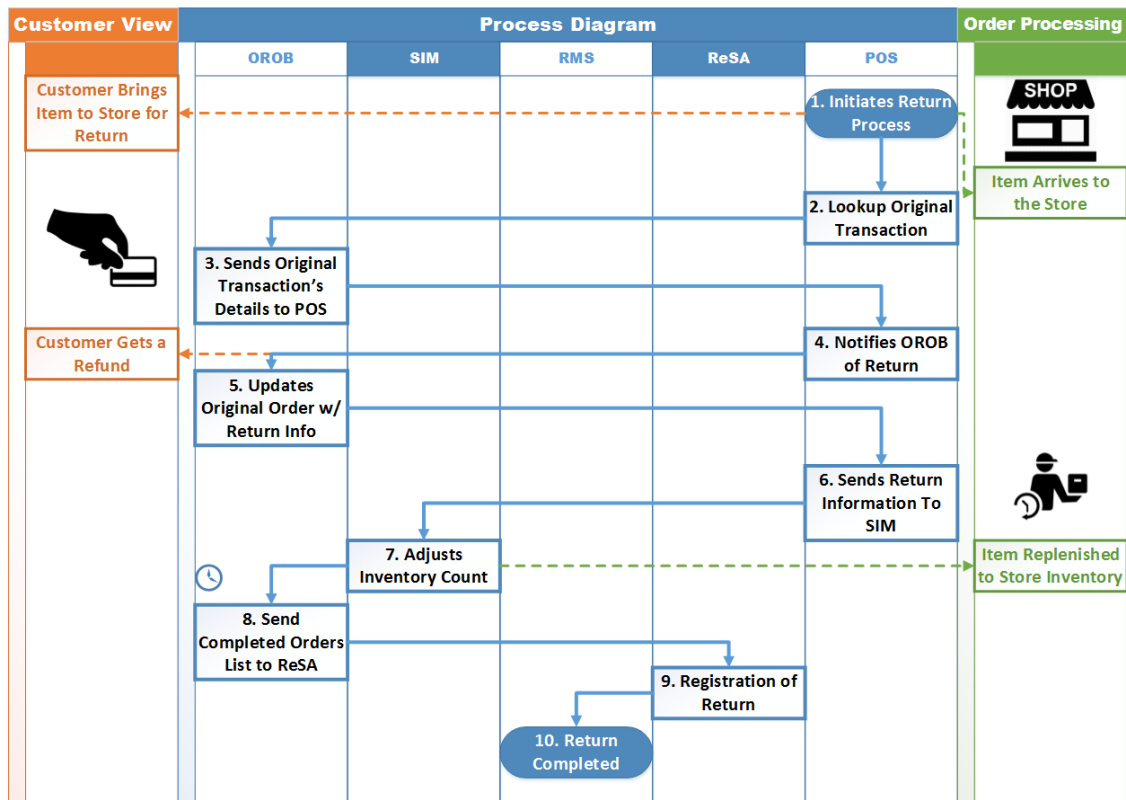


Figure 3.8: Scenario 15: Return to Store

1. The customer brings the item to the store for return.
2. POS will look-up customer orders using the order number or customer information from OROB to get original transaction details and confirm that the return is allowed.
3. OROB returns the order detail including item information, price, discounts, and tender applied to The POS System.
4. Once the return is processed, POS will notify OROB of the return.
5. OROB updates the order with the return information.
6. POS will also send the return information to SIM so they can adjust inventory if necessary.
7. SIM adjusts inventory count if necessary.
8. OROB will periodically send ReSA RTLOG transactions which will include customer order returns.
9. ReSA will pass the audited sales onto RMS.
10. RMS will process the return of the item at the store.

Chapter 4

Alternatives to Benchmark

After a detailed analysis of the Oracle Retail Suite in the previous chapter [3](#), this chapter will go through some of Oracle's competitors in the run for the best Omnichannel performer, the list includes the main choices like IBM or Salesforce. Each one will be presented separately, going through a brief presentation of the company followed by an insight on the provided solution's structure and capabilities, as well as a preview on future development stages while observing strong and weak spots, what is being well done and what can use some improvement.

4.1 IBM

Starting by one of the largest companies, IBM, [figure 4.1](#) is a company With headquarters based in New York, founded in nineteen-eleven that provides hardware, software and services across eighteen industries in about a hundred and seventy countries [\[23\]](#).



Figure 4.1: IBM Logo [\[3\]](#)

Regarding the retail industry, with one of the biggest market footprints, IBM presents as a solution of their own, the IBM Watson Commerce.

4.1.1 Architecture and Features

IBM Watson Commerce covers all Omnichannel main areas through three different modules with the target to provide a full Omnichannel experience. All modules presented ahead work on a cloud service [\[3\]](#).

4.1.1.1 Digital Commerce

Starting by Digital Commerce, this module focuses on offering a SaaS commerce platform that allows brand customization to engage customers on any digital touchpoints such as mobile and web. Positioned as a leader in digital commerce in Gartner's magic quadrant for digital commerce [24] IBM's solution offers functionalities like starter store, as seen in figures 4.2 and 4.3, a tool to deploy an online store in no time, complete with up to date capabilities and practices and an extensive set of site, category and product level features easily customizable to give customers a personalized experience. Digital Commerce offers also, mobile optimized experiences dynamically responsive to different devices that target customers with personalized content and offers with a location-based system. The web content management feature automatically delivers the right content at the right time in the customer's journey to offer the best possible customer experience without need for extra IT services. Customer service counts with a set of customer service representative capabilities built into the platform making it easier and seamless to help the customer resolve common issues and capture orders. With externalized customization, Digital Commerce allows to customize the online store and customer experience with simplified management and without losing convenience, making it able to create unique experiences with the help of IBM provided platform upgrades and enhancements. Integration with third party services allows to create new customer experiences through a full set of REST API, giving the flexibility to innovate some of the commerce services like voice shopping or conversational commerce adding new possibilities of distinguishing the brand. Application management is simplified with a web-based tool kit helping administrators and developers deploy and maintain services. To end this module Digital Commerce provides user friendly templates to create, update and publish sites quickly without heavy reliance on IT without compromising the website's scalability and security. [25]



Figure 4.2: IBM Digital Commerce Starter Store demo [4]

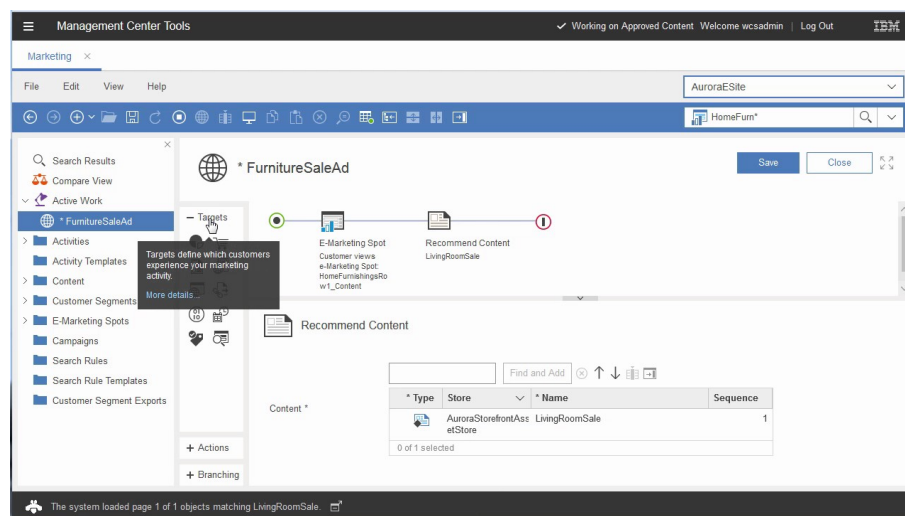


Figure 4.3: IBM Digital Commerce Back Office Demo [4]

4.1.1.2 Store Engagement

Focusing now on the physical store, which is still a massive channel for most customers since ninety percent of retail revenue comes from store purchases [5], IBM tackles this area with the Store Engagement solution. Store engagement gives store associates intuitive mobile applications extending access and control of store operations, like shown in figure 4.4 to enable Omnichannel scenarios across channels like pick up in store, returns or ship to customer from store adding valuable capabilities to store personnel that is able to access customer information, product information, view inventory levels across locations, check and manage orders and execute fulfilment tasks in the store, all of it in real time right at the shop-floor. Like this the amount of time needed to train personnel to support customers is reduced, sales increase and the buying experience is improved by answering the customer needs at the store environment and the customer usually gets an alternative to his desired out-of-stock item. Store Engagement counts yet with other features like the ability to view available and in-transit inventory for stores and partner locations, the capacity of the associates to batch-pick improving the quality of fulfilment while reducing labour and resources costs, click to collect feature and facilitating in-store returns with rules-based processing of orders and items regardless of the original purchase channel [26].

4.1.1.3 Order Management

Getting to the juicy part, the Order management solution is responsible to, in a way, provide what the customer wants, when he wants it and where he wants it as previously described in chapter 2. IBM executes it with real-time global inventory visibility, sophisticated sourcing, fulfilment logic across all channels and linking of inventory to demand. [27]

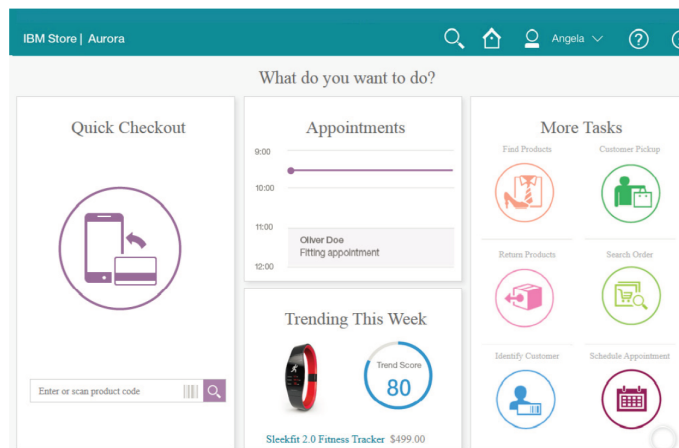


Figure 4.4: IBM Store Engagement Mobile App Demo [5]

With a centralized inventory system, order promising, and a fulfilment hub, IBM Order management provides order orchestration to accomplish, along with the other modules, a Omnichannel environment. Helping to improve fulfilment rates, inventory turns, customer loyalty and the amount of business the retailers gets from their customers while reducing markdowns, that is the decrease of an item selling price in face with its original price, granting better efficiency at promising and fulfilling orders resulting in improved customer satisfaction and therefore more profitability. Centralized inventory provides a single view not only of supply but also a single view of demand across channels improving the accuracy of the order promises and deliver dates made to the customers and, if needed, schedule alternative fulfilment locations. The order management process is customizable, offering a flexible set of definitions and adaptable fulfilment models where customers can create an order through any channel and choose to complete it almost anywhere. Lastly IBM order management captures every order from any channel and presents a single hub with all order status information. Analysing these functionalities with further detail, it's possible to divide this OMS in sections, starting by the order orchestration section, this section is responsible for aggregating managing and monitoring orders from all channels as well as executing customizable rules to determine the most efficient fulfilment solution across the company and provides a single view of the orders in a hub where orders can be modified, cancelled, tracked and monitored during their life cycles. The delivery and service scheduling section schedules dynamically product deliveries and associated services right at the time of sale taking into account the order type and the availability of resources and monitors service and delivery executions. There's a available to promise section that provides a single view of supply and demand conglomerating all internal and external locations associated with the company, optimizes promising decisions, accounting for cost-based inputs and accounts the resources allocated to extra value-added services. Inventory visibility is the section of the OMS gets customized, real-time information about all inventory across the company, gives users role-specific views of that information and accounting with that information is able to trigger alternative fulfilment methods for item with high inventory

turns that are running out. Reverse logistics as the name suggests takes care of returns and repair services, linking these requests to their original transaction to track the products' life cycles as well as tracking the items back to their appropriate location, partner locations included, in case of return based on customizable business rules. Lastly business process definition framework configures unique business processes graphically, defines relationships with participating organisations as well as their roles connecting in this manner with partner supplier and provide alternatives to fulfil product returns helps to assure customer satisfaction [28, 29].

4.1.1.4 Complementary Modules

Besides these three main modules IBM counts with many more complementary modules that can make a huge impact in the company's way of executing Omnichannel as well as the capacity to make it more profitable while offering a better customer experience. In fact, there are some many that would be an over extensive analysis to include them all in this document, although some certainly deserve to be mentioned such can be their impact.

That is the case of Watson Commerce Insights, figure 4.5, which consists of an eCommerce analytics tool to assist merchandisers, product managers and marketers with intuitive data analysis and forecast to help detect where to take action either to emend a poor selling item or to further profit on a popular one through deep insights on customer behaviour allowing for real-time correction procedures accompanied by suggestions on those actions to take. Through its cognitive system, commerce insights is also able to inform not just that an item is under-performing but also why that is. [6].

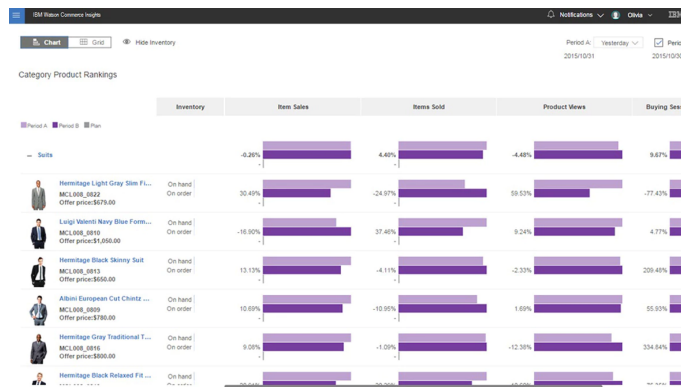


Figure 4.5: IBM Watson Commerce Insights Demo [6]

Watson Content Hub is another interesting complementary module, a CMS that allows to easily build content models quickly updatable that automatically adapt to the device, billboard or app where it will be presented complete with cognitive tagging for an easy identification. [30].

Customer Experience Analysis is a module that assists in making faster and more efficient marketing decisions. Powered by AI, this module gives customer insights across channels and touch points to help maximise the life time customer value while optimising customer journeys

and resolve frictions. Some of the key features are visualising customer journeys to know about their decisions, behaviour and struggles, pinpoint trouble spots that need to be addressed and identifying trends and root causes in order to have a complete insight of the customer experience, all of it in an user friendly dashboard as seen in figure 4.6 [7].

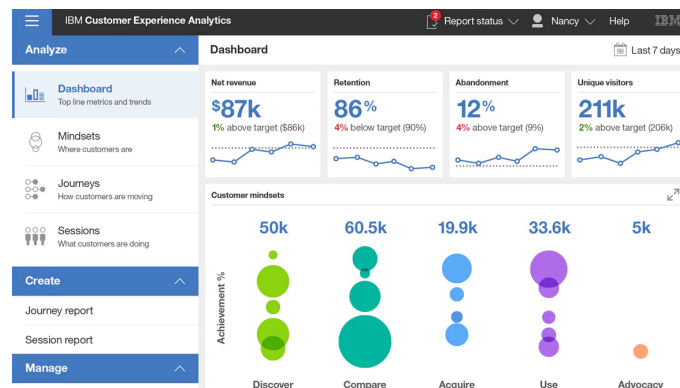


Figure 4.6: IBM Watson Customer Experience Analytics Dashboard [7]

Real-Time Personalization helps to improve customer experience in digital commerce by personalising the content shown to each customer based on data gathered from the customer's interaction with the brand [31].

IBM also offers Configure, Price, Quote, a module that as the name says, automates configuration, pricing and quoting of complex products and services. With automated online sales process Configure, Price, Quote eliminates the need for manual pricing with a centralised system that enforces price consistency across channels as well as automated price changes facilitating price management while allowing staff and partners to control the quote process allowing them to create, negotiate and convert quotes into orders. [32].

Still about the pricing matter, IBM Dynamic Pricing makes sure the prices continue to be competitive since it responds in real-time to changes in competitors' prices, product demand and market conditions using rules like, web page view count, sales, available inventory and even cart abandonment rates to compute optimal suggestions, making it possible to change prices in real time across channels, assure price consistency, out-price competitors and improve the customer experience [33].

Finally to end this section, Watson Order Optimizer, figure 4.7 is another module worth to mention since it executes optimized Omnichannel fulfilment plans in real-time, maximizing capacity while reducing shipping costs and optimizing complex cost-to-serve fulfilments. [8]

These are just some of the most out-standish modules IBM as to offer to make the retailers Omnichannel system more complete and efficient.

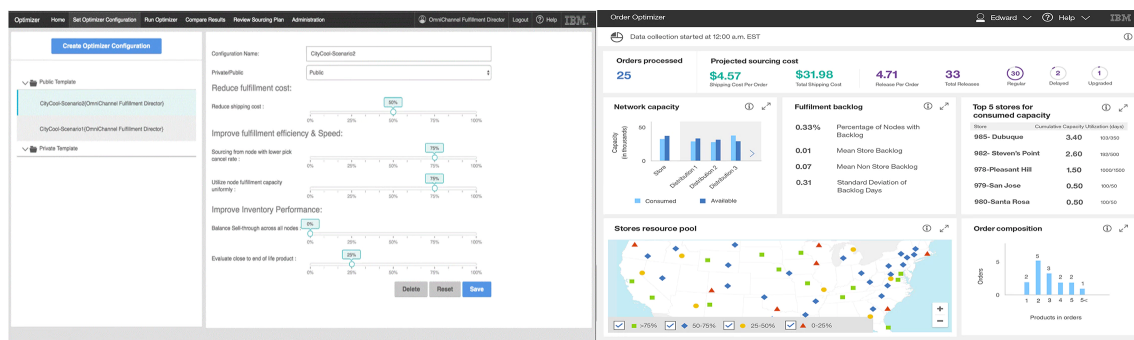


Figure 4.7: IBM Watson Order Optimizer Demo [8]

4.1.2 Future Improvements

Even though IBM offers one of the most complete solutions out there still a long road ahead strategy-wise. The focus is directed through further improve customer engagement solutions as well as partner and supplier engagement solutions like B2B integration, payments and procurement. Other point to have into account is the price range which according to some partners and clients it's not really a low-cost solution, specially taking in account the need for additional modules for core capabilities, however IBM is investing in new delivery models and rapid implementation strategies by reducing the need for regression testing and deployment time and in some cases eliminating downtime for upgrades. IBM considers also an option to include third-party business partners' solutions and providing smart integration with ROCCP, allowing the partners to and new capabilities to it. IBM is well positioned to achieve its goals since it counts with over 60 global partners, assuring a consistent ecosystem of third-party business partners.

4.2 SalesForce

With Headquarters in San Francisco, Salesforce, figure 4.8, is a software solutions provider who acquired Demandware, in twenty sixteen, now called Salesforce Commerce Cloud, which is the division responsible for the Omnichannel solution presented next. At the acquisition time Demandware already counted with 391 retail customers. Salesforce ROCCP solution uses four main modules to enforce Omnichannel and unify the customer experience across channels [23].



Figure 4.8: Salesforce Logo [9]

4.2.1 Architecture and Features

Salesforce ROCCP solution uses four main modules to enforce Omnichannel and unify the customer experience across channels. Those being respectively Commerce Cloud Digital, Commerce Cloud Endless Aisle, Commerce Cloud Einstein and Order Management.

4.2.1.1 Commerce Cloud Digital

Starting by Commerce Cloud Digital, the eCommerce management tool of Salesforce solution enables the retailer to create personalised journeys to its customers with robust out-of-the-box tools to develop powerful merchandising and promotions in order to gain customers and build on their loyalty at all channels like web, mobile and social.

In the marketing and merchandising matter, this module allows to easily manage and share product content and launch campaigns without technical support, offering the right deal at the right time to the customer with AI-powered personalized emails, offers and product recommendations.

This AI also improves the insights of the digital commerce showcasing important data to be analysed.

Commerce Cloud Digital provides content management across sites, brands, devices and geographies allowing for relevant offers-based on customers behaviour, traffic channel and location.

It's easy to manage all sites from a single environment with a multi-site architecture making it possible to launch a new brand or geographic site on a fast manner.

Customizable extensions with open API enable commerce anywhere with the ability to power commerce on mobile devices and social channels like Facebook.

To end the overview on this module, Commerce Cloud Digital comes with a native Endless Aisle feature enabled by mobile devices equipped by associates in the shop-floor, giving them the ability to offer to ship any product to the customer whether that product is available at the store, other locations or warehouses [34].

4.2.1.2 Commerce Cloud Endless Aisle

Commerce Cloud offers a well-developed set of tools to the store business. With full integration with Commerce Cloud Digital for a seamless transaction provides a single view of the customer turning the store an extension of the customer journey.

Associates equipped with mobile devices are able to consult customers' historic as well as a full unique view of the inventory across locations together with the ability to consult all product details and capacity to complete sales for digital merchandise on the spot, making the store shopping as enjoyable as digital shopping with the benefit of personal assistance. All of it along with the ability to fulfil orders through many Omnichannel scenarios like cross-store pick, pack and ship capabilities as well as the possibility to return through any touchpoint. [35]

4.2.1.3 Commerce Cloud Einstein

Commerce Cloud Einstein is a Salesforce-developed AI infused into the ROCCP platform. Analysing customer behaviour, product data and order history in real-time Einstein provides relevant experiences that automatically adjust and evolve with every choice a shopper makes, learning at every step of the way to the point of presenting the customer with relevant product recommendations even when it's not an authenticated user, all of it with no training of the machine needed.

As accessed before, Einstein also interacts with the customer through the digital channel tailoring each customer journey as it unfolds, delivering product recommendations and personalised product sorting as well as meaningful search results at every touchpoint.

Apart from that Commerce Cloud Einstein takes care of merchandising, creating new product groupings, updating customer segments and optimizing sorting rules resulting in more labour time for the team to focus on other matters [36].

4.2.1.4 Order Management

Salesforce Order management as expected is fully integrated with both Commerce Cloud Digital and Commerce Cloud Store play the role of a central nervous system of the solution gathering order information from every touchpoint or intermediary, resulting in a single view of shoppers, inventory, orders, catalogue, product and price information, and in similarity to IBM and Oracle's solution allows the customer to fulfil its order in many different scenarios like, buy online and pick up or return in store making it virtually possible to the customer to create and complete the order however he wants like a full state Omnichannel system should.

In this module cross-channel inventory and order information are all managed through the same dashboard for a better view of all the process flow and store associates are equipped with tools to enable easy fulfilment. Advanced order routing algorithms and optimized allocation make sure orders are consistently captures and fulfilled seamlessly.

This Order Management system is integrable with existing retail systems and critical operations with a share order information with other retail systems customizable feature to fit right into the working system.

Easy to interact interfaces with role-based rules makes sure associates get access strictly to relevant information to execute their role [37]

4.2.1.5 CloudCraze for B2B Commerce

CloudCraze for B2B Commerce is one of the most recent features in the Salesforce ROCCP and aims to provide a customer-like user experience with a set of B2B features like account hierarchies, complex pricing, custom catalogues and account management in order to create a seamless customer experience to B2B customers, all of it natively built into the Salesforce platform.

4.2.2 Future Improvements

Due to the recent acquisition of Demandware, also known as, Salesforce Cloud Commerce, being a recent event as it occurred in twenty sixteen and the fact that Demandware had acquired Tomax POS and Mainstreet Commerce OMS just a year before being acquired by Salesforce, the path to reach the expected status of a unified commerce platform is still ongoing with a considerable way to go until getting to a more mature phase which means there's a lot of improvement to expect coming to the platform.

The complete integration of Salesforce Commerce Cloud with the Salesforce unified service architecture strategy is yet to be fulfilled as it is indeed a difficult deed to achieve in a short term.

The Einstein Cloud Commerce machine learning system still has a lot of untapped potential to be integrated to other vital features of the platform which Salesforce intends to do since the company agrees that this integration is a fundamental shift to help retailers achieve increasing Omnichannel profitability.

Another compelling plan for the future, which Salesforce is already working on, is the integration with IoT although a timetable for this upgrade is yet to be announced. A plan that can change the impact of the data that can be leveraged from the ecosystem. [\[23\]](#)

Chapter 5

Omnichannel Solutions Benchmark

After the presentation of the Omnichannel solutions done in chapter 3 and chapter 4, in this chapter pretends to put those solutions side by side with today's Omnichannel standards, which were described in chapter-2, by doing a critic review of the tools from the brands present in this paper. After the comparison to Omnichannel standards there will be a stand-out of the strong and weak points of each solution in order to better expose the tool to the customer beyond the pure marketing done at the web-pages.

ORS will suffer a slightly different review since it was partially based on hands-on testing while other brands were mainly studied through articles and brand web-pages.

5.1 Oracle - Oracle Retail Suite

Starting by the customer, ORS makes a good job in allowing for a three hundred and sixty degrees view of the customer with an ORCE module that takes care of grouping every bit of data correspondent to a customer, from purchase history to social listening regardless of the channel the customer uses always giving assistant a good insight allowing to deliver a better and more complete customer experience. It also allow to merge to identify and merge double accounts and create family programs connecting all related data all of that apart from the awards and loyalty system available to engage the customer.

As for inventory management even though it assures a global view of the inventory there are some questions to whether it can provide a single view of the same. With a cloud system, it allows to keep track of inventory not only from stores and warehouses but also from suppliers if the partnership allows for it, with capacity to define item status. The issue appears regarding the heavy flow of data in case of real-time inventory checking which may cause the system to run slowly in case of heavy activity across many location. The solution present by Oracle to resolve this issue comes with some issued of its own found by testing the system. The solution is based on, every so often, creating a copy of inventory status to the database of other modules like OROB besides the Store Inventory Management system. It solves the heavy data transfer issue by checking inventory

availability in offline copies of inventory for item with high stock capacity and slow inventory turn-over. The new problem comes when for some reason a discrepancy appears between databases. Since the databases only account for shifts in inventory instead of the actual quantity present in inventory when a discrepancy is created it remains along with new inventory updates unless a full inventory check is performed. In a short manner, it has a good inventory tracking system but counts with a few minor problems that can escalate with the size of the company and lead to some undesirable situations.

Regarding the order management system it also counts with ups and downs. Regarding the main features, it is a pretty complete solution with a deep integration with the other ORS products and available to work as a standalone integrated with other third party systems. As for features it allows for a good order management with easy search on the orders' status, as for the fulfilling part, it has an integrated feature to find the best location to fulfil an order, that being a store, a warehouse or even fulfilling directly from a vendor. It can break order into single lines that can be edited, added or deleted and fulfilable independently in order to complete every order in the best possible way. As for fulfilment types it allows to pick up an order at a store or ship to any address specified by the customer and lastly regarding reverse logistics, it has a return system financially integrated that allows the customer to deliver to the store or even directly to the warehouse even without receipt.

5.1.1 Strengths

ORS finds itself as an Omnichannel solution with a very complete set of modules that fully covers all features a good Omnichannel system should have, all without needing any third party program like an e-mail merchandise system to fill any gaps since the modules are deeply integrated with each other and respond to virtually every Omnichannel common need. Besides that, it's integrated with the rest of the Oracle Retail Suite gluing well the Omnichannel section with other retail systems like the Retail Merchandise System, the Retail Price Manager or the financial section.

Even though this integration layer is a strong suit of this system, on the flip side, it counts with an established IT vendor's partner ecosystem that allows the system to work with third party applications.

Oracle scores points as well on the hardware that accompanies the system. It was demonstrated how their equipment, besides performing well on their capabilities assisting store associates at the shop-floor or at the back-floor, that they can take a hell of a beating, resisting with no collateral damage whatsoever to hard throws and falls.

5.1.2 Challenges

As for elements where the Omnichannel system is a little rough around the edges and needs a bit more polishing, starting by the Inventory management system, as referred before, can have discrepancies between offline databases that can be hard to correct.

Also, during the hands-on seminary some problems regarding customer notification about orders' status were detected, as well as, problems regarding invalid shipping addresses in the brokering system. Overall, issues that be easily fixed with small updates, at least at the first sight.

Lastly Oracle lacks in giving partners a view of the road map ahead and even though Oracle's system is aligned with the Omnichannel necessities for the time being, it's starting to fall behind the direct competition on what concerns the next Omnichannel tendencies, meaning AI systems integrated in the solution that some of the competitors already offer, as well as, break-throughs in the IoT scene [24, 19].

5.2 IBM - Watson Commerce

IBM Watson Commerce considered by many a leader option in the Omnichannel area, considering the customer does not deepen how exactly it assures a three hundred and sixty degrees view of the customer although it counts with a Customer Insight module that record all customer related data up to single customer journey that can be analysed independently along with an AI system to help identify situations to take action and come up with interesting engagement situations for the customer. It also as a feature to track inventory even in transit across nodes and deals with complex delivery processes like merge-in-transit and cross-docking.

As for the single view of the inventory IBM presents a modern well thought structure that groups all inventory information in a single hub in a transparent way that even lets the customer know when he is looking an item that has few units left. Watson Commerce tries to avoid heavy data transfer by limiting real-time inventory availability check to customizable rule-based situations based on location, inventory levels and inventory turn-over rates. As for the full inventory updates it uses an asynchronous system to update different clusters at different times exactly to speed up the process and avoid heavy data transfer peaks. It also calculates the inventory levels needed per node since it not only tracks supplied inventory but also the demand per location, making it able to suggest inventory levels to satisfy the demand in the most profitable way.

As for the order management system, it captures orders for all channels, as expected, and offers the common fulfilment types, pick up at store and ship to address with easy integration to fulfil an order that need two supplier shipments for example and utilizes customizable rules to evaluate the cost to fulfil at each node, store or warehouse, to pick the most profitable fulfilment path and checks each node capacity of fulfilments per shift to avoid over-picking the same node, all of it allows for accurate promise dates to fulfil the customer order. Counts with a reverse logistics section to handle returns and repairs with real-time status form repair companies to be tracked. It also allows to break the orders in single lines to edit however the customer wants and still facilitate the fulfilment process and has a segmentation feature to fulfil orders with higher priority first. Overall a complete system but needs extra products to have this full set of capabilities [24, 3, 38, 39].

5.2.1 Strengths

For starters IBM's Omnichannel solution, Watson Commerce shows competence with complex, global, high trafficked websites, including some of the largest in the world, granting like this a good performance in scalability and complexity.

To comfort its clients, IBM counts with an extensive set of over sixty partners in the digital commerce ecosystem in order to fill any gaps with third party applications where, perhaps, the main system may not do a good job.

Not forgetting the AI and the machine learning capabilities in IBM's solution with features like the predictive merchandising and predictive search system, since IBM is considered to be one of the leading companies in this research area, especially to implement it in the retail industry.

Even though IBM's main products don't cover all Omnichannel possibilities IBM counts on an extensive portfolio of products that fully integrate with the main system to offer complex, deep capabilities to the original Omnichannel solution and in some cases are fundamental contributors to improve, not only the customer experience but also the system profitability.

IBM does a great job keeping their clients informed with a well-defined road map for the next half-year where recently has been focusing customer engagement solutions and partner and supplier engagement solutions.

5.2.2 Challenges

IBM's architecture has a lot of potential, but as referred before some of the key components of the system to improve customer experience and reach Omnichannel profitability are acquired out of the main deal which implies a bigger expense to have access to the full potential of the solution. Overall to have a good Omnichannel solution provided by IBM ends up being a costly investment, although IBM is making efforts to reduce costs by new methodology implementation like the reduction of the need for regression testing, deployment time and by eliminating downtime for upgrades.

Also, IBM works on a cloud system and even though this system as scalability capacity, it is not done automatically as traffic and orders increase, this feature is provided by a SaaS and hosting and managed service vendors.

The complex product messaging and packaging IBM provides, as well as the general use of the Watson brand can be confusing their own clients that struggle with some technology delivery models for digital commerce as well as the product offering and models associated with the Watson Commerce.

IBM also could improve their Marketplace by introducing a smart integration with the products present in the Marketplace, as well as including their third-party applications in that platform to improve visibility and option access, making the act of adding new capabilities to the Omnichannel platform a much easier task.

5.3 Salesforce - Unified Cloud Commerce

With this Omnichannel solution, in similarity with the IBM case, Salesforce does not really explain how they assure a three hundred and sixty degrees view of the customer, but according to their features in Digital Commerce Cloud, Salesforce provides personalized content to the customer with location-based information and analysing customer history and journeys to create on-the-fly product bundles to engage the customer with relevant deals. Salesforce counts with an AI tool that integrates with several Salesforce products and in this case it even help to show relevant content to the customer when he uses the search box function and develops data-driven insights on the customers based on their journeys across channels.

As for the inventory management the data is scarce as well, inventory availability can be consulted globally and the customer, regardless of it's location has all inventory available to promise. It manages all inventory from a single dashboard but does not specify if it actually manages to get a single view of all inventory, or how it handles inventory inside the nodes.

Regarding the order management system it supports the common scenarios to enable the buy anywhere, fulfil anywhere to anywhere, that being, order from any channel, fulfil from any node and pick-up or deliver where the customer wants. It counts with algorithms and advanced order routing to make the fulfilment decision easier and crosses item availability with captured orders in the same dashboard for a better insight. Counts with a return-anywhere feature and enables cross-node fulfilling options and besides being fully integrated with other Salesforce modules it works very well as a standalone integrated with the retailer legacy system [37, 35, 34, 24].

5.3.1 Strengths

Salesforce makes its stand, firstly by acquiring recently Demandware with a well-developed structure to, with Salesforce's CRM expertise, build a unified commerce platform. Once Salesforce completes the merge with Salesforce Commerce Cloud the platform will reach a stage of having a broad customer life-cycle management capability.

Their Einstein Commerce machine learning system is a big plus on Salesforce resume. Even though the integration of this feature to the Unified Commerce is still limited, it offers precious insights and analytics and manages to show potencial to be integrated in other sections providing additional features.

For now, Salesforce can be improved in the customer management area by enablement of third-party services to help improve the customer experience.

Salesforce counts with a percent of gross merchandise value model that facilitates the process for retailers of making the Omnichannel system more profitable.

Lastly Salesforce has a LINK Marketplace where the retailers can choose pre-built integrations to their Omnichannel platforms in order to improve customer experience and Omnichannel profitability.

5.3.2 Challenges

Although Salesforce has expertise in the Customer Relationship Management area, as verified, that expertise has yet to be effectively applied to the unified commerce platform and until that phase is reached, the platform lacks in the three hundred and sixty degrees view of the customer feature.

The machine learning system developed by Salesforce, Einstein Commerce, even though it's proving to be a great asset of the solution, still has a long way to go since it's yet to be integrated with many parts of the system, for now just being an untapped source of opportunities.

On the other hand, Salesforce Commerce Cloud is yet to be fully integrated with the Salesforce unified service architecture strategy which, at first sight, is a complex process to be achieved in the short term. However, to tackle this issue, Salesforce has acquired, on May of this year (2018) Mulesoft, a company that provides a leading platform to build application networks to connect enterprise applications, data and devices across any cloud system [40].

To end this section, Salesforce has already revealed to be working in the IoT area, however no roadmap is defined in that matter and it is a critical step in Salesforce path to fully develop a platform that can leverage data from the retail ecosystem.

Chapter 6

Conclusion and Future Work

In this conclusive chapter will be presented, in a critic manner, thoughts about the obtained results along with reference to the methodology used as well and unexpected situations and other ways to obtain better results.

There will also be a section reserved to future work to expand the results of this paper.

6.1 Results Satisfaction

Before analysing the result satisfaction, is necessary to understand that there isn't a unique solution to solve all problems. Each client has different needs, processes, objectives and so on, that require deep analysis to find the solution that better fits their business model analysing things like scalability needs, hability to integrate the solution with legacy applications used by the customer and many other variables.

About the development of this paper and the respective results obtained, there's a lot that can be concluded. Starting by the deployment of the work, it started at a low pace, which is in part, understandably, due to the fact that it was developed during an internship which besides all the good opportunities it provides, comes along with a lot of processes that take time to integrate in the work-flow, like getting used to the transportation schedule, and inner working and rules of the company along with the integration with the rest of the staff and the company's working methods.

Apart from that, the first phase about the state of the art study went at a steady pace with good information intake. Starting with a better understanding of the retail industry through article reading as well as very valuable presentations by some of the company's staff members with deep knowledge in that area followed by analysis of recent articles and observation of the top of the market Omnichannel enforcers in order to identify trends and breakthroughs in that area, again accompanied by presentations attended at the internship, obtaining at last a broad and up to date overview of the state of Omnichannel.

The next phase involved an understanding of the main Omnichannel tool used by the company, the Oracle Retail Suite. That learning process started by analysing private Oracle documentation only available to partners which could not be accessed with the opportunity provided by Wipro.

But, even though that documentation provides fundamental data for the paper development, it lacked in its content for being outdated. Most of Oracle's documentation respective to ORS is derived from older ORS versions, with a lot of information mismatching the updated product. Also, the lack of information about the next version is outstandingly noticed, specially taking in account that it's expected to come out very soon. To counter this lack of updated documentation, a hands-on in the ORS Omnichannel product was provided by Wipro in a form of a four-day seminar led by Wipro's staff members that allowed for a deep explanation about the up-to-date product and most of its functionalities along with an already referred hands-on component which proved to be very enlightening when compared to the documentation already analysed.

As for the research about the alternative brands to the Oracle solution, unfortunately didn't went has smoothly. The research for alternatives was rich in options but the lack of articles and the incapacity to test the tools made the work much harder since there was little to none documentation outside the data provided by the brands' web-pages where, as expected, are only referred the strong points of the solutions with specifying how the tools manage to do it. In other words, there was a need to carefully filter the information through all the marketing involved by combining the information with some few articles that evaluated the tools through hands-on testing.

In order to obtain better results, there was a critical need for at least some kind of hands-on test demo on each of the tools to obtain more conclusive data. As there was no possibility to do such thing and time began to fall short, of all the alternative brands studied only the most important two could be deepened enough to be part of this paper, those being Salesforce and IBM, both with big market footprints and considered leaders in Omnichannel enforcement. With more time and better resources on that aspect this paper could have a much more impactful analysis on the alternative solutions to Oracle.

Overall the objectives were achieved, some more successfully than others. Starting by the study of the Omnichannel state of art, it was extensive and points out all up to date key features, as well as a future tendency analysis. About the ORS that Wipro is using, there was a need to understand what the actual version offers to their clients in terms of Omnichannel, since the last versions were obsolete in this matter and very few have actually implemented or put to practice this last version to test these new features. This document deeply analyses this actual version exposing the Omnichannel module with extensive detail exposing it's capacity to perform according to today's standards. As for the study of alternative brands, even though it does not cover many alternatives, it tackles those of most importance to Wipro and gathers valuable information about their robustness and versatility as an Omnichannel solution.

Even though this information is valuable to the company, Wipro's business decisions cannot be discussed as they are of confidential nature.

6.2 Future Work

The future work to improve on this matter is very straight forward since it can be expanded by analysing many other alternative brands, like low-cost options which unfortunately were not cov-

ered in this paper, with an insight on the cost of the covered solutions and critics based on hands-on testing, along with further insight in the next version of Oracle Retail Suite as well as a deeper analysis in the trending future of Omnichannel that some of the Omnichannel enforcers already started exploring but very few started implementing it on the market.

Appendix A

Remaining Omnichannel Scenarios

This appendix takes off from where chapter 3 ended continuing to detail most of the Omnichannel scenarios fulfillable by Oracle Retail Suite.

Starting by the second scenario, a customer performs an order through a digital channel and chooses to have it delivered home and it goes like shown in figure A.1.

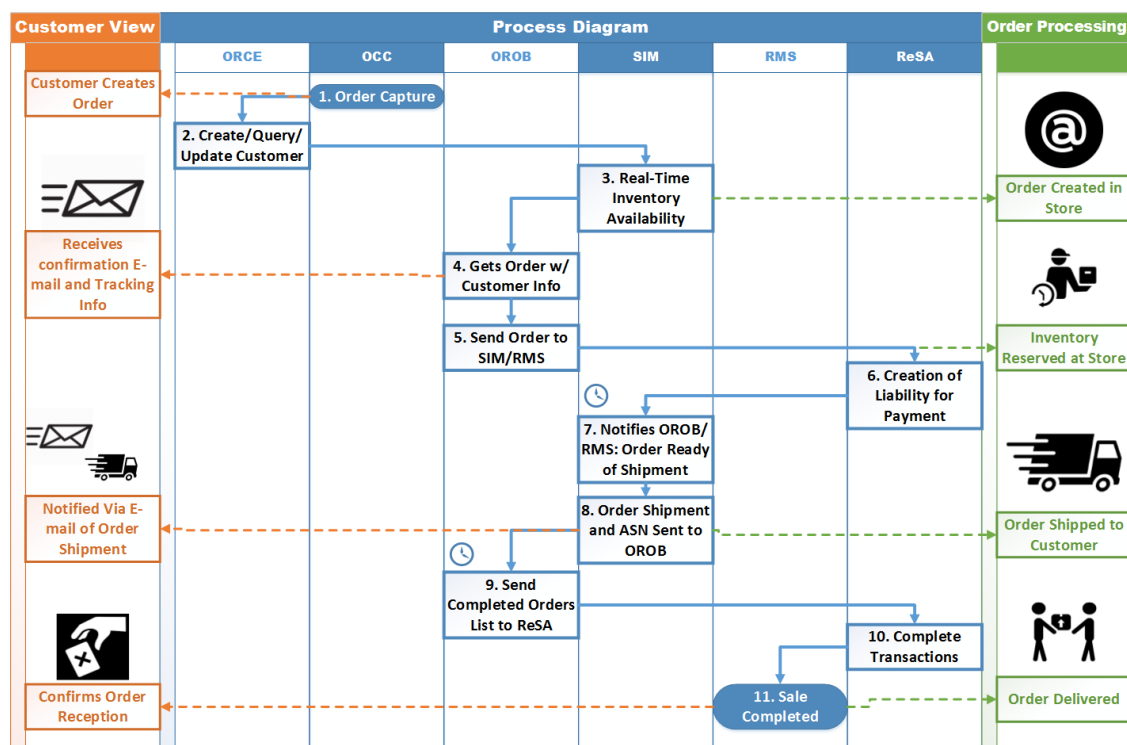


Figure A.1: Scenario 2: Order Online/ Fulfil at Store/ Ship to Customer

1. The Order is captured Online through the OCC module, which could be via website, mobile app, call centre or any other digital channel.

2. OCC will query existing customer information from ORCE and associate it to an order as part of the order capture process. If the customer doesn't already exist, then a new customer may be created and if it exists but the necessary information to create the order is missing the profile can be updated.
3. SIM checks item availability on its database in real-time. If the retailer wants, for high inventory level and low inventory turnover, OCC can check in a recently updated offline database to reduce the impact of data transfer.
4. Once created, the order is sent to OROB which will determine the source and fulfilment locations.
5. OROB sends the order to RMS and SIM for execution. The order information sent will include the pertinent information to execute the order, including items, quantities, pricing, fulfilment location and customer information. Upon receipt of the order in RMS and SIM, inventory will be reserved.
6. OROB will send an Order Initiate (ORI) transaction to ReSA to capture a liability. Total ORI transactions will be periodically interfaced to the General Ledger from ReSA.
7. SIM will notify RMS and OROB via Stock Order Status (SO Status) once inventory is ready for shipment.
8. Upon shipment to the customer, SIM will send an Advanced Shipment Notification (ASN) to OROB which will update the customer order. OROB will also update the OCC and one of the applications will inform the customer that the order has been shipped.
9. OROB will periodically send ReSA RTLOG transactions to record all customer order fulfilments (ORD transaction type).
10. Total ORD transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.
11. When RMS receives the sales transaction associated with in-store fulfilment from ReSA, it will recognize that the sale occurred as a result of a customer order in a stock holding store and decrement customer order reserved quantity, as well as stock on hand.

The following scenario describes another order created through a digital channel that is defined to be fulfilled at a warehouse and shipped from there to the customer, as seen in figure [A.2](#).

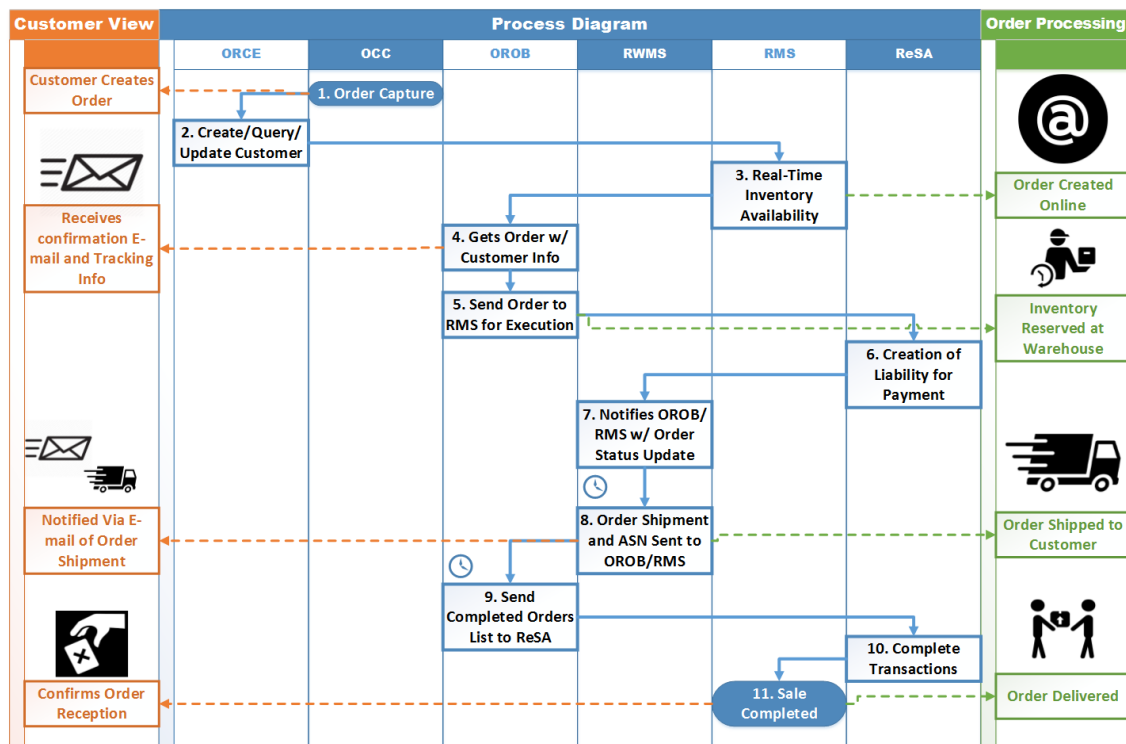


Figure A.2: Scenario 3: Order Online/ Fulfil at Warehouse/ Ship to Customer

1. The Order is captured online through the OCC module, which could be via website, mobile app, call centre or any other digital channel.
2. OCC will query existing customer information from ORCE and associate it to an order as part of the order capture process. If the customer doesn't already exist, then a new customer may be created and if it exists but the necessary information to create the order is missing the profile can be updated.
3. During the order creation process, OCC will verify inventory is available to fulfil the order using inventory availability via RMS.
4. Once created, the order is sent to OROB which will determine the source and fulfilment locations.
5. OROB sends the order to RMS. The order information sent from OROB will include the pertinent information to execute the order, including items, quantities, pricing, fulfilment location, and customer information. Upon receipt of the order in RMS, a customer order transfer will be created from the warehouse to a non-stockholding store and inventory will be reserved. RMS will send the transfer created to the warehouse, including the customer order number and customer information, such as address and shipping method.
6. OROB will send an Order Initiate (ORI) transaction to ReSA to capture a liability. Total ORI transactions will be periodically interfaced to the General Ledger from ReSA.

7. RWMS will notify OROB and RMS of order updates via Stock Order Status (SO Status) during processing.
8. Upon shipment to the customer, RWMS will send an outbound Advanced Shipment Notification (ASN) to RMS and OROB. RMS will use this information to ship and receive the transfer into the virtual store location. OROB will use this information to update the customer order.
9. OROB will periodically send ReSA RTLOG transactions to record all customer order fulfilments (ORD transaction type).
10. Total ORD transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.
11. When RMS receives the sales transaction associated with in-store fulfilment from ReSA, it will recognize that the sale occurred as a result of a customer order in a stock holding store and decrement customer order reserved quantity, as well as stock on hand.

In figure A.3 is represented a situation where the customer creates his order online and wants it delivered home, however the items are only available at the supplier, OROB chooses to send the order directly to the customer address.

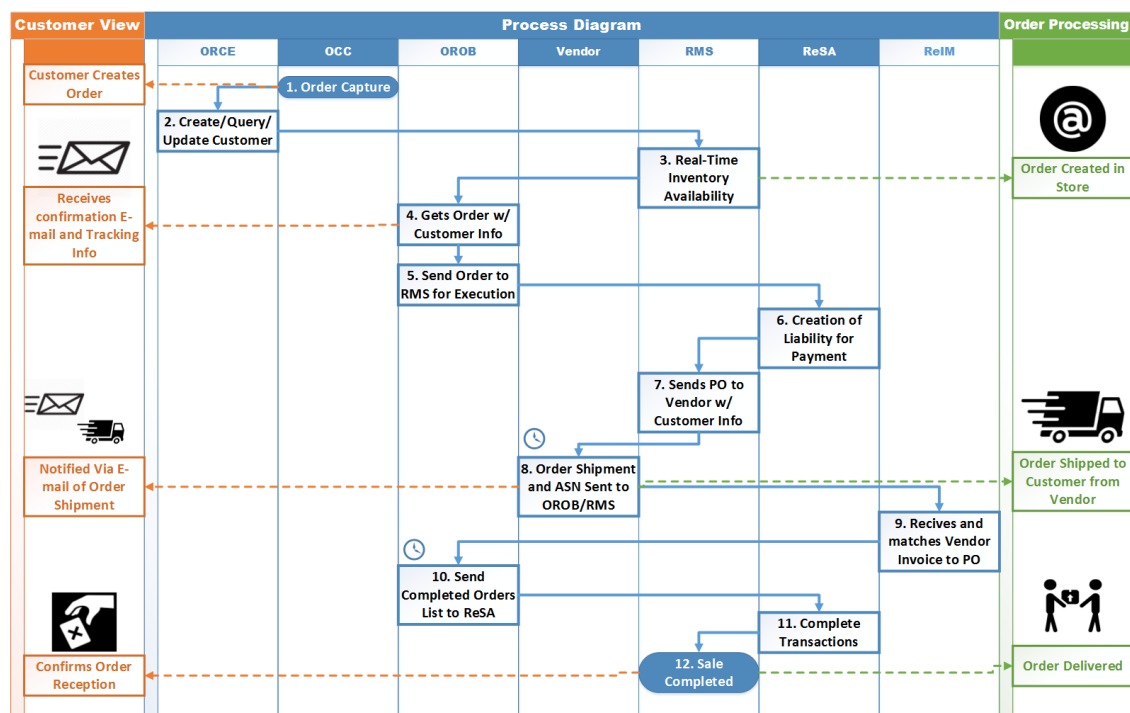


Figure A.3: Scenario 4: Order Online/ Fulfil at Vendor/ Ship to Customer

1. The Order is captured Online through the OCC module, which could be via website, mobile app, call centre or any other digital channel.

2. OCC will query existing customer information from ORCE and associate it to an order as part of the order capture process. If the customer doesn't already exist, then a new customer may be created and if it exists but the necessary information to create the order is missing the profile can be updated.
3. During the order creation process, OCC will verify inventory is available to fulfil the order using inventory availability via RMS.
4. Once created, the order is sent to OROB which will determine the source and fulfilment locations.
5. OROB sends the order to RMS for execution. The order information sent from OROB will include the pertinent information to execute the order, including items, quantities, pricing, fulfilment location, and customer information. Upon receipt of the order in RMS, it will create a customer order PO.
6. OROB will send an Order Initiate (ORI) transaction to ReSA to capture a liability. Total ORI transactions will be periodically interfaced to the General Ledger from ReSA.
7. RMS will send the Purchase Order to the vendor with the customer order number and delivery details.
8. After shipping an order to the customer, the vendor will send a vendor Advanced Shipment Notification (ASN) to RMS and OROB. RMS will use this information to ship and receive the PO into the virtual store location. OROB will use this information to update the customer order and notify the customer of the shipment of the order.
9. After the customer order has been fulfilled, the vendor will send an invoice to the Retail Invoice Match System (ReIM). Once the transaction is complete ReIM processes will match the invoice to the purchase order and receipt and post the invoice for payment.
10. OROB will periodically send ReSA RTLOG transactions to record all customer order fulfilments (ORD transaction type).
11. Total ORD transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.
12. When RMS receives the sales transaction associated with in-store fulfilment from ReSA, it will recognize that the sale occurred as a result of a customer order in a stock holding store and decrement customer order reserved quantity, as well as stock on hand.

Figure A.4 refers to a customer who made an order online and chooses to pick it up at the store, however that store is not holding the order necessary stock which will be shipped to the store from a warehouse.

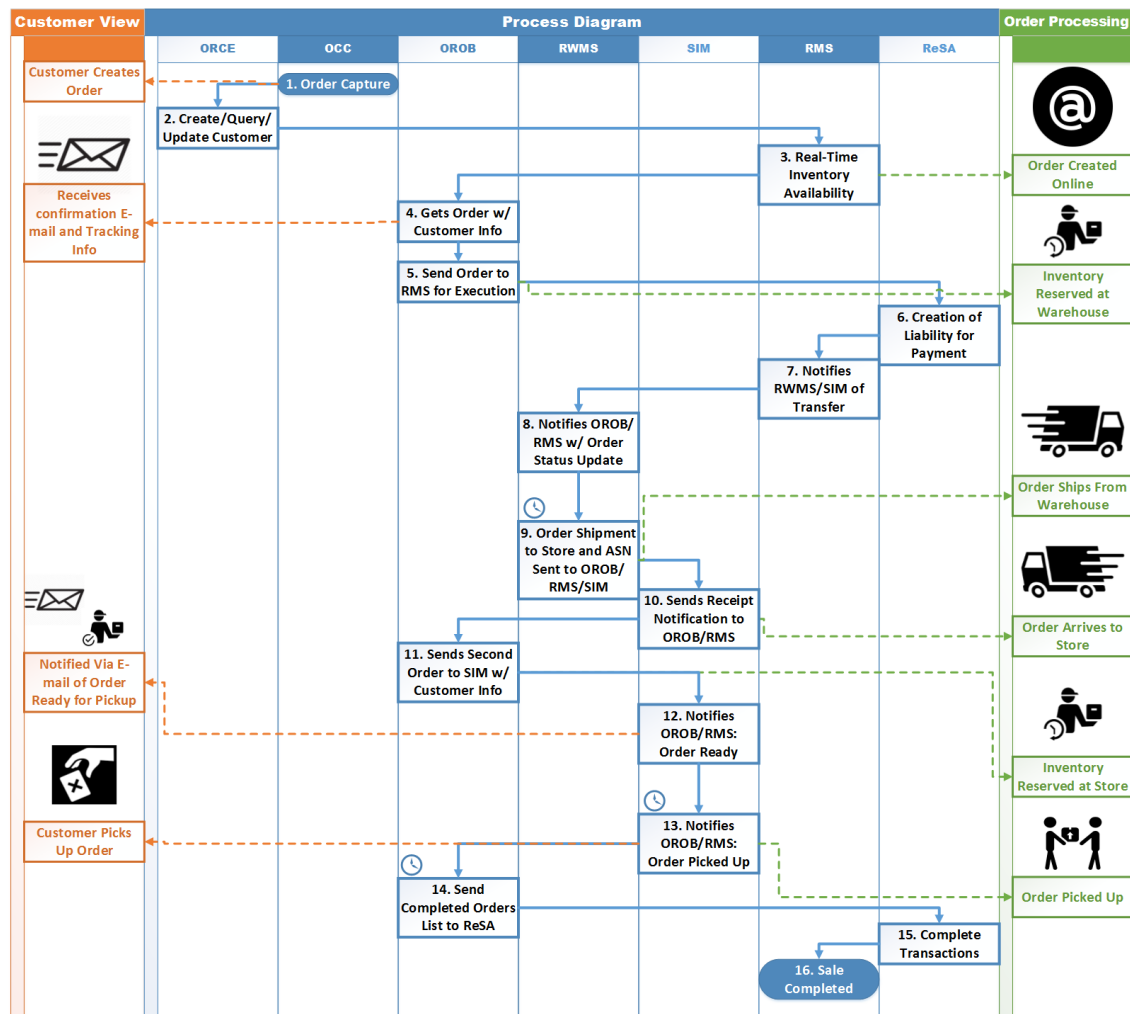


Figure A.4: Scenario 5: Order Online/ Source From Warehouse/ Pickup at Store Via SIM

1. The Order is captured Online through the OCC module, which could be via website, mobile app, call centre or any other digital channel.
2. OCC will query existing customer information from ORCE and associate it to an order as part of the order capture process. If the customer doesn't already exist, then a new customer may be created and if it exists but the necessary information to create the order is missing the profile can be updated.
3. During the order creation process, OCC will verify inventory is available to fulfil the order using inventory availability via RMS.
4. Once created, the order is sent to OROB which will determine the source and fulfilment locations.
5. OROB sends the order to RMS. The order information sent from OROB will include the pertinent information to execute the order, including items, quantities, pricing, fulfilment

location, and customer information. Upon receipt of the order in RMS, a customer order transfer will be created from the warehouse to a non-stockholding store and inventory will be reserved.

6. OROB will send an Order Initiate (ORI) transaction to ReSA to capture a liability. Total ORI transactions will be periodically interfaced to the General Ledger from ReSA.
7. RMS will send the transfer created to the warehouse and the fulfilling store SIM, including the customer order number and customer information, such as address and shipping method.
8. RWMS will notify OROB and RMS of order updates via Stock Order Status (SO Status) during processing.
9. Upon shipment to the store, RWMS will send an outbound Advanced Shipment Notification (ASN) to SIM, RMS and OROB. SIM will use this information to receive the product. RMS will use this information to update inventory and stock ledger based on the shipment. OROB will use this information to update the customer order.
10. After receiving the shipment in the store, SIM will send a Receipt notification message to OROB and RMS.
11. Once OROB has confirmed that the product is available in the store, it will send a second fulfilment order to SIM. Upon receipt of the order in SIM, SIM will reserve inventory.
12. Once the product has been picked, SIM will notify RMS and OROB via Stock Order Status (SO Status) that the order is ready for pickup.
13. Once the product has been picked up, SIM will decrement the reserved stock on hand inventory, and notify OROB and RMS via Stock Order Status (SO Status) that the order is complete.
14. OROB will periodically send ReSA RTLOG transactions to record all customer order fulfilments (ORD transaction type).
15. Total ORD transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.
16. When RMS receives the sales transaction associated with in-store fulfilment from ReSA, it will recognize that the sale occurred as a result of a customer order in a stock holding store and decrement customer order reserved quantity, as well as stock on hand.

The next scenario is very similar to the previous one and counts with the same setup with the exception that the customer wants the order delivered home, although the order's source is at the warehouse OROB defines that is more profitable to ship it to the customer from a nearby store, figure [A.5](#).

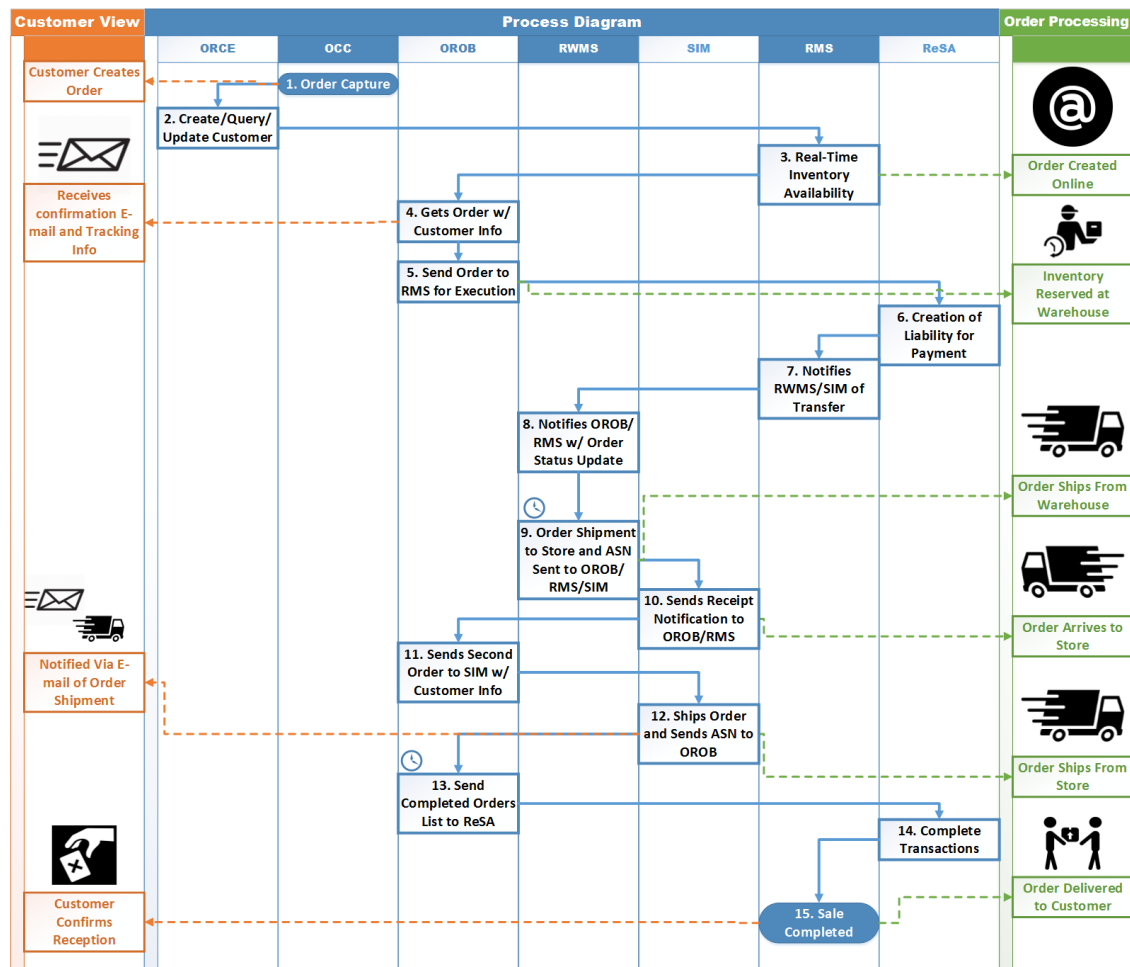


Figure A.5: Scenario 6: Order Online/ Source From Warehouse/ Fulfil at Store/ Ship to Customer

1. The Order is captured Online through the OCC module, which could be via website, mobile app, call centre or any other digital channel.
2. OCC will query existing customer information from ORCE and associate it to an order as part of the order capture process. If the customer doesn't already exist, then a new customer may be created and if it exists but the necessary information to create the order is missing the profile can be updated.
3. During the order creation process, OCC will verify inventory is available to fulfil the order using inventory availability via RMS.
4. Once created, the order is sent to OROB which will determine the source and fulfilment locations.
5. OROB sends the order to RMS. The order information sent from OROB will include the pertinent information to execute the order, including items, quantities, pricing, fulfilment location, and customer information. Upon receipt of the order in RMS, a customer order

transfer will be created from the warehouse to a non-stockholding store and inventory will be reserved.

6. OROB will send an Order Initiate (ORI) transaction to ReSA to capture a liability. Total ORI transactions will be periodically interfaced to the General Ledger from ReSA.
7. RMS will send the transfer created to the warehouse and the fulfilling store SIM, including the customer order number and customer information, such as address and shipping method.
8. RWMS will notify OROB and RMS of order updates via Stock Order Status (SO Status) during processing.
9. Upon shipment to the store, RWMS will send an outbound Advanced Shipment Notification (ASN) to SIM, RMS and OROB. SIM will use this information to receive the product. RMS will use this information to update inventory and stock ledger based on the shipment. OROB will use this information to update the customer order.
10. After receiving the shipment in the store, SIM will send a Receipt notification message to OROB and RMS.
11. Once OROB has confirmed that the product is available in the store, it will send a second fulfilment order to SIM. Upon receipt of the order in SIM, SIM will reserve inventory.
12. Upon shipment to the customer, SIM will send an Advanced Shipment Notification (ASN) to OROB which will update the customer order. OROB will also update the OCC and one of the applications will inform the customer that the order has been shipped.
13. OROB will periodically send ReSA RTLOG transactions to record all customer order fulfilments (ORD transaction type).
14. Total ORD transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.
15. When RMS receives the sales transaction associated with in-store fulfilment from ReSA, it will recognize that the sale occurred as a result of a customer order in a stock holding store and decrement customer order reserved quantity, as well as stock on hand.

Next, a customer creates an order through a digital channel and wants to pick it up at a nearby store. That store does not hold the necessary inventory so OROB defines another store as the source for the order which will then ship it to the store to be picked up by the customer [A.6](#).

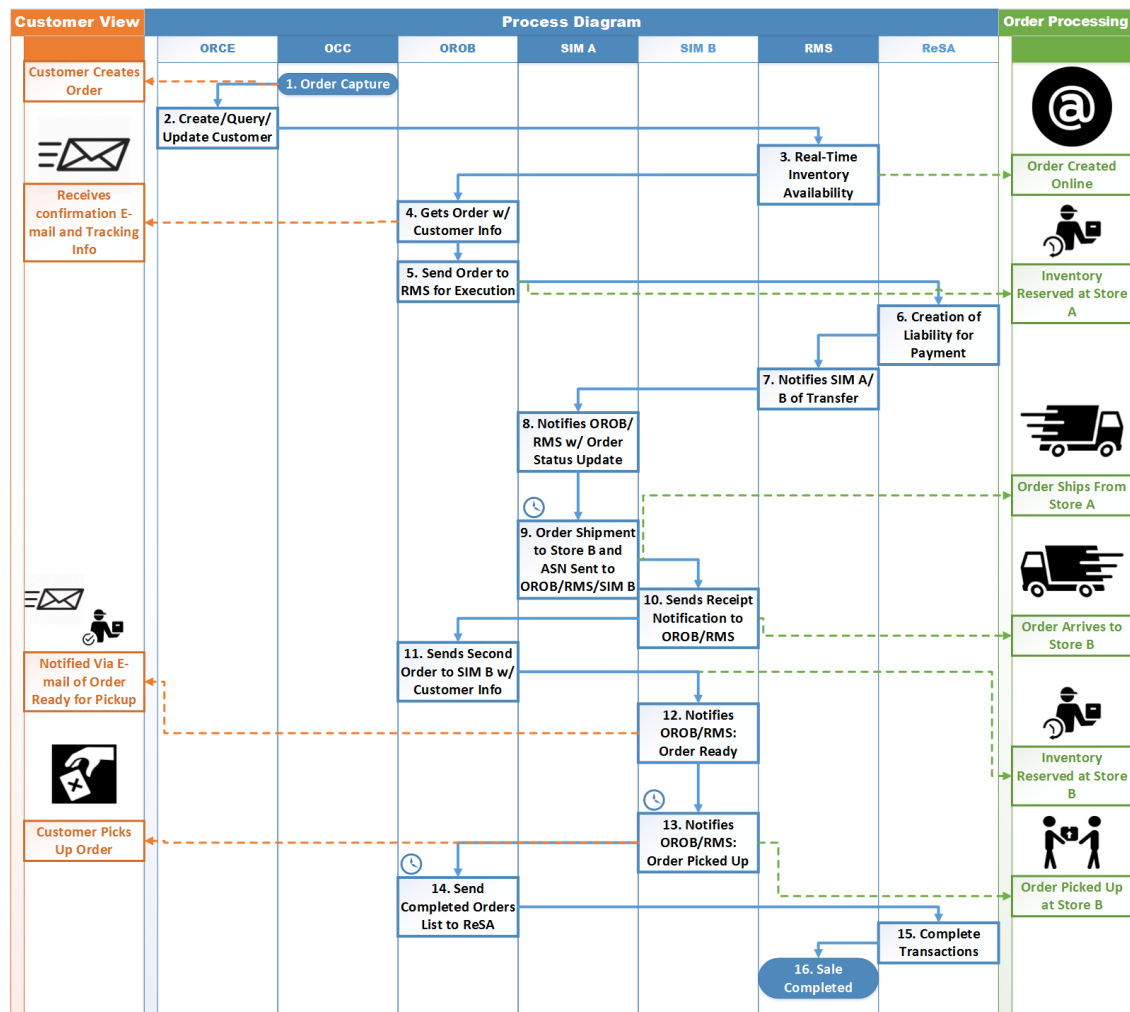


Figure A.6: Scenario 7: Order Online/ Source From Store A/ Pickup at Store B Via SIM

1. The Order is captured Online through the OCC module, which could be via website, mobile app, call centre or any other digital channel.
2. OCC will query existing customer information from ORCE and associate it to an order as part of the order capture process. If the customer doesn't already exist, then a new customer may be created and if it exists but the necessary information to create the order is missing the profile can be updated.
3. During the order creation process, OCC will verify inventory is available to fulfil the order using inventory availability via RMS.
4. Once created, the order is sent to OROB which will determine the source and fulfilment locations.
5. OROB sends the order to RMS for execution. The order information sent from OROB will include the pertinent information to execute the order, including items, quantities, pricing,

fulfilment location, and customer information. Upon receipt of the order in RMS, a store-to-store customer order transfer will be created and inventory will be reserved.

6. OROB will send an Order Initiate (ORI) transaction to ReSA to capture a liability. Total ORI transactions will be periodically interfaced to the General Ledger from ReSA.
7. RMS will send the transfer created to both SIMs, including the customer order number and customer information, such as address and shipping method.
8. SIM A will notify OROB and RMS of order updates via Stock Order Status (SO Status) during processing.
9. Upon shipment from the source store, SIM A will send an Advanced Shipment Notification (ASN) to RMS and OROB which will update the customer order.
10. After receiving the shipment in the fulfilling store, SIM will send a Receipt notification message to OROB and RMS.
11. Once OROB has confirmed that the product is available in the store, it will send a second fulfilment order to SIM. Upon receipt of the order in SIM, SIM will reserve inventory.
12. Once the product has been picked, SIM will notify RMS and OROB via Stock Order Status (SO Status) that the order is ready for pickup.
13. Once the product has been picked up, SIM will decrement the reserved stock on hand inventory, and notify OROB and RMS via Stock Order Status (SO Status) that the order is complete.
14. OROB will periodically send ReSA RTLOG transactions to record all customer order fulfilments (ORD transaction type).
15. Total ORD transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.
16. When RMS receives the sales transaction associated with in-store fulfilment from ReSA, it will recognize that the sale occurred as a result of a customer order in a stock holding store and decrement customer order reserved quantity, as well as stock on hand.

In this scenario, after the customer creates an order that he wants delivered home, OROB defines as best fulfilment method, ship the inventory from a store to a nearby one and ship it from there to the customer.

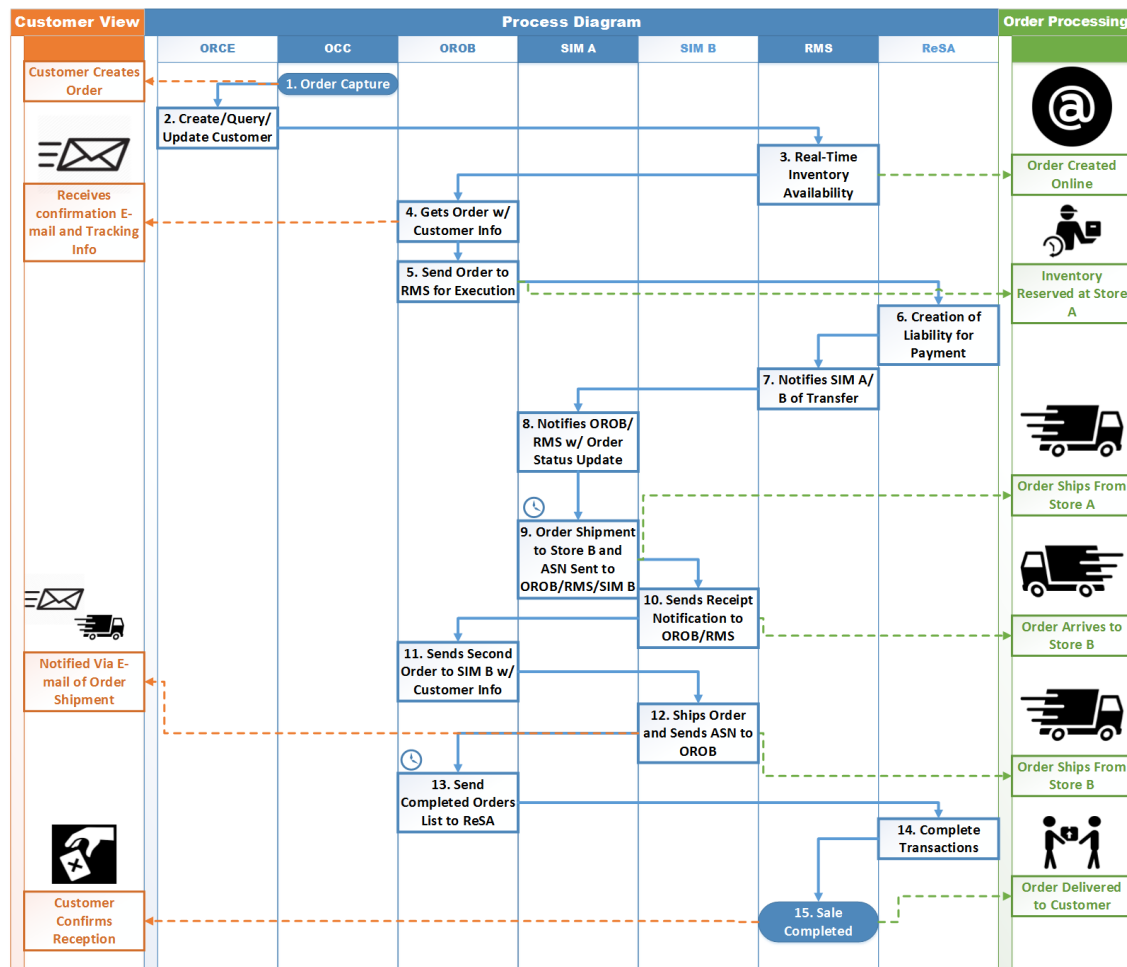


Figure A.7: Scenario 8: Order Online/ Source From Store A/ Ship to Customer from Store B

1. The Order is captured Online through the OCC module, which could be via website, mobile app, call centre or any other digital channel.
2. OCC will query existing customer information from ORCE and associate it to an order as part of the order capture process. If the customer doesn't already exist, then a new customer may be created and if it exists but the necessary information to create the order is missing the profile can be updated.
3. During the order creation process, OCC will verify inventory is available to fulfil the order using inventory availability via RMS.
4. Once created, the order is sent to OROB which will determine the source and fulfilment locations.
5. OROB sends the order to RMS for execution. The order information sent from OROB will include the pertinent information to execute the order, including items, quantities, pricing,

fulfilment location, and customer information. Upon receipt of the order in RMS, a store-to-store customer order transfer will be created and inventory will be reserved.

6. OROB will send an Order Initiate (ORI) transaction to ReSA to capture a liability. Total ORI transactions will be periodically interfaced to the General Ledger from ReSA.
7. RMS will send the transfer created to both SIMs, including the customer order number and customer information, such as address and shipping method.
8. SIM A will notify OROB and RMS of order updates via Stock Order Status (SO Status) during processing.
9. Upon shipment from the source store, SIM A will send an Advanced Shipment Notification (ASN) to RMS and OROB which will update the customer order.
10. After receiving the shipment in the fulfilling store, SIM will send a Receipt notification message to OROB and RMS.
11. Once OROB has confirmed that the product is available in the store, it will send a second fulfilment order to SIM. Upon receipt of the order in SIM, SIM will reserve inventory.
12. Upon shipment to the customer, SIM B will send an Advanced Shipment Notification (ASN) to OROB which will update the customer order.
13. OROB will periodically send ReSA RTLOG transactions to record all customer order fulfilments (ORD transaction type).
14. Total ORD transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.
15. When RMS receives the sales transaction associated with in-store fulfilment from ReSA, it will recognize that the sale occurred as a result of a customer order in a stock holding store and decrement customer order reserved quantity, as well as stock on hand.

In the figure [A.8](#), after the customer creates an order online that he wants to pick up at a nearby store, OROB defines that the necessary inventory is located only at the vendor, so it has to be shipped from there to the store for former pickup by the customer.

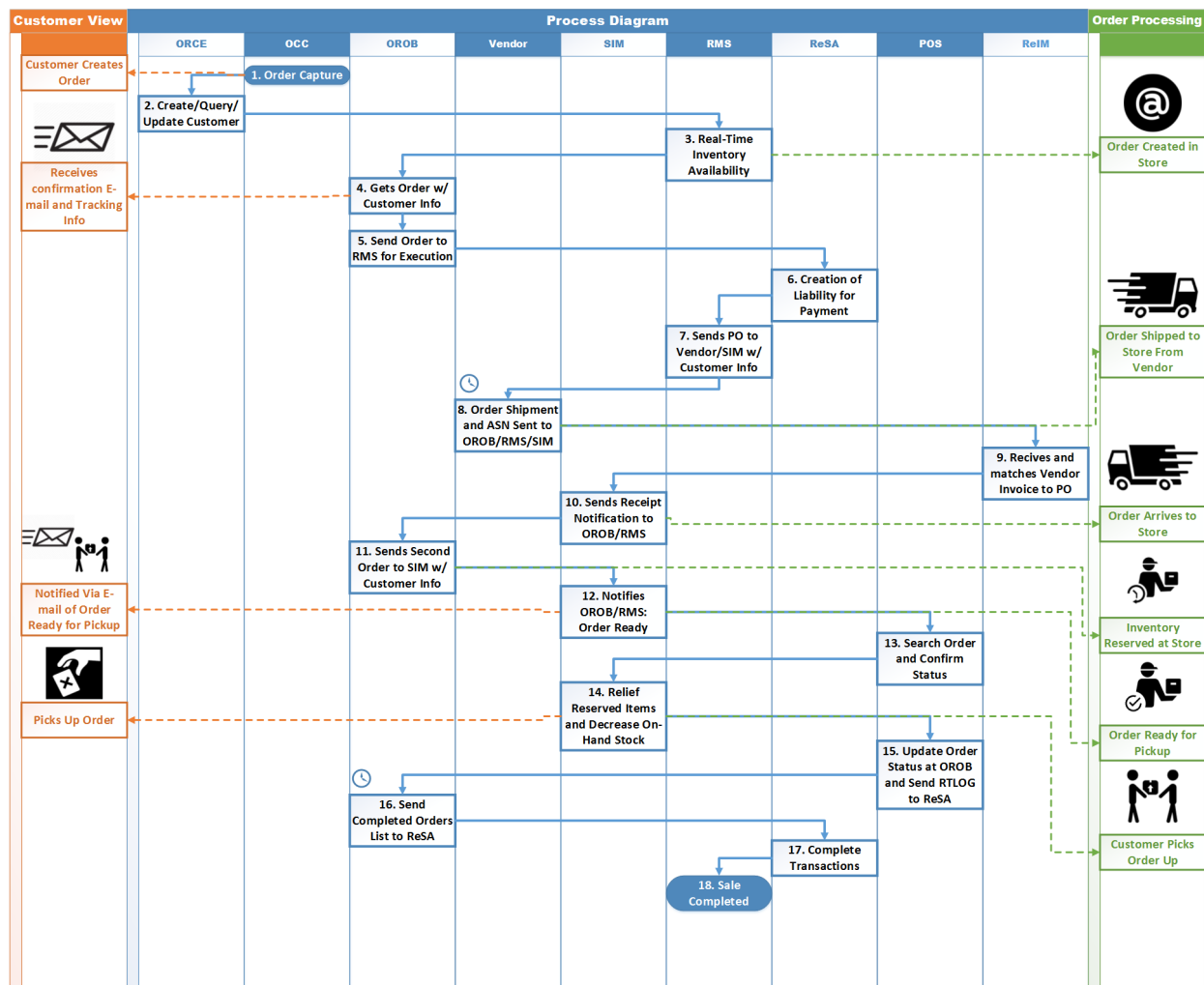


Figure A.8: Scenario 9: Order Online/ Source From Vendor/ Pickup at Store

1. The Order is captured Online through the OCC module, which could be via website, mobile app, call centre or any other digital channel.
2. OCC will query existing customer information from ORCE and associate it to an order as part of the order capture process. If the customer doesn't already exist, then a new customer may be created and if it exists but the necessary information to create the order is missing the profile can be updated.
3. During the order creation process, OCC will verify inventory is available to fulfil the order using inventory availability via RMS.
4. Once created, the order is sent to OROB which will determine the source and fulfilment locations.
5. OROB sends the order to RMS for execution. The order information sent from OROB will include the pertinent information to execute the order, including items, quantities, pricing,

fulfilment location, and customer information. Upon receipt of the order in RMS, it will create a customer order PO.

6. OROB will send an Order Initiate (ORI) transaction to ReSA to capture a liability. Total ORI transactions will be periodically interfaced to the General Ledger from ReSA.
7. RMS will send the Purchase Order to the vendor and to the fulfilling store SIM with the customer order number and delivery details.
8. After shipping an order to the store, the vendor will send a vendor Advanced Shipment Notification (ASN) to RMS and OROB. RMS will use this information to ship and receive the PO into the virtual store location.
9. The vendor will send an invoice to the Retail Invoice Match System (ReIM). Once the transaction is complete ReIM processes will match the invoice to the purchase order and receipt and post the invoice for payment.
10. After receiving the shipment in the store, SIM will send a Receipt notification message to OROB and RMS.
11. Once OROB has confirmed that the product is available in the store, it will send a second fulfilment order to SIM. Upon receipt of the order in SIM, SIM will reserve inventory.
12. Once the product has been picked, SIM will notify RMS and OROB via Stock Order Status (SO Status) that the order is ready for pickup.
13. When the customer arrives in the store, a cashier will look up the customer's order using a POS System which will call OROB therefore returning a list of customer orders matching the customer's information. The cashier will then select the appropriate order being picked up.
14. After the customer order pickup process is complete at the POS System, the POS System will notify SIM to relieve reserved inventory and decrement stock on hand.
15. POS will send an order complete transaction to OROB with the pickup details and sends an RTLOG to ReSA for all sales transactions, including customer order pickups (ORD transaction type), periodically throughout the day.
16. OROB will periodically send ReSA RTLOG transactions to record all customer order fulfilments (ORD transaction type).
17. Total ORD transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.
18. When RMS receives the sales transaction associated with in-store fulfilment from ReSA, it will recognize that the sale occurred as a result of a customer order in a stock holding store and decrement customer order reserved quantity, as well as stock on hand.

This scenario represents a situation where a customer creates an order online and requests it to be delivered to his address, OROB identifies the Inventory available at the vendor and that is more efficient to fulfil the order from the store [A.9](#).

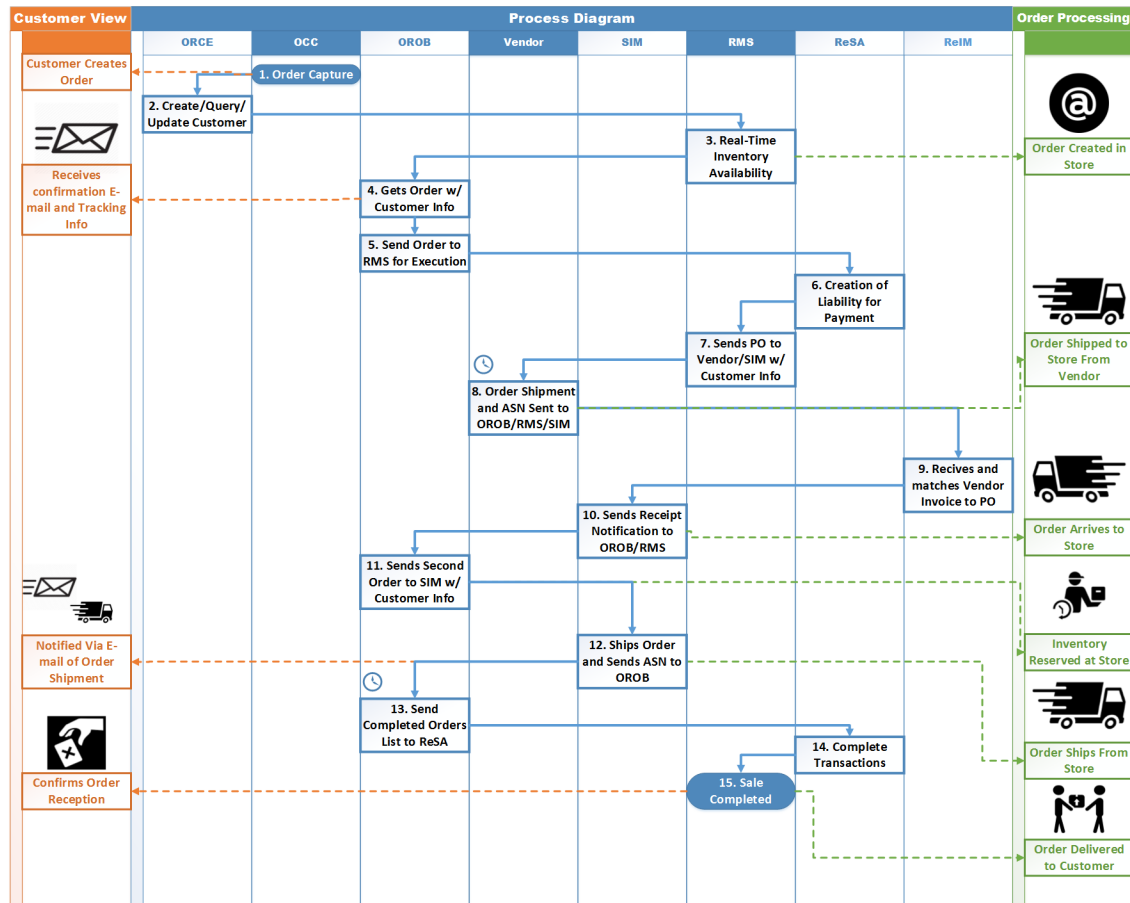


Figure A.9: Scenario 10: Order Online/ Source From Vendor/ Ship to Customer From Store

1. The Order is captured Online through the OCC module, which could be via website, mobile app, call centre or any other digital channel.
2. OCC will query existing customer information from ORCE and associate it to an order as part of the order capture process. If the customer doesn't already exist, then a new customer may be created and if it exists but the necessary information to create the order is missing the profile can be updated.
3. During the order creation process, OCC will verify inventory is available to fulfil the order using inventory availability via RMS.
4. Once created, the order is sent to OROB which will determine the source and fulfilment locations.

5. OROB sends the order to RMS for execution. The order information sent from OROB will include the pertinent information to execute the order, including items, quantities, pricing, fulfilment location, and customer information. Upon receipt of the order in RMS, it will create a customer order PO.
6. OROB will send an Order Initiate (ORI) transaction to ReSA to capture a liability. Total ORI transactions will be periodically interfaced to the General Ledger from ReSA.
7. RMS will send the Purchase Order to the vendor and to the fulfilling store SIM with the customer order number and delivery details.
8. After shipping an order to the store, the vendor will send a vendor Advanced Shipment Notification (ASN) to RMS and OROB. RMS will use this information to ship and receive the PO into the virtual store location.
9. The vendor will send an invoice to the Retail Invoice Match System (ReIM). Once the transaction is complete ReIM processes will match the invoice to the purchase order and receipt and post the invoice for payment.
10. After receiving the shipment in the store, SIM will send a Receipt notification message to OROB and RMS.
11. Once OROB has confirmed that the product is available in the store, it will send a second fulfilment order to SIM. Upon receipt of the order in SIM, SIM will reserve inventory.
12. Upon shipment to the customer, SIM will send an Advanced Shipment Notification (ASN) to OROB which will update the customer order.
13. OROB will periodically send ReSA RTLOG transactions to record all customer order fulfilments (ORD transaction type).
14. Total ORD transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.
15. When RMS receives the sales transaction associated with in-store fulfilment from ReSA, it will recognize that the sale occurred as a result of a customer order in a stock holding store and decrement customer order reserved quantity, as well as stock on hand.

In contrast with the other scenarios so far, the one represented in figure [A.10](#) actually represents the order cancellation process with a cancel request by the customer of an order that was already ongoing.

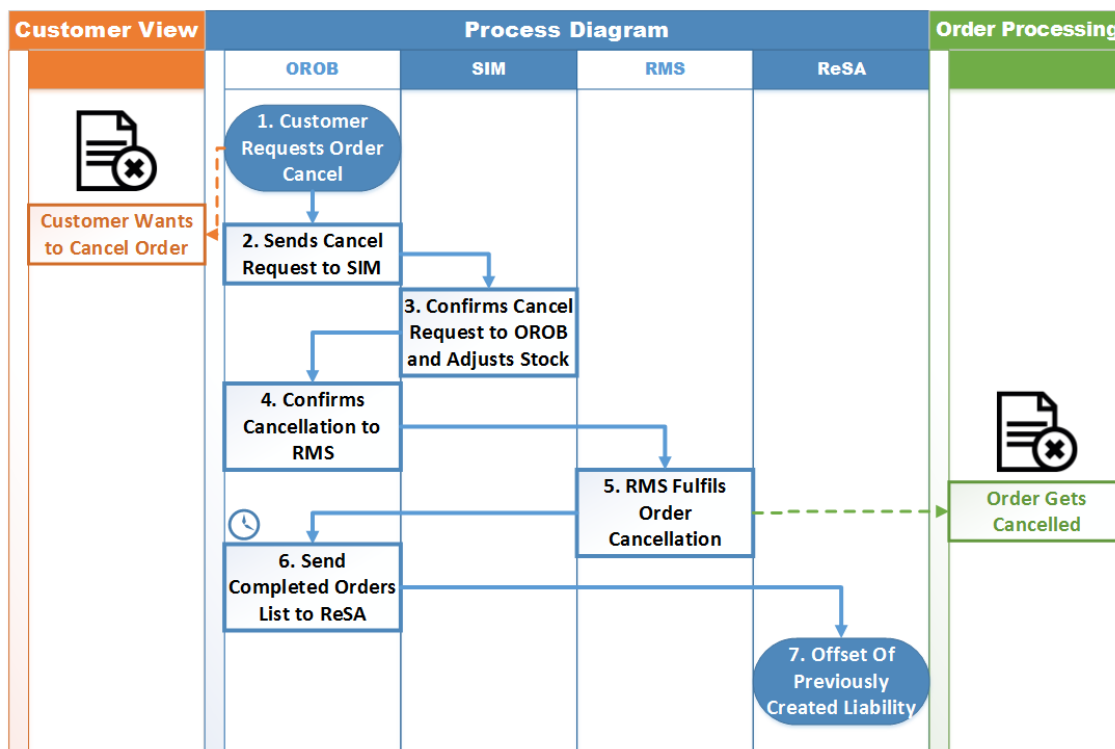


Figure A.10: Scenario 12: Customer Order Cancellation Process

1. The customer requests the retailer to cancel their order.
2. OROB sends a Cancel Request message to SIM indicating the quantity of each item to be cancelled.
3. Based on stock on hand and the status of the order, SIM will send a Cancel Confirmation message to OROB including the quantity SIM was able to cancel.
4. Once OROB is able to process the cancellation, it will send an Approved Cancel Message to RMS.
5. RMS will process the message and cancel the specified quantity for the fulfilment order.
6. When the OMS updates ReSA with RTLOG transactions, it will include a cancellation for the customer order (ORC transaction type).
7. Total ORC transactions will be periodically interfaced to the General Ledger from ReSA. These will offset the ORI transactions recorded at order creation.

In the next scenario represented in figure A.11, the customer requests a return via electronic return merchandise authorization.

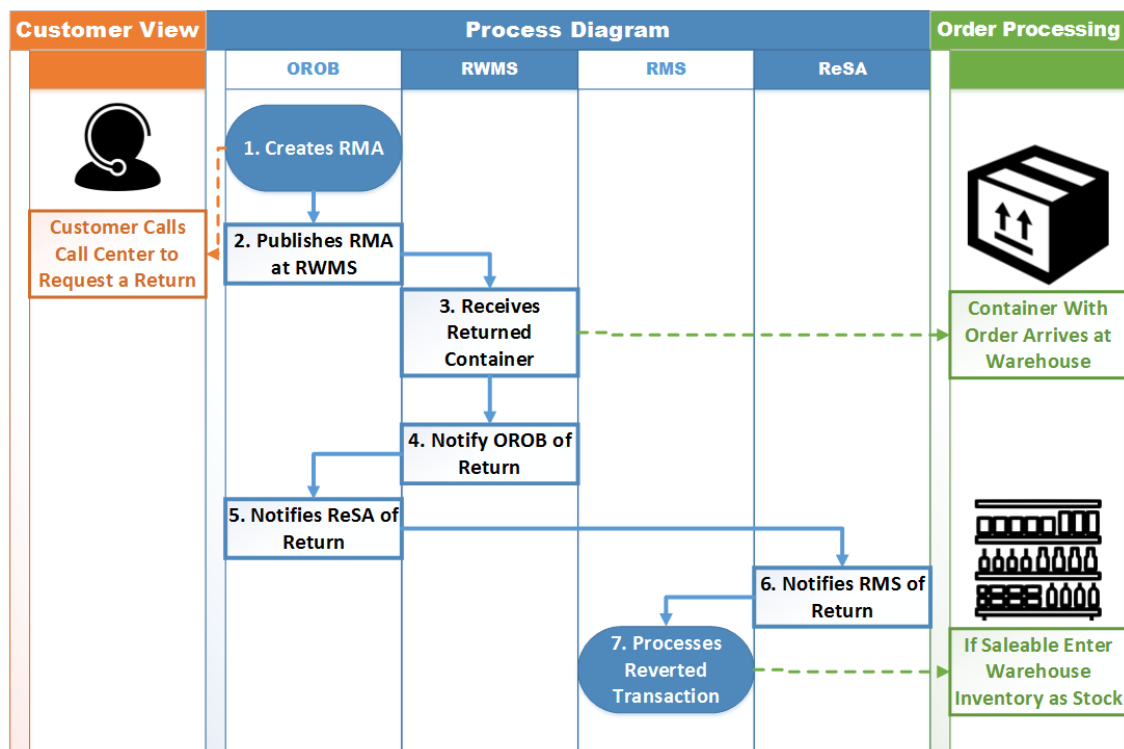


Figure A.11: Scenario 13: Customer Returns Order to Warehouse Via RMA

1. The customer calls the call centre or uses the retailer's website to request a return. OROB will support the creation of an RMA as per customer's request. Once created, OROB will be the repository for RMA information.
2. OROB will publish the RMA information to RWMS. This will be used to accept or reject customer returns when being processed in the warehouse (RWMS will only accept items included on the RMA).
3. Before processing the return, RWMS will receive the returned container and send the returned container information to OROB. This is container information only, no item data is provided
4. Once the return is processed, RWMS will notify OROB of the return, including item details, in order to update the order and trigger a refund to the customer.
5. OROB will inform ReSA of return at the warehouse – including both the virtual store where the return will be processed and the actual warehouse where the return occurred.
6. ReSA will pass these details onto RMS.

7. RMS will process this as a sales return into the virtual store from the original sales transaction. If the returned merchandise is saleable, RMS will recognize a return to a non-stockholding store and transfer inventory from the non-stockholding store into the warehouse where the return occurred.

The last scenario is very similar to the prior one with the exception that the customer requests a return through paperwork and in goes like represented in figure A.12.

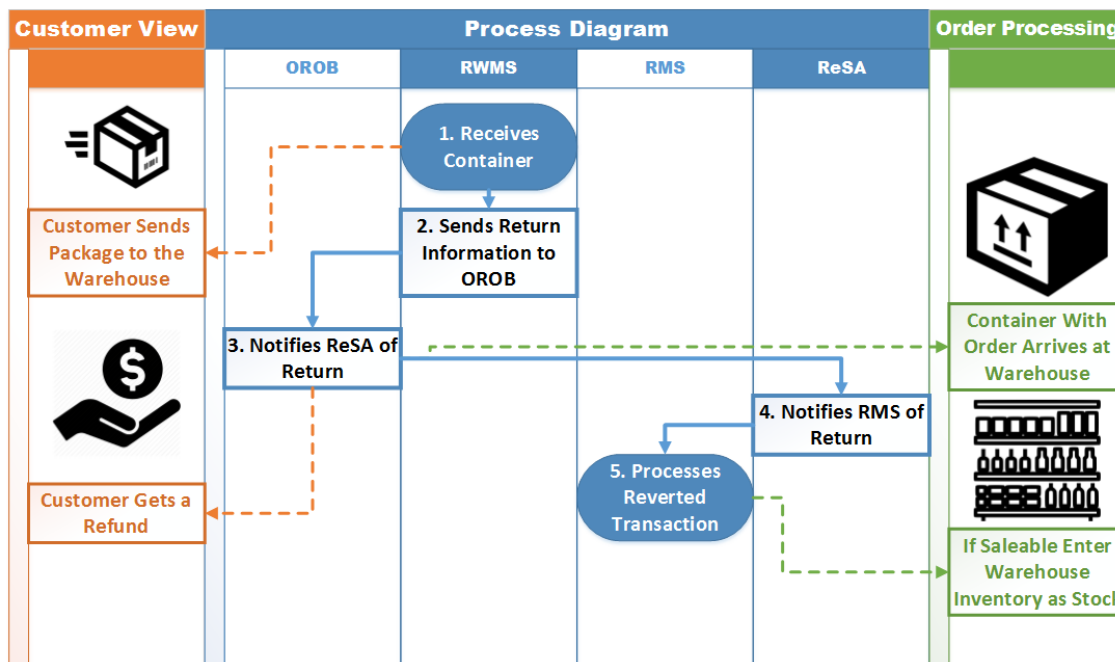


Figure A.12: Scenario 14: Customer Returns Order to Warehouse Via Paperwork

1. The customer sends the item(s) to be returned to the warehouse. This is done without prior notification and with return paperwork provided by the retailer.
2. Once the return is processed, RWMS will notify OROB of the return, including item details, in order to update the order and trigger a refund to the customer.
3. OROB will inform ReSA of return at the warehouse – including both the virtual store where the return will be processed and the actual warehouse where the return occurred.
4. ReSA will pass these details onto RMS.
5. RMS will process this as a sales return into the virtual store from the original sales transaction. If the returned merchandise is saleable, RMS will recognize a return to a non-stockholding store and transfer inventory from the non-stockholding store into the warehouse where the return occurred.

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