WHITEPAPER

AN INTRODUCTION TO HEADLESS COMMERCE

BUILDING THE OMNICHANNEL SHOPPING EXPERIENCE FAST AND AGILE

PART 1

SQLI DIGITAL EXPERIENCE

Management Summary

Retailers and wholesalers looking to start or expand their e-commerce will face many new challenges today. E-commerce has changed.

From the growing number of customer touchpoints for consuming content and making purchases, to fierce online competition and rising customer expectations. Online success is not guaranteed. To compete, businesses need to create digital experiences that offer both value and relevance. Getting ahead of the competition, faster time-to-market and increased flexibility are key. Headless commerce promises to give you just that.

As a technology approach, headless commerce keeps change and evolution foremost in mind. Essential to headless commerce is the decoupling of the customer facing front end from the back-end layer.

That gives the freedom to create personalized and connected digital experiences across all channels: true omnichannel. By seamlessly blending commerce and content, transactions can become relations. The headless commerce architecture allows you to experiment, quickly add new channels, increase your business agility and scale efficiently.

This whitepaper is for both the marketing and IT manager who are looking to grow e-commerce by offering omnichannel shopping experiences. We'll explain step-by-step how the customers are changing, the challenges for meeting their expectations and show how headless commerce will help you grow and develop your e-commerce. Fast and agile

Why headless commerce?

SHOPPING IS CHANGING

John just finished cutting the vegetables when he realizes he forgot to buy the main ingredient for his stew: beef. Fortunately, he lives in Shanghai and he has a Hema store nearby. Through their app, John orders his beef. A shopping assistant goes into the supermarket to pick this order and within 30-minutes, the order is delivered at John's doorstep. If he had the time to go by himself, John could have also had his meal cooked for him in the store. To eat, take home or have delivered later. All paid for via facial recognition.

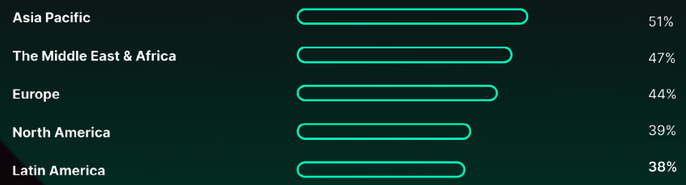
This is what Jack Ma, co-founder of Alibaba, calls New Retail. Through Alibaba-owned Hema Xiansheng this retail vision comes to live: a new shopping experience that combines the best of both offline and online. With the emphasis on fresh food, the experience is distinctly Chinese and aims to resemble traditional Chinese markets where freshness is key. And while New Retail may not fit either your specific market or your customers, it's undeniable that shopping around the world is changing rapidly.

WHAT CUSTOMERS WANT TODAY

Customers expect nothing less than personalized experiences that are connected across multiple touchpoints. They want a seamless, omnichannel experience that is both relevant and engaging. And while new touchpoints like smart speakers are just around the corner gearing up for mass adoption, customers also still go to physical stores. 30%1 of mobile searches on Google are for local solutions, for example. Customers want it all. And they are increasingly dissatisfied with the current levels of service: customer satisfaction dropped from 94.6% in 2013 to 92.5% in 2018 according to Zendesk2.
So, how can your brand meet the customer of today?

Consider the following key research findings...

Mobile Shopping



New Channels

Smart speakers - % of households, who own one:

31% 21% 5%

Users:

TikTok App

Worldwide, 66% of them belong to Generation Z

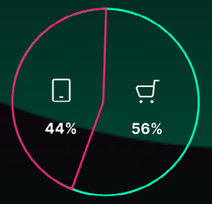
More downloads in AppStore than Facebook, YouTube & Instagram

Mixing of Channels

Online & Offline

56% of customers prefer to shop in-store

44% prefer to shop online



Pick up in store

62% online orders pick up in the store

Online tracking

72% customers want it > **42%** retailers offering

Customer Experience

73% point to customer experience as an important factor in their purchasing decisions

43% of all consumers would pay more for greater convenience

32% say they will walk away from a brand they love after just one bad experience

42% would pay more for a friendly, welcoming experience

The challenges of creating the omnichannel shopping experience

By embracing change, big companies like Amazon and Netflix have managed to become successful and stay in the lead.

They are what customers today want. Through the restructuring of their organizations and IT architectures, these brands continuously improve and optimize the delivery of digital experiences. When aiming for that same path of digital excellence, which organizational and technological challenges will you need to face?

THE ORGANIZATIONAL CHALLENGE

Your e-commerce success depends entirely on the ability to organize yourself around the customer. Traditionally, the first e-commerce solutions followed the paradigm of contemporary software, such as ERP solutions. This approach of centralizing software, the so-called monolith approach, is a result of a centralized team structure. Marketing, IT, e-commerce and sales were all separated in their own silo.

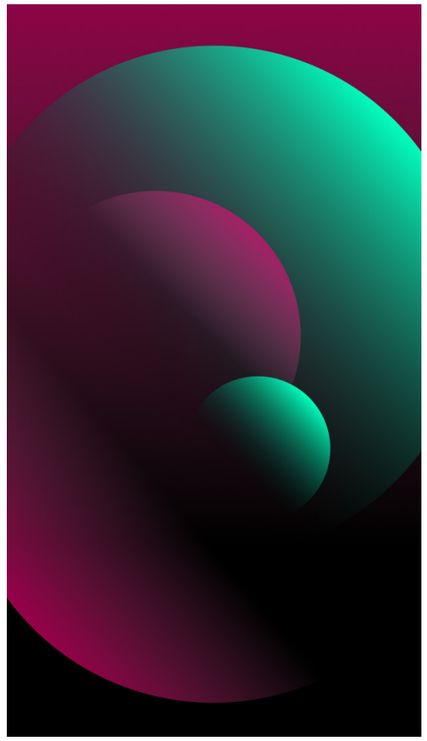
But as e-commerce developed and the customer's journey now touches all the different departments, these silos hold the customer data hostage. That prevents a 360-degree customer view.

To create those digital experiences that customers expect today, departments need to be restructured around the customer. The organizational solution is to createmultidisciplinary teams with members of different departments and give them customer goals. Key to this approach is local empowerment by giving these teams the responsibility for the customer and the required means and time. And of course, they'll also need the right tools and technology.

THE TECHNOLOGICAL CHALLENGE

The architecture is the hardest and most costly part to change for any business. It's the one thing in your organization you want to change the least. And yet, innovations and changing customer's behaviors are forcing organizations to think differently about their architecture.

How can you have a five-year plan when some unfathomable innovation can completely change your business? If, for example, voice commerce becomes the leading channel through which your customers want to order?
How quickly could you add this touchpoint and make it work together smoothly with your other touchpoints and back end? This is usually where things can get messy rather than quickly.



When you have separate applications for each touchpoint you'll need to feed all your touchpoints simultaneously with the same product information and marketing campaigns. In the background, you'll need to make sure orders are recorded in a structured way for efficient shipping. Additionally, all the customer interaction needs to be collected and processed centrally.

Typically, brands and retailers see two routes to take:

1. Rewrite the existing software to connect to emerging new touchpoint

2. Purchase new software to take care of the new touchpoint

Both options are undesirable in the long run. Rewriting software will introduce new complexity in an architecture that characteristically is already heavily customized. As each new requirement has to be documented and tested, the update cycles and time-to-market will get longer and longer. Purchasing the new software will have your organization facing a software mish-mash where parts are isolated and some or even all information stays locked in silos. While both options will certainly address your technological needs in the short term, it's quite clear that the market today demands a better solution.

THE MARKET CHALLENGE

The biggest challenge that brands are facing in an omnichannel world is to keep up. Or even better, to stay ahead of the competition. With consumer behavior and buying patterns changing so fast, companies need to become more agile. When new touchpoints or business requirements emerge, they have to be flexible to react without completely overhauling the IT landscape.

And yet, as a whole, the infrastructure should still provide a seamless, unified experience that inspires and offers convenience at the same time. Especially when disruptors and digital mature competitors start encroaching on your turf, you are forced to respond adequately. Because through expectation transfer14, the great experiences your competitors offer are now becoming expected by your customers too. That raises the bar. Improving the time-to-market of new functionality becomes paramount.

Only with rapid innovation can you build the lasting relationships that customers ache for and increase the customer lifetime value. What's called for is a customer-centric, consistent experience across all digital touchpoints and the infrastructure that can deliver. Headless commerce promises to do just that

ADAPTING TO CHANGE

"The amount of changes that organizations face is clearly on the rise.Some things may change by an organization taking the initiative, other things will change involuntarily. There are two types of change to deal with. First, there is business-driven change, which covers new revenue models, disruptive competitors, emerging channels, changing customer needs, market regulation and product innovation. These change your business requirements and use cases that you are addressing with your architecture. Second, there can be changes in the technical domain. Programming languages, libraries, framework tools and the operating environments can all change. Docker, for example, helped to bring container technology to the masses. Consequently, this revolutionized the way we use computer resources. For organizations today, the ability to adapt to change is the only thing that can secure future business."

- Kelly Goetsch,
CPO at commercetools

So what is Headless?

In this and the next chapter, we'll explore the background of headless commerce. It may sound like a term better skipped at the dinner table, but there is nothing supernatural about headless. It's a smarter way of running your application, which may feel strange since the head is usually where the brain sits. So, what is headless and how does it enable the creation of omnichannel shopping experiences?

Headless means it runs without a graphical user interface (GUI). All applications and hardware can be headless, but typically you'll see headless computers (most often servers) and headless websites. Without the GUI, inputs and outputs go via interfaces like network, serial port or command lines. The focus lies on efficiency and not on user-friendliness. Instead of developing a complex GUI that requires a graphics card or an interface like the mouse or keyboard, you can more easily monitor, maintain and automate the process.

AUTOMATIC REORDERING OF PRODUCTS

Amazon gives a prime example of headless with its Amazon Dash Replenishment Service (DRS). A consumer running out of coffee, dog food, water filters or laundry detergent can have it ordered automatically by a connected machine. In the background, the machine measures and tracks usage.

When supplies start running low, the machine connects with Amazon and places an order on behalf of the consumer. With companies like Whirlpool, HP, LG, Brother and Samsung connecting to DRS, ordering products without any interface is increasing worldwide.

MAKING THE WEBSITE HEADLESS

The internet started with static HTML offered by the website which was interpreted by the user's browser. With the rise of CMS came an extra layer of abstraction. The website owner puts his content in the database, usually PHP, which gets rendered into HTML. That's where most websites are now: software installed on the server that holds all the functionality to maintain the website and present its contents to visitors. The CMS provides a WYSIWYG experience: what you see is what you get. As you put content in the CMS you can immediately see how your changes impact the presentation.

The headless website adds another layer between the website editor and the end user. The front end where the website is presented, is decoupled from the back end where the website editor works on the content. In a headless website, the front end and back end operate separately from each other. They can be even placed on completely different servers.

The biggest advantages of going headless are performance and flexibility, because it allows you to optimize the front end and the back end independently.

THE HEAD – THE FRONT END

The head is the presentation layer of an application. For a website, it is the user interface (UI) visitors interact with by clicking their mouse or tapping buttons. The UI reacts to their input, by showing new information or performing tasks such as adding products to a digital shopping basket. Although the term front end implies a graphical user interface (GUI) displayed on some kind of screen, this is not the only possible interaction. There are many more variants regarding how man-machine communication can be structured:

These are only some of the current front ends that customers interact with today. Each of these brings itself its technical prerequisites and its own ecosystem, which can make it so messy to open a new front end. The headless approach, however, sets the frontend developers free from the conventions, rules and structures from the back end. They can focus completely on optimizing the user experience. Going headless doesn't mean you don't want to have a front end. On the contrary, it means you want to be able to easily switch front ends.

1. Voice devices like Amazon Echo and Google Home
2. Chatbots
3. Augmented Reality and Virtual Reality immersive experiences
4. Automobiles, through on-demand car functions (ODCF)
5. Smart Homes
6. Social Platforms
7. Digital Marketplaces
8. In-store experiences (In-store Web Browser, Endless Aisles, Guided Sales Tools)
9. Internet of Things (IoT) and Wearables
10. In-game/In-app transactions

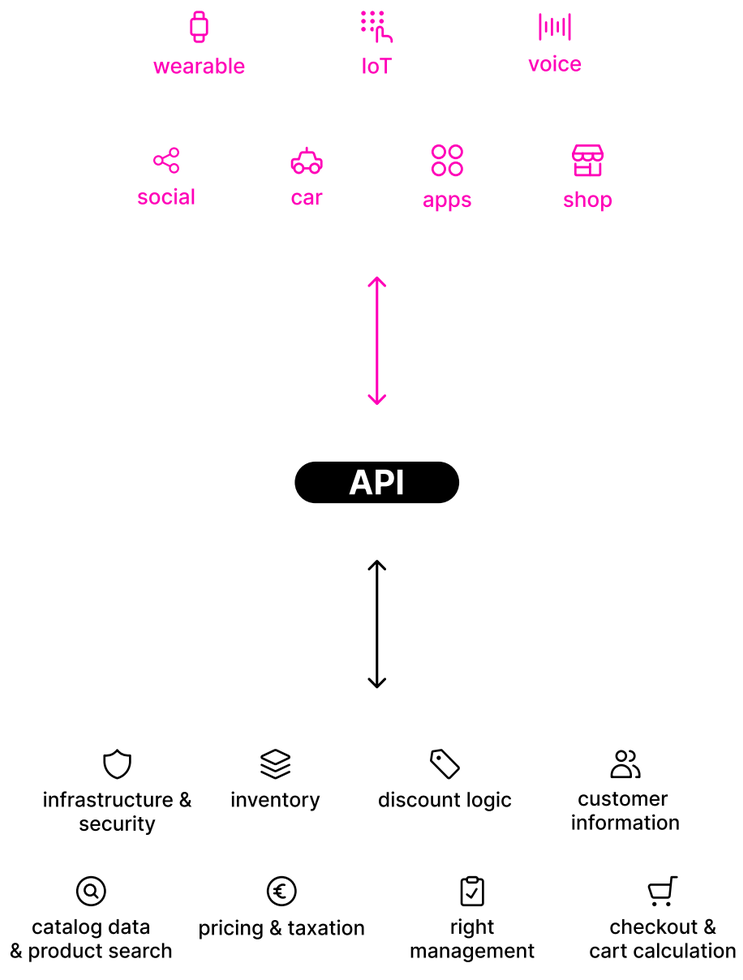
THE BODY: THE BACK END

The back end is where it all happens inside your organization. It's the operational layer that contains all the business logic and that's responsible for the data crunching and heavy lifting. Invisible in the background, the back end enables key functions like:

1. Infrastructure
2. Security and rights management
3. Master data management (MDM) and product information management (PIM)
4. Inventory and warehouse management
5. Pricing and taxation
6. Customer information, customer groups
7. Discount logic and sales campaigns
8. Checkout and cart calculation
9. Order and return processes
10. Management console/business user interface

These business functions are enabled by solutions like ERP, CRM, PLM, MDM and PIM, all of which are part of the back end. Basically, the back end consists of any application you might have running on your servers or in the cloud. By going headless, these functions can run entirely separately from the front-end interaction. Whether an order is placed through a mobile app or put in the system by an inside sales agent, the back end stores and processes it blindly.

Of course, something is missing in this picture. We need a fast, reliable and flexible way to pass data from the front end to the back end and vice versa. At the same time, we need to make sure to have a clear separation between the two. And this is where an API (Application Programming Interface) comes in.



API for bridging the front and back end

API is the layer that works as a glue between the front end and back end. Through API, all the information travels back-and-forth from the business processes to the presentation. That makes it possible to quickly connect a new application, turning every application into a service and making your infrastructure highly flexible.

WHAT ARE APIS?

We interact daily with several APIs. Whether you order online, make a reservation at your favorite restaurant or pay an invoice. In today's digital interactions, APIs are exchanging information in the background. APIs (Application Programming Interfaces) have emerged as the foundational currency for the web. Already some 20 years ago, we had the concept of silent commerce: transactions taking place digitally via API calls. Like, for example, a headless printer ordering its cartridges. Basically, APIs are like userinterfaces but for other software. This allows you to decouple the functionality and data from the presentation in a headless approach.

EVERYTHING AS A SERVICE

API can add functionality without having to develop an application from scratch. As long as an application can get its inputs and outputs through an API, it can be connected to your infrastructure and made accessible to other applications. API's make an application functionality accessible to other applications and turn it into a service. This drives a new wave of innovation as applications can easily connect and a best-of-breed strategy becomes possible. Through API, business processes can be shaped around the customer's expectations and experiences, which will lead to increased customer satisfaction and customer loyalty. As Forrester reports: "Firms that use APIs externally are nearly three times as likely to have revenue growth of 15% or more."

Take, for example, a fashion brand that opens up a new physical store in a new country. To make a successful entry, the brand will also want to accompany the launch with a local webshop. That requires translations, new payment methods, country-specific delivery options and a local approach. By using APIs the brand can efficiently channel translated content, add payment methods and connect to a local logistical system and marketing system. That saves time and costs for building a completely new webshop and enables the brand to make its launch on all channels.

THE BUSINESS POTENCY OF API

With customers today spending more time on mobile and social, connecting commerce systems through these channels is essential now for brands. The challenge lies in connecting the underlying systems: commerce systems were built for transactions and not for optimal experiences. On the other hand, the solutions for creating experiences, called Experience Management Systems, lack the transactional infrastructure. To create those shopping experiences that customers expect, you'll need to combine these two systems.

COMBINING COMMERCE AND CONTENT

Increasingly, customers are looking for inspiring shopping experiences that go beyond finding product data, price and availability. They also hunger for rich content like video reviews, product stories, designer notes, selection wizards and entertaining yet editorial content. Through these types of content, brands can build an emotional connection with their customers that transcends the transactional and becomes more relational and loyal. That's where you are working towards a Digital Experience Platform (DXP)16, a structured approach to building the best customer experiences possible.

THE API-LED COMMERCE

When the whole infrastructure consists of applications that work together like a welloiled machine, adding new channels and features becomes as simple as adding a new building block. Developers can focus on a specific business domain and don't need to consider the overall implications. Developing new products and services will go faste and the innovation time-cycle will shorten. That's where the true potential of APIs lies. Where today a PriceAPI serves the mobile shopping app and the electronic shelf display, tomorrow it can service a new channel that suddenly becomes the bee's knees, like the smartwatch for example. The underlying commerce functionality stays the same, only the presentation layer changes. Not having to develop the entire pricing logic for every new touchpoint saves a lot of time and speeds up the time-to-market.

WANT TO KNOW MORE ABOUT MICROSERVICES? CHECK OUT OUR WHITEPAPER:

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HEADLESS DOES NOT EQUAL MICROSERVICES

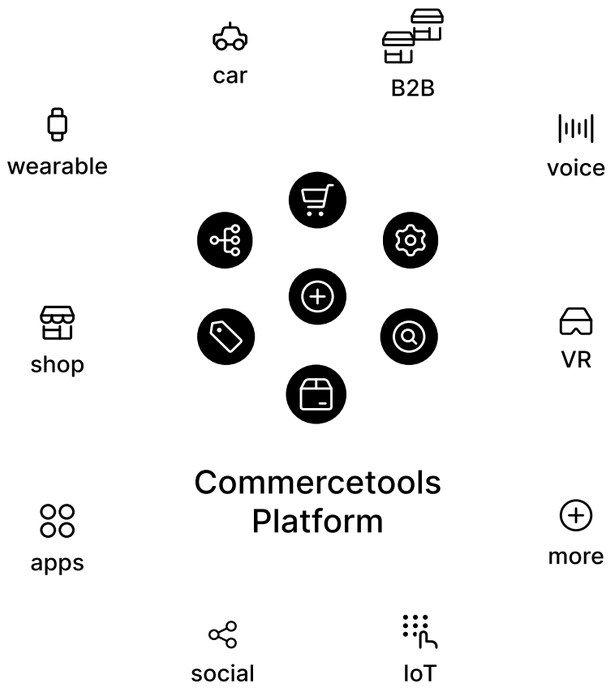
"Another term you will often see in connection with headless commerce and API, is microservices. These are a software development technique that structures an application as a collection of loosely coupled services. So, instead of one application to handle your e-commerce for example, you have several microservices working independently. One microservice may handle the payment process, while the other adds products to the basket. To consider the headless commerce architecture does not naturally mean you'll also have to consider microservices. There are many full-suite headless solutions available, such as Bloomreach or Adobe Experience Manager that can take fully care of the presentation layer. Microservices simply go one step further and allow you to decouple every part of the system."

- Mark Blockhuys,
Managing Director, SQLI Netherlands

Summary and Outlook

Decoupling front end and back end helps brands and businesses to create those omnichannel shopping experiences that their customers crave for. Today and tomorrow, since the headless architecture allows for rapid innovation and time-to-market of new functionality.

And yet, going headless is not suitable for every organization. Just like every other architecture, there also downsides next to the benefits. In the second part of this white paper series, we'll address the choice for headless commerce: what are the pros and cons? And how will choosing headless will impact my organization?



About SQLI

At SQLI, we craft digital experiences that define the success of great brands and companies. Being around since the '90s, we have a proven track record in e-commerce and creating digital experiences. We do this by engaging customers and driving business, based on a sound technology.

SQLI.COM

About Commercetools

Commercetools, the next-generation software technology company that offers a true cloud commerce platform, provides the building blocks for the new digital commerce age. An agile, componentized architecture improves profitability by significantly reducing development time and resources required to migrate to modern commerce technology and meet new customer demands. It is the perfect starting point for customized microservices.

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Do you want to know more about evolutionary architecture and microservices?

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