COMMERCE & PAYMENT PLATFORMS

Is e-Commerce Losing Its Head?

Strategies for Modernizing E-Commerce · February, 2020

KEY ISSUES

How will e-commerce technology stack evolve?

What is the business case for headless commerce?

What are the realistic adoption scenarios for headless commerce?

Who are the winners and losers in the e-commerce platform market?

E-Commerce platforms are generally viewed as a relatively modern element of an enterprise stack. But in our view, it is one area that is significantly overdue for renovation. In this research note we examine the role that a headless commerce concept can play in helping modernize e-commerce capabilities.

For all the talk about omnichannel and e-commerce innovation, most e-commerce operations today are still supported by aging stove-piped systems that struggle with limited capability, inconsistent back-ends and high operating costs.

The pace of change in key e-commerce markets such as retail is now exceeding the pace of innovation of the underlying technology. The collapse of the mall as the hub of retail and its rebirth as an experiential destination, retail-as-entertainment (RaE), shift to retail pop-ups, new payment methods, subscription retail and direct to consumer custom premium brands, pricing and customer targeting via machine learning and AI, the intersections of online and offline commerce and the rapid consumerization of B2B are just a few of the highly dynamic trends that are shaping the business and technology priorities in e-commerce.

The majority of the installed e-commerce technology base is aging rapidly and not able to keep up with emerging requirements of modern retail, B2B and global commerce players or be an enabler of a sustainable competitive advantage. To a business person most e-commerce platforms appear as black boxes that have limited functionality, have a lot of constraints and require a lot of highly trained experts. In this context, any realistic prospect of higher agility, more flexibility and faster time-to-market sounds as an attractive value proposition.

Among current innovations in e-commerce, headless commerce (HC) is a concept that holds above average potential. HC is a technology architectural concept that effectively decouples e-commerce front-ends that supports core presentation and UX functions from back-end components that support core monetization functions such as billing, payments, order management and provisioning.

What Does "Headless" Commerce Mean?

Traditional e-commerce architectures evolved in the late 1990s and early-to-mid 2000s. A typical first-generation commerce platform would incorporate all of the key functions needed to conduct commerce over the web (see Fig.1 below).

Traditional E-Commerce Platform

Interfaces to Customer Service, Financials/ERP, Enterprise Security				
Product Catalog	**Price Books**	**Billing + Invoicing**	**Order Management**	**Fulfillment + Provisioning**
Payment Processing	**Risk Management**	**Tax**	**Compliance**	**E-Store Management**
BUSINESS RULES				
Presentation Logic - UX				

Figure 1 - Traditional (1st generation) e-Commerce Platform Architecture

One of the objectives of the 1st generation e-commerce platforms was to hide the perceived web complexity from enterprises still inexperienced with Internet technologies. These were monolithic systems that had some API capability but whose primary user interface design point was the web browser. There was little ability to interface to these e-commerce systems programmatically. These systems also offered only a limited amount of flexibility or extensibility. Companies were limited to whatever user experience capabilities were available with the system. Developing context-specific interfaces, such as for example to support a channel partner or an OEM, presented a

meaningful challenge. By adopting such 1st generation e-commerce platform a company would become speed-constrained – they could only move as fast in terms of innovation as their platform supplier.

In a traditional commerce technology stack the front-end systems are tied together with the back-end. Any addition of a new channel, a new product or new pricing models led to a lot of changes and therefore reduced agility. Many companies ended up owning multiple e-commerce platforms – each one optimized for a specific target market – one for web retail, one for mobile, one for B2B, one for Europe and one for North America. This led to severe overlap and function duplication and an impossible maintenance task.

By contrast, Headless Commerce is all about decoupling of the front-end and back-end systems, the 'head' refers to front end systems such as devices, channels and points-of-sale that are used to interact with and sell to customers, partners, OEMs.

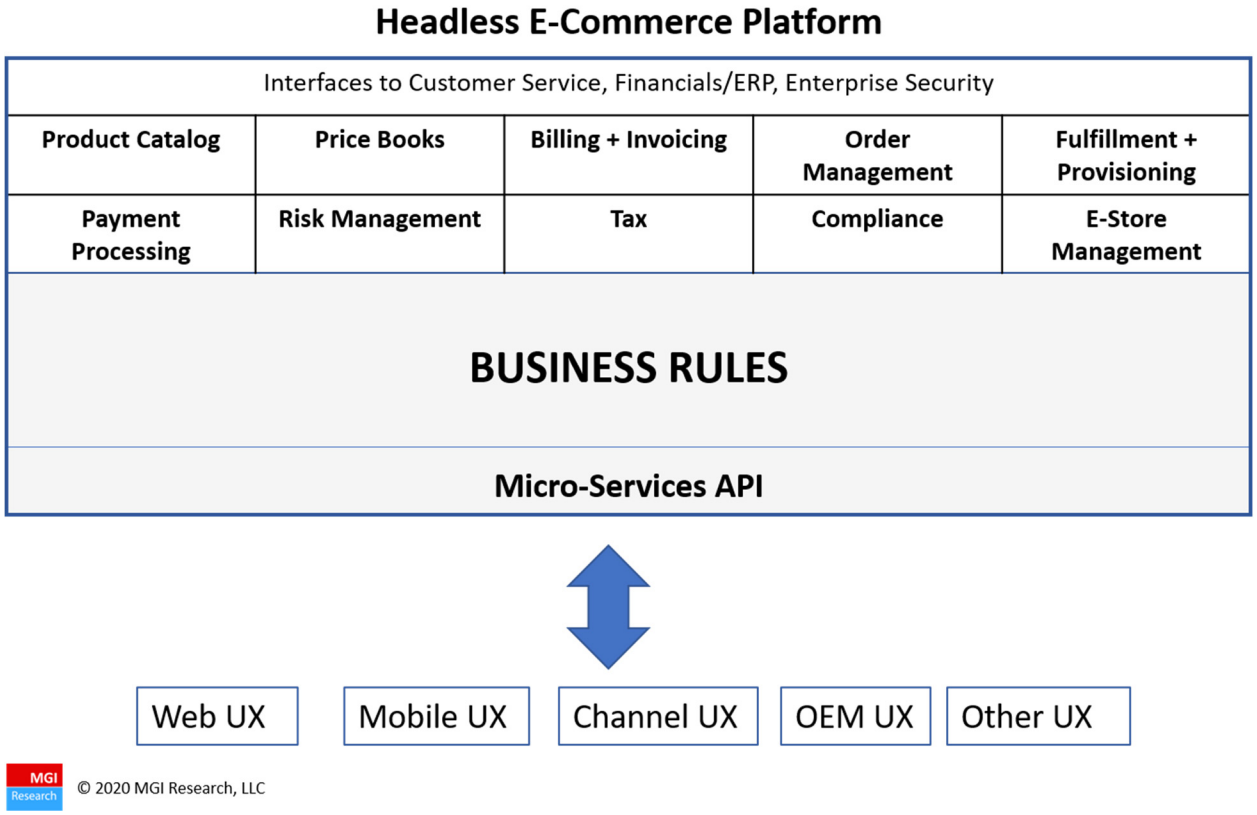

Figure 2 - Headless E-Commerce Platform Architecture

The result of the back-end systems being decoupled from the front-end means that a new or updated shopping experience in the mobile

channel has no impact on the payments system. It also means that change on the back-end, say an introduction of a new product or service, is available immediately across all channels. This reduces function duplication and reduces or eliminates the need to have multiple e-commerce platforms.

Key in this decoupling is the availability of Microservices API's as a method for creating new e-commerce instances. In a 2nd generation headless commerce technology the design point shifted away from a web browser towards a programmatic access to all key e-commerce functions. All of e-Commerce capabilities including business rules, back-end capabilities for billing, tax, compliance and others, can be accessed via a browser, natively via a variety of mobile devices, programmatically via internal or 3rd party systems belonging to channel partners, resellers and OEMs.

Reality Check

The term Headless Commerce is a misnomer as headless commerce is not really headless. It is loosely coupled and modular as opposed to tightly coupled and monolithic (see Fig. 3 below).

Transition from Traditional to Headless E-Commerce Architecture

TRADITIONAL E-COMMERCE PLATFORM ARCHITECTURE		HEADLESS E-COMMERCE PLATFORM ARCHITECTURE
Monolithic – sold as a unified solution only		Modular, can be acquired on a component basis
Tightly Coupled		***Loosely Coupled***
Slow to evolve		Agile
Difficult to maintain		Modular maintenance
Limited API		Robust micro-Services API

Figure 3 - Transition from Traditional to Headless E-Commerce Architecture

A robust programmatic API capability is the "acid test" of any commerce platform claiming to be headless.

We expect that by 2024, over 60% of enterprise-oriented e-Commerce implementations world-wide will incorporate a headless commerce capability as a feature.

On the supply side, the more modern e-commerce platforms will be natively built as a headless only offerings while the incumbent vendors will face an uphill task of modernizing their aging technology stacks. Yet, headless does not have to be a black and white type of strategy.

It is important to note, that being headless does not mean that an e-Commerce platform would totally lack any capability to construct user experiences or re-use a few out-of-the-box pre-built models. Not having model UX components has proven to be a barrier to product selection and adoption.

Within companies of all sizes there are opportunities for both modern, headless-native bare-bones, API-only commerce capability and for more more enterprise-oriented hybrid systems where headless is a baseline feature. Most e-commerce platform providers (e.g. Digital River, Nexway, et al) are already beginning to offer headless as a feature while also offering design libraries to allow for a rapid start. Several other Merchant of Record (MoR) providers are going headless and focusing on the backend functions such as payments, order management, chargeback handling and VAT settlement or advice depending on the business model used. So, it is not as much of a headless solution as it is loosely coupled e-commerce platform.

Headless does not mean brainless as this approach actually allows companies to increase focus on building more intelligence into the core back-end engine. This is especially valuable for larger B2B oriented firms.

The concept of headless architecture has been gaining traction in recent years across a spectrum of software disciplines e.g. Content Management, billing systems.

Key Drivers for Headless Commerce

One of the key drivers of headless commerce is the increasing overall complexity. First and foremost, the complexity manifests itself

through the exploding number of intersections of channels, pricing and payment methods.

Then there is the hardware and software platform complexity. Mobile is continuously increasing its share. Data from recent Black Friday sales points to a 70% share for mobile phones with desktops, laptops and even tablets losing share of transactions. On the horizon is the emergence of 'voice commerce' thru devices such as Amazon Alexa and Google Home. In Asia there is significant growth in "assisted commerce" with chat supporting or completing the buying journey. When one adds to this the huge variety of form factors and underlying software, operating systems and hardware combinations, the full picture of the level of complexity emerges.

Dealing with exponentially rising complexity through monolithic e-commerce platforms is not a realistic option. A modular, loosely coupled, programmatic-API system is a much better fit. The headless systems are much better at quickly adapting to changing customer demands and channels without having to make changes to the back-end.

Benefits of Headless Commerce

Headless commerce is not just a neat technology model but does translate into meaningful business benefits.

True Omni-Channel Enablement: By reusing the same back-end capability, headless commerce allows organizations to truly enable their omni-channel strategies where all points of sale work through the same consistent set of business rules, data, prices and compliance methods. This reduces risks, enables faster time-to-market and reduces overall costs. The economic case for headless commerce could be built on elimination of duplicate functionality alone.

Contextual UX: While supporting omni-channel objectives, headless architectures enable creation of context-tailored user experiences: direct web retail, in-store kiosks, resellers, OEMs, B2B/B2b, government, education, customers in specific industries and geographies. This supports faster time to market, gains in market share and reduced discounting.

Reduced Maintenance, Increased Flexibility: Headless commerce reduces or eliminates the need for changes in the back-end when changes are made to the front-end. It also enables a best of breed strategy whereby the best technology vendor is chosen for UX in each channel while creating a plug-and-play environment not only for the front-end but also for the back-end. For example, with headless commerce, it is far easier for organizations to utilize different payment providers for different UX channels.

Increased Agility and Faster Time-to-Market: New products or services can be implemented a lot more quickly as any changes to the overall system are incremental rather than fundamental. Moreover, changes can be isolated to specific UX channels and thus be largely isolated from the rest of the enterprise. For example, new currencies, new logos can be introduced on a trial basis for a specific UX channel. Companies also gain the ability for faster testing of concepts through mechanisms such as A/B Testing. For example, commerce leaders are continuously testing, measuring and adjusting their front-end solutions. Travel services firm Booking.com has at least 1,000 low-level production A/B tests running at any given moment trialing at scale user interfaces, verbiage and pricing offers. This is a scenario that would have been impossible with a monolithic e-commerce architecture.

Smarter Resource Allocation: By separating the front-end from the back-end, merchants can focus specialized internal or external resources on specific areas of either back-end or the front-end. For example, in a multi-national firm headless commerce can make it possible to hire a local firm with specialized front-end UX expertise in a specific market and/or geography while relying on a rich set of capabilities developed by the parent for the back-end.

Channel Consistency: With the product catalog located in the back-end each front-end will use the same data source and provide shoppers and channel partners with consistent product & pricing information regardless of the channel they use. At the same time, any updates or a new product or service are instantly visible across all channels. Such data discipline enables new business opportunities such as pick-up commerce where a shopper starts a transaction with a discovery via Instagram on a mobile device, fills out the details on a desktop and picks up the merchandise in a physical store.

The Risks in Headless Commerce

For all the benefits and flexibility, headless commerce strategies are not risk-free.

Adoption of headless commerce places increased emphasis on maintaining discipline in UX implementations. As the ability to implement interfaces is distributed, there is a need for standards and enforcement mechanisms to insure consistency of the user experience, branding, privacy policies and standard content such as logos.

Inevitably, as e-commerce systems evolve from monolithic to decoupled and distributed, processes and practices become more difficult to standardize. Organizations run the risks of not being able to maintain predictable standard procedures or to collect and enforce best practices.

Technical support also becomes more challenging as customer care organizations now have to become familiar with a multiplicity of UX models. Any deployment of a headless commerce capability must be accompanied by an assessment of how support will be provided and paid for.

Action Items: What Can Companies Do Now?

In an increasing complex commerce environment Headless Commerce offers an opportunity to gain flexibility, consistency, efficiency, access to new business opportunities and potential to grow revenues and market share. It allows

Most e-commerce platforms and their implementations today do not follow the headless commerce model, but we expect adoption to accelerate rapidly into 2021-2022.

Any organization contemplating a move to headless commerce needs to start with an assessment of what e-commerce capability is in place, what are the key operating metrics and how are current systems either meeting or falling short of core business objectives. Going to headless commerce should not be an end in itself. Commerce systems that have clear operational gaps vs objectives should be prime candidates for the headless commerce approach. Most of the brand new e-commerce systems are likely to adapt the headless commerce architectural model.

Any adoption of headless commerce architecture entails a meaningful degree of risk and should include a practical strategy and plan that covers technology, skill sets and hiring plan, process modifications, definitions of any internal standards, security and disaster recovery review, budget plan, metrics, best practices and intentory of key internal and external resources. Companies need to undersrand both the opportunities afforded and potential risks exposed.

Lastly, outside expertise from other organizations, best practices groups, software suppliers and service providers is invaluable at containing any risks.

BOTTOM LINE

Headless Commerce presents a compelling vision for modernizing aging e-commerce platforms and opening up new business opportunities. We expect the majority of greenfield e-commerce implementations to adapt a headless architectural model. As older e-commerce systems are modernized, a share rising to majority by 2024 will be updated to include a headless option that will de-couple front-end UX component from back-end processing capability. The move to headless commerce presents many potential benefits but can also expose non-trivial risks. Organizations seeking to put headless commerce to practical use are best served by seeking out validated industry use cases and starting out with small scale pilot applications to demonstrate efficacy and key metrics.