Mobile Media Usability: 
Evaluation of Methods for Adaptation and User Engagement

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ABSTRACT
With the evolution of smartphones and tablets, mobile devices have quickly become the primary means by which consumers interact with web-based media. Media managers and content developers simply cannot ignore this shift. The problem lies in maintaining content designed for multiple devices and platforms; it puts pressure on the developer to juggle different versions of the same site. The industry’s answer to this problem has been the creation of automated adaptation techniques as a means of device-agnostic media delivery. However, how do these techniques handle usability? Do they improve the experience or simply mirror the content? Increased usability can lead to higher levels of user satisfaction and engagement. Therefore, media managers should be cognizant of these effects. This article presents a study of techniques in content adaptation and the factors that influence the success of media distributed on mobile platforms. Included is an analysis of the advantages and disadvantages of current methods and techniques along with consideration for future technologies.

KEYWORDS
Adaptive Design, Augmented Content, Input Factors, Media Delivery Frameworks, Mobile Media, Mobile Usability, Responsive Design

INTRODUCTION
Mobile devices are incredibly powerful tools for engaging customers. Providing a host of unique features such as location-based GPS signals, social media integration, wireless connectivity, and camera integration, mobile platforms have become a ubiquitous presence in everyday life. Consumers use mobile devices for a variety of activities and purposes including communication, entertainment, information gathering, and commerce. Mobile usage has become so popular that mobile web traffic has exceeded traditional desktop traffic. Mobile devices were responsible for 60% of all video views in 2017 (Williams, 2018). In 2018, 40% of all ecommerce purchases during the holiday season were made on a smartphone (Smith, 2019). To satisfy the demand, retailers are now focusing heavily on mobile media integration that includes creation of mobile websites and apps, messaging on mobile platforms, mobile advertising, coupon transactions, and customer service. This can lead to higher customer engagement with the company and can yield a better return on investment (Dickinger & Kleijnen, 2008).

DOI: 10.4018/JMME.2020010106

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A key attributing factor to a customer’s level of engagement with mobile media is its usability. Usability is the overall level of effort required and satisfaction gained from using an interface. Usability specifically measures attributes like ease of use, learning and recall times, error rates, efficiency levels, and general user satisfaction (Budiu & Nielsen, 1992). Greater levels of usability are associated with lower levels of difficulty in operation; therefore, usability is traditionally considered a predictor for continued use of software (Teo, 2006). This has translated over to the mobile environment; in one study on the role of usability in mobile banking, usability was found to have positive impact on customer satisfaction and company preference for future interactions (Thakur, 2014). Over 70% of users are more likely to revisit sites that are tailored to be mobile-friendly (Miller, 2012). Usability and the User Experience (UX) is a component of the Customer Experience (CX) and plays a significant role in the reputation of a brand and customers’ loyalty to the brand (Lowden, 2014).

Unfortunately, mobile media faces significant usability challenges. Studies show that desktop sites exhibit poor usability metrics when accessed on mobile devices (Gallant, Boone, & LaRoche, 2014). A mobile device contains operational factors that can affect cognition, create distraction, limit efficiency, and inhibit usability. There are inherently more distractions that have negative impacts on both usability and performance (Deegan, 2014). Smaller screen sizes necessitate serious consideration for content inclusion. One study revealed that having to enlarge a mobile screen to touch a link or button is the single most frustrating usability issue for mobile users (Silver, 2016). Another revealed that 69% of users find that “excessive form field requirements” will stop them from completing general inquiry form (KoMarketing, 2016). In an environment where screen real estate is premium, the decision about which elements to keep requires an understanding of the usability implications.

Sites that do not adapt to mobile landscape are finding themselves losing a larger share of audience and revenue. They force mobile users to rely on features like browser zooming to interact with media on a smaller screen (Budiu, 2016). Even those that do consider mobile may be simply porting content without taking usability into account. Usability is often overlooked due to time and budget constraints. Although users prefer mobile-friendly or mobile-tailored webpages, only larger organizations can typically afford to maintain both desktop and mobile versions of their content. What options are available to smaller media companies and entrepreneurs? What techniques and strategies can help mobile media content providers reach their target audience without forgoing usability? Media managers cannot simply assume that media generated for one platform will succeed on another.

This paper will address various mobile media delivery strategies available, specifically with regards to usability. While these strategies may be commonly used, their effect on usability is not well understood in the literature. First, a review of the various factors that affect mobile usability will be provided to highlight the areas that mobile content display systems need to consider. These factors are divided into two sections, “Input/Output” factors that define the nature of the device, such as interaction mechanics, and “Content” factors that define the nature of the content, such as context, audience demographics, and sociological influence. Next, mobile content delivery strategies will be presented and discussed in detail, particularly the mechanics of responsive and adaptive design as well as commonly used frameworks. It is important to understand the underlying mechanics; this not only affects the usability of output, but also time and resource demands. Within a framework, adaptation mechanisms, such as compression, scaling, and segmentation, may be implemented to aid in content conversion. These mechanisms may be used alone or in combination with others to different effects. This paper will identify their advantages and disadvantages as well as issues and gaps in the larger frameworks. The analysis section will also identify appropriate tools and resources for developers. Finally, upcoming technologies that will affect mobile usability are presented and discussed. This will help media managers plan for future usability needs and keep pace with the shifting mobile media landscape. Ultimately, this paper will help media developers choose their mobile strategies, incorporate usability efficiently, and foster higher levels of engagement and loyalty.

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