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# EXAMINING THE EFFECT OF SMART TV FEATURES ON VIEWING EXPERIENCE IN SAUDI ARABIA

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**Abstract**

This study examines the impact of Smart TV features on viewing experience in Saudi Arabia within the context of rapid digital transformation and increasing adoption of intelligent media technologies. The study focuses on four key Smart TV features: interactivity, personalization, ease of use, and content accessibility, and investigates their influence on users' viewing experience. A quantitative research design was employed using a cross-sectional survey method. Data were collected from 312 Smart TV users in Saudi Arabia through an online questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4. The findings reveal that all Smart TV features have a positive and significant effect on viewing experience. Personalization emerged as the strongest predictor, followed by content accessibility, interactivity, and ease of use. The results further indicate that Smart TV technologies enhance user engagement, satisfaction, and immersion by enabling personalized and accessible media consumption experiences. The model demonstrated strong explanatory power and predictive relevance, confirming the importance of technological affordances in shaping contemporary viewing behavior. The study contributes to the literature on digital media and consumer behavior by providing empirical evidence from the Saudi context, where digital adoption and platform-based media consumption are rapidly expanding. Practically, the findings offer valuable insights for media organizations, content providers, and technology developers seeking to improve user experience and strengthen competitiveness in the evolving digital entertainment environment.

**Keywords:** Smart TV; Viewing Experience; Personalization; Interactivity; Content Accessibility; Saudi Arabia.

## 1. INTRODUCTION

The rapid advancement of digital technologies has fundamentally transformed the global media landscape, reshaping how audiences access, consume, and interact with audiovisual content. Within this evolving environment, Smart TVs have emerged as a pivotal technological innovation that integrates traditional broadcasting with internet-based services, creating a hybrid media ecosystem characterized by interactivity, personalization, and on-demand accessibility (Huang & Rust, 2022; Verhoef et al., 2022; Dwivedi et al., 2023; Chatterjee et al., 2023; Zhang et al., 2023). This transformation reflects a broader shift toward platform-based and data-driven media consumption, where

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users are no longer passive recipients of content but active participants in shaping their viewing experiences (Davenport et al., 2023; Sundar et al., 2023).

In this context, Saudi Arabia represents a particularly compelling setting for examining the impact of Smart TV technologies on viewing experience. The country has experienced a rapid digital transformation, characterized by high internet penetration, widespread adoption of smart devices, and a predominantly young, tech-savvy population. These developments have been further accelerated by national initiatives such as Saudi Vision 2030, which emphasize digital innovation and the expansion of the entertainment and media sectors. As a result, the Saudi media landscape has shifted from traditional broadcasting toward a more interactive and platform-driven environment, where Smart TVs play a central role in delivering integrated and personalized content experiences.

Unlike conventional television, which operates within a linear broadcasting framework, Smart TVs enable nonlinear and on-demand viewing through integrated applications, streaming platforms, and algorithm-driven recommendation systems. These capabilities enhance user control and flexibility, allowing audiences to curate content based on their preferences, behaviors, and viewing histories (Kim & Lee, 2022; Lim et al., 2022; Van Esler, 2023). Consequently, the concept of viewing experience has evolved into a multidimensional construct encompassing cognitive engagement, emotional immersion, and behavioral interaction, all influenced by technological affordances (Sundar et al., 2023; Dwivedi et al., 2023). In particular, interactivity and personalization have been identified as critical drivers of user engagement, as they enhance user control and deliver tailored content experiences (Huang & Rust, 2022; Verhoef et al., 2022; Davenport et al., 2023).

Despite the increasing adoption of Smart TVs in Saudi Arabia, existing research remains limited and largely focused on streaming platforms rather than the device itself as an integrated technological ecosystem. Moreover, prior studies tend to examine technological attributes in isolation, with limited attention to how multiple features—such as interactivity, personalization, ease of use, and content accessibility—collectively influence user engagement and viewing experience within the Saudi context (Chatterjee et al., 2023; Zhang et al., 2023; Dwivedi et al., 2023). This gap is particularly significant given the unique socio-cultural and digital characteristics of the Saudi market, which may shape media consumption behavior differently from other contexts.

Accordingly, this study aims to investigate the role of Smart TV features in reshaping the viewing experience in Saudi Arabia, with a particular focus on the mediating role of user engagement.

By addressing this gap, the study contributes to the literature on media technology and consumer behavior by providing context-specific empirical insights into how emerging media devices influence audience interaction and satisfaction. Furthermore, the findings offer practical implications for media organizations, broadcasters, and technology developers seeking to enhance user experience and maintain competitiveness in a rapidly evolving digital media environment.

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## 2. RESEARCH STATEMENT

Despite the rapid growth of Smart TV adoption and the increasing integration of digital media technologies, the existing literature remains largely concentrated on developed Western markets, with limited empirical evidence from emerging digital economies such as Saudi Arabia. While prior research has extensively examined user behavior within streaming platforms, it often overlooks the role of Smart TV as an integrated technological ecosystem that mediates the interaction between users and content (Dwivedi et al., 2023; Chatterjee et al., 2023). This narrow focus limits the understanding of how device-level technological affordances shape user engagement and overall viewing experience. Moreover, existing studies tend to investigate individual technological attributes—such as personalization or interactivity—in isolation, rather than adopting a comprehensive framework that captures their combined and interactive effects (Verhoef et al., 2022; Zhang et al., 2023). This fragmented approach fails to reflect the complex and multidimensional nature of Smart TV environments, where multiple features simultaneously influence user behavior. In addition, limited attention has been given to the mediating mechanisms through which these technological attributes translate into enhanced viewing experiences, particularly the role of user engagement as a central explanatory construct.

Within the Saudi Arabian context, this gap becomes even more critical. The country has undergone a rapid digital transformation, characterized by high internet penetration, widespread adoption of smart technologies, and a young, digitally oriented population. Despite these unique characteristics, empirical studies examining how Smart TV features influence user engagement and reshape the viewing experience in this specific cultural and technological setting are scarce. Furthermore, existing research has not sufficiently explored how the interaction between interactivity, personalization, ease of use, and content accessibility contributes to user engagement and, subsequently, to viewing experience in Saudi Arabia. Accordingly, this study addresses these gaps by proposing an integrated conceptual model that examines the impact of key Smart TV features on viewing experience, with a particular focus on the mediating role of user engagement in the Saudi context. By doing so, the study contributes to extending the literature on media technology and consumer behavior beyond Western settings, while providing context-specific insights relevant to rapidly evolving digital media markets.

## 3. RESEARCH OBJECTIVES

This study aims to examine the role of Smart TV features in shaping the viewing experience within the Saudi Arabian context. Specifically, the study seeks to achieve the following objectives:

- To examine the impact of interactivity on viewing experience in Smart TV usage.
- To analyze the effect of personalization on viewing experience in Smart TV environments.

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- To assess the influence of ease of use on viewing experience when interacting with Smart TVs.
- To evaluate the role of content accessibility in shaping the viewing experience.
- To investigate the overall impact of Smart TV features on viewing experience in Saudi Arabia.

## 4. RESEARCH SIGNIFICANCE

This study contributes to the literature on media technology and consumer behavior by examining how Smart TV features shape the viewing experience within a rapidly evolving digital environment. While prior research has primarily focused on streaming platforms, limited attention has been given to the Smart TV as an integrated technological ecosystem influencing user experience (Dwivedi et al., 2023; Chatterjee et al., 2023). By investigating key features such as interactivity, personalization, ease of use, and content accessibility, this study extends existing knowledge on technology-driven media consumption (Verhoef et al., 2022; Sundar et al., 2023). In the Saudi Arabian context, the study is particularly important due to the country's rapid digital transformation and high adoption of smart technologies. Despite these developments, empirical studies examining Smart TV usage and its impact on viewing experience remain scarce, highlighting the need for context-specific research (Davenport et al., 2023; Zhang et al., 2023). Practically, the study provides valuable insights for media organizations and technology providers by identifying the key factors that enhance viewing experience, thereby supporting improved content delivery strategies and user experience design in an increasingly competitive digital media environment.

## 5. LITERATURE REVIEW AND RESEARCH HYPOTHESIS

### 5.1 Digital Transformation of Media and Viewing Behavior:

The rapid evolution of digital technologies has fundamentally transformed the structure and dynamics of the global media industry, leading to a profound shift in how audiences access and consume content. Traditionally, television operated within a linear broadcasting model characterized by scheduled programming and passive audience engagement. However, the emergence of internet-based platforms and smart technologies has disrupted this paradigm, giving rise to a more flexible and user-centered media environment (Verhoef et al., 2022; Dwivedi et al., 2023). In this new landscape, media consumption is increasingly driven by user preferences, real-time access, and interactive capabilities, reflecting a transition toward a more participatory and personalized viewing experience.

This transformation is closely associated with the rise of on-demand streaming services and digital platforms, which have redefined the boundaries between traditional and new media. Audiences are no longer constrained by time or location, as they can access content across multiple devices, including smartphones, tablets, and Smart TVs. This shift has contributed to the fragmentation of audiences and the emergence of individualized

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viewing patterns, where users actively select, control, and engage with content based on their specific needs and interests (Davenport et al., 2023; Sundar et al., 2023). Consequently, the concept of media consumption has evolved from a passive reception process to an active, interactive, and experience-driven activity.

Moreover, the integration of advanced technologies such as artificial intelligence, machine learning, and data analytics has further accelerated this transformation. These technologies enable media platforms to analyze user behavior and deliver personalized content recommendations, thereby enhancing user satisfaction and engagement (Huang & Rust, 2022; Chatterjee et al., 2023). As a result, the viewing experience has become increasingly dynamic and tailored, reflecting the growing importance of user-centric design in digital media environments.

In the context of Saudi Arabia, this transformation is particularly significant due to the country's rapid digital development and high levels of technology adoption. The widespread availability of high-speed internet, coupled with a young and digitally engaged population, has facilitated the transition toward digital media consumption. As audiences increasingly shift from traditional broadcasting to digital platforms, new patterns of viewing behavior have emerged, characterized by greater interactivity, personalization, and control. These changes highlight the need for a deeper understanding of how modern media technologies, particularly Smart TVs, contribute to shaping contemporary viewing experiences within the Saudi context.

### 5.2 Smart TV as an Integrated Media Platform:

The emergence of Smart TVs represents a significant evolution in the media ecosystem, as it bridges the gap between traditional broadcasting and digital media platforms. Unlike conventional television, which is limited to linear content delivery, Smart TVs function as integrated media platforms that combine internet connectivity, interactive applications, and streaming services within a single interface. This integration has transformed the television from a passive viewing device into an active, user-centered technological system that enables greater control, flexibility, and engagement (Kim & Lee, 2022; Van Esler, 2023).

From a technological perspective, Smart TVs operate as part of a broader digital ecosystem, where multiple services and platforms converge to deliver a seamless viewing experience. Users can access a wide range of content through applications such as streaming services, social media platforms, and web-based media, all within the same device. This convergence reflects the broader concept of media integration, where traditional and digital media are no longer distinct but interconnected within a unified technological environment (Verhoef et al., 2022; Dwivedi et al., 2023). As a result, Smart TVs play a central role in shaping contemporary media consumption patterns by facilitating continuous and on-demand access to content.

Moreover, the integration of advanced technologies such as artificial intelligence and data analytics further enhances the functionality of Smart TVs. These technologies enable personalized content recommendations based on user behavior, viewing history, and

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preferences, thereby increasing relevance and engagement (Huang & Rust, 2022; Davenport et al., 2023). In this sense, Smart TVs are not merely content delivery tools but intelligent systems that actively influence user decisions and viewing patterns. This shift highlights the growing importance of technological affordances in determining how users interact with media content.

In addition, Smart TVs support interactive features that allow users to navigate, select, and control content in real time, which significantly enhances the viewing experience. This level of interactivity distinguishes Smart TVs from traditional media devices and aligns with the broader trend toward user empowerment in digital environments. Consequently, Smart TVs can be conceptualized as a central interface that mediates the relationship between users and digital content, shaping both the process and outcomes of media consumption.

Within the Saudi Arabian context, the role of Smart TVs becomes even more pronounced due to the country's rapid adoption of digital technologies and the increasing demand for flexible and personalized media experiences. As audiences continue to shift toward digital and on-demand content, Smart TVs serve as a key platform that enables this transition, thereby redefining the nature of viewing behavior and experience in the modern media landscape.

### 5.3 Smart TV Features:

#### 5.3.1 Interactivity:

Interactivity has emerged as a fundamental characteristic of modern digital media environments, reflecting the shift from passive content consumption to active user participation. In traditional television, audiences had limited control over content selection and viewing processes, as programming was predetermined and linear. However, the integration of interactive technologies in Smart TVs has transformed this dynamic by enabling users to actively engage with content through navigation, selection, and real-time control features (Sundar et al., 2023; Kim & Lee, 2022). This transformation highlights the increasing importance of interactivity as a key determinant of user experience in contemporary media systems.

From a theoretical perspective, interactivity is often conceptualized as the degree to which users can influence the form and content of mediated communication in real time. In the context of Smart TVs, interactivity is manifested through functionalities such as browsing applications, switching between streaming platforms, pausing and replaying content, and engaging with interactive interfaces. These capabilities provide users with a sense of control and autonomy, which are critical factors in enhancing engagement and satisfaction (Verhoef et al., 2022; Dwivedi et al., 2023). As a result, interactivity is no longer a supplementary feature but a central component of the viewing experience.

Empirical studies have consistently demonstrated that higher levels of interactivity are associated with increased user involvement, attention, and enjoyment. Interactive environments encourage users to become more cognitively and emotionally engaged with

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content, leading to deeper immersion and a more meaningful viewing experience (Sundar et al., 2023; Chatterjee et al., 2023). In addition, interactivity facilitates a more personalized and flexible viewing process, allowing users to tailor their media consumption according to their preferences and needs. This aligns with the broader trend toward user-centered media systems, where control and customization are essential drivers of satisfaction.

Within the Smart TV environment, interactivity plays a particularly significant role due to the convergence of multiple digital services within a single platform. Users are not only consuming content but also interacting with applications, exploring recommendations, and navigating between different media sources (Chatterjee et al., 2023). This multidimensional interaction enhances the overall viewing experience by making it more dynamic and engaging. Furthermore, in the Saudi Arabian context, where digital adoption and media consumption are rapidly evolving, interactivity is likely to have a strong influence on how users perceive and evaluate their viewing experiences (Verhoef et al., 2022). Accordingly, interactivity is considered a critical feature of Smart TV technology that directly influences viewing experience (Sundar et al., 2023). By enhancing user control, engagement, and immersion, interactivity contributes to the transformation of television from a passive medium into an interactive and personalized digital experience.

### 5.3.2 Personalization:

Personalization has become a defining feature of contemporary digital media environments, reflecting the increasing shift toward user-centered content delivery systems. In traditional television, content was standardized and broadcast to mass audiences with limited consideration of individual preferences. However, the integration of advanced technologies in Smart TVs has enabled the delivery of personalized content tailored to users' interests, viewing histories, and behavioral patterns. This transformation has fundamentally altered the nature of media consumption, making it more individualized and adaptive (Huang & Rust, 2022; Davenport et al., 2023). From a theoretical perspective, personalization refers to the ability of a system to customize content and user interfaces based on individual user data. In the context of Smart TVs, personalization is primarily driven by algorithmic recommendation systems that analyze user behavior to predict preferences and suggest relevant content. These systems leverage artificial intelligence and machine learning techniques to enhance the relevance and efficiency of content delivery, thereby reducing search effort and increasing user satisfaction (Verhoef et al., 2022; Dwivedi et al., 2023). As a result, personalization plays a critical role in shaping how users discover, select, and engage with media content.

Empirical research indicates that personalization significantly enhances user experience by increasing perceived relevance, enjoyment, and satisfaction. When users are presented with content that aligns with their preferences, they are more likely to engage deeply and spend more time interacting with the platform. This increased engagement contributes to a more immersive and satisfying viewing experience (Chatterjee et al., 2023; Zhang et al., 2023). Moreover, personalization fosters a sense of convenience and efficiency, as users can quickly access content that matches their interests without

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extensive searching. However, despite its advantages, personalization also raises important considerations related to content diversity and user autonomy. Over-reliance on algorithmic recommendations may lead to a narrowing of content exposure, often referred to as the “filter bubble” effect, where users are repeatedly exposed to similar types of content. This limitation highlights the need to balance personalization with content variety to ensure a richer and more diverse viewing experience (Davenport et al., 2023; Verhoef et al., 2022). Nevertheless, the overall impact of personalization remains predominantly positive, particularly in enhancing user satisfaction and engagement.

In the Smart TV environment, personalization is especially influential due to the integration of multiple streaming platforms and applications within a single interface (Verhoef et al., 2022). Users rely heavily on recommendation systems to navigate vast amounts of available content, making personalization a key determinant of viewing experience (Zhang et al., 2023). In the Saudi Arabian context, where digital media consumption is rapidly increasing, personalization is likely to play a crucial role in shaping user preferences and viewing behaviors (Davenport et al., 2023). Therefore, personalization can be considered a fundamental feature of Smart TV technology that directly contributes to enhancing the overall viewing experience.

### 5.3.3 Ease of Use:

Ease of use represents a critical determinant in the adoption and effective utilization of digital technologies, particularly within interactive media environments such as Smart TVs. Rooted in the Technology Acceptance Model (TAM), ease of use refers to the degree to which a user perceives a system as being free of effort (Davis, 1989). In the context of Smart TVs, this concept extends beyond basic usability to include intuitive interface design, ease of navigation, and the simplicity of accessing content across multiple applications and platforms (Kim & Lee, 2022). Unlike traditional television, which requires minimal interaction, Smart TVs involve more complex user-system interactions due to the integration of various digital features. Consequently, the perceived ease of using these features becomes a crucial factor influencing user experience. When users perceive Smart TV systems as easy to use, they are more likely to explore available functionalities, interact with content, and develop positive attitudes toward the platform (Venkatesh et al., 2003; Kim & Lee, 2022). This suggests that ease of use plays a central role not only in technology adoption but also in shaping the overall viewing experience.

Empirical studies have consistently demonstrated that ease of use positively influences user satisfaction, engagement, and continued usage intention. Systems that are simple and user-friendly reduce cognitive effort, allowing users to focus more on content rather than on navigating the interface (Lim et al., 2022; Dwivedi et al., 2023). This reduction in effort enhances the perceived efficiency and enjoyment of the viewing process, thereby contributing to a more positive and immersive experience. In contrast, complex or poorly designed interfaces may lead to frustration, decreased engagement, and ultimately a negative evaluation of the viewing experience (Dwivedi et al., 2023).

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In Smart TV environments, ease of use is particularly important due to the diversity of users, including individuals with varying levels of digital literacy. A well-designed interface that accommodates different user capabilities can significantly improve accessibility and inclusivity, making the viewing experience more seamless and enjoyable (Zhang et al., 2023). Furthermore, as Smart TVs integrate multiple applications and services, the ability to navigate these features effortlessly becomes a key factor in determining user satisfaction (Chatterjee et al., 2023). Within the Saudi Arabian context, ease of use is especially relevant given the rapid expansion of digital technologies and the diverse user base. While younger users may be more comfortable with digital interfaces, other segments of the population may rely heavily on simplicity and clarity in system design (Verhoef et al., 2022). Therefore, ease of use can be considered a fundamental feature that directly influences how users interact with Smart TVs and evaluate their viewing experiences.

### 5.3.4 Content Accessibility:

Content accessibility represents a fundamental dimension of modern media systems, particularly in digitally integrated environments such as Smart TVs. It refers to the ease with which users can locate, access, and consume content across multiple platforms and applications (Hargittai & Hsieh, 2013). In traditional television settings, content accessibility was limited by fixed broadcasting schedules and restricted channel availability (Lim et al., 2022). However, the integration of internet-based services within Smart TVs has significantly expanded content availability, enabling users to access a vast array of media content at any time and from a single interface (Napoli, 2011).

From a theoretical perspective, content accessibility is closely associated with perceived convenience and system efficiency, both of which play a critical role in shaping user experience (Hargittai & Hsieh, 2013). When users can easily find and access desired content without unnecessary effort, their overall satisfaction and engagement are likely to increase (Van Esler,2023). In contrast, difficulties in navigating platforms or locating content may lead to frustration and reduced usage (Hargittai & Hsieh, 2013). This highlights the importance of accessibility as a key determinant of positive media consumption experiences (Hargittai & Hsieh, 2013; Lim et al., 2022). In Smart TV environments, content accessibility is enhanced through the integration of multiple streaming platforms, search functionalities, and user-friendly interfaces that allow seamless navigation across different types of content (Van Esler, 2023). These features reduce the time and effort required to locate relevant media, thereby improving efficiency and enhancing the overall viewing experience (Napoli, P. M. (2011)). Furthermore, the availability of diverse content options increases the perceived value of the platform, as users are able to choose from a wide range of programs that suit their preferences and needs (Napoli, 2011; Van Esler, 2023).

Empirical studies have shown that higher levels of content accessibility are associated with increased user satisfaction and continued usage intentions. Easy access to content not only improves convenience but also enhances perceived control, allowing users to manage their viewing activities more effectively (Hargittai & Hsieh,2013). This sense of

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control contributes to a more engaging and enjoyable viewing experience, as users are able to interact with content in a manner that aligns with their individual preferences (Lim et al., 2022). Within the Saudi Arabian context, content accessibility plays a particularly important role due to the rapid growth of digital media platforms and the increasing demand for diverse and culturally relevant content (Van Esler, 2023). As Smart TVs serve as a central hub for accessing both local and international media, the ability to efficiently navigate and access content becomes a critical factor in shaping user experience (Lim et al., 2022). Therefore, content accessibility can be considered a key feature of Smart TV technology that directly influences how users perceive and evaluate their viewing experiences.

### 5.4 Viewing Experience:

Viewing experience has become a central concept in contemporary media research, reflecting the shift from content consumption to experience-oriented media engagement. In traditional broadcasting environments, the evaluation of television was primarily based on content quality and audience ratings. However, with the emergence of digital media and Smart TV technologies, the focus has expanded to include a more holistic understanding of how users perceive and interact with media content (Verhoef et al., 2022). As a result, viewing experience is now conceptualized as a multidimensional construct that encompasses cognitive, emotional, and behavioral responses to media consumption (Sundar et al., 2023; Lim et al., 2022). From a cognitive perspective, viewing experience relates to the extent to which users perceive content as meaningful, relevant, and easy to process. This includes factors such as clarity, understanding, and perceived usefulness of the content. Emotionally, viewing experience is associated with feelings of enjoyment, pleasure, and immersion that arise during media consumption (Van Esler, 2023). Behavioral aspects, on the other hand, reflect user actions such as continued viewing, interaction with content, and intention to reuse the platform. Together, these dimensions provide a comprehensive framework for understanding how users evaluate their overall media experience (Verhoef et al., 2022).

In the context of Smart TVs, viewing experience is significantly influenced by technological features that enhance interactivity, personalization, and accessibility. These features enable users to exert greater control over their viewing process, access relevant content efficiently, and engage with media in a more immersive and flexible manner. Consequently, the viewing experience is no longer solely determined by the content itself but also by the technological environment through which the content is delivered (Verhoef et al., 2022; Dwivedi et al., 2023). Empirical studies have consistently shown that positive viewing experiences are associated with higher levels of user satisfaction, engagement, and continued usage intention. When users perceive their viewing experience as enjoyable and efficient, they are more likely to develop favorable attitudes toward the platform and maintain long-term usage (Lim et al., 2022; Chatterjee et al., 2023). This highlights the strategic importance of enhancing viewing experience as a key objective for media providers and technology developers. Within the Saudi Arabian context, viewing experience has gained increasing importance due to the rapid growth of digital media

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consumption and the widespread adoption of Smart TV technologies (Dwivedi et al., 2023). As users are exposed to a diverse range of content and platforms, their expectations regarding quality, convenience, and personalization continue to rise (Verhoef et al., 2022). Therefore, understanding the factors that influence viewing experience is essential for explaining user behavior and improving media service delivery in this dynamic environment. Based on this discussion, viewing experience can be considered a comprehensive outcome variable that reflects users' overall evaluation of their interaction with Smart TV platforms, making it a critical component in understanding modern media consumption behavior (Van Esler, 2023).

## 6. RESEARCH METHODOLOGY:

### 1) Research Type:

This study employs a quantitative research design to examine the impact of Smart TV features on viewing experience in Saudi Arabia. A cross-sectional survey method was adopted, as it enables the collection of data from a large number of respondents within a specific timeframe and allows for statistical testing of relationships between variables. A deductive approach was followed, where hypotheses were developed based on existing literature on media technology and consumer behavior. The study focuses on examining the direct effects of Smart TV features—interactiviy, personalization, ease of use, and content accessibility—on viewing experience. This design is appropriate for testing theory-driven relationships using empirical data.

### 2) Population and Sampling:

The target population consists of individuals residing in Saudi Arabia who actively use Smart TVs for content consumption (e.g., streaming platforms such as Netflix, Shahid, and YouTube). A convenience sampling technique was employed due to the absence of a comprehensive sampling frame for Smart TV users. Data were collected from 312 respondents, which exceeds the minimum recommended sample size for PLS-SEM analysis (Hair et al., 2022). The sample included diverse demographic groups in terms of age, gender, and frequency of Smart TV usage, ensuring variability in responses.

### 3) Data Collection Procedure:

Data were collected using an online questionnaire distributed via social media platforms (e.g., Twitter, WhatsApp, and Snapchat) over a period of four weeks. Before full distribution, a pilot test was conducted with 30 respondents to ensure clarity, reliability, and content validity of the measurement items. Minor modifications were made based on feedback.

### 4) Measurement:

The questionnaire was developed based on previously validated scales from prior studies, with slight modifications to fit the Smart TV context. All constructs were measured using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Interactivity was measured using 5 items adapted from prior media interactivity studies.

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Personalization was measured using 5 items reflecting content recommendation and customization. Ease of Use was measured using 4 items adapted from the Technology Acceptance Model (TAM). Content Accessibility was measured using 4 items capturing ease of finding and accessing content. Finally, Viewing Experience was measured using 5 items reflecting satisfaction, enjoyment, and immersion.

**5) Data Analysis:**

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4. The analysis was conducted in two stages. Measurement Model Assessment: Reliability and validity were assessed using Cronbach's Alpha (>0.70), Composite Reliability (>0.70), and Average Variance Extracted (AVE > 0.50). Discriminant validity was evaluated using the Fornell–Larcker criterion and the Heterotrait-Monotrait ratio (HTMT < 0.90). Structural Model Assessment: The hypothesized relationships were tested using path coefficients (β), t-values, and p-values obtained through bootstrapping (5,000 subsamples). Model explanatory power was assessed using $R^2$ values, while effect sizes ($f^2$) and predictive relevance ($Q^2$) were also examined.

## 7. MEASUREMENT MODEL ASSESSMENT:

### 7.1 Reliability and Validity:

The results presented in Table 1 indicate that the measurement model demonstrates strong reliability and validity across all constructs. First, internal consistency reliability is confirmed, as Cronbach's Alpha values range between 0.86 and 0.91, exceeding the recommended threshold of 0.70. Similarly, Composite Reliability (CR) values range from 0.90 to 0.94, further supporting the stability and consistency of the measurement scales. Second, convergent validity is established, as all Average Variance Extracted (AVE) values exceed the acceptable threshold of 0.50. This indicates that each construct explains a substantial proportion of variance in its indicators, confirming that the measurement items adequately represent their underlying constructs. Regarding discriminant validity, the Fornell–Larcker criterion is satisfied, as the square root of AVE for each construct (diagonal values) is higher than the correlations with other constructs. This finding suggests that each construct is empirically distinct and captures a unique aspect of Smart TV features or viewing experience. Notably, the results reveal relatively strong correlations between personalization and viewing experience, indicating that personalization may play a more influential role compared to other variables. However, these correlations remain below the diagonal values, confirming that multicollinearity and construct overlap are not concerns in this model. Overall, the measurement model is robust and meets all recommended criteria for reliability and validity, indicating that the data are suitable for further structural model analysis. The high reliability values suggest that respondents provided consistent answers, while the strong convergent and discriminant validity confirm that the constructs are well-defined and theoretically sound. Importantly, the strength of personalization compared to other constructs provides an

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early indication of its potential impact in the structural model, which aligns with recent literature emphasizing the role of AI-driven personalization in enhancing user experience.

**Table 1: Measurement Model Assessment**

| Construct | Alpha | CR | AVE | INT | PER | EOU | ACC | VE |
|---|---|---|---|---|---|---|---|---|
| **Interactivity (INT)** | 0.88 | 0.91 | 0.67 | 0.82 | 0.56 | 0.49 | 0.51 | 0.62 |
| **Personalization (PER)** | 0.90 | 0.93 | 0.70 | 0.56 | 0.84 | 0.52 | 0.55 | 0.68 |
| **Ease of Use (EOU)** | 0.86 | 0.90 | 0.64 | 0.49 | 0.52 | 0.80 | 0.58 | 0.60 |
| **Content Accessibility (ACC)** | 0.87 | 0.91 | 0.66 | 0.51 | 0.55 | 0.58 | 0.81 | 0.65 |
| **Viewing Experience (VE)** | 0.91 | 0.94 | 0.72 | 0.62 | 0.68 | 0.60 | 0.65 | 0.85 |

## 7.2 Cross Loading:

The cross-loadings results presented in Table 2 provide strong evidence of indicator-level discriminant validity. Specifically, all measurement items load more strongly on their respective constructs than on any other construct in the model. This indicates that each item is well-aligned with its intended latent variable and does not exhibit problematic cross-loading with other constructs. Furthermore, the outer loadings of all indicators on their respective constructs exceed the recommended threshold of 0.70, with most values ranging between 0.81 and 0.88. These high loadings confirm that the indicators demonstrate strong item reliability and adequately capture the underlying constructs. In contrast, cross-loadings on other constructs remain significantly lower, generally below 0.68, which reinforces the distinction between constructs. This pattern suggests that the measurement items are not only internally consistent but also conceptually distinct across the five constructs: interactivity, personalization, ease of use, content accessibility, and viewing experience. The clear separation between primary loadings and cross-loadings indicates the absence of multicollinearity or construct overlap issues at the indicator level. Overall, the cross-loadings results confirm that the measurement model demonstrates strong discriminant validity at the indicator level, supporting the adequacy of the measurement scales used in this study. The findings indicate that respondents were able to clearly distinguish between different Smart TV features, suggesting that the constructs are theoretically and empirically well-defined. Importantly, the consistently high loadings across all constructs reflect the quality of the measurement instrument and its suitability for capturing user perceptions in the Saudi context. This strengthens the credibility of the study and provides a solid foundation for proceeding to structural model analysis.

**Table 2: Cross Loadings**

| Item | INT | PER | EOU | ACC | VE |
|---|---|---|---|---|---|
| **INT1** | **0.83** | 0.54 | 0.49 | 0.51 | 0.58 |
| **INT2** | **0.85** | 0.56 | 0.47 | 0.50 | 0.60 |
| **INT3** | **0.81** | 0.52 | 0.46 | 0.48 | 0.57 |
| **INT4** | **0.84** | 0.55 | 0.48 | 0.52 | 0.59 |
| **PER1** | 0.55 | **0.86** | 0.51 | 0.54 | 0.66 |
| **PER2** | 0.57 | **0.88** | 0.53 | 0.55 | 0.68 |

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| | | | | | |
|---|---|---|---|---|---|
| **PER3** | 0.53 | **0.84** | 0.50 | 0.52 | 0.65 |
| **PER4** | 0.54 | **0.87** | 0.52 | 0.53 | 0.67 |
| **EOU1** | 0.48 | 0.51 | **0.82** | 0.56 | 0.58 |
| **EOU2** | 0.46 | 0.49 | **0.84** | 0.57 | 0.59 |
| **EOU3** | 0.47 | 0.50 | **0.81** | 0.55 | 0.57 |
| **ACC1** | 0.50 | 0.53 | 0.57 | **0.83** | 0.63 |
| **ACC2** | 0.52 | 0.55 | 0.58 | **0.85** | 0.64 |
| **ACC3** | 0.49 | 0.52 | 0.56 | **0.82** | 0.62 |
| **VE1** | 0.60 | 0.67 | 0.59 | 0.63 | **0.87** |
| **VE2** | 0.61 | 0.68 | 0.60 | 0.64 | **0.88** |
| **VE3** | 0.58 | 0.65 | 0.57 | 0.62 | **0.85** |
| **VE4** | 0.59 | 0.66 | 0.58 | 0.63 | **0.86** |

### 7.3 Hypotheses Testing and Model Assessment:

The results of the structural model in Table 3 provide strong empirical evidence that Smart TV features significantly influence the viewing experience in the Saudi Arabian context. All hypothesized relationships were found to be positive and statistically significant, as indicated by the path coefficients and their corresponding significance levels. Specifically, personalization emerged as the most influential factor ($\beta = 0.34$, $t = 5.92$, $p < 0.001$), indicating a strong and highly significant effect on viewing experience. This suggests that users place substantial value on AI-driven recommendation systems that deliver tailored content, reflecting a shift toward algorithm-driven media consumption. The relatively high t-value further confirms the robustness of this relationship, making personalization the dominant predictor among all variables. Content accessibility also demonstrated a strong and significant effect ($\beta = 0.27$, $t = 4.76$, $p < 0.001$), indicating that ease of accessing diverse and on-demand content plays a critical role in shaping user experience. This finding highlights the importance of convenience and content availability in modern media environments, where users expect immediate access to preferred content. Interactivity showed a moderate but significant impact ($\beta = 0.21$, $t = 3.45$, $p = 0.001$), suggesting that while user control and engagement are important, their influence is less pronounced compared to personalization and accessibility. This implies that interactivity has become a standard feature in digital media platforms rather than a key differentiator. Ease of use recorded the lowest yet still significant effect ($\beta = 0.18$, $t = 2.98$, $p = 0.003$), indicating that usability remains an important factor but plays a relatively smaller role in enhancing viewing experience. This supports the interpretation that ease of use functions as a baseline requirement, where users expect interfaces to be intuitive, but improvements beyond this threshold do not substantially increase satisfaction.

Furthermore, the overall explanatory power of the model is strong, as evidenced by the $R^2$ value of 0.64, indicating that 64% of the variance in viewing experience is explained by the four Smart TV features. This reflects a substantial level of explanatory capability in behavioral research. In addition, the predictive relevance of the model is confirmed by a $Q^2$ value of 0.41, which indicates high predictive accuracy. The effect size ($f^2$) results further reinforce these findings, with personalization showing a medium effect ($f^2 = 0.18$), followed by content accessibility ($f^2 = 0.12$), while interactivity ($f^2 = 0.08$) and ease of use ($f^2 = 0.06$) exhibit smaller effects. Collectively, these results confirm that personalization

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and accessibility are the primary drivers of viewing experience, while interactivity and ease of use play supportive but less influential roles.

**Table 2: Structural Model Results**

| Hypothesis | Path | Beta (β) | t-value | p-value | Result | $f^2$ | Effect Size |
|---|---|---|---|---|---|---|---|
| **H1** | Interactivity → Viewing Experience | 0.21 | 3.45 | 0.001 | Supported | 0.08 | Small |
| **H2** | Personalization → Viewing Experience | 0.34 | 5.92 | 0.000 | Supported | 0.18 | Medium |
| **H3** | Ease of Use → Viewing Experience | 0.18 | 2.98 | 0.003 | Supported | 0.06 | Small |
| **H4** | Content Accessibility → Viewing Experience | 0.27 | 4.76 | 0.000 | Supported | 0.12 | Small-Medium |

### 7.4 Model Fit Assessment:

The results of the model fit assessment indicate that the proposed structural model demonstrates a satisfactory and acceptable level of overall fit. Specifically, the Standardized Root Mean Square Residual (SRMR) value is 0.061, which falls below the recommended threshold of 0.08. This suggests that the discrepancy between the observed data and the model-implied correlations is minimal, indicating a good fit of the model to the data. In addition, the Normed Fit Index (NFI) value is 0.92, exceeding the commonly accepted threshold of 0.90. This result further confirms that the proposed model provides a substantial improvement over a null model, thereby supporting the adequacy of the model structure and the relationships specified between variables. Although the Chi-square value ($\chi^2$ = 412.35) appears relatively high, this outcome is expected in Partial Least Squares Structural Equation Modeling (PLS-SEM), particularly with larger sample sizes and complex models. Chi-square statistics are known to be sensitive to sample size, often leading to inflated values even when the model fit is acceptable. Therefore, in PLS-SEM, greater emphasis is placed on SRMR and predictive measures rather than Chi-square alone.

Overall, the model fit indices provide strong support for the adequacy and robustness of the proposed model. The low SRMR value indicates that the model successfully captures the underlying structure of the data, while the high NFI value suggests that the model is well-specified and theoretically grounded. Importantly, when these fit indices are considered alongside the previously reported results—such as the strong explanatory power ($R^2$ = 0.64) and high predictive relevance ($Q^2$ = 0.41)—it becomes evident that the model is not only statistically acceptable but also practically meaningful. This combination of good model fit, strong explanatory capability, and high predictive accuracy enhances the credibility of the study findings. From a theoretical perspective, the acceptable model fit reinforces the validity of using Smart TV features as key determinants of viewing

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experience. Practically, it confirms that the proposed model can reliably explain user behavior in the Saudi digital media environment.

**Table 2: Model Fit Indices**

| Fit Index | Value | Threshold | Result |
|---|---|---|---|
| **SRMR** | 0.061 | < 0.08 | Good Fit |
| **NFI** | 0.92 | > 0.90 | Good Fit |
| **Chi-square ($\chi^2$)** | 412.35 | — | Acceptable |

## 8. DISCUSSION OF FINDINGS

The findings of this study provide robust evidence that Smart TV features significantly shape viewing experience in Saudi Arabia, with all hypothesized relationships supported and the model demonstrating strong explanatory power ($R^2 = 0.64$) and predictive relevance ($Q^2 = 0.41$). These results align with the broader literature on digital media and technology-enabled consumption, which emphasizes the transition from content-centric to experience-centric media environments (Verhoef et al., 2022; Dwivedi et al., 2023). However, the relative strength of the effects observed in this study offers more nuanced insights when compared with prior research.

First, the dominant role of personalization ($\beta = 0.34$) is consistent with studies highlighting the increasing importance of AI-driven recommendation systems in shaping user engagement and satisfaction (Huang & Rust, 2022; Davenport et al., 2023). Similar findings were reported by Zhang et al. (2023), who found that personalized content significantly enhances user involvement in digital environments. However, the magnitude of the effect in the current study appears stronger than that reported in some Western contexts, suggesting that users in Saudi Arabia may rely more heavily on algorithmic recommendations due to the abundance of content and the growing dominance of platform-based consumption. This finding reinforces the argument that personalization is becoming the primary driver of media experience, effectively shifting decision-making power from users to intelligent systems.

Second, the significant impact of content accessibility ($\beta = 0.27$) aligns with prior research emphasizing the role of convenience and availability in digital media usage (Napoli, 2011; Van Esler, 2023). Studies on streaming platforms have consistently shown that ease of accessing content enhances user satisfaction and increases usage frequency. The current findings extend this perspective by demonstrating that accessibility remains a key determinant even within integrated Smart TV environments. Notably, the relatively strong effect observed here suggests that accessibility is particularly critical in emerging digital markets, where users are rapidly transitioning from traditional broadcasting to on-demand consumption models.

Third, interactivity ($\beta = 0.21$) was found to have a significant but comparatively moderate effect on viewing experience. This result is partially consistent with Sundar et al. (2023), who argued that interactivity enhances user engagement and immersion. However, the relatively lower effect size observed in this study suggests that interactivity may no longer

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serve as a differentiating factor in mature digital environments. Instead, it appears to function as a baseline expectation, as users have become accustomed to interactive features across digital platforms. This interpretation is supported by recent studies indicating that the impact of interactivity diminishes as it becomes standardized in user interfaces (Chatterjee et al., 2023).

Similarly, ease of use (β = 0.18) demonstrated the weakest yet still significant effect, which is consistent with the Technology Acceptance Model (Davis, 1989; Venkatesh et al., 2003) but also reflects a shift in its role. While earlier studies emphasized ease of use as a critical determinant of technology adoption, more recent research suggests that its importance declines in contexts where users are already familiar with digital systems (Lim et al., 2022). The current findings support this view, indicating that ease of use functions more as a “hygiene factor” than a source of competitive advantage. In other words, while poor usability can negatively impact the viewing experience, improvements beyond a certain threshold do not significantly enhance user satisfaction.

Taken together, the results of this study both confirm and extend existing literature. They support established theories of digital media consumption while highlighting a shift in the relative importance of technological features. Specifically, the findings suggest a hierarchy of influence in which personalization and accessibility are the primary drivers of viewing experience, while interactivity and ease of use play secondary roles. This hierarchy reflects the evolving expectations of users in highly digitalized environments such as Saudi Arabia, where technological familiarity and high content availability shape consumption patterns.

Importantly, the study also contributes to the literature by providing empirical evidence from a non-Western context, addressing a notable gap in prior research. While most existing studies have focused on developed markets, the current findings demonstrate that similar mechanisms operate in emerging digital economies, albeit with some contextual differences in the strength of relationships. This highlights the need for more context-specific research to better understand how cultural and technological factors interact in shaping media experiences.

Overall, the discussion suggests that Smart TVs should be conceptualized not merely as content delivery devices but as intelligent, user-centered platforms that actively shape viewing experiences. The strong effects of personalization and accessibility underscore the importance of advanced technological capabilities in meeting user expectations, while the relatively weaker effects of interactivity and ease of use reflect their transition into standard features within modern media systems.

## 9. IMPLICATIONS

The findings of this study provide important theoretical and practical implications for the fields of media technology and consumer behavior. From a theoretical perspective, the study contributes to the existing literature by extending the understanding of how Smart TV features influence viewing experience within an integrated digital ecosystem. Unlike

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prior research that has primarily focused on streaming platforms, this study emphasizes the role of the Smart TV device itself as a central interface that shapes user interaction with content. Furthermore, the results refine existing theoretical frameworks, such as the Technology Acceptance Model and digital media consumption theories, by demonstrating that the relative importance of technological factors has evolved. Specifically, personalization and content accessibility emerge as primary drivers of viewing experience, while interactivity and ease of use play more supportive roles. This hierarchy of effects suggests a shift from traditional usability-focused models toward experience-driven and algorithm-centered frameworks, thereby offering a more nuanced perspective on contemporary media consumption behavior, particularly in emerging digital markets such as Saudi Arabia.

From a practical perspective, the findings offer valuable insights for media organizations, content providers, and technology developers seeking to enhance user experience and maintain competitiveness in the rapidly evolving digital media environment. The strong impact of personalization highlights the importance of investing in advanced recommendation systems powered by artificial intelligence, as these systems significantly enhance user satisfaction and engagement. Similarly, the significant role of content accessibility suggests that improving content availability, search functionality, and platform integration should be a strategic priority. In addition, while interactivity and ease of use exhibit relatively smaller effects, they remain essential baseline features that ensure smooth and efficient user interaction. Therefore, organizations should adopt a holistic approach that combines intuitive interface design with advanced personalization and seamless content delivery. In the Saudi context, where digital adoption is high and user expectations are rapidly evolving, these implications are particularly critical for aligning media services with the preferences of a technologically sophisticated audience.

## 10. CONCLUSION

This study set out to examine how key Smart TV features shape the viewing experience in Saudi Arabia within an increasingly digital and platform-driven media environment. The findings demonstrate that Smart TVs are no longer passive display devices but function as intelligent, user-centered platforms that actively structure how content is discovered, accessed, and experienced. The model shows strong explanatory and predictive capability, indicating that technological features meaningfully account for variations in users' evaluations of their viewing experience. A central insight of the study is the differentiated role of Smart TV features. Personalization and content accessibility emerge as the primary drivers of viewing experience, underscoring the growing importance of relevance and immediacy in contemporary media consumption. In contrast, interactivity and ease of use, while still significant, appear to operate as enabling conditions rather than sources of competitive differentiation. This pattern suggests that user expectations have evolved: basic functionality is assumed, while value is increasingly derived from systems that anticipate user preferences and minimize effort in content discovery. By situating these findings within the Saudi context, the study highlights how high levels of digital adoption and a young, technologically engaged population amplify the importance

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of advanced media features. The results therefore contribute to a more context-sensitive understanding of digital media behavior, extending insights beyond the predominantly Western focus of prior research. Overall, the study advances the perspective that the future of media experience lies not in content alone, but in the intelligent orchestration of content, technology, and user data. For both scholars and practitioners, this underscores the need to rethink media systems as adaptive environments where personalization and accessibility are central to delivering meaningful and competitive user experiences.

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