



Designing for the Interactive Screen: Shoppable CTV Advertising and Visual Communication Readiness in Pakistan

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ABSTRACT

The emergence of shoppable Connected Television (CTV) advertising represents a convergence of visual design, interactive media, and digital commerce in contemporary advertising. In mature markets, shoppable CTV formats are transitioning from experimental to mainstream, enabling viewers to purchase products directly through their television screens without interrupting content consumption. However, this evolution presupposes a complex infrastructure of design literacy, interactive visual conventions, and technological readiness that does not uniformly exist across global markets. This paper examines shoppable CTV advertising from a visual communication and advertising design perspective, with particular attention to Pakistan as a case study in emerging market readiness. Drawing on Kress and van Leeuwen's (1996, 2001) multimodal discourse theory, Rogers' (2003) Diffusion of Innovations framework, and Norman's (2013) affordance theory, and informed by the technology leapfrogging literature in development economics (Steinmueller, 2001; Fong, 2009), the analysis investigates the visual communication demands of interactive television advertising and the degree to which Pakistan's current advertising design landscape is equipped to meet them. A conceptual comparative analysis of global CTV design conventions and the Pakistani advertising environment, grounded in secondary sources and industry data, reveals three critical gaps: multimodal design literacy, interactive visual signifier legibility, and e-commerce design integration. Rather than positioning Pakistan as simply behind global trends, the paper proposes a conceptual framework for design-informed CTV adoption that accounts for local visual culture, accelerated adoption through late-mover observation, and the specific communicative context of Pakistani audiences. The paper concludes with implications for advertising design practice, design education, and industry development.

Introduction

The television screen has never been merely a passive surface. From the earliest broadcast advertisements to the interactive formats emerging on streaming platforms today, the relationship between visual design, viewer attention, and commercial intent has continuously evolved. The most recent development in this evolution is shoppable Connected Television (CTV) advertising: a format in which viewers can interact with advertisements in real time, selecting products, accessing information, and completing purchases without leaving their viewing environment (Innovid, 2025). This convergence of commerce and content, enabled by internet-connected television devices and advanced advertising technology, represents a significant reconfiguration of what an advertisement is, how it communicates, and what it asks of its audience.

In the United States and other mature digital markets, shoppable CTV is transitioning rapidly from a niche format to a core advertising channel. By 2026, interactive shoppable advertisements are projected to represent approximately 10% of all CTV advertisements globally, with shoppable formats converting at rates five times higher than standard video advertisements (Demand Local, 2025). The scale of the underlying market continues to grow at a pace that has repeatedly outstripped forecasts. GroupM's 2023 global end-of-year report projected global CTV advertising expenditure to reach approximately 45.8 billion USD by 2028, with a compound annual growth rate of 9.5% (GroupM, 2023). CTV advertising expenditure in the United States alone is projected to surpass traditional television advertising expenditure for the first time by 2028 (Statista, 2026a).

Pakistan presents a markedly different picture. CTV advertising expenditure in the country is projected to reach only approximately 290,000 USD by 2030 (Statista, 2025), a figure that places it far outside commercially mature CTV markets. Traditional television remains the dominant advertising medium, accounting for PKR 50.1 billion, or 43.7% of total advertising expenditure in FY2024 (PACRA, 2026). Digital advertising is growing rapidly, having increased its share from 26.5% to 31.2% of total advertising spend in a single fiscal year (PACRA, 2026), but the specific infrastructure required for shoppable CTV, including interactive advertising technology, seamless e-commerce integration, and the design conventions that make such formats legible and actionable for audiences, remains underdeveloped.

This paper argues that the gap between Pakistan and global CTV markets is not simply a matter of technological infrastructure or media investment. It is, at its foundation, a design problem. Shoppable CTV requires a specific visual communication grammar: one in which interaction cues, purchase affordances, brand identity, and narrative must coexist within a compressed and time-sensitive screen environment. Without a design culture attuned to these demands, neither the advertising industry nor its audiences can effectively adopt the format, regardless of infrastructure availability.

As a conceptual paper grounded in secondary source analysis, the study pursues three objectives. First, it situates shoppable CTV advertising within established design and communication theory to clarify the visual and interactive demands the format makes of designers and audiences. Second, it examines the current state of advertising design in Pakistan relative to these demands through a comparative analysis of global and local design conventions. Third, it proposes a conceptual framework for design-informed CTV adoption applicable to Pakistan and, by extension, to other emerging markets undergoing similar media transitions.

Literature Review

The Rise of Connected TV and Shoppable Advertising

Connected Television refers to any television device that accesses content through an internet connection, whether through a built-in smart television interface or through external streaming devices such as Roku, Amazon Fire Stick, or Apple TV (AppsFlyer, 2024). Unlike traditional linear television, CTV enables dynamic, programmatically delivered advertising that can be personalised to household-level audience data and measured with digital precision. Shoppable advertising extends this potential by collapsing the traditional consumer journey. Where conventional advertising has operated across distinct phases of awareness, consideration, and purchase, shoppable formats integrate all three into a single viewing moment. The viewer sees a product within an advertisement, interacts with it using a remote control or second-screen device, and completes a purchase without leaving the content environment. This design logic reflects broader developments in social commerce, where platforms such as TikTok Shop have demonstrated that the boundary between entertainment and transaction can be effectively dissolved by embedding purchasing functionality directly within content feeds (eMarketer, 2024).

The scale of investment behind this shift is considerable. CTV advertising expenditure in the United States is projected to surpass traditional television advertising expenditure for the first time by 2028 (Statista, 2026a). Retail Media Networks represent a parallel development in commerce-integrated advertising: these platforms deliver 1.8 times better results than standard digital advertising and nearly three times better results for purchase intent (Kantar, 2026), indicating that advertising formats integrating commerce into the viewing experience carry measurable performance advantages over conventional brand communications. Social commerce in the United States reached 100.99 billion USD in 2026, up from 71.62 billion USD in 2024 (Statista, 2026b), reflecting a broader consumer shift toward transactions that occur within content environments rather than through dedicated retail destinations. Shoppable CTV advertising represents the extension of this behavioural logic to the largest screen in the home.

Advertising Design and Interactive Media

Within advertising design scholarship, the transition to interactive formats introduces challenges that extend beyond conventional principles of layout, colour, and typography. Interactive advertising design must account for the temporal dimension of viewer engagement, the spatial logic of screen navigation, the cognitive demands of simultaneous content consumption and commercial interaction, and the visual grammar by which interactive affordances are communicated to audiences. Norman (2013) establishes that the effectiveness of any interactive system depends on the clarity of its affordances and signifiers: the visual and structural properties that communicate to users what actions are available, how to perform them, and what outcomes will follow. In the context of shoppable CTV advertising, these principles acquire particular urgency, as interaction cues must be visible without obscuring primary content, intuitive without requiring prior instruction, and sufficiently compelling to motivate action within the brief duration of an advertisement. Industry data corroborate this: interactive CTV advertisements employing clear visual cues such as product galleries and overlay elements generate an average of 71 additional seconds of viewer engagement compared to standard pre-roll formats (Innovid, 2025), suggesting that the legibility of interactive affordances directly affects measurable performance outcomes.

Kress and van Leeuwen (1996) demonstrate that visual compositions are decoded not through universal rules but through culturally specific reading paths, spatial conventions, and semiotic

expectations shaped by the communicative practices of particular communities. Visual conventions that signal interactivity, trustworthiness, and commercial value are shaped by the digital ecosystems in which audiences have been trained. What reads as an actionable element in one visual culture may be invisible, confusing, or unwelcome in another. For emerging markets where the visual conventions of interactive digital media are still being established, the design challenge is not merely to replicate global templates but to develop interaction grammars that are legible and persuasive within local communicative contexts.

Emerging Markets, Digital Transitions, and Late-Mover Advantage

The trajectory of digital advertising adoption in emerging markets has been studied extensively in marketing literature, though comparatively limited attention has been given to the design dimensions of this transition. Research on digital marketing in developing regions has identified mobile-first consumer behaviour, limited digital infrastructure, and socio-cultural diversity as factors shaping market approaches, yet the creative and design capacities required to produce effective content for advanced advertising formats receive considerably less analytical attention (Tamirat & Zewdie, 2023). In South Asia, including Pakistan, infrastructure growth has tended to precede rather than accompany the development of design literacy and creative industry capacity (Jamil, 2021).

Pakistan's digital advertising market reached approximately 201.8 million USD in 2024 (Statista, 2024), with rapid growth occurring in social media and short-form video. The Smart TV and OTT market in Pakistan is actively being tracked for growth through 2031 (6Wresearch, 2025). However, Pakistan's media sector, despite rapid expansion since liberalisation in the early 2000s, has concentrated its growth primarily in broadcast journalism and entertainment production rather than in the interactive design and digital advertising specialisations that shoppable CTV formats demand (PACRA, 2026).

The concept of technology leapfrogging, originating in development economics, offers a useful counter-narrative to simple developmental lag frameworks. Steinmueller (2001) examines how developing countries may bypass intermediate technology stages and adopt advanced formats directly, though he cautions that such leapfrogging requires the prior development of absorptive capacities, including specific skills, complementary technologies, and market conditions for knowledge exchange. Fong (2009) defines technology leapfrogging as the adoption of advanced technology in an application area where immediate prior technology has not been adopted, noting that developing countries are not inhibited by entrenched intermediate technology but must nevertheless build supporting capabilities. Mobile financial services in Pakistan are frequently cited as an example: services such as JazzCash and Easypaisa reached tens of millions of users without passing through the desktop banking phase that characterised Western adoption (State Bank of Pakistan, 2025). However, this precedent involves bypassing a hardware stage, not a design literacy stage. The question this paper raises is whether a similar dynamic might apply to shoppable CTV, and what design conditions would need to be in place for accelerated adoption to occur.

Theoretical Framework

Multimodal Discourse Theory

Kress and van Leeuwen's (2001) theory of multimodal discourse provides the primary analytical lens for this paper. Multimodal discourse theory holds that communication in contemporary media environments is realised through the orchestrated interaction of multiple semiotic modes operating

simultaneously. These modes, including image, motion, sound, colour, spatial arrangement, and interaction, each carry meaning potential, and their combination produces meanings that no single mode could achieve independently (Kress & van Leeuwen, 1996). Shoppable CTV advertising represents an unusually complex multimodal event: within a single screen moment, it must coordinate narrative video content, brand visual identity, product representation, textual information, interaction affordance signals, and purchase pathway design. Each of these elements operates according to its own semiotic logic, and the designer's task is to orchestrate them such that they reinforce rather than compete with each other. Applying multimodal discourse theory to shoppable CTV allows this paper to analyse not only what these advertisements look like, but how they mean: how each modal element contributes to or undermines the overall communicative intent.

This framework is particularly valuable for the Pakistan context because it draws attention to the question of semiotic legibility: the degree to which particular multimodal configurations are recognisable and appropriate for specific audiences. Visual conventions that carry clear interaction meanings in one cultural context may carry different or no meanings in another, and multimodal theory provides conceptual tools for analysing these differences without assuming that any single visual grammar is inherently superior or universally applicable.

Diffusion of Innovations

Rogers' (2003) Diffusion of Innovations framework provides the structural model through which this paper positions Pakistan within the broader adoption trajectory of shoppable CTV. Rogers identified five stages in the innovation-decision process: knowledge, persuasion, decision, implementation, and confirmation. He also described a consistent distribution pattern in which innovators and early adopters account for a small proportion of eventual users, followed successively by an early majority, a late majority, and laggards. This distribution pattern is relevant to Pakistan's current position, which this paper characterises as preceding meaningful adoption: the innovation has not yet achieved sufficient visibility or accessibility to move through the knowledge stage at scale.

For the purposes of this paper, the most relevant aspects of Rogers' framework are his identification of innovation characteristics that influence the rate of adoption. Among these, observability (the degree to which results of an innovation are visible to potential adopters), trialability (the degree to which an innovation can be tested on a limited basis), and complexity (the degree to which an innovation is perceived as difficult to understand or use) function as significant constraints on shoppable CTV adoption in Pakistan. The format is not yet widely observable in the Pakistani market, trial opportunities are minimal, and the interaction conventions it relies on are unfamiliar to most audiences and many designers. Rogers' framework allows the paper to articulate these constraints systematically and to identify where design interventions might meaningfully accelerate adoption.

Affordance Theory

Norman's (2013) theory of affordances and signifiers provides the third theoretical pillar of this analysis. An affordance, in Norman's formulation, is a relationship between the properties of an object and the capabilities of the agent interacting with it: it determines what actions are possible. Critically, affordances exist whether or not they are visible to the user. What communicates the presence and nature of an affordance to the user is what Norman terms a signifier: a perceivable indicator that signals where and how to act. In digital and interactive design contexts, signifiers are

communicated through visual cues including shape, colour, position, motion, and contrast, and their design determines whether users understand and can act on available interactions.

For shoppable CTV advertising, signifier design is among the most critical and least forgiving design challenges. The viewer has seconds to register that an advertisement is interactive, to understand what interaction is available, and to decide whether to perform it. If the signifiers are visually unclear, the opportunity is lost. The distinction between affordance and signifier is particularly consequential here: a shoppable advertisement may technically afford purchasing (the system supports the transaction), but if its visual signifiers fail to communicate that this action is available or how to initiate it, the affordance remains invisible to the viewer and the interaction does not occur.

In the Pakistani context, where interactive television advertising is new, the signifiers of shoppable formats cannot be assumed from prior audience experience alone. They must, in most cases, be actively designed and communicated through the advertisements themselves. This has direct implications for advertising design practice: designers cannot rely on established visual conventions that audiences already recognise from prior exposure to interactive media, and must construct an interaction grammar that is legible within the specific communicative context of Pakistani audiences.

Methodology

Research Design

This paper adopts a conceptual research design that synthesises three categories of secondary sources: established theoretical literature in multimodal discourse, diffusion of innovations, and affordance theory; industry reports and market analyses from global advertising technology and media research organisations; and publicly available market data on advertising expenditure, CTV adoption, and digital media infrastructure in Pakistan. The paper constructs a comparative analysis of shoppable CTV advertising design conventions across mature and emerging markets, with Pakistan as the focal case study.

The decision to adopt a conceptual rather than empirical approach reflects the nascent state of shoppable CTV in Pakistan. The format has not yet been deployed at sufficient scale to support primary data collection through audience reception studies, practitioner interviews, or systematic content analysis of locally produced shoppable advertisements. In the absence of a meaningful corpus of Pakistani shoppable CTV content, the paper contributes by establishing the theoretical and analytical groundwork upon which future empirical research can build.

Analytical Framework

The comparative analysis is structured around three theoretical lenses applied systematically to both global and Pakistani advertising design contexts. First, Kress and van Leeuwen's (1996, 2001) multimodal discourse theory is used to analyse the semiotic complexity of shoppable CTV as a communicative form, examining how multiple modes are orchestrated within the format. Second, Rogers' (2003) Diffusion of Innovations framework is applied to position Pakistan within the adoption trajectory and to identify specific innovation characteristics that function as constraints on adoption. Third, Norman's (2013) theory of affordances and signifiers is employed to evaluate the interaction design challenges of remote-controlled television interfaces and the cultural dimensions of signifier legibility across different audience contexts. These frameworks are applied across three analytical dimensions: (a) interaction design conventions, examining how global and Pakistani visual cultures signal interactivity; (b) signifier legibility, assessing whether audiences

can identify and act upon visual cues that communicate interactive possibilities; and (c) multimodal integration, evaluating how narrative, brand, product, and commerce elements coexist within screen environments.

Data Sources, Scope, and Limitations

The paper draws on academic literature, industry reports from organisations including GroupM, Kantar, eMarketer, PACRA, and Statista, and government and institutional documents including State Bank of Pakistan publications and PACRA sector studies. The geographic scope is deliberately comparative: global CTV markets, primarily the United States and Western Europe, serve as the reference context, and Pakistan serves as the focal case study. Where possible, the analysis acknowledges internal diversity within the Pakistani market, recognising differences across urban and rural, socioeconomic, and platform-specific contexts.

Several limitations should be acknowledged. As a conceptual paper relying on secondary sources, this study does not present original empirical data. Claims about Pakistani audience familiarity with interactive visual conventions are inferred from available market data, industry reporting, and theoretical reasoning rather than from direct audience research or practitioner inquiry. Industry data, particularly market forecasts, carry inherent uncertainty. Where industry publications are used, claims are triangulated across multiple sources or clearly attributed. Future research should complement this conceptual foundation with empirical studies, including user testing of interactive CTV prototypes with Pakistani audiences and qualitative research with advertising design practitioners in the Pakistani market.

Pakistan's Advertising Design Landscape

The Dominance of Traditional Television

Television has been, and remains, the dominant medium for brand communication in Pakistan. In FY2024, television advertising generated PKR 50.1 billion, representing 43.7% of total advertising expenditure, while the top fifteen television channels accounted for approximately two thirds of all television advertising revenue (PACRA, 2026). This concentration within a broadcaster-centric media economy has shaped both the design conventions of Pakistani advertising and the structural priorities of the industry. The design conventions developed within this television-dominant environment reflect its one-directional communicative logic. Pakistani television advertising has historically been produced for passive viewing: its visual grammar is calibrated for linear consumption, storytelling through sequential narrative, and brand recall through repetition and emotional resonance. Studies of Pakistani television commercials have documented intertextual references to popular culture, literary traditions, and social values as key engagement mechanisms (Khalid et al., 2019). The design culture of the industry is oriented toward communication and persuasion, not toward interaction and transaction. The interaction design vocabulary that shoppable CTV requires, including visual signifiers for interactive elements, QR code integration, and real-time commerce overlays, has limited established precedent in this tradition.

The Digital Shift

The rapid growth of digital advertising is introducing new design demands. Digital advertising's share of total ad spend rose from 26.5% to 31.2% in FY2024 alone (PACRA, 2026), with particular growth in social media and short-form video. Platforms such as YouTube, TikTok, Facebook, and Instagram have become significant advertising channels, and Pakistani brands are increasingly producing content calibrated for mobile-first, vertical-format, and short-duration viewing (DataReportal, 2025). Social media advertising, particularly on TikTok and Instagram, has

introduced Pakistani designers to some of the interaction conventions that inform shoppable advertising more broadly: text overlays, call-to-action elements, product tagging, and swipe-based behaviours. TikTok Shop, which embeds purchasing functionality directly within entertainment feeds, has been a significant driver of this convergence between content and commerce across global markets, including those with growing digital adoption (eMarketer, 2024). However, the translation from mobile social commerce to the television screen is not straightforward. The scale, viewing distance, input mechanism, and content environment of CTV differ fundamentally from the mobile context, and design solutions that succeed in one environment do not automatically transfer to the other.

E-Commerce Design and Infrastructure

The shoppable dimension of CTV advertising depends not only on the visual design of the advertisement itself but on the e-commerce infrastructure to which it connects. The government's E-Commerce Policy Framework identified payment infrastructure development, logistics standardisation, and consumer protection in digital environments as critical areas requiring systemic improvement, noting that the regulatory and facilitation environment for digital commerce remained fragmented across multiple institutional mandates (Ministry of Commerce, Pakistan, 2019). A revised policy (E-Commerce Policy 2.0, covering 2025 to 2030) has since been drafted, acknowledging persistent challenges including unstandardised address systems, limited warehousing infrastructure beyond major cities, and weak reverse logistics capabilities (Ministry of Commerce, Pakistan, 2025). The design challenge in Pakistan is therefore not only to create compelling interactive advertisements but to design coherent, end-to-end commerce experiences within a still-developing digital retail environment. This systems-level design thinking represents a departure from the campaign-level design orientation that currently dominates Pakistani advertising practice.

Design Education and Industry Capacity

Pakistan's graphic design and advertising design education sector has expanded considerably, with institutions including the Indus Valley School of Art and Architecture, Beaconhouse National University, and the University of the Punjab producing graduates with foundations in visual communication, typography, and brand design. However, curricula have historically concentrated on print, brand identity, and conventional media production. The interaction design, user experience design, and motion design competencies that shoppable CTV advertising requires represent a newer set of professional demands that design education has been slower to incorporate. The professional industry reflects a similar pattern: strong capabilities in brand identity, print, and video production, but limited specialised expertise in interactive television advertising, CTV advertising specifications, or data-driven creative optimisation.

Global vs. Pakistan: A Comparative Design Analysis

Global Visual Conventions for Shoppable CTV

In markets where shoppable CTV is operational, a set of visual conventions has emerged to signal interactivity and guide viewer behaviour. These conventions include persistent on-screen overlays indicating the availability of additional product information, animated interaction prompts appearing at specific moments within an advertisement, QR code integrations inviting second-screen engagement via mobile device, and remote-control-navigable product carousels allowing viewers to browse items without leaving the content stream (Demand Local, 2025). Each convention addresses a specific design challenge: making interactivity visible, communicating the

interaction mechanism, and enabling action without cognitive or visual overload. These conventions have developed through iteration and audience testing in contexts where CTV viewing is widespread and interactive advertising is a familiar format. They draw on visual conventions established in digital advertising more broadly, including the button styles, hover states, and navigation patterns familiar from web and application interfaces, and adapt them for the constraints of a large-screen, lean-back viewing context.

The Pakistani Visual Communication Context

Pakistani visual communication has developed distinctive conventions shaped by its cultural, linguistic, and media environment. Advertising design operates within a bilingual Urdu-English context, incorporating both scripts simultaneously and developing spatial compositions and typographic hierarchies calibrated for audiences who navigate between linguistic registers. Research on Pakistani television advertising has documented the systematic integration of intertextual elements drawn from popular culture, literary traditions, and social values, reflecting both the culturally layered character of urban Pakistani communication and the semiotic associations each language carries: Urdu connoting cultural authenticity and emotional warmth, English connoting modernity and aspiration (Khalid et al., 2019). Colour usage, brand identity registers, and narrative strategies reflect local cultural associations, with warmth, family orientation, and community values functioning as dominant communicative logics across the industry's most prominent campaigns (PACRA, 2026). These local conventions are strengths, not deficits; they reflect deep cultural intelligence accumulated over decades of advertising practice. However, they have developed within the context of one-directional visual communication rather than interactive design. The visual signifiers of interactivity, including interaction prompts, navigational cues, and real-time responsive elements, do not yet appear to be widely embedded in Pakistani visual culture to the degree that would make shoppable CTV immediately legible to general audiences without active orientation or prior exposure.

Pakistan's digital landscape, however, presents significant counterpoints to a narrative of pure unreadiness. Pakistan has over 55 million YouTube users and rapidly growing audiences on TikTok, Instagram, and Facebook (DataReportal, 2025). Pakistani audiences are already engaging with interactive commerce features on these platforms, including product tagging, live shopping streams, and swipe-to-purchase interfaces. This growing familiarity with social commerce suggests that certain audience segments may possess more interaction design fluency than a traditional television-centric analysis would indicate. The gap is therefore not absolute but stratified across demographic, geographic, and socioeconomic lines, with urban, younger, and digitally connected audiences likely closer to readiness than the general population.

Interaction Design Conventions and Cultural Legibility

A central insight from Kress and van Leeuwen's (1996) visual grammar framework is that the legibility of visual conventions is not universal but depends on the communicative practices and prior semiotic exposure of specific audiences. Pakistani audiences are highly familiar with the visual conventions of WhatsApp, YouTube, and TikTok, all of which have achieved massive penetration in the country (DataReportal, 2025). This familiarity provides a foundation for introducing interactive advertising conventions, particularly those that draw on mobile-native interaction patterns such as tap targets, swipe gestures, and notification-style overlays.

However, the translation to a television remote-controlled interface introduces a significant legibility discontinuity. The interaction paradigm of remote-controlled CTV navigation, in which users move a cursor or use directional buttons to select and activate on-screen elements, may be

unfamiliar to audiences who have not yet encountered it. Norman's (2013) distinction between affordances and signifiers is directly relevant here: the television may technically afford interactive purchasing, but if the visual signifiers that communicate this possibility are drawn from conventions unfamiliar to the audience, the affordance remains invisible. Designing shoppable CTV advertisements for Pakistani audiences therefore requires not only adaptation of visual conventions but active orientation: the advertisement must teach its interaction grammar at the same time as it delivers its commercial message. This dual communicative burden makes the design challenge considerably more complex than it is in markets where the interaction paradigm is already familiar.

Infrastructure and Design System Gaps

Beyond the audience-facing dimensions of shoppable CTV design, there are structural infrastructure gaps that constrain design practice in ways that distinguish Pakistan from markets where shoppable formats are operational. These include the absence of standardised CTV advertising specifications for the Pakistani market, limited availability of the programmatic advertising platforms through which shoppable CTV inventory is typically transacted globally, and the nascent state of data integration between digital advertising platforms and local e-commerce systems. These constraints reflect the early-stage development of Pakistan's interactive advertising ecosystem and have direct consequences for what designers can produce, test, and deliver.

These gaps matter for design practice because shoppable CTV is not simply a creative exercise but a systems design challenge. The signifiers that communicate interactivity to viewers do not function in isolation; they must be designed in relation to the technical specifications of the delivery platform, the data infrastructure enabling targeting and personalisation, and the commerce pathway that converts interaction into transaction. If the signifier promises an action that the underlying system cannot deliver seamlessly, the result is a breakdown in the communicative contract between the format and its audience. Without standardised infrastructure, designers cannot develop replicable design systems, and without replicable design systems the format cannot achieve the commercial scale necessary to build audience familiarity. The development of such infrastructure is therefore a prerequisite for design practice, not merely a supporting condition.

Design Challenges for Interactive TV Advertising in Pakistan

Multimodal Overload and Cognitive Demands

One of the primary design challenges of shoppable CTV advertising is the management of what this paper terms multimodal overload: the condition in which the simultaneous demands of multiple communicative modes exceed the cognitive processing capacity of the viewer. Applying Kress and van Leeuwen's (2001) multimodal framework analytically, it becomes clear that shoppable CTV advertisements must coordinate narrative content, brand communication, product information, and interaction prompts within a single, time-constrained viewing event. Each of these elements competes for attention within the viewer's perceptual field, and the orchestration of multiple semiotic modes within a compressed temporal window creates a processing burden that distinguishes shoppable CTV from both conventional television advertising and from interactive mobile formats where user-initiated pacing provides more cognitive flexibility. In the Pakistani context, where interactive television advertising is not yet familiar, the cognitive demands are higher still, as viewers cannot draw on prior experience of the format to guide their processing.

Signifier Legibility and Interaction Grammar

Signifier legibility is a foundational design challenge for shoppable CTV. In Pakistan, where the interactive television advertising format is new, the visual signals that indicate interactivity cannot be assumed to be self-explanatory. Designers face the challenge of creating signifiers that are simultaneously unobtrusive enough not to interrupt content consumption and prominent enough to be noticed and acted upon within the brief window of the advertisement.

This challenge is compounded by the input mechanism of CTV. Mobile touchscreen interactions have well-established visual correlates: buttons appear tappable, links are distinctively coloured, swipe gestures are indicated by directional handles and animations. The remote control interface of CTV operates on a different interaction logic, one in which spatial navigation, selection, and confirmation are performed through a small number of physical buttons rather than direct-touch manipulation. The visual design of remote-control-navigable elements requires a distinct signifier vocabulary, including focused selection states, directional navigation indicators, and confirmation feedback signals, that has not yet been developed within Pakistani advertising design practice. Norman (2013) emphasises that signifiers must be perceivable and interpretable within the user's existing cognitive and cultural framework; where that framework does not yet include interactive television conventions, the signifier design burden falls entirely on the advertisement itself.

Cultural Visual Coding and Commerce

The integration of commercial transaction into the viewing experience raises specific design questions around cultural visual coding in Pakistan. The design signals associated with trust, urgency, value, and purchase intent are culturally mediated. Kress and van Leeuwen (1996) establish that visual compositions carry meaning through culturally specific semiotic conventions, and this principle extends directly to commerce-related visual elements. In Pakistani visual culture, trust in commercial transactions has historically been communicated through interpersonal relationships, brand familiarity built over years of television exposure, and community endorsement rather than through interface design conventions (PACRA, 2026). Translating the visual grammar of online purchase into the CTV advertising environment requires careful cultural calibration rather than direct adoption of conventions developed for Western digital retail contexts. Pakistan's consumer market encompasses a wide range of income levels, media access patterns, and purchasing power (PACRA, 2026; DataReportal, 2025). Design systems for shoppable CTV in Pakistan must therefore be flexible and segmented rather than uniform.

Bilingual Typography

Pakistan's bilingual advertising environment presents an additional design challenge. Effective shoppable CTV design requires clear, legible, and rapidly processable text: product names, prices, calls to action, and navigation labels must register immediately within the brief duration of an interactive advertisement. In Pakistan, this text may need to function in Urdu, English, or both simultaneously. Urdu's right-to-left Nastaliq script creates spatial design challenges for layouts that must also accommodate left-to-right English elements. Bilingual layouts in Pakistani advertising have long navigated this bidirectional tension in print and broadcast contexts (Khalid et al., 2019), but the interactive dimension of shoppable CTV introduces additional complexity: navigational signifiers, selection states, and transaction confirmations must maintain legibility and spatial coherence across both script directions simultaneously under time pressure. Typography designed for mobile screens does not automatically scale effectively to television screens, and the font rendering characteristics of smart television operating systems may differ from those familiar from mobile and desktop environments.

A Framework for Design-Informed CTV Adoption

Drawing on the comparative analysis and theoretical examination in the preceding sections, this paper proposes a conceptual framework for design-informed CTV adoption in Pakistan. The framework is organised around three preparatory conditions and three design principles that together describe what needs to be in place before shoppable CTV advertising can function effectively in the Pakistani context.

The three preparatory conditions are as follows. First, interaction design literacy development: building design competency and audience familiarity with interactive television conventions through lower-stakes formats such as interactive social media advertising, second-screen engagement campaigns, and interactive digital out-of-home advertising. These formats share some of the interaction grammar of shoppable CTV while operating in contexts where audiences are more familiar and design infrastructure is more available. Second, design infrastructure standardisation: the establishment of local CTV advertising specifications, design system templates, interaction pattern libraries, and e-commerce integration standards that enable replicable and scalable shoppable advertising production. Without such standardisation, each advertiser must solve the same design problems independently, producing inconsistent audience experiences. Third, culturally calibrated signifier development: deliberate research and codification of interaction signifier conventions that are legible and appropriate for Pakistani audiences within their specific visual cultural context, drawing on existing mobile interaction familiarity while developing CTV-specific extensions.

The three design principles are as follows. First, progressive disclosure: interactive elements should be introduced gradually within an advertisement, building viewer familiarity before demanding action. Rather than presenting full interaction capability at the outset, early-stage shoppable advertisements in the Pakistani market should orient audiences to the interactive nature of the format before inviting them to engage with it. Second, modal orchestration: all communicative modes within a shoppable advertisement should reinforce a single clear communicative intent rather than competing for attention. This principle draws directly on Kress and van Leeuwen's (2001) insistence that multimodal communication succeeds through the coordinated interaction of semiotic modes, and suggests that multimodal complexity should be introduced incrementally as audiences develop format fluency. Third, culturally grounded signifier design: interaction cues should be developed in relation to the visual conventions already familiar to target audiences from their existing digital media behaviour, particularly mobile social media interaction, rather than imported wholesale from Western CTV design conventions. Norman (2013) establishes that signifiers must be perceivable and interpretable within the user's existing framework of experience; this principle applies that insight to the specific cultural and media context of Pakistani audiences.

This framework is intended not as a prescriptive checklist but as a conceptual orientation for practitioners, educators, and industry stakeholders. It treats design readiness as a precondition for technology adoption rather than a byproduct of it. The accelerated adoption opportunity identified by the technology leapfrogging literature (Steinmueller, 2001; Fong, 2009) is embedded within this framework, though with an important qualification. Steinmueller (2001) cautions that leapfrogging requires prior development of absorptive capacities, and this paper's analysis supports that caution: the design competencies, audience literacies, and infrastructure standards described above represent precisely such absorptive capacities in the domain of interactive advertising. Pakistan has the opportunity to compress rather than replicate the iterative development path of early CTV markets by learning from their experience. This is not leapfrogging in the strict sense of

bypassing intermediate stages entirely; it is accelerated sequential development, informed by late-mover observation. By developing culturally grounded signifier conventions from the outset rather than retroactively correcting imported design templates, Pakistan can produce a more locally coherent interactive advertising language than might emerge from uncritical adoption of global conventions.

Conclusion

This paper has examined shoppable CTV advertising through the lens of visual communication and advertising design, using Pakistan as a case study in emerging market readiness. The analysis has established that the gap between Pakistan and global CTV markets is not primarily a matter of technological infrastructure or media investment but is rooted in design conditions: the visual communication conventions, interaction design literacy, and culturally appropriate signifier grammar that the format requires.

Three theoretical frameworks have structured this analysis. Kress and van Leeuwen's (1996, 2001) multimodal discourse theory has illuminated the semiotic complexity of shoppable CTV as a communicative form, revealing the demands it makes of both practitioners and audiences when multiple modes must be orchestrated within a single, time-constrained screen event. Rogers' (2003) Diffusion of Innovations framework has positioned Pakistan's current status within the adoption trajectory and identified complexity, observability, and trialability as the innovation characteristics that function as the most significant constraints on adoption from a design perspective. Norman's (2013) theory of affordances and signifiers has focused attention on the interaction design challenges specific to remote-controlled television environments, establishing that signifiers must be perceivable and interpretable within the user's existing cognitive and cultural framework, a condition that cannot be assumed in the Pakistani context.

The comparative analysis has identified four specific design challenges for shoppable CTV in Pakistan: multimodal overload management, signifier legibility across unfamiliar interaction paradigms, culturally calibrated commerce design, and bilingual typographic adaptation for bidirectional Urdu-English layouts. These challenges are not insurmountable, but they require deliberate attention from advertising designers, design educators, and industry infrastructure developers working in coordination rather than independently.

The opportunity for accelerated adoption is real but conditional. Pakistan need not replicate the full iterative development path of early CTV markets if it approaches the format with design intelligence rather than mere technology deployment. However, the technology leapfrogging literature (Steinmueller, 2001; Fong, 2009) and this paper's own analysis converge on a critical point: accelerated adoption is not the same as skipping stages. The three preparatory conditions (interaction design literacy development, design infrastructure standardisation, and culturally calibrated signifier development) and three design principles (progressive disclosure, modal orchestration, and culturally grounded signifier design) proposed in this framework describe capabilities that must be built, not bypassed. Pakistan's advantage as a late mover lies in the ability to build these capabilities more deliberately and efficiently, informed by what has and has not worked in mature CTV markets, rather than in the ability to bypass them altogether.

For design education specifically, the analysis points to a need for curriculum development in interaction design, user experience design for television environments, and cross-cultural signifier design. Pakistani graduates entering the advertising industry in the coming years will encounter shoppable and interactive television formats as a professional reality. Equipping them with the

design knowledge to address this reality is both commercially valuable and a contribution to the country's broader capacity for innovation in creative communication.

Future research directions emerging from this paper include empirical studies of Pakistani audience responses to interactive television advertising stimuli, design practice research examining how Pakistani advertising designers currently approach digital interactivity, comparative longitudinal tracking of shoppable CTV adoption in emerging markets such as Indonesia, Nigeria, and Vietnam, and experimental studies testing the proposed design principles of progressive disclosure, modal orchestration, and culturally grounded signifier design with Pakistani audiences across varied demographic and socioeconomic segments. Such research would complement this conceptual foundation with the empirical evidence necessary to refine the framework and identify which design challenges prove most consequential in practice. The convergence of television, commerce, and interaction design that shoppable CTV represents is not a temporary phenomenon; it reflects a structural transformation in how advertising communicates and what it asks of its audiences. Preparing Pakistan's design infrastructure, education system, and creative industry for this transformation is both a practical necessity and an intellectual opportunity for the field of visual communication design.

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