The Potential of Digital Out-of-Home Advertising in the Lift Industry

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Abstract. This paper analyses the potential of Digital Out-of-Home (DOOH) advertising in the lift environment—a confined, high-dwell space optimally suited to targeted, high-impact digital communication. Based on academic literature, market research, and direct lift stakeholder survey data, this paper explores the technical infrastructure, operational concerns, content models, privacy considerations, and monetisation strategies associated with lift-based DOOH applications.

The paper examines the adoption of modular hardware within the lift and how this integrates into building management systems. The paper then reviews content scheduling through CMS (Content Management System) platforms with AI and programmatic delivery of ads. Special focus is placed on ethical curation of content and GDPR compliance in data use, specific to the lift environment. Findings from a direct lift stakeholder survey show very high interest in DOOH for organisational communication and cost efficiency, but also pinpoint concerns about control, relevance, and aesthetic disruption.

The paper outlines an innovation agenda with smart targeting, responsive display environments, and effective energy use at its centre. It concludes by highlighting lift-based DOOH as a monetisable ad vehicle and strategic communications layer in smart buildings— albeit one which will only be successful if privacy, content regulation, and context are placed at its centre.

1 INTRODUCTION

DOOH advertising is dynamic, screen-based media shown in public areas, from roadside billboards and malls to transit points and lifts. While traditional OOH (Out-of-Home) relied on static signage, DOOH transforms this medium by integrating real-time, data-driven content distribution, contextual messaging, and cross-platform engagement via programmatic networks [1, 2]. This evolution has made outdoor advertising an increasingly digitised landscape that leverages AI and behavioural analytics to deliver targeted, responsive campaigns.

The global DOOH market is growing at a high rate. Research by Grand View Research [3] predicts the market will reach USD 39.12 billion by 2030, driven by rising urbanisation, smart infrastructure investments, and demand for real-time, interactive content. Stakeholders are leveraging DOOH technologies more than before to gain optimum audience coverage, maximise return on advertisement spend, and be aligned with digital transformation trends [4].

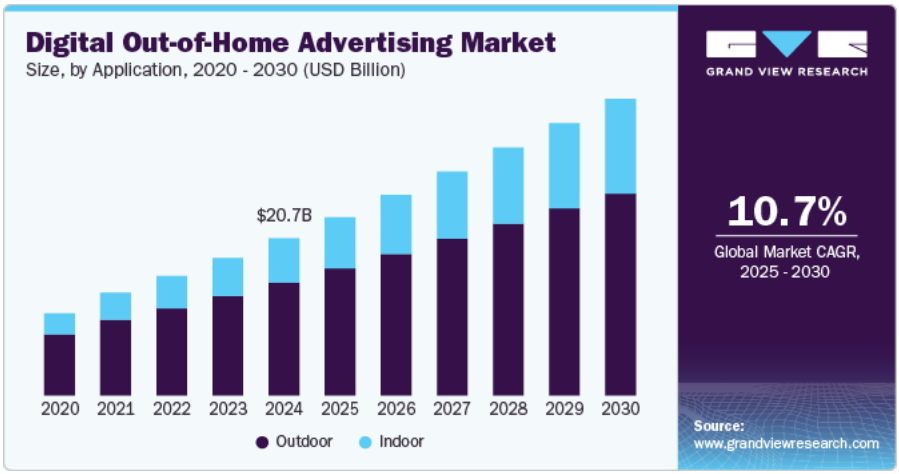

Figure 1 Digital Out-of-Home Advertising Market [3]

Lifts provide a new, albeit relatively untapped, environment for the deployment of DOOH. As enclosed and high-frequency transportation areas, lifts provide long dwell times—typically 30–60 seconds—and a captive audience with low distraction. Additionally, lift screens offer the advantage of contextual relevance, allowing content to be customised to suit the specific building environment and audience needs. These features make the inside of lifts a perfect space for hyper-targeted, time-sensitive communication [5]. In addition, the repetitive use of lifts ensures multiple exposure, developing brand awareness and internal communications.

For lift asset owners and building managers, there are numerous advantages to the installation of DOOH screens. Beyond monetisation potential via advertising, screens can modernise interior aesthetics, enable real-time user communication, and elevate emergency messaging systems [6,7]. In a post-pandemic era where digitisation and contactless information are a priority, such systems also enhance real-time user experience and build competitiveness.

Likewise, this paper examines the operational and technical viability of lift-based DOOH advertising, founded in academic literature, market research, and primary stakeholder response.

2 TECHNICAL INFRASTRUCTURE OF DOOH SYSTEMS IN LIFTS

2.1 Hardware integration and display technologies

Installing digital screens in lifts requires careful consideration of space constraints, constant movement, and visibility. The lift environment is compact and subject to frequent use, vibration, and varying temperatures, demanding robust and resilient hardware.

Screen placement is critical in lift environments. Displays must not interfere with control panels, emergency buttons, or passenger movement. Ultra-thin, flush-mounted designs integrated into wall panels offer a discreet and practical solution, maintaining both safety and usability. Beyond function, these installations enhance the overall passenger experience and project a modern, high-tech image – a valuable asset for commercial offices and premium residential buildings.

2.2 Power Supply and Network Connectivity

Reliable power and connectivity are key to lift-based DOOH. Lifts do not typically enjoy simple access to building LAN infrastructure, and small metal cabins interfere with wireless signals. The Outdoor Advertising Association of America [8] adds that most operators resort to cellular

connectivity—typically via 4G/LTE modems utilising external antennas fixed outside the lift shaft. Redundant power systems need to be implemented in order to prevent power outages, with UPS backup suggested to maintain service during short-duration power loss.

In addition, to keep latency and service interruption under control, content must be stored locally on embedded flash storage or edge media devices, such as SD cards, ensuring smooth playback in the event of temporary network disruption. Remote screen health monitoring and content updating via cloud-based CMS platforms provide scalability and assurance for building managers and advertisers, ensuring seamless management across multiple locations.

Another critical challenge in lift-based DOOH systems is electromagnetic noise, particularly in modernisation projects. Older motors, legacy wiring, and pre-existing electrical infrastructure can generate high-frequency electromagnetic interference, disrupting network signals and causing inconsistent data transmission. These disruptions can lead to unstable connections, content loading delays, or even complete signal loss. To mitigate these issues, shielded networking cables are deployed to insulate data transmission lines from external interference, ensuring a clean, uninterrupted connection. Managing electromagnetic interference will be essential for ensuring the long-term reliability of lift-based DOOH systems. Future installations may integrate signal filtering technologies and improved grounding mechanisms to further stabilise transmission, reinforcing the viability of lift-based digital signage as a robust communication platform within modern buildings.

2.3 Integration with Building Management Systems (BMS)

Top-tier DOOH implementations are facilitated through integration with BMS, allowing content to respond automatically to real-time inputs. Quinn et al. [9] describe how IoT sensors linked to Facility Management enabled Building Information Models (FM-BIM) platforms are able to update content triggers—e.g., occupancy rates, time-of-day, or alert messages. During peak traffic during mornings, for example, screens can show fast-scrolling headlines or offers geared towards professionals; during evenings, content can shift to leisure or lifestyle programming.

Lift-specific integrations may also integrate lift controllers or Programmable Logic Controllers (PLC). These integrations cause screen content to change with the floor level or destination context of the lift—providing hyper-relevant messages. Though more complex, this multi-layered use case makes DOOH a component of a building's digital architecture, and not a standalone system.

2.4 Modular Design and System Upgradability

As DOOH media landscapes continue to develop at a fast pace, the systems have to be capable of simple upgrading. D'Ambrosio et al. [10] identify modular system design as good practice—whereby display units, controllers, and CMS software can be upgraded separately. This reduces maintenance expenses, future-proofs the installation, and prevents the downtime of total system revamps.

In retro-fit applications and pre-wired modular packs allow screens to be more readily installed without heavy infrastructure renewal. This is particularly advantageous in older buildings which wish to improve their internal communications and income streams without extensive lift refurbishments.

Modular buildings also lend themselves to scalable content strategies—where multiple units across different floors or elevations can be tracked from a single dashboard. This is valuable for business property managers with portfolios of office towers, hotels, or apartment complexes.

3 CONTENT MANAGEMENT AND PROGRAMMATIC ADVERTISING

3.1 Content scheduling and CMS requirements

The adoption of content management systems (CMS) for DOOH is typically driven by the perceived usefulness and ease of use—key constructs of the Technology Acceptance Model (TAM). As Shinde et al. [4] elaborate, stakeholders will adopt CMS tools that have intuitive interfaces and automatic scheduling functionality for numerous endpoints. In the context of lift-based DOOH, this is the ability to program short-format, context-sensitive content that changes dynamically based on time, building type, or user profiles.

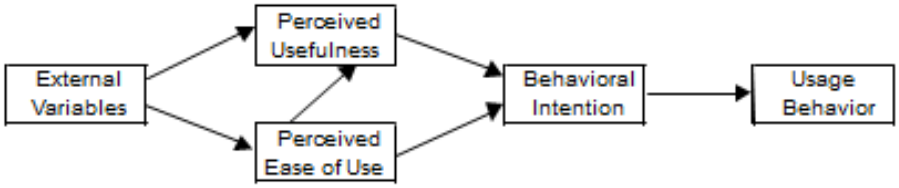

Figure 2 Technology Acceptance Model [11]

Sayoh [7] also adds that AI-powered integration with CMS enables content to respond to real-time input, such as environmental factors or audience traffic. This capability is especially required in lifts, where audiences are subjected for limited durations, and messaging must be concise, dynamic, and immediately relevant. Scheduling through CMS effectively reduces operational overhead while optimising content impact.

3.2 Programmatic and automated ad delivery

With programmatic infrastructure becoming inherent to DOOH networks, the lift environment can benefit from more targeted and efficient delivery of advertisements. Häglund and Björklund [1] explain programmatic DOOH as connecting advertisers with screen networks via real-time bidding platforms, with the capability of data-driven control of when and where content is displayed. Shinde et al. [4] explain how such automation improves campaign agility – ads can be changed in a space of minutes, depending on real-time data feeds.

In lifts, this ability delivers time-of-day programming, weekday-vs-weekend targeting, and floor-level messaging according to commercial or residential audiences. Programmatic delivery also offers ad inventory that is sold with minimal or no human involvement, which scales while continuing to maintain relevant content.

3.3 Interaction and cross-channel integration

Beyond visual messaging, lift-based DOOH can extend its impact through interactive touchpoints and cross-channel efforts. Sayoh [7] discusses that AI-powered DOOH networks use ambient cues—such as crowd density or motion detection—to adjust content in real time. QR codes, near-field communication (NFC), and Bluetooth Low Energy (BLE) beacons can serve as bridge points between lift-based screens and users' mobile devices, enabling deeper engagement and interaction.

This level of interaction strengthens campaign recall and allows for deeper conversion funnels, especially when paired with broader omni-channel efforts. In the lift ecosystem, where real estate is minimal but dwell time is abundant, these digital cues can solicit strong action without physical engagement, maximising each passenger's journey to its highest utility.

4 PRIVACY, AUDIENCE MEASUREMENT AND ETHICS

4.1 Privacy, consent and data protection

The use of DOOH advertising in lift environments demands a rigorous data privacy and protection strategy. Because of the enclosed nature of lifts, any data collection mechanisms, such as sensors or cameras, must be fully compliant with data privacy regulations such as the General Data Protection Regulation (GDPR). The GDPR mandates explicit user consent for data collection and processing, such that the individuals are aware of how their data is being used and can opt out if they choose to do so [12].

To counter these demands, advertisers are increasingly relying on anonymised data collection methods. For instance, sensors can log the presence of individuals without noting personally identifiable information, thus adhering to compliance while still offering targeted content [13]. This not only safeguards users' privacy but also facilitates trust between consumers and advertisers.

4.2 Ethical content and contextual sensitivity

Responsible use of DOOH content extends beyond data privacy to encompass the content and context of the advertising itself. In lift environments, where audiences are captive and exposure is unavoidable, it is critical that the content is appropriate and not invasive. Advertising needs to avoid leveraging sensitive topic areas or displaying content that will offend or cause discomfort for those exposed to it.

Moreover, the use of adaptive advertising technologies that tailor content based on real-time data raises ethical issues about the potential for manipulation, along with the perpetuation of biases. It is the advertisers' duty to make sure that such technologies are used responsibly, with regulatory frameworks existing to prevent abuse as well as maintain the integrity of the content of the advertisements [14].

5 STAKEHOLDER INSIGHTS: SUPPORTING EVIDENCE FROM INDUSTRY SURVEY

To gain a clearer understanding of perspectives on digital modernisation within lift spaces, we conducted a targeted industry survey. The survey aimed to explore stakeholder interest in replacing traditional pinboards with digital solutions, assess attitudes towards advertising in lifts, and identify key considerations for content relevance and operational management. By gathering insights from respondents across residential, commercial, and hospitality sectors—including lift contractors, consultants, and building owners—we were able to capture a comprehensive view of the current landscape and future opportunities.

5.1 Current adoption landscape

The adoption landscape for building lift digital screens is evolving extremely rapidly, with pioneers being primarily commercial real estate and high-end residential buildings. What our survey reveals is that while 63% of respondents indicated they have digital screens installed somewhere within their buildings, only as low as 38% affirm deployment in lifts as well. This divergence depicts a huge growth opportunity. Academic papers confirm the same observation. Babu and Lakshmaiah [6] pointed out that lift lobby digital screen advertising continues to be a high-recall and cost-efficient option that aligns perfectly with residents' routines. They emphasise the hyper-local coverage of such media, which is reinforced by repeated exposure and physical proximity to decision-making spaces like offices and homes.

Furthermore, Bah and Haba [15] found that positive attitudes towards DOOH are strongly correlated with familiarity and frequent exposure frequency—a natural advantage of lift environments, where individuals are often captive and recurrently exposed to screens.

5.2 Operational management & content governance

One of the recurring themes in the survey answers was the importance of content management and control. Over 67% of the respondents answered that their screens are not refreshed more than once a month, indicating the challenge of maintaining a steady stream of new and appropriate content.

Additionally, 75% underscored the importance of maintaining local control of screen content. Governance becomes even more relevant within local environments. Respondents were reluctant to give away content control to third-party sponsors, complaining about the possibility of brand misalignment, lack of relevance, or visual clutter. This is in line with Shinde et al. [4], who highlight that successful DOOH campaigns within cluttered or semi-private environments are extremely dependent on a successful Technology Acceptance Model (TAM) strategy centred on perceived ease of use and usefulness by operators and inhabitants.

The research tells us that owners of buildings are open to adopting DOOH systems, but only in facilities that enable selective filtering of material and relevance enforcement—particularly if user attitudes and building brand identity are at stake.

5.3 Cost sensitivity and monetisation

The most significant point of our industry poll was the financial incentive for DOOH installation. A full 58% of the respondents said they were open to third-party ads on lift displays—provided it would help cover operational or installation costs and if they would retain some editorial discretion over the ads. A few suggested that openness to monetising would depend on reducing intrusiveness and increasing contextuality. This reflects how the broader market feels. Kishore Babu [6] clarifies that as lift real estate becomes increasingly digitised, brands perceive it as an opportunity to reach audiences during moments of unbroken attention and the best possible platform for branded content. Nevertheless, he also warns that excessive commercialisation in the absence of thematic and aesthetic alignment has the risk of diminishing user experience and trust levels.

Therefore, the path forward appears to be hybrid monetisation models, where a percentage of screen time is spent on building-related announcements or community content, and a selection pool of advertisers is given limited access, subject to strict guidelines.

6 FUTURE-PROOFING AND INNOVATION ROADMAP

6.1 Smart targeting and responsive displays

Among the most groundbreaking developments of DOOH advertising is the application of AI in real-time targeting. Smart targeting allows screens to dynamically react to context—e.g., weather, day/part of day, or demographic information—displaying more relevant and effective content. Sayoh [7] describes how AI may screen consumer demographics, behaviours, and environmental context to personalise content on-the-fly, maximising consumer experience and enhancing brand recall.

As urban spaces get packed, the lift becomes more and more a hub of online interaction. Research conducted by Babu [6] demonstrates the high dwell time and typical use of lifts, revealing that screens in these confined spaces can maintain sustained contact and cement brand remembering. Beyond advertising, buildings are increasingly adopting digital signage as an integral communication tool, facilitating tenant updates, community notices, and real-time building-wide messaging.

In the long term, DOOH in lifts may shift from passive advertising to a platform for building-wide communication infrastructure—used not just for marketing purposes but also for community engagement, building notices, and personalised user experiences. The wider applicability reinforces the strategic importance of such installations over the long term.

6.2 Consumer behaviour and ROI: Further research suggestions

While academic papers and marketing research point towards high recall and interaction rates with DOOH, more quantitative academic studies are required to measure consumer behavioural shifts in particular lift environments. Upcoming studies would then be able to examine how repeated exposure in these environments affects loyalty to a brand, intention to buy, or tenant satisfaction.

Besides, an awareness of the psychological impact of screen proximity and use frequency in such cramped areas might be a useful input for content design and organisation.

6.3 Energy-efficient resilient technologies

Future-proofing DOOH networks also entails the adoption of energy-efficient technology. LCDs with LED backlight and the next-generation E-ink display offer power-saving alternatives without compromising visibility. Moreover, heat-resistant and vibration-resistant hardware ensures uninterrupted performance in changing lift environments.

These innovations reinforce advocacy for a holistic, future-oriented approach to lift-based DOOH in which technical competence is weighed against functional building integration as well as user-centric design.

7 CONCLUSION

Digital Out-of-Home advertising is coming of age, and especially in the built environment. The lift industry, with its inherent captive-audience environment and habitual use patterns, offers an engaging environment for novel, interactive DOOH systems. This paper has discussed the technical infrastructure necessary, the changing stakeholder environment, and the way forward for lift-based digital screens.

Evidence from industry reports and scholarly research indicates that while take-up is growing, success will depend on balancing technological innovation with governance, content suitability, and user trust. The convergence of AI-driven targeting, modular and energy-efficient hardware, and programmatic content delivery offers lift operators and advertisers a strategic moment for both communication and monetisation—provided that privacy and contextual integrity are guaranteed.

Moving ahead, the task is not merely to install DOOH infrastructure, but to ensure its integration assists broader stakeholder objectives, from operational efficiency to resident happiness. With thoughtful installation, lift-based DOOH can be a central component of smart building ecosystems and a highly effective ad touchpoint.

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BIOGRAPHICAL DETAILS

Begüm Avdagiç is a Product Manager at Dewhurst Ltd, where she leads engineering-driven product development with a strong focus on sustainability and continuous improvement in the lift industry. She holds a BSc in Mechanical Engineering and an MSc in Management from Imperial College London. At Dewhurst, she manages the full lifecycle of lift components and technical rigour to deliver user-centred, high-impact solutions. Begüm brings a strategic, cross-functional approach to product development, with a commitment to sustainable innovation and advancing the role of women in STEM.

Peter Dewhurst is the Managing Director of Dewhurst Ltd, where he has led the company through a period of strategic growth and innovation in the lift industry. He holds a Master of Engineering (MEng) in Civil Engineering from the University of Cambridge. Since joining in 2020, he has been instrumental in modernising commercial operations, strengthening customer partnerships, and positioning the business to meet the evolving demands of vertical transportation. Peter brings a hands-on leadership approach, combining technical understanding with a clear long-term vision.

Gemma Moore is an Account Manager at Dewhurst Ltd, where she manages a portfolio of key clients and supports the delivery of tailored lift solutions across the UK. She holds a BA in International Marketing and a BA in Business Management from Teesside University. With over eight years of experience in technical sales and customer relationship management, she plays a central role in driving new business development and ensuring long-term client satisfaction. Gemma brings a customer-focused approach to the lift industry, with a strong emphasis on service excellence, market insight, and collaborative growth.