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360-Degree Video Advertising Environments: Investigating the Impact of Time-Sequenced Content Design on Brand Perception

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Abstract

Integrating 360-degree video advertising with time-sequenced content strategies provides an effective approach to engaging consumers throughout their advertising journey. By delivering immersive and contextually relevant content consistently, brands can enhance consumer perception. The rise of 360-degree video advertising environments has introduced new possibilities for delivering immersive and interactive content to audiences. With this innovation, advertisers are faced with the challenge of optimizing content design to effectively engage users and communicate brand messages. These environments provide users with a unique opportunity to engage with content in a highly dynamic and personalized manner. However, a critical question arises: how does the design of time-sequenced short-form content impact brand perception This research, titled "360-Degree Video Advertising Environments: Investigating the Impact of Time-Sequenced Content Design on Brand Perception," aims to address this gap by examining how different content sequencing affects user interactions and brand outcomes. Specifically, it focuses on understanding the role attention guidance, and emotional engagement in shaping consumer experiences within immersive advertising settings. The study explores key aspects such as brand recall, perception, emotional connection, and engagement levels, providing valuable insights into the effectiveness of time-sequenced versus non-sequenced content in enhancing brand presence and user involvement. As immersive media continues to evolve, understanding these dynamics becomes crucial for advertisers seeking to maximize the impact of their campaigns. By delving into the interplay between content design and user experience, this research contributes both theoretical advancements and practical applications to the field of immersive advertising, guiding marketers in crafting more compelling and impactful brand interactions.

Keywords

360-Degree Video Advertising; Time-Sequenced Content; Brand Perception

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Introduction

The digital landscape of video advertising is rapidly evolving, with numerous advanced technologies emerging across various platforms as sophisticated media tools designed to captivate users and immerse them in advertising experiences. These innovations often rely heavily on granting users the freedom and autonomy to navigate such immersive advertising formats. Among these advancements, 360-degree video advertising presents a unique opportunity for brands to create engaging, interactive experiences that allow users to freely shape their journey within this advertising format and explore brand-associated content without constraints.

Despite the numerous advantages of these technologies, the unrestricted user control within 360-degree advertisements may influence their perception of the brand and the contextual narrative of the advertising experience. This highlights the critical role of appropriate time-sequenced content design—a strategic approach where specific elements are revealed progressively over time. Such structured, time-sequenced content flows guide user attention within the immersive, multi-angled advertising environment, enhancing interaction rates and content engagement. This, in turn, can positively influence the user's response and perception of the brand.

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Research Problem:

360-degree video advertising environments have emerged as a cutting-edge tool for delivering immersive and interactive experiences. However, there is a lack of empirical evidence on how time-sequenced short-form content within these environments impacts brand perception and user engagement. The challenge lies in identifying the optimal design strategies that enhance audience immersion while effectively communicating brand messages.

Research Objective:

The primary objective of this study is to explore the effects of time-sequenced short-form content design on brand perception and user engagement within 360-degree video advertising environments. Specifically, the study aims to:

- Analyze the role of time-sequencing in guiding user attention and narrative flow.
- Evaluate the effectiveness of short-form content in maintaining viewer engagement.
- Assess the overall impact on brand awareness, recall, and emotional connection.

Research Hypotheses:

- H1: Participants exposed to 360-degree video ads with time-sequenced content will have significantly higher brand recall compared to those exposed to non-sequenced content.
- H2: Time-sequenced content in 360-degree video ads will result in a more positive change in brand perception compared to non-sequenced content.
- H3: Participants exposed to 360-degree video ads with time-sequenced content will report higher levels of emotional engagement (e.g., excitement, interest, connection) than those exposed to non-sequenced content.
- H4: Time-sequenced content in 360-degree video ads will lead to higher engagement levels, measured by increased time spent viewing and interaction with ad elements, compared to non-sequenced content.
- H5: 360-degree video advertisements with chronological content have an effect on brand perception.

Research Significance:

This study is significant as it addresses a gap in the existing literature on immersive advertising technologies. The findings will provide:

- Theoretical Contributions: Insights into the psychological and behavioral impacts of time-sequenced content in 360-degree video advertising.
- Practical Applications: Guidelines for advertisers and marketers to design more effective and engaging campaigns using innovative content strategies.
- Technological Relevance: Recommendations for leveraging advanced storytelling techniques in immersive media to maximize brand impact and consumer engagement.

By bridging the gap between innovative design strategies and measurable advertising outcomes, this research aims to advance the understanding of immersive video advertising practices.

Research Methodology:

The research methodology follows an experimental research approach to study and examine the impact of time-sequenced short-form content design in 360-degree video advertising environments. The aim is to achieve a comprehensive understanding of user engagement levels and brand perception.

Theoretical background:

360-Degree Video Ads

The interactive viewing experience, rich visuals, and spatial audio design—where the sound shifts as the viewer changes their viewing direction—distinguish 360-degree videos from traditional videos (SHOOT, 2016). These immersive qualities have led some to refer to 360-degree videos as the "ultimate empathy machine" for media (Myrow, 2016). Research shows that approximately 86% of businesses have embraced 360-degree videos for attention-grabbing advertising and marketing campaigns (Valvano, 2018). Consequently, brands across various industries are achieving substantial success by leveraging 360-degree videos

(Cisse, 2017).

The effectiveness of 360-degree video ads is evident in a 29% increase in views compared to traditional video formats (Furer, 2018). For instance, a leading online travel company, Expedia (Fig1), utilized 360-degree videos to provide a panoramic experience of Australia's forests, cliffs, and oceans. Similarly, Shangri-La Hotels and Resorts (Fig2) have showcased visual experiences through 360-degree videos, such as the rooftop of the Jokhang Temple in Lhasa, complemented by numerous stunning interiors across Asia

(Huang, 2017 ;Feng 2018).

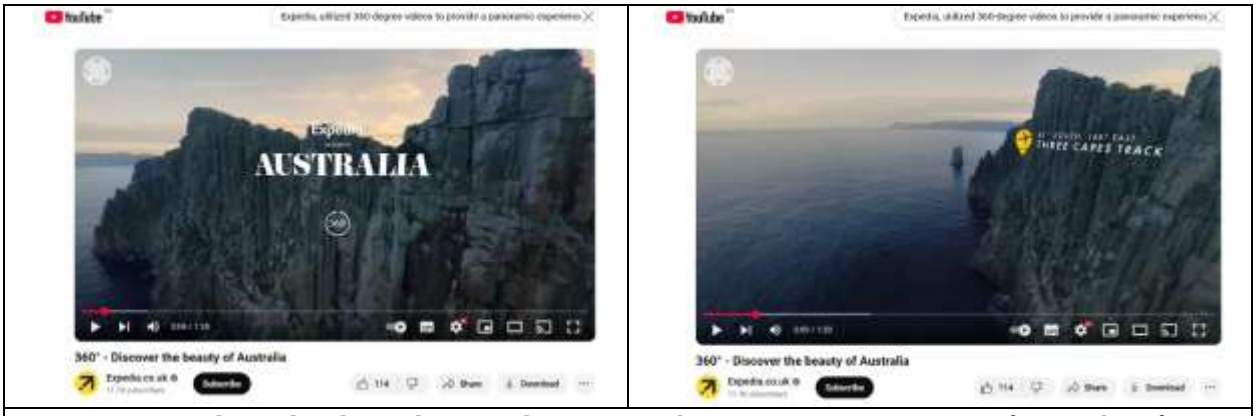


Figure (1) Expedia, utilized 360-degree videos to provide a panoramic experience of Australia's forests

Figure (2) Shangri-La Hotels 360-degree videos, such as the rooftop of the Jokhang Temple in Lhasa

Unlike traditional videos, where the point of view is predetermined by the director, 360-degree videos offer viewers a flexible and omnidirectional viewpoint. This allows viewers to freely explore the content from different angles, enabling them to interact with the content in a personalized way. As a result, viewers can move their viewpoint arbitrarily, providing a more engaging and immersive experience. This shift in interaction enhances the user's ability to choose where and how to view the content, promoting a deeper sense of engagement (Cauberghe, Hudders & Eisend 2018).

A 360-degree video is a monoscopic format that delivers a single image directed to both eyes, allowing viewers to explore free and omnidirectional perspectives within a full 360-degree radius. This viewing experience is entirely under the control of the user.

Social media platforms like YouTube and Facebook have become popular spaces for brands to share 360-degree videos, often referred to as immersive or spherical videos (Cohen, 2015; Johnson, 2016). These videos capture views in all directions simultaneously using specialized camera setups. During playback, viewers can control the direction of the view, providing a panoramic and interactive experience. (Cohen, 2015; Feng 2018).

Typically, 360-degree videos are accessed through personal computers or mobile devices such as smartphones and tablets. Navigation within these videos is facilitated by tools like a mouse for PCs or an accelerometer for mobile devices. On a PC, users can explore the video by clicking and dragging with a mouse, while on a smartphone, tilting the device adjusts the viewing direction. (Popper, 2016; Feng 2018). Despite the significant impact of 360-degree videos on online consumer experiences, the scarcity of experimental research restricts a deeper understanding of how these videos influence brand perception in advertising contexts (Feng 2018).

The emergence of 360-degree video has introduced exciting opportunities for digital brand storytelling by engaging audiences through immersive panoramas and enabling interaction with the content. Its integration into widely used social media platforms like YouTube and Facebook, which natively support 360-degree formats, has significantly enhanced its online dissemination (Cohen, 2015; Johnson, 2016; Popper, 2016; Feng 2018).

By allowing users to control their point of view, 360-degree videos enable two-way interaction between the audience and the content, highlighting a key principle of communication technology. (Feng 2018) Although 360-degree video ads are gaining popularity, creating content for them presents significant challenges. While viewers

enjoy greater freedom to explore the frame, producers lose the ability to guide their attention toward specific scenes that clarify the narrative. This occurs because creators cannot be certain that viewers will focus on the intended areas, potentially leaving viewers confused and frustrated as they struggle to identify the "correct" viewing path.

(Feng, Xie & Lou 2019)

With the growing adoption of 360-degree videos in brand storytelling, it becomes crucial to evaluate the effectiveness of 360-degree video advertising. While these videos grant viewers a high degree of autonomy, enhancing engagement, a key challenge lies in crafting a narrative that ensures a seamless navigation and viewing experience. The narrative structure—referring to the sequence and causality within an advertisement's story—plays a significant role in how viewers process the story and envision themselves within the consumption scenario. This experience, in turn, impacts the overall viewing satisfaction. Focusing on the concept of Time-Sequenced Content, this research specifically contributes to the advertising literature by examining its role within 360-degree video ads.

(Feng, Xie & Lou 2019)

When viewers of a 360-degree video advertisement are provided with a synchronized sequence that allows them to allocate sufficient cognitive resources to engage with the interactive ad, the interactive nature of the advertisement facilitates a stronger sense of presence. For example, Schlosser (2003) noted that interactive narrative advertising helps viewers mentally simulate scenarios similar to the events depicted in the ad. In this context, viewers of a 360-degree version of an ad with a moderate level of narrative structure are likely to experience a greater sense of presence compared to viewers of a traditional version.

(Feng, Xie & Lou 2019)

The Concept of Narrative 360 Advertising

Narrative ads, often referred to as story ads (Escalas, 1998; Padgett & Allen, 1997), communicate through a recognizable storyline (Green & Brock, 2002), where interrelated events unfold around story characters over time (Escalas, 2004). A narrative consists of central themes, characters' goals, the actions taken to achieve those goals, and the outcomes of those actions (Schank & Berman, 2002; (Feng 2018).

There are two key structural components of narrative ads: 1) chronology, where events occur sequentially, and 2) causality, where events are organized into a structured framework that establishes a causal relationship between them (Escalas, 1998; Feng 2018).

Prior studies emphasize that a key role of narrative advertising is to engage consumers on both cognitive and emotional levels (Chang, 2009). For instance, such advertisements have the ability to capture attention and provide entertainment (Escalas, 1998) or immerse viewers in the experience, ultimately fostering favorable perceptions of both the advertisement and the brand. The integration of characters, storylines, and dramatic structures within narrative ads facilitates empathetic engagement (Deighton, Romer, & McQueen, 1989). Empathy is fundamental to belief transformation in narrative contexts, as it involves audience members mentally placing themselves in the experiences of advertising characters (Zheng, 2014). Closely related to this concept is identification, which occurs when viewers adopt the perspective of the central character in a narrative advertisement, interpreting events through that character's lens (Kim et al., 2017; Feng, 2018).

In addition to empathy, the effectiveness of narrative advertising is largely linked to the innate human tendency to process information through storytelling (Adaval & Wyer, 1998). As Escalas (2004) highlights, individuals rely on narratives to make sense of their surroundings, personal experiences, and social identities. Furthermore, recurring story patterns shape how people establish causal relationships, serving as cognitive frameworks for interpreting new situations (Shank & Abelson, 1995; Feng, 2018).

Given the human tendency to structure experiences through narratives, storytelling in advertising enables consumers to extract both practical and symbolic meanings, aiding in their understanding of products and brands (Escalas, 2004; Zheng, 2014).

Another significant area of research in narrative advertising examines the concept of transportation as a mechanism for narrative persuasion. Transportation is characterized by the integration of attention, imagery, and emotional engagement in response to narratives, resulting in a state where individuals become deeply immersed, losing awareness of time, real-world facts, and experiencing intense emotions. Green (2004) posited that the phenomenological experience of transportation facilitates belief change through three distinct pathways (Feng, 2018):

1- Users tend to have fewer negative cognitive reactions to narrative advertisements. This can be attributed to the process of narrative transportation, which involves mental stimulation—a cognitive mechanism that enables the formation of hypothetical scenarios (Taylor & Schneider, 1989). When engaging with a narrative ad, users construct mental representations of its events and simulate

related situations (Chang, 2009). Since this cognitive engagement demands considerable mental effort, fewer resources remain available for generating counterarguments against the advertisement's claims (Adaval & Wyer, 1998; Feng, 2018).

2- Additionally, users develop emotional connections with the characters in narrative advertisements (Green, 2004). This aligns with the psychological processes of empathy and identification, both of which stem from the cognitive formation of mental representations of the characters (Chang, 2009; Green, 2004).
3- Lastly, users often interpret the storyline of a narrative advertisement as reflective of real-life experiences (Green, 2004). This phenomenon occurs because when individuals construct imagined scenarios that closely mirror those presented in the advertisement, these mental simulations may be misinterpreted as actual experiences if they resemble real memories (Johnson, Hastroudi, & Lindsay, 1993; Feng, 2018).

Interactivity in 360-Degree Video Ads

A 360-degree video enables viewers to control and adjust their perspectives, creating a bidirectional interaction between the audience and the content. This aligns with a fundamental principle of communication technology: interactivity (Macias, 2003; Sundar et al., 2014; Feng, 2018). By allowing users to dynamically shift their viewpoint, the experience mirrors real-world exploration, enriching the user experience and amplifying emotional engagement.

In a 360-degree video format, unlike traditional videos where the perspective is dictated by the creative director and viewers remain passive, audiences enjoy unrestricted, omnidirectional viewpoints. This allows them to explore content freely across a full 360-degree radius, guided by their interests rather than the director's decisions. They can "navigate" the video scenes in real time (Wijnants et al., 2015), choosing "where and what" to focus on (Hsiao and Grauman, 2017). This format empowers viewers to take control, customize, and adapt their experience, influencing the flow of information.

This type of advertisement facilitates active control, a crucial element of interactivity, which is defined as a voluntary and intentional action that shapes the user's experience (Liu & Shrum, 2002). Research indicates that audiences generally prefer dynamic formats such as 360-degree videos over static, two-dimensional alternatives (Broeck et al., 2017; Feng et al., 2019). Moreover, studies suggest that the interactive nature of 360-degree videos enhances emotional engagement, as viewers experience heightened presence and immersion, resulting in more meaningful interactions with the content. This immersive experience aligns with narrative persuasion, as users are more likely to retain information and develop stronger emotional connections with the messages presented (Green, 2004; Feng, 2018). Therefore, 360-degree video ads serve as a powerful medium for creating compelling and impactful content that resonates with contemporary digital audiences.

360-Degree Video Ads Interactivity and Brand Perception

Interactivity plays a critical role in 360-degree advertising, as it allows viewers to actively engage with content, shaping their perceptions of the brand. Research indicates that interactivity in digital content enhances emotional involvement, leading to deeper connections with the brand (Sundar et al., 2014; Feng, 2018). By enabling users to control their navigation through the content, they experience a more personalized and memorable interaction, which can significantly impact brand perception. On several levels, as follows:

Improved Memory and Recall

Research indicates that 360-degree advertising can substantially enhance brand recall. Macias (2003) underscores that immersive, interactive experiences facilitate the retention of information. By integrating time-sequenced narratives, viewers are guided through a storyline, allowing them to process each element within a coherent and meaningful context. This approach enhances brand recognition and recall, as users are more likely to engage with and remember the content in a structured and immersive manner. (Macias 2003)

Increased Engagement and Immersion

The interactive aspects of 360-degree advertising significantly influence brand perception by promoting higher levels of engagement. Sundar et al. (2014) highlight that when viewers have active control over their experience within a time-sequenced 360-degree space, they form a stronger emotional connection with the brand. This heightened engagement enables brands to differentiate themselves from competitors and foster a more memorable and impactful brand image. (Sundar 2014)

Navigation and Viewer Control

Time-sequenced 360-degree content provides a more controlled and immersive experience, allowing viewers to navigate through various aspects of the brand's story. This level of control is essential, as it enables users to personalize their journey, leading to a stronger emotional connection with the brand. Research by the Interactive

Advertising Bureau (2016) suggests that this personalization significantly enhances brand perception, making it more memorable and impactful.

Impact of Time-Sequenced 360-Degree Video Advertising on Brand Perception

"Time-Sequenced Content Design in Advertising" involves strategically arranging advertising content in a specific temporal order to enhance consumer engagement, recall, and conversion rates. This approach leverages the timing and sequence of ad exposures to optimize their effectiveness.(Baccot et, al 20009)

Research by Chorianopoulos and Spinellis (2009) emphasizes the significance of delivering advertisements in the appropriate sequence and at optimal times. Their study introduces a web adaptation system designed to manage the timing and sequencing of rich media ads, demonstrating that such strategic delivery can significantly enhance user engagement and ad effectiveness. (Baccot et, al 20009)

360-degree videos offer an exceptional platform for achieving these objectives, as their multi-sensory and interactive nature enables highly innovative and compelling executions. These videos create an immersive audiovisual environment where viewers can actively engage with the content. This interactivity fosters a heightened sense of presence and realism, offering unique opportunities for consumer immersion compared to traditional communication channels. (Flavián 2021)

The ability to create meaningful engagement stems not from the technology itself but from the quality and relevance of the story being told. Immersive technologies, such as virtual reality and 360-degree videos, provide a sense of proximity to the narrative, making the experience more impactful and memorable. The depth of immersion offered by this medium enhances the focus on creative storytelling, allowing brands to connect with their audiences in ways that traditional formats cannot achieve. (Flavián 2021).

Previous studies have emphasized the importance of time-sequenced content design in enhancing brand perception and consumer engagement. Escalas (2004) highlighted how narrative transportation, facilitated by well-designed time-sequenced narratives, strengthens emotional connections with a brand, leading to improved brand attitude and purchase intent. Similarly, Teixeira et al. (2012) demonstrated that time-sequenced advertisements following a rising action-climax-resolution structure significantly improve user retention and emotional response, making brand narratives more memorable. Kronrod and Huber (2018) found that the sequence and timing of advertising messages positively influence brand trust and recall, with coherent and logical sequencing creating more favorable brand perceptions compared to disjointed messaging. Aaker and Norris (2019) further revealed that sequential storytelling, where each segment builds upon the previous one, fosters emotional engagement, increasing brand attachment and customer loyalty. Additionally, Wang et al. (2021) showed that breaking down video ads into sequenced chapters on social media platforms enhances user engagement metrics such as shares, likes, and comments, ultimately strengthening brand perception. These findings suggest that integrating an organized timeline in 360-degree advertisements can address challenges associated with user-controlled, interactive content by reducing potential confusion and enhancing brand perception and user engagement.

Key Features of Time-Sequenced Content in Advertising

1- Sequential Structuring: Ads are presented in a logical sequence, creating a narrative or progression that resonates with consumers. Each exposure builds upon the previous, enhancing comprehension and emotional engagement. (Bruce et, al 2012)
2- Temporal Dynamics: The timing of ad delivery is optimized to ensure maximum visibility and impact, factoring in
3- Reinforcement and Recall: Carefully timed repetitions of ads reinforce brand awareness and ensure that key messages remain top of mind for consumers. (Gligorijevic & Flores 2019)
4- Consumer-Centric Alignment: The strategy is designed to match the consumer's journey, delivering content that aligns with their stage in the purchasing funnel. (Klymenko 2021)

Study:

An experimental research design will be employed, where the participants will be divided into two groups and exposed to two different types of 360-degree video ads. The first group will view three versions featuring short, time-sequenced content, while the second group will view three versions with non-sequenced content. This approach facilitates a comparison between the two types of content in terms of brand recall and emotional engagement. To gather data, a questionnaire (appendix 1 (Keller 1993; Aaker 1991; Poels & Dewitte 2006; Calder, Malthouse & Schaedel 2009)) was created and administered from March 1, 2024, to July 1, 2024.

2. Participants

Two groups were assigned for the experiment, each consisting of 100 participants who are YouTube users to ensure the generalizability of the results. Participants were selected based on the following criteria:

- Age: 18–40 years old (a common demographic for digital media consumption).
- Access to smartphones devices capable of

viewing 360-degree content.
- Participants randomly assigned into two groups:
- Group A (100 participants): Were exposed to three 360-degree video ads featuring time-sequenced content (64% females, 36% males).
- Group B (100 participants): Were exposed to three 360-degree video ads featuring non-sequenced content (55% females, 45% males).

First ad: 360° Video Ad with Time-Lapse Content

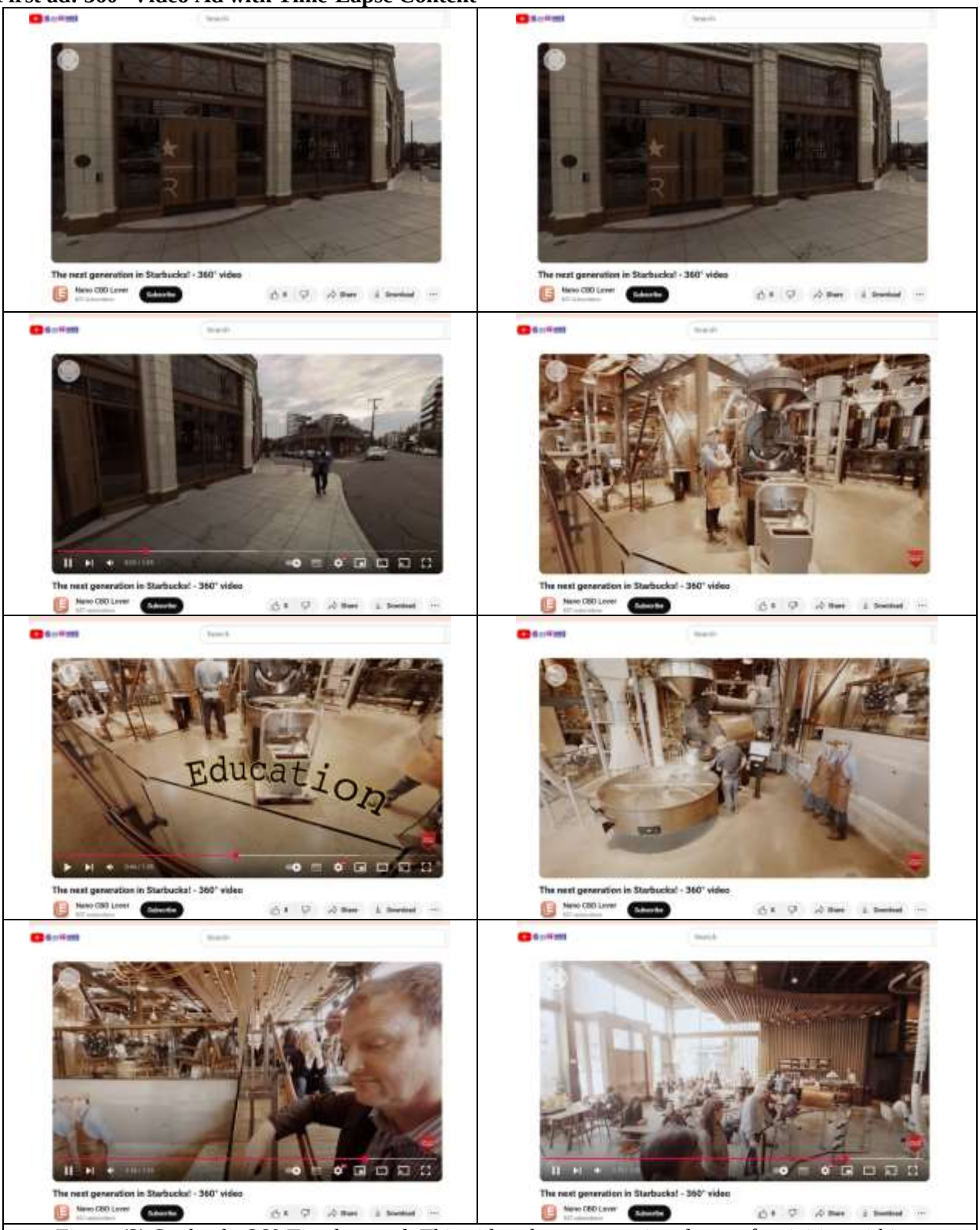


Figure (3) Starbucks 360 Timelapse ad: This video showcases a time-lapse of activities within a Starbucks store, providing an accelerated view of the bustling environment.

Second ad: 360° Video Ad with Time-Lapse Content

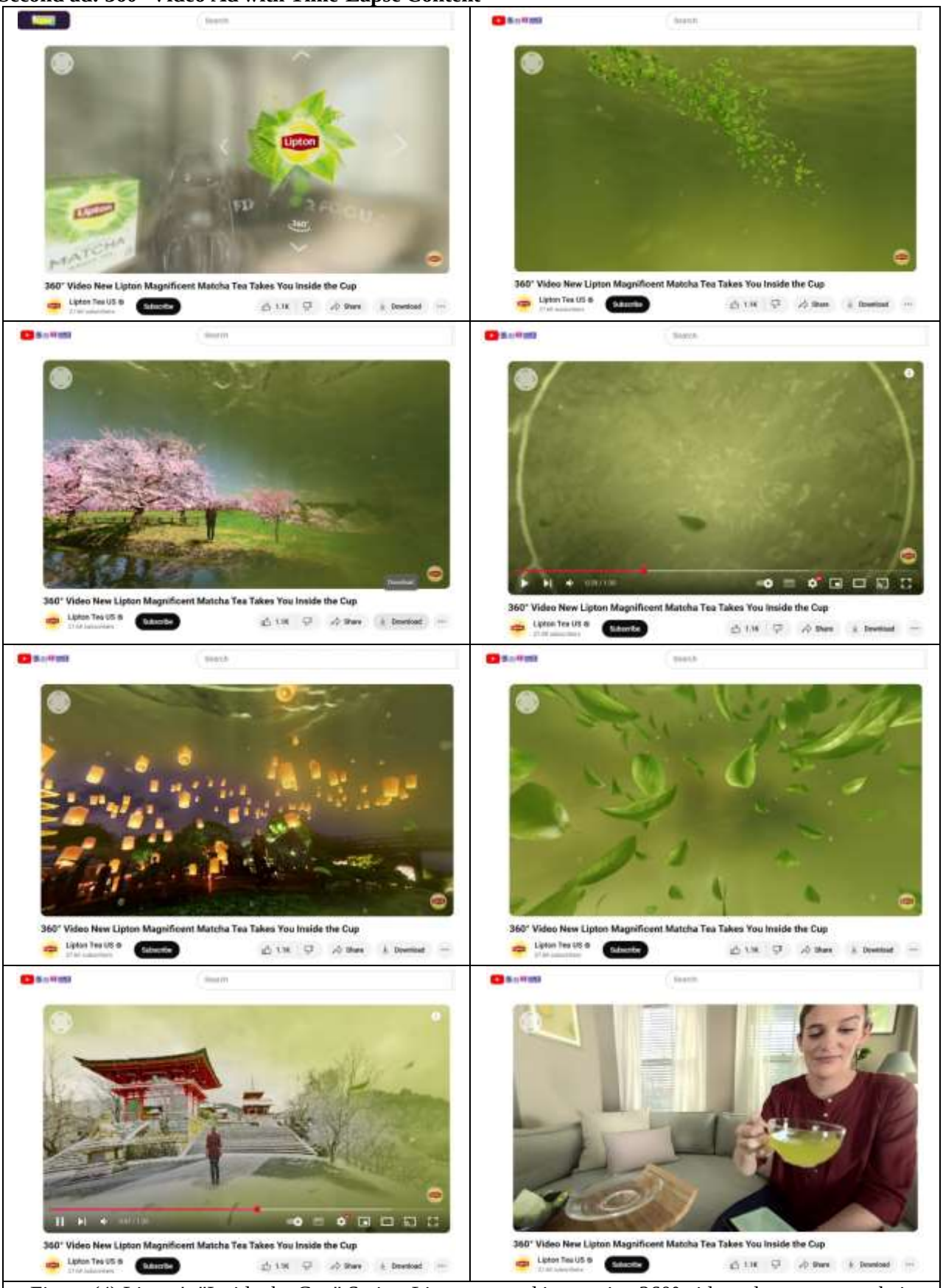


Figure (4) Lipton's "Inside the Cup" Series: Lipton created immersive 360° video ads to promote their specialty teas, such as Matcha and Chai. These videos transport viewers inside a virtual teacup, providing an engaging experience of the tea's flavors and origins.

Third ad: 360° Video Ad with Time-Lapse Content

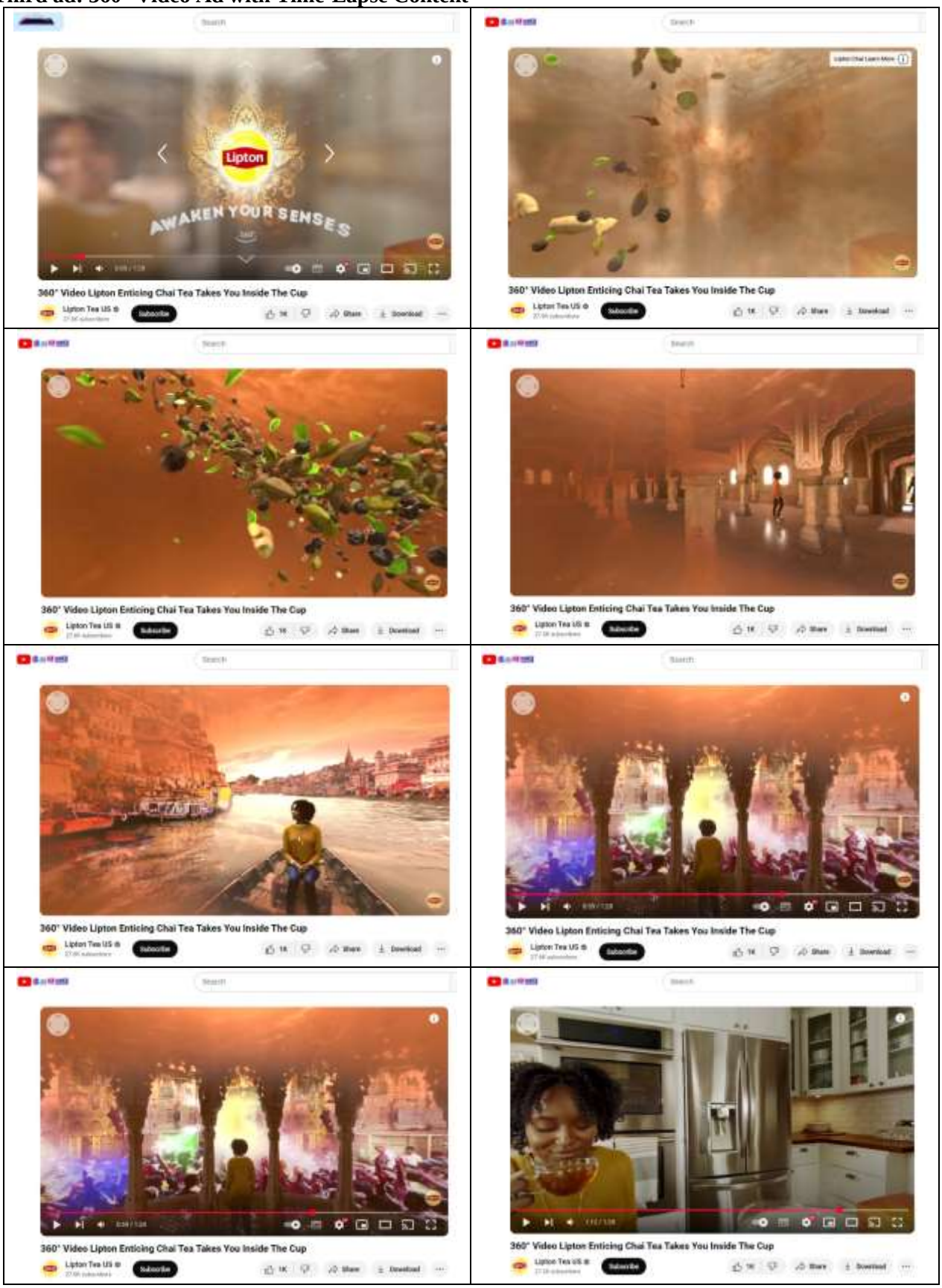


Figure (5) Lipton's "Inside the Cup" Series: Lipton created immersive 360° video ads to promote their specialty teas, such as Matcha and Chai. These videos transport viewers inside a virtual teacup, providing an engaging experience of the tea's flavors and origins.

Foruth ad: Coca-Cola - "Coca-Cola 360° Experience" Without Time-Lapse Content

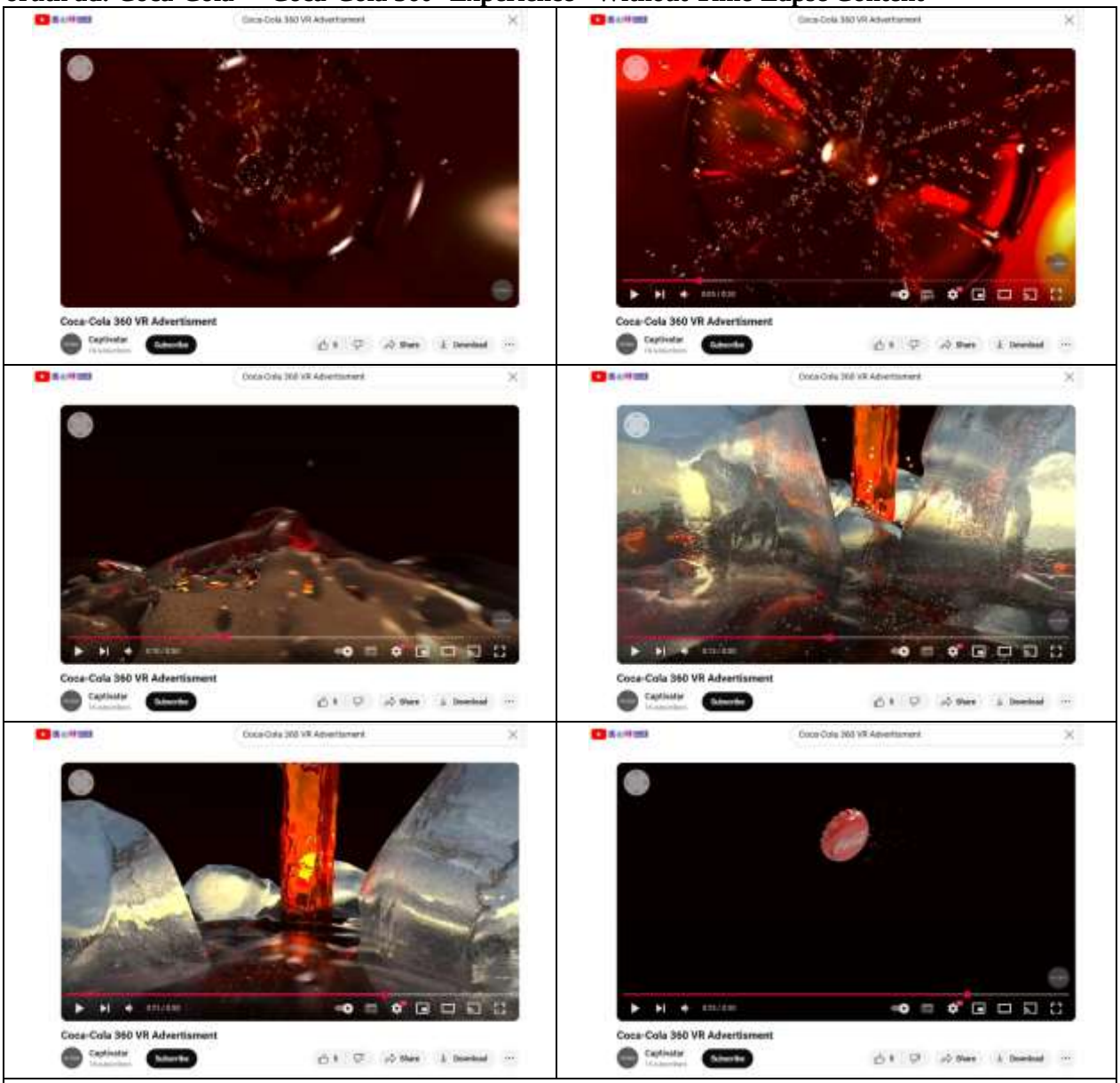
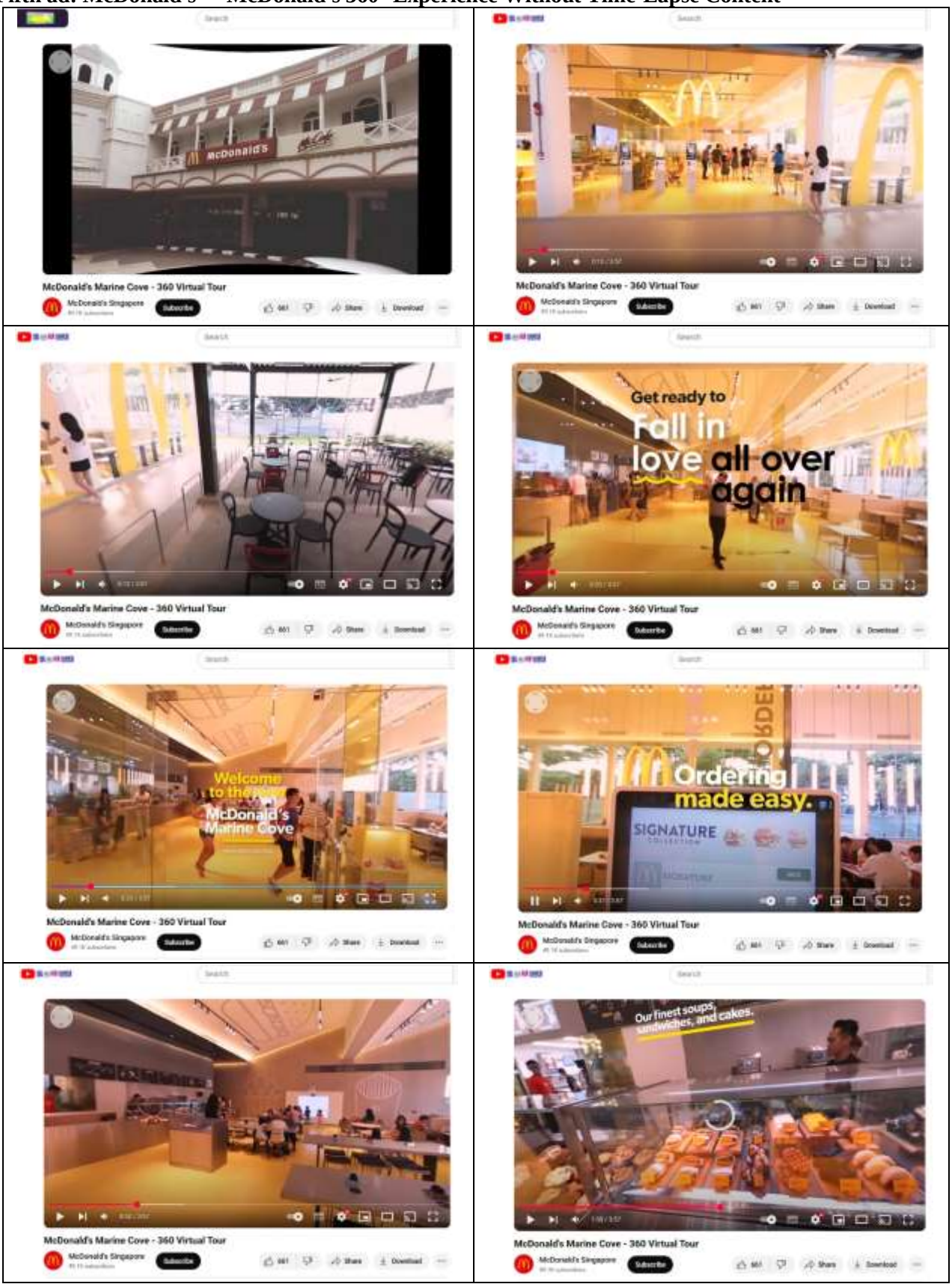


Figure (6) Coca-Cola 360° Experience ad: An immersive 360° experience that places the viewer in a vibrant and lively celebration, where they can explore different moments of joy, sharing, and connection that are timeless.

Fifth ad: McDonald's - "McDonald's 360° Experience Without Time-Lapse Content"



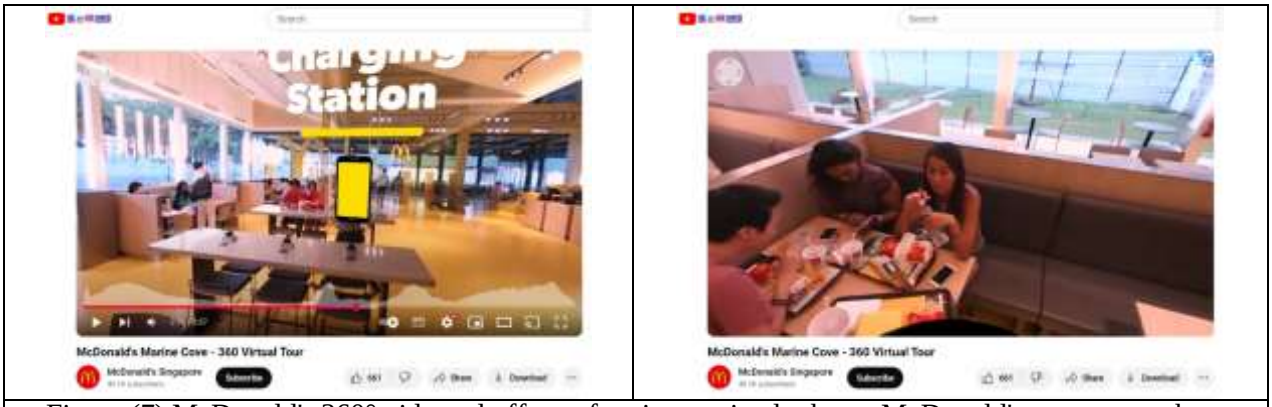


Figure (7) McDonald's 360° video ad offers a fun, interactive look at a McDonald's restaurant where users can explore various parts of the environment and experience real-time moments of joy and food preparation. The McDonald's 360° Kitchen Tour ad is considered without time-sequenced content because it offers a real-time, exploratory experience rather than a narrative structured around the passage of time or sequential events.

Sixth ad: 360° Antarctica unexpected snow ad Without Time-Lapse Content

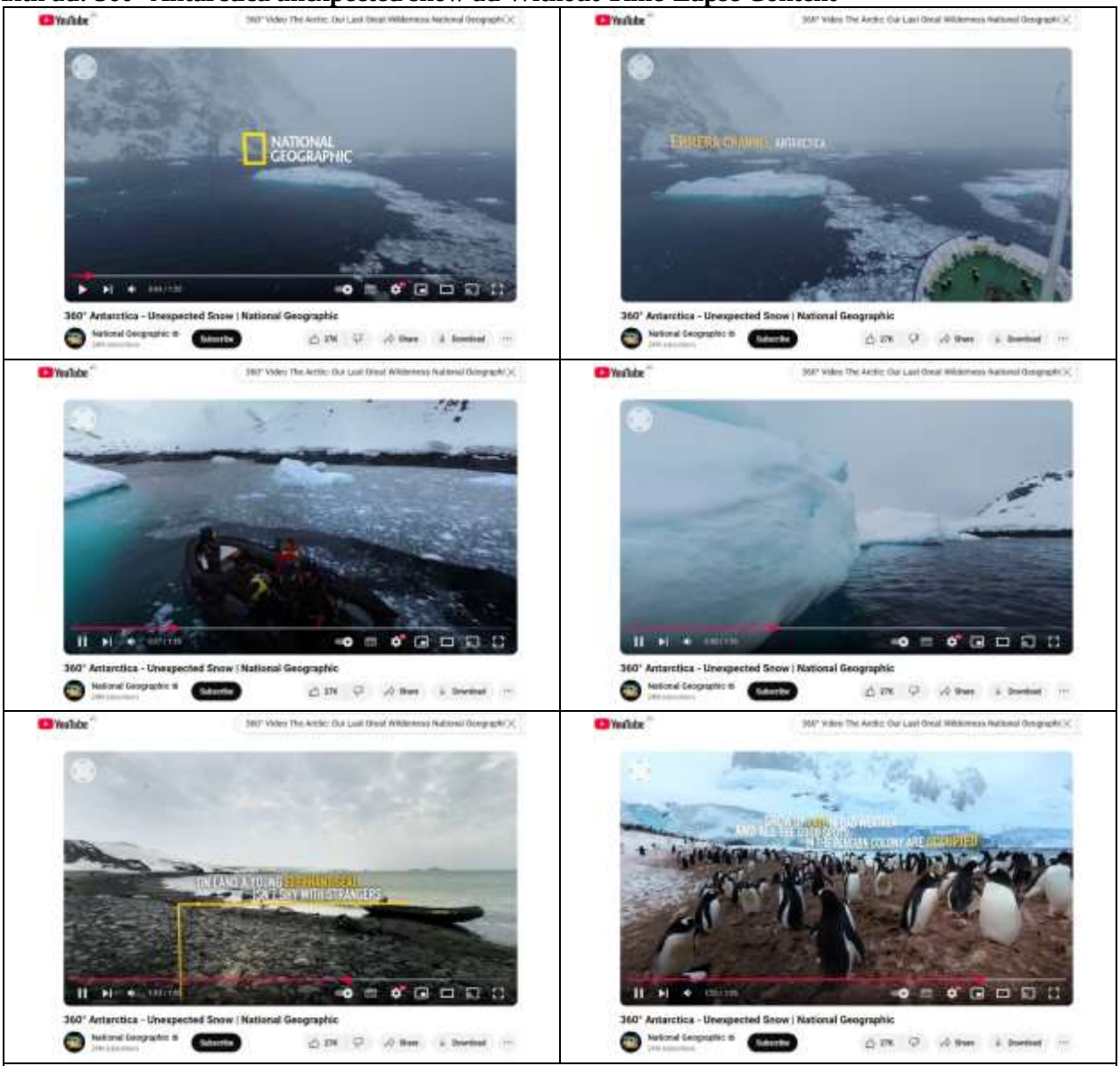


Figure (8) The National Geographic 360° Video "The Arctic: Our Last Great Wilderness" ad is considered without time-sequenced content because it focuses on creating a real-time, immersive exploration of the Arctic environment rather than presenting a structured narrative based on chronological events.

Measures

The participants' perspectives were evaluated through a questionnaire (Appendix 1), designed to capture their reactions to various statements using a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree."

The researcher conducted statistical analyses using the Statistical Package for the Social Sciences (SPSS 25) software, applying the following statistical methods:

Statistical Methods Used in the Research:

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25, with results extracted using the following statistical methods**:**

- Pearson Correlation Coefficient: Used to verify the internal consistency validity of the research tool**.**
- Cronbach's Alpha Coefficient: Used to assess the reliability and consistency of the research tool**.**
- Mean Calculation for Each Item: To determine the level of agreement for each item in the questionnaire, following the method as described above**.**

$$\text{Numerical Estimation} = \frac{(K1 \times 5) + (K2 \times 4) + (K3 \times 3) + (K4 \times 2) + (K5 \times 1)}{N}$$

where K1, K2, K3, K4, and K5 represent the frequencies of responses (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree), and "N" denotes the sample size. Then, items are arranged based on the mean for each item.

- Chi-square Test (χ^2): Used to assess the goodness of fit for each item, identifying differences in the choices made by the study sample for the five response alternatives (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree).
- Range Formula: Used to describe the mean of responses for each item in the Likert five-point scale. The degree of response for each item was calculated as follows:
- Positive Statements: Assign a score of (5) for Strongly Agree, (4) for Agree, (3) for Neutral, (2) for Disagree, and (1) for Strongly Disagree.
- If the mean score is between 1 and less than 1.80, the level of agreement is considered Strongly Disagree.
- If the mean score is between 1.80 and less than 2.60, the level of agreement is considered Disagree.
- If the mean score is between 2.60 and less than 3.40, the level of agreement is considered Neutral.
- If the mean score is between 3.40 and less than 4.20, the level of agreement is considered Agree.
- If the mean score is between 4.20 and 5.0, the level of agreement is considered Strongly Agree.

1- T-test: Used to identify differences between the mean scores of responses from the two groups within the sample (Group 1, Group 2).

2- Eta Squared (η^2) Formula: Used to measure the effect size of 360-degree video advertisements with sequential/non-sequential content over time among study participants.

Validity and Reliability of the Questionnaire:

Content Validity:

Expert Review: The initial version of the questionnaire was presented to a number of (10) professors and academic experts specialized in the field. Their feedback aimed at ensuring the validity and appropriateness of the questionnaire for measuring the intended constructs. The reviewers assessed:

- Clarity and relevance of the questionnaire items.
- Clarity of instructions provided in the questionnaire.
- Suitability of response options.
- Consistency between each dimension of the questionnaire and its intended measurement.
- Suggested modifications, deletions, or additions as necessary.
- The researcher incorporated the necessary revisions based on the feedback from the experts, and the final version of the questionnaire was established.

Internal Consistency Validity:

The internal consistency of the questionnaire was evaluated by calculating the correlation coefficients between the scores of individual items and the total score of their corresponding section. The findings are outlined below:

Level of Engagement		Emotional Engagement		Brand Perception		Brand Recall	
Correlation Coefficient	**Item Number**	**Correlation Coefficient**	**Item Number**	**Correlation Coefficient**	**Item Number**	**Correlation Coefficient**	**Item Number**
0.788**	11	0.669**	1	0.788**	11	0.669**	1
0.662**	12	0.733**	2	0.662**	12	0.733**	2
0.746**	13	0.672**	3	0.746**	13	0.672**	3
0.65**	14	0.677**	4	0.65**	14	0.677**	4
0.552**	15	0.772**	5	0.552**	15	0.772**	5
0.416**	16	0.72**	6	0.416**	16	0.72**	6
0.665**	17	0.713**	7	0.665**	17	0.713**	7
0.631**	18	0.751**	8	0.631**	18	0.751**	8
0.564**	19	0.778**	9	0.564**	19	0.778**	9
0.478**	20	0.735**	10	0.478**	20	0.735**	10

Significant at the 0.01 level

Table (1): Shows the correlation coefficients between the scores of each item and the total scores of the section it belongs to.

Table 1 demonstrates a statistically significant correlation between the scores of each questionnaire item and the total scores of the respective section. The correlation coefficients, ranging from 0.416 to 0.788, indicate that the items are appropriately designed to measure the intended constructs, confirming their validity for the study.

Construct Validity:

The researcher assessed construct validity by calculating the correlation between the scores of each section of the questionnaire and the overall total score of the questionnaire. The results are shown in Table (2):

Sections	Correlation Coefficient
Brand Recall	0.589**
Brand Perception	0.439**
Emotional Engagement	0.589**
Level of Engagement	0.769**

Significant at the 0.01 level

Table (2): Shows the correlation coefficients between the scores of each section of the questionnaire and the overall total scores of the questionnaire.

Table 2 reveals a statistically significant correlation between the scores of each questionnaire section and the overall total scores. The correlation coefficients, which range from 0.439 to 0.769, confirm the validity and consistency of the questionnaire sections in measuring the overarching constructs.

Reliability of the Questionnaire and its Sections:

The researcher assessed the reliability of the questionnaire and its sections using both Cronbach's Alpha and split-half methods. The results are shown in Table (3):

Sections of the Questionnaire	Number of Items	Cronbach's Alpha	Split-half	
			Guttman	Spearman-Brown
Brand Recall	10	0.896	0.942	0.944
Brand Perception	10	0.796	0.810	0.810
Emotional Engagement	10	0.890	0.922	0.923
Level of Engagement	10	0.864	0.939	0.940
Overall Questionnaire	10	0.867	0.946	0.946

Table (3) Cronbach's Alpha for the questionnaire and its sections.

Table 3 presents the reliability coefficients for the questionnaire and its sections. The Cronbach's Alpha values ranged from 0.796 to 0.896 for individual sections, with an overall reliability score of 0.867 for the entire questionnaire. Using the Spearman-Brown method, the reliability coefficients ranged from 0.810 to 0.944 for sections, with an overall score of 0.946. Similarly, the Guttman split-half method produced reliability values between 0.810 and 0.942 for sections, with an overall score of 0.946. These high reliability coefficients confirm the consistency and stability of the questionnaire, ensuring its suitability for accurate data collection.

Results of the Field Study and Interpretation:

Results of the First Hypothesis Test

The first hypothesis posits that "Participants (Group 1) exposed to 360-degree video advertisements with time-sequenced content will demonstrate significantly better brand recall compared to participants (Group 2) exposed to non-sequenced content."

To evaluate this hypothesis, the researcher analyzed the data by calculating the means, standard deviations, and agreement scores for the items in the first section, which focused on brand recall. An independent samples t-test was conducted to compare the mean scores of Group 1 and Group 2 for these items. The detailed results are presented below:

Section One: Brand Recall

No	Statement	Group1				Group2				T-value	Significance Level
		Rank	Approval Rating	Standard Deviation	Arithmetic Mean	Rank	Approval Rating	Standard Deviation	Arithmetic Mean		
1	I can remember the brand name that appeared in the advertisement	9	Strongly Agree	0.82	4.47	9	Not Agree	0.82	1.89	22.28	0.001
2	I remember the main or promotional slogan of the brand.	1	Strongly Agree	0.44	4.82	8	Not Agree	1.10	1.96	24.17	0.001
3	I can easily recognize the product featured in the advertisement in my memory.	5	Strongly Agree	0.57	4.71	10	Not Agree	0.82	1.87	28.27	0.001
4	I can describe the main features of the product shown in the advertisement.	4	Strongly Agree	0.58	4.74	7	Not Agree	1.07	2.10	21.72	0.001
5	I remember visual elements (such as the logo and colors) associated with the brand.	6	Strongly Agree	0.61	4.63	4	N/A	1.31	3.06	10.86	0.001
6	I can identify the brand's logo in the advertisement	3	Strongly Agree	0.55	4.76	7	N/A	0.97	2.75	18.03	0.001
7	The advertisement's message is unforgettable.	7	Strongly Agree	0.68	4.62	5	N/A	1.06	3.03	12.65	0.001
8	I remember the main benefits of the brand's product after watching the advertisement	8	Strongly Agree	0.82	4.61	1	Agree	0.82	4.08	4.57	0.001
9	The advertisement highlighted the brand in my mind.	10	Agree	0.83	4.18	3	Agree	0.74	3.58	5.38	0.001
10	I can easily describe the mission or vision of the brand after watching the advertisement	2	Strongly Agree	0.49	4.80	2	Agree	1.26	3.61	8.78	0.001

Table (4) illustrates the responses of the research sample to the statements in the first section (Brand Recall) after being exposed to 360-degree video advertisements, as shown below:

Group one (those exposed to time-sequential content): The responses of this group were within the range of (Strongly Agree, Agree), with the mean values for the first section statements ranging from (4.18 – 4.82). Statement No. (2), which states "I remember the main slogan or promotional slogan of the brand," ranked first among the statements in the first section with a mean score of (4.82) at the level of "Strongly Agree." Following this, statement No. (10), which states "I can easily describe the brand's mission or vision after watching the advertisement," ranked second with a mean score of (4.80) and a level of "Strongly Agree." Statement No. (6), which states "I can identify the brand's logo in the advertisement," was ranked third with a mean score of (4.76) and a level of "Strongly Agree." On the other hand, statement No. (1), which states "I can remember the brand name that appeared in the advertisement," ranked ninth, just before the last statement in the first section with a mean score of (4.47) and a level of "Strongly Agree." Additionally, statement No. (9), which states "The advertisement emphasizes the brand in my mind," ranked tenth and last with a mean score of (4.18) and a level of "Agree."

Group two (those exposed to non-sequential content): The responses of this group were within the range of (Agree, Neutral, Disagree), with the mean values for the first section statements ranging from (1.87 – 4.08). Statement No. (8), which states "I remember the main benefits of the brand's product after watching the advertisement," ranked first among the statements in the first section with a mean score of (4.08) and a level of "Agree." Following this, statement No. (10), which states "I can easily describe the brand's mission or vision after watching the advertisement," ranked second with a mean score of (3.61) and a level of "Agree." Statement No. (9), which states "The advertisement emphasizes the brand in my mind," was ranked third with a mean score of (3.58) and a level of "Agree." Meanwhile, statement No. (1), which states "I can remember the brand name that appeared in the advertisement," ranked ninth, just before the last statement in the first section with a mean score of (1.89) and a level of "Disagree." Additionally, statement No. (3), which states "I can easily recognize the product in the advertisement in my memory," ranked tenth and last with a mean score of (1.87) and a level of "Disagree."

Comparison Results between Group One and Group Two: There were statistically significant differences between the mean scores of Group One and Group Two on the statements of the first section (Brand Recall) after exposure to 360-degree video advertisements. These differences were in favor of Group One, with t-values for the statements ranging from (4.57 – 28.27), all of which were statistically significant.

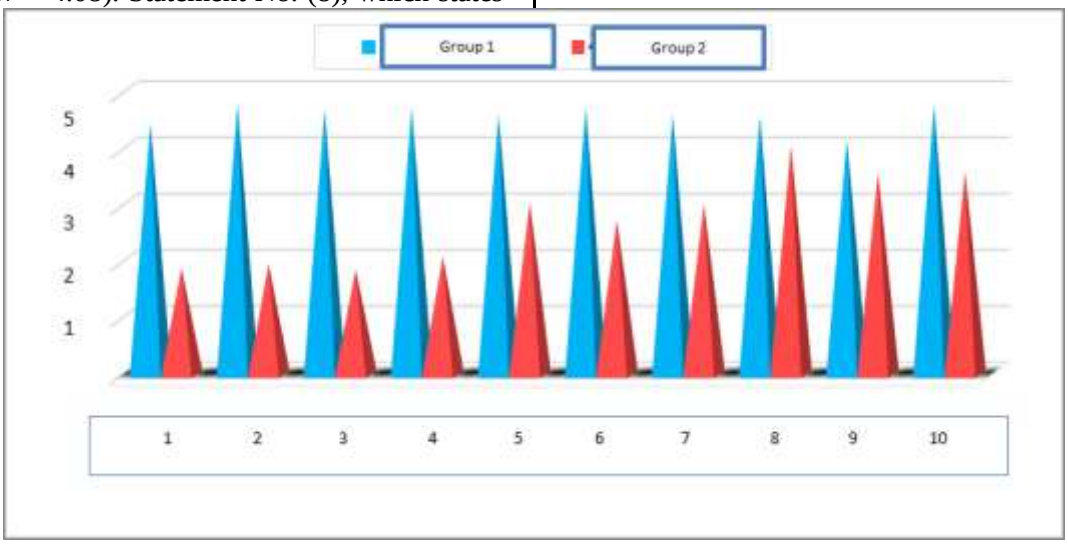


Figure (9) illustrates the mean scores of group one and group two on the first section statements after exposure to 360-degree video advertisements.

Based on Table (4), its results, and Figure (9), the first research hypothesis is confirmed.

Results of the second research hypothesis test:

The second hypothesis posits that "Sequential content in 360-degree video advertisements will lead to a more positive change in brand perception compared to non-sequential content."

To examine this hypothesis, the researcher calculated the means, standard deviations, and degree of agreement for the second section (brand perception). An independent samples t-test was conducted to compare the mean scores of Group 1 (exposed to sequential content) and Group 2 (exposed to non-sequential content) for this section. The results are as follows:

Section Two: Brand Perception:

No	Statement	Group1				Group2				T-value	Significance Level
		Rank	Approval Rating	Standard Deviation	Arithmetic Mean	Rank	Approval Rating	Standard Deviation	Arithmetic Mean		
11	I feel more positively towards the brand after watching the advertisement.	4	Strongly Agree	0.63	4.61	9	Not Agree	0.94	1.91	23.75	0.001
12	The advertisement makes the brand appear more trustworthy.	2	Strongly Agree	0.64	4.70	4	Not Agree	0.94	2.17	22.25	0.001
13	I see the brand as more innovative after watching the advertisement.	5	Strongly Agree	0.77	4.59	6	Not Agree	0.87	2.01	22.24	0.001
14	The advertisement made me think of the brand as more sustainable.	3	Strongly Agree	0.71	4.62	7	Not Agree	0.91	2.00	22.37	0.001
15	I perceive the brand as high quality after watching the advertisement.	6	Strongly Agree	0.71	4.58	3	N/A	1.04	2.74	14.58	0.001
16	I am likely to consider purchasing from this brand based on the advertisement.	10	Agree	1.12	4.12	2	N/A	1.42	3.13	5.47	0.001
17	The advertisement makes the brand seem more customer-oriented.	8	Agree	1.20	4.19	10	Not Agree	0.70	1.88	16.95	0.001
18	The advertisement makes the brand look more modern and relevant.	9	Agree	0.89	4.17	8	Not Agree	0.96	1.97	16.84	0.001
19	The advertisement made me feel that the brand understands my needs.	1	Strongly Agree	0.58	4.73	5	Not Agree	1.06	2.06	22.04	0.001
20	I am more likely to recommend this brand after seeing the advertisement.	2	Strongly Agree	0.49	4.80	1	Agree	1.09	4.06	3.19	0.002

Table (5): Descriptive statistics and results of the independent samples t-test for responses from the research sample on the second section (brand perception).

Table (5) presents the responses of the research sample on the second section (brand perception) after being exposed to 360-degree video advertisements, as follows:

Group One (those exposed to sequentially chronological content): The responses of Group One were in the range of (Strongly Agree, Agree), with average values ranging from (4.12 – 4.73) for the second section. The item number (19), which states "The advertisement makes me feel that the brand understands my needs," ranked first with an average of (4.73) and a "Strongly Agree" rating. This is followed by item number (12), which states "The advertisement makes the brand appear more trustworthy," with an average of (4.70) and a "Strongly Agree" rating. Item number (14), "The advertisement made me think of the brand as more sustainable," came third with an average of (4.62) and a "Strongly Agree" rating. On the other hand, item number (18), which states "The advertisement makes the brand seem more modern and relevant," ranked ninth, with an average of (4.17) and a "Agree" rating. Lastly, item number (16), "I am likely to consider purchasing from this brand based on the advertisement," ranked tenth with an average of (4.12) and an "Agree" rating.

Group Two (those exposed to sequentially chronological content): The responses of Group Two were in the range of (Agree, Neutral, Disagree), with average values ranging from (1.88 – 4.06) for the second section. The item number (20), which states "I am likely to recommend this brand after seeing the advertisement," ranked first with an average of (4.06) and a "Agree" rating. This is followed by item number (16), which states "I will consider purchasing from this brand based on the advertisement," with an average of (3.13) and a "Agree" rating. Item number (15), "I see the brand as high quality after watching the advertisement," came third with an average of (2.74) and a "Neutral" rating. Conversely, item number (11), which states "I feel more positively towards the brand after watching the advertisement," ranked ninth before last among section two items with an average of (1.91) and a "Disagree" rating. Lastly, item number (17), which states "The advertisement makes me believe that the brand cares about its customers," ranked tenth and last among section two items with an average of (1.88) and a "Disagree" rating.

Comparison Results between Group One and Group Two: A significant difference was found between the average scores of Groups One and Two on section two (brand perception) after being exposed to 360-degree video advertisements, favoring Group One. The values of "t" ranged between (3.19 – 23.75), all of which are statistically significant.

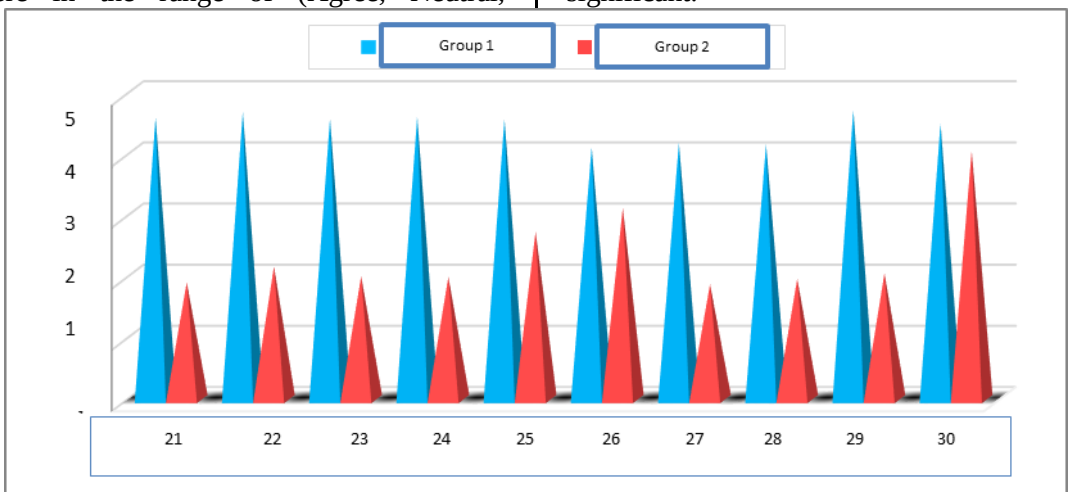


Figure (10) illustrates the average scores of Groups One and Two on section two after exposure to 360-degree video advertisements.

From Table (5), its results, and the graphical representation in Figure (10), it is evident that the second hypothesis of the research has been achieved.

Results of the Third Hypothesis Testing:

The third hypothesis posits that "Participants (Group 1) exposed to 360-degree video advertisements with sequential content over time will report higher levels of emotional engagement (e.g., excitement, interest, connection) compared to those (Group 2) exposed to non-sequential content."

To verify this hypothesis, the researcher calculated means, standard deviations, and response agreements for the third section (emotional engagement). An independent samples t-test was used to assess differences between the mean scores of Group 1 (sequential content) and Group 2 (non-sequential content) on this section. The results are presented below:

Section Three: Emotional Engagement

No	Statement	Group1				Group2				T-value	Significance Level
		Rank	Approval Rating	Standard Deviation	Arithmetic Mean	Rank	Approval Rating	Standard Deviation	Arithmetic Mean		
21	The advertisement made me feel excited.	1	Strongly Agree	0.65	4.66	1	Agree	1.20	4.10	4.09	0.001
22	I felt an emotional connection with the story told by the advertisement.	2	Strongly Agree	0.66	4.63	10	Not Agree	0.96	1.92	23.24	0.001
23	The advertisement made me feel happy.	6	Strongly Agree	0.87	4.41	5	Not Agree	0.80	2.31	17.81	0.001
24	I felt curious about the images in the advertisement.	4	Strongly Agree	0.77	4.55	4	Not Agree	0.66	2.49	20.32	0.001
25	The advertisement sparked my curiosity.	5	Strongly Agree	0.89	4.49	9	Not Agree	0.90	1.97	19.83	0.001
26	The advertisement made me feel proud of the brand.	10	Agree	1.38	4.08	6	Not Agree	0.86	2.26	11.17	0.001
27	I felt motivated to learn more about the brand after watching the advertisement.	8	Strongly Agree	1.28	4.22	8	Not Agree	0.86	2.16	13.33	0.001
28	The advertisement inspired me.	7	Strongly Agree	1.02	4.38	3	N/A	0.66	2.79	13.09	0.001
29	The advertisement evoked positive emotions within me.	3	Strongly Agree	0.64	4.56	7	Not Agree	0.92	2.19	21.17	0.001
30	I felt a sense of belonging after watching the advertisement.	9	Agree	1.22	4.15	2	Agree	1.33	3.48	3.72	0.001

Table (6) presents the responses of the research sample on the third section (emotional engagement) after being exposed to 360-degree video advertisements, as follows:

Group One (exposed to sequential content): The responses of Group One were at a level between "Strongly Agree" and "Agree." The mean scores for the third section ranged between (4.08 – 4.66). The statement No. 21, "It made me feel excited," ranked first with a mean score of (4.66) and a degree of "Strongly Agree." Following that, statement No. 22, "I felt an emotional connection with the story told by the advertisement," ranked second with a mean score of (4.63) and a degree of "Strongly Agree." Statement No. 29, "The advertisement evoked positive emotions within me," was in the third position with a mean score of (4.56) and a degree of "Strongly Agree." Meanwhile, statement No. 30, "I felt a sense of belonging after watching the advertisement," was ranked ninth, just before the last position, with a mean score of (4.15) and a degree of "Agree." Finally, statement No. 26, "It made me feel proud of the brand," ranked tenth with a mean score of (4.08) and a degree of

"Agree."

Group Two (exposed to sequential content): The responses of Group Two ranged between "Agree," "Neutral," and "Disagree." The mean scores for the third section ranged between (1.92 – 4.10). Statement No. 20, "It made me feel excited," ranked first with a mean score of (4.10) and a degree of "Agree." Following that, statement No. 30, "I felt a sense of belonging after watching the advertisement," ranked second with a mean score of (3.48) and a degree of "Agree." Statement No. 28, "It made me feel inspired," was in the third position with a mean score of (2.79) and a degree of "Neutral." Meanwhile, statement No. 25, "The advertisement piqued my curiosity," was ranked ninth, just before the last position, with a mean score of (1.97) and a degree of "Disagree." Finally, statement No. 22, "I felt an emotional connection with the story told by the advertisement," ranked tenth with a mean score of (1.92) and a degree of "Disagree."

Results Comparison between Group One and Group Two: A statistically significant difference was found between the mean scores of Group One and Group Two on the third section (emotional engagement) after being exposed to 360-degree video advertisements, favoring Group One. The "t" values for the statements ranged between (3.72 – 23.24), all of which were statistically significant.

Figure (11) illustrates the mean scores for both groups on the third section after exposure to 360-degree video advertisements.

Figure (11) shows the average scores of the first and second groups on the third section after exposure to 360-degree video advertisements.

From Table (6) and its results, along with Figure (11), it is evident that the third hypothesis of the research is validated.

Results of the fourth hypothesis test for the research:

The fourth hypothesis states that "Sequential content in 360-degree video advertisements will lead to higher engagement levels, measured by an increase in the time spent viewing and interacting with the advertisement elements, compared to non-sequential content."

To verify this hypothesis, the means, standard deviations, and agreement levels of the fourth section (engagement level) were calculated. The researcher used the independent samples t-test to examine the differences between the average scores of the first and second groups on the fourth section. The results are as follows:

Section Four: Engagement Level:

No	Statement	Group1				Group2				T-value	Significance Level
		Rank	Approval Rating	Standard Deviation	Arithmetic Mean	Rank	Approval Rating	Standard Deviation	Arithmetic Mean		
31	I paid close attention to the advertisement throughout its entire duration.	1	Strongly Agree	0.68	4.68	6	Not Agree	0.93	2.03	23.07	0.001
32	I felt immersed in the advertisement experience.	6	Strongly Agree	0.82	4.53	8	Not Agree	0.93	1.83	21.72	0.001
33	I spent more time interacting with the advertisement compared to	2	Strongly Agree	0.70	4.67	7	Not Agree	0.85	1.96	24.62	0.001

No	Statement	Group1				Group2				T-value	Significance Level
		Rank	Approval Rating	Standard Deviation	Arithmetic Mean	Rank	Approval Rating	Standard Deviation	Arithmetic Mean		
	traditional advertisements.										
34	I interacted with the 360-degree advertisement features (e.g., rotation and zooming).	3	Strongly Agree	0.83	4.61	5	Not Agree	0.95	2.06	20.22	0.001
35	The advertisement made me want to explore the brand further.	7	Strongly Agree	0.97	4.40	4	Not Agree	0.85	2.36	15.80	0.001
36	I found the interactive elements of the advertisement enjoyable.	5	Strongly Agree	0.88	4.56	2	N/A	1.34	3.05	9.44	0.001
37	The length of the advertisement was suitable to maintain my attention.	9	Agree	0.89	4.14	1	N/A	1.18	3.08	4.19	0.001
38	I found the advertisement more engaging compared to other video ads.	8	Agree	1.06	4.17	3	N/A	1.01	2.68	10.14	0.001
39	I felt that the interactive features of the advertisement enhanced my overall experience.	10	Agree	1.28	4.13	10	Not Agree	0.84	1.60	16.55	0.001
40	I will consider watching more advertisements from this brand based on this experience.	4	Strongly Agree	0.79	4.57	9	S.Not Agree	0.89	1.74	23.65	0.001

Table (7) presents the responses of the research sample on the fourth section (engagement level) after being exposed to 360-degree video advertisements, as follows:

Group One (those exposed to sequential content): The responses of Group One were at a level ranging from "Strongly Agree" to "Agree." The mean values for the fourth section ranged between (4.13 – 4.68). The highest-ranking statement was No. 31, which states, "I paid close attention to the advertisement throughout its entire duration," with a mean score of (4.68) and a degree of "Strongly Agree." Following closely were statements No. 33, "I spent more time interacting with the advertisement compared to traditional advertisements," with a mean score of (4.67) and a degree of "Strongly Agree." Additionally, statement No. 34, "I interacted with the 360-degree advertisement features (e.g., rotation and zooming)," was ranked third with a mean score of (4.61) and a degree of "Strongly Agree." In contrast, the lowest-ranking statement was No. 39, which states, "I felt that the interactive features of the advertisement enhanced my overall experience," with a mean score of (4.13) and a degree of "Agree."

Group Two (those exposed to sequential content): The responses of Group Two were at a level ranging from "Neutral" to "Strongly Disagree." The mean values for the fourth section ranged between (1.60 – 3.08). The highest-ranking statement was No. 37, which states, "The length of the advertisement was suitable for retaining my attention," with a mean score of (3.08) and a degree

of "Neutral." Following closely were statements No. 36, "I found the interactive elements of the advertisement enjoyable," with a mean score of (3.05) and a degree of "Neutral," and statement No. 38, "I found the advertisement more attractive compared to other video ads," with a mean score of (2.68) and a degree of "Neutral."

In contrast, the lowest-ranking statement was No. 39, which states, "I felt that the interactive features of the advertisement enhanced my overall experience," with a mean score of (1.60) and a degree of "Strongly Disagree."

Comparison Results between the Two Groups: There were statistically significant differences between the mean scores of the two groups on the fourth section (engagement level) after being exposed to 360-degree video advertisements, favoring Group One. The t-values ranged between (7.19 – 24.62), all of which were statistically significant.

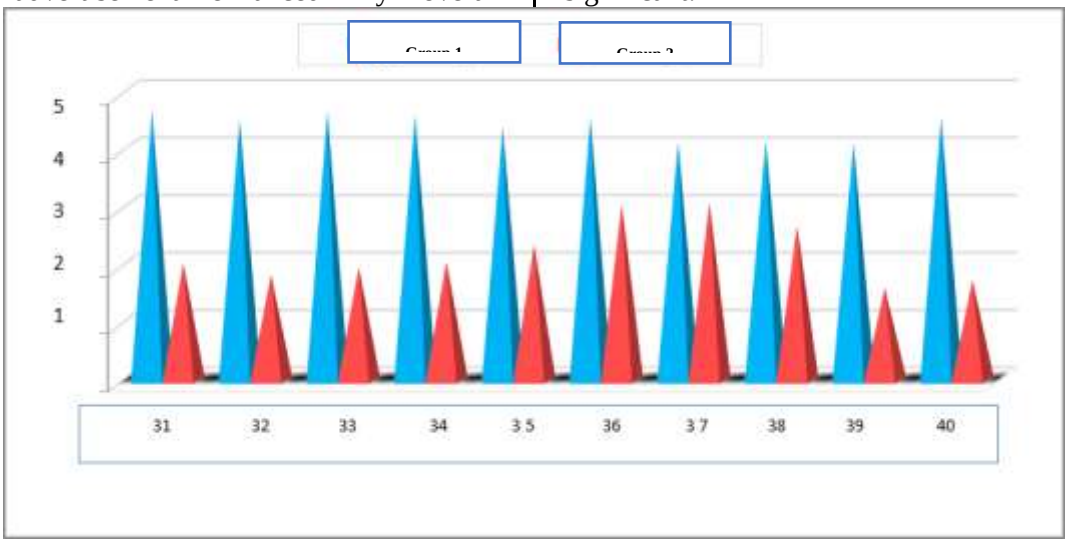


Figure (12) illustrates the mean scores of the two groups on the fourth section after exposure to 360-degree video advertisements.

From Table (7) and its results, along with Figure (12), it is evident that the fourth hypothesis of the research is achieved.

Results of the fifth hypothesis testing:

The fifth hypothesis states that "360-degree video advertisements with chronological content have an effect on brand perception."

To verify this hypothesis, the researcher used an independent samples t-test to determine the differences between the mean scores of the two groups on the sections of the questionnaire and the overall evaluation. Additionally, the researcher used Cohen's Eta Squared (η2\eta^2η2) formula to measure the effect size of 360-degree video advertisements with chronological content on brand perception. Cohen provided interpretations for the effect size: small if η2\eta^2η2 is 0.01, medium if the value is 0.06, and large if the value is 0.14. The results are as follows:

Sections	Groups	Mean	Standard Deviation	t-value	Level of Significance
Brand Recall	Group1	4.63	0.30	39.53	0.001
	Group2	2.79	0.35		
Brand Perception	Group1	4.48	0.50	33.96	0.001
	Group2	2.39	0.36		
Emotional Engagement	Group1	4.41	0.66	24.88	0.001
	Group2	2.57	0.34		
Participation Level	Group1	4.45	0.30	44.25	0.001
	Group2	2.24	0.40		
Overall Assessment	Group1	4.49	0.35	49.14	0.001
	Group2	2.52	0.21		

Table (8): Differences between mean scores of the two groups at the level of questionnaire sections and overall evaluation.

From Table (8), it is evident that there are statistically significant differences between the average scores of the first and second groups across sections and overall evaluation, favoring the first group. The average scores for the first group ranged between (4.41 – 4.63), while for the second group,

they ranged between (2.24 – 2.79). The values of "t" ranged between (24.88 – 44.25), all statistically significant at a significance level of (0.001). The average scores for the first group in the overall evaluation were (4.49), compared to (2.50) for the second group, with a t-value of (49.14) and a significance level of (0.001). This indicates that the sequential content in 360-degree video advertisements is higher compared to non-sequential content. Table (9) illustrates the effect size of 360-degree video advertisements with sequential content on brand perception.

Sections	Groups	Average Score	Mean	Standard Deviation	t-value	Level of Significance	Effect Size (%)
Brand Recall	Group1	3	4.63	0.30	54.12	0.000	0.967
Brand Perception	Group1	3	4.48	0.50	29.56	0.000	0.898
Emotional Engagement	Group1	3	4.41	0.66	21.37	0.000	0.822
Participation Level	Group1	3	4.45	0.30	47.99	0.000	0.959
Overall Evaluation	Group1	3	4.49	0.35	43.18	0.00	0.950

Table (9): Effect of 360-Degree Video Advertisements with Sequential Content on Brand Perception

Table (9) shows the effect size of 360-degree video advertisements with sequential content, where the values range between (0.822 – 0.967). The overall effect size was (0.950), indicating a large impact. This demonstrates that 360-degree video advertisements with sequential content significantly enhanced brand perception.

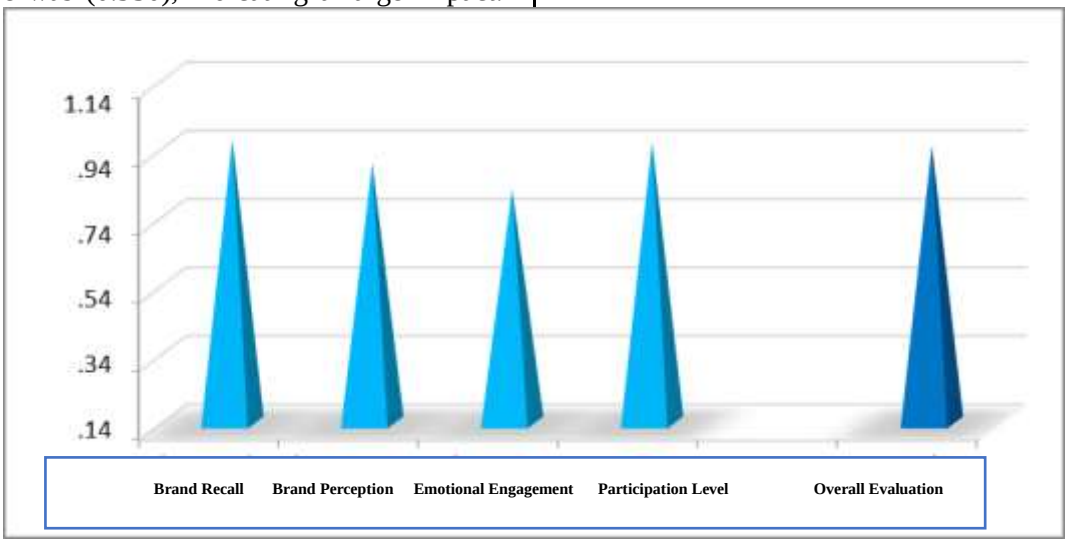


Figure (13) illustrates the effect size of 360-degree video advertisements with sequential content over time.

Figure (13) shows the impact of 360-degree video advertisements with sequential content over time.

From tables (8) and (9) and their results, along with chart (5), it is evident that the fifth hypothesis of the research is achieved.

Conclusion

This study explores the impact of time-sequenced short-form content design within 360-degree video advertising environments, shedding light on its effects on brand perception, user engagement, and overall advertising effectiveness. The results indicate that time-sequencing plays a crucial role in guiding user attention and enhancing the immersive experience, making it a powerful tool for maximizing brand recall and emotional connection. Additionally, the use of short-form content proves to be effective in maintaining viewer engagement while ensuring the message is conveyed clearly and memorably.

By demonstrating the significance of time-sequenced design in 360-degree video ads, this research provides valuable insights for advertisers looking to optimize their strategies in immersive media. It emphasizes the need for a balance between interactive storytelling and concise content to retain user focus and enhance brand impact. Furthermore, the study highlights the potential of immersive advertising to create more meaningful connections with audiences, paving the way for future innovations in the field of digital advertising. Ultimately, the findings offer practical recommendations for both marketers and content creators, encouraging the adoption of advanced

design techniques that combine emotional engagement with strategic brand messaging in 360-degree environments. This research contributes to the growing body of knowledge in immersive advertising, providing a foundation for further exploration of its evolving role in consumer behavior and advertising effectiveness.

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