Research on the Image Projection of Platform Screen X

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Abstract Screen X is one of the Premium Large-Format platforms. Screen X projects images and video along the side wall of the theatre that go in synch with the front main screen. It's a different way of immersing the audience. This technique demands film-makers taking the two new “screens” into account when making movies. Screen X is the most obvious feature of viewing content with a range of 270 degrees. Viewers can view the experience of viewing experiences beyond the frame of screen screens by allowing viewers to experience the experience beyond the frame of screen screens, which means screen X can immerse the audiences without 3D glasses. Based on the results of this study, studies of content specifications and how they fit in the screen X are studied, and goals for maximizing the visual effects of the visual effects are studied. Looking forward to future research paper researchers and industry professionals who will benefit from future research papers.

Key Words: Screen X, Digital media contents, Platform, Panorama, 270 degrees screens, CGY cinema

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1. Introduction

1.1 Objectives and Background of the Research

Digital technology has been developing rapidly in the 21st century. With the improvement of living standards, cinema becomes an indispensable entertaining place in our daily lives. With the development of digital media content, its platform is also changing rapidly, for example, from silence to sound and even stereo, and from black and white to color and even three-dimensional. Such as from the general screen to the wide screen and then dome or ring screen, the shape, size, proportion, and acoustics of digital media contents platform are always changing. Among digital media contents platform, screen X has become a state-of-art screen technology.

1.2 Range of the Research

The scope of this research is screen X. Based on the books and previous research papers about these platforms, concept of each platform and the features of each platform will be discussed in this paper.

2. Theoretical Background

2.1 Concept of Screen X

The first time of the world screen X showed was in October, 2013 at Busan International Film Festival (BIFF). Developed by the CJ CGV Group and the Korean Institute of Science and Technology (KAIST). It was the first projection system on multiple planes in the world. Screen X is a cinema technology which promises to offer audiences an immersive cinematic experience without wearing any glasses. As we know traditional movie theater had only one front viewable screen. But screen X implements a three-sided screens using not only the front screen but also the two sidewalls. For simple summary, screen X basically projects images and video along the sidewall of the theatre that go in sync with the front main screen. So, that the audience can be immersed in 270 degrees of content, which means that, screen X is a different way of immersing the audience.

2.2 Development of Screen X

The first film shown on Screen X technology is the appropriately titled The X[6]. It is a half-hour spy thriller directed by JeeWoon Kim who premiered at the recent Busan International Film Festival. By 2016, Screen X has been in operation in more than 80 countries including South Korea, China, the United States, and Thailand and etc.. To be more specific, CGV has 23 theatres in Seoul operating with Screen X technology, and another 40 screens to be set up. Paul Kim, the lead producer of Screen X, claimed that “we plan to open 50 by the end of this year, 100 by the end of next year, and depending on how the film goes, in this format we may open more.” Therefore, it can be predicted that Screen X’s market will grow rapidly in the next one or two years.

3. Methods

Based on the basic concept of screen X, we can raise the following questions. And through these discussions, we call on more profound studies relating screen X.

3.1 Questions of the Research

1) What are the characteristics of screen X?
2) What are the difference between side screen and center screen?
3) How many forms of screen X? and what are the differences?
4) How to optimize the screen X effect?

3.2 Methods of the Research

This paper presents the concepts and characteristics
of screen X while compares and analyzes the difference between side screen and center screen of each form of screen X. Finally, we looked ahead the development direction of screen X through the above results.

4. Results and Discussion

4.1 Characteristics of Screen X

In general, there are three major features of screen X: Expand, Express and Experience[11]. As shown in [Fig. 1], firstly, screen X expands beyond the front screen with spectacular special effects and additional immersion experience[9]. Secondly, contents expressed by screen X could reach beyond limits with innovatively creative methods. At last, for the audiences, the long-last entertainments and maximum immersion of screen X is a brand new experiences[3].

[Fig. 1] Three areas of screen X

4.2 Comparison Between Different Screens

According to these features of Screen X above, we can analyze that its center screen and side screen are not the same. As it is shown in <Table 1>, we can see that screen X’s center screen is a white or silver screen set up horizontally on the viewing platform, and the value of Front Side Ratio (FSR) is 1. Purely on the center screen, the viewing position is not a big request, which means it is very similar with the IMAX. While, the screen X’s side screen is composed of vertical and horizontal vertical plane perpendicular to the horizontal plane, and the value of FSR is 1.8. And generally it does not need to set a screen specifically; instead of, the projection will be showed directly on the left and right sides white walls. And because the cinema seats is inclined ladder (slope) slowly upward, the side screens will also slope based on them. To be more specific, the left and right sides may have screens of different tilts varying from before and after, respectively. These different slopes results in a great impact on the viewing effect of side screen if the viewers sit at different viewing position. Above all, in screen X, the center screen is the main screen while the side screens are used as auxiliary screens.

<Table 1> Comparison between center screen and side screen in screen X

<table>
<thead>
<tr>
<th></th>
<th>Center</th>
<th>Side Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Screen</td>
<td>1</td>
<td>left, right 1</td>
</tr>
<tr>
<td>FSR</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>Screen</td>
<td>white/silver</td>
<td>white walls</td>
</tr>
<tr>
<td>Impact or demand of viewing position</td>
<td>not much demand for viewing position</td>
<td>great impact of the viewing effect with different viewing position</td>
</tr>
<tr>
<td>Screen angle</td>
<td>horizontal</td>
<td>90 degrees curved surface</td>
</tr>
<tr>
<td>Slope(Y/N)</td>
<td>N</td>
<td>Y</td>
</tr>
</tbody>
</table>

MAIN SCREEN      AUXILIARY SCREEN

4.3 Different forms of screen X

Screen X gets rid of the current concept of watching digital media contents through only one screen. It makes the left and right walls of theaters also become screens, resulting in kinds of 270 degrees screen which is like a ‘C’ character[2]. Therefore, the screen X can either extend the image that is presented on one face to both the left and the right sides (Panorama), or at the same time to present a different picture on a different screen (Split-Screen).

Taking the Nespresso ‘Milano’ Commercial Screen X Version released in October 2015 as an example, the two different methods of screen X can be showed sufficiently. This commercial can be viewed by scanning the QR Code in [Fig. 2].
At the same time, we also exemplified *For A Few Bullets* to distinguish the two different methods of screen X again. *For A Few Bullets* (screen X version), which was shot by Chinese director Anzi Pan in 2014, is a 115-minute comedy movie. The film was released in China in July 2016 in the format of IMAX and screen X and the latter format attracted many audiences with a brand-new shock[7].

### 4.3.1 The panorama visual form of screen X

As shown in [Fig. 3], this is the image at the end of *Nespresso 'Milano' Commercial Screen X Version* (at 32 seconds). Screen X can show a bird’s eye view of the entire city, through a continuous frame on three screens, which brings the viewer’s amazing three-dimensional visual impact on space[15]. But the important thing is that it does not affect the visual status of the coffee on the main screen, which still attracts viewers’ eye sight and attention absolutely. We can call it panorama visual form.

### 4.3.2 The Split–Screen form of screen X

As shown in [Fig. 5], that is the image in the *Nespresso 'Milano' Commercial Screen X Version* (at 26 seconds). The projection on left and right are different from the main screen. Through the left and right screens, part details of the coffee machine on main screen can be enlarged in different the angle of sight. Therefore, some contents of the story can be explained specifically, and at the same time, through the left and right screen the viewers can be attract into in-depth feelings about the main screen’s content[13].

The picture shown in [Fig. 6] is another screen of the movie *For A Few Bullets* (screen X version). This is a very obvious the Split–Screen formed into the screen X. We can see the content of the film before and after the convergence of the lens screen is shown on
the center of the main screen. While at this time, the left and right sides of the screen show the main characters,[14], indirect expression of the characters thinking, and interpersonal relationships. It is summarized as 'The Split-Screen form' that presenting different content in the form of the picture at the same time for the viewers.

We found that screen X has more advantages in brighter scenes, while in darker scenes, additional screens have no differences with normal walls.

Through the above content, we can see that screen X in the performance of the bright scenes of the speed sense of a greater advantage. In addition, screen X can be through the addition of the two sides of the screen to expand the story, through more expand the information, so that the viewer can be out of the movie described the story. Compared to the long movie (Screen X Movies), screen X is more suitable for use as a short advertising format. Screen X Advertisement can maximize the interest of screen X, through a few minutes in the film to the viewer all-round introduction of the product.

5. Conclusion

Through the above understanding of the concept of screen X, and the analysis of specific examples on its characteristics, we can make a conclusion that screen X is a new concept that breaks the way of traditional viewing. It can make viewers have 270 degrees viewing platforms, by the C-type three sides screen which is formed by the main screen and two auxiliary screens. So that the viewing field becomes broader, and visual effect of three-dimensional space becomes stronger. But in the other respect, it is also because of the three-dimensional visual effects, different viewing position will lead to different effect, and long-term viewing will possibly lead to a certain sense of dizzy. So, this platform can be used effectively in the future to make short advertising video, so as to achieve better publicity.

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