A Study on Presentation Methods for Interactive Poster

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Abstract

The advancement of various displays and the development of sensing technology and network infrastructure make it possible to present interactive advertisements in public scene. We investigate the effects of interactive presentation methods in terms of the media difference among texts, still pictures and moving images in a shopping decision task. A subjective experiment was conducted with positive and negative preference for moving image presentations.

1.Introduction

In this paper, we investigate the effect of the different media presentation in a shopping decision task using a large-scale screen(50-70 inches) display. We analyze the effects of the different media such as texts, still pictures and moving images on a psychological approach, in a laboratory set up of such tasks.

Recently, large-scale screens like plasma displays are widely-used as digital discussion boards or direction boards in the public places such as train stations, airports, meeting rooms and so on. Such displays give an advantage on simple and convenient availability in the open air. We expect growth in demand and in diversity of utilization of such displays in the near future for interactive advertising systems.

Advertising media have been mostly in the form of texts, figures, and still pictures. Moving images that has been frequently exploited in the commercial messages will be used in those systems. In this research, we examine the effect of moving images in a shopping catalog selection task comparing to texts and still images through a subjective experiment taking account of the impression of experimentees.

Many studies have been made on applications using large-scale a screen display with a touch-panel[1]. However, there is very few researches on the effect of media difference in advertising presentations. SmartBoard[2] is a good commercialized example of a large-screen display with a touch-panel. SmartBoard has a capability of easy connection to computers and pen and touch input of mouse-like events and handwritten characters. Existing research has shown to utilize such a large display to facilitate group collaboration in meeting rooms[3] and public spaces[4].

In this paper, we evaluate the presentation effect of moving image catalog in an item selection task comparing to text and still picture presentations taking account of the impressions of users and watching duration for items.

2. Experimental Method and the Results

To investigate an effect of the media difference in advertising presentations, we set a hypothesis that the level of the interest in the object on a shopping decision task is proportional to the duration of stay in browsing. The hypothesis was tested through a subjective experiment.

The following pilot studies were performed in order to adjust scales to normalize understanding duration for each medium. We instructed experimentees to take time to understand the contents of the presented information in each form stimuli sufficiently before proceeding to the next stimuli, and measured the time of watching/reading as the time needed for experimentees' understanding the contents of information which stimuli gives.

2.1 Pilot Studies

- Pilot Study 1
  Verification Contents: The relation between the amount of texts and the reading time is measured.
  Stimuli: Text which varies in the amount
  Method: Five kinds of texts which varies in the length (fifty characters, one hundred characters, one hundred and fifty characters, two hundreds characters and four hundreds characters.) are presented on a large-screen display. experimentees are told to push a button when they finish reading it.
  Measurement: The watching time of each texts(time between pushing buttons to proceed next stimuli)
  Results

  Linearity was observed in the relation between the number of phrases and the average of reading duration(See Fig. 1), while no linearity in the relation between the number of characters and the average of reading duration(See Fig. 2).

- Pilot Study 2
  Verification Contents: The relation between the number of phrases in a text and the time to confirm the information that appears in a still picture
  Stimuli: The sets of a still picture of a dog and the text which explains the content of the still picture
  Method: First, text is presented on a large-screen display. Experimentees are told to push a button when finish reading it. Next, a still picture is presented and then experimentees are told to push a button again when they confirm the content of the text with the still picture.
  Measurement: The time of reading each text and the time of confirming the still picture
  Results

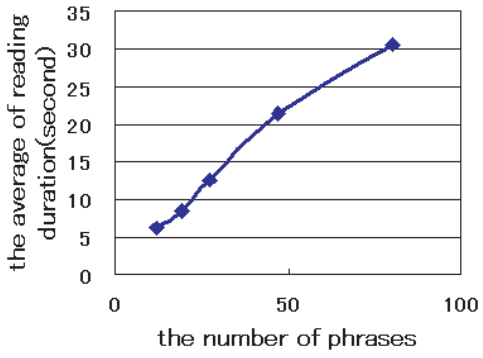

Figure 1: The relation between the number of phrases and the average of reading duration.

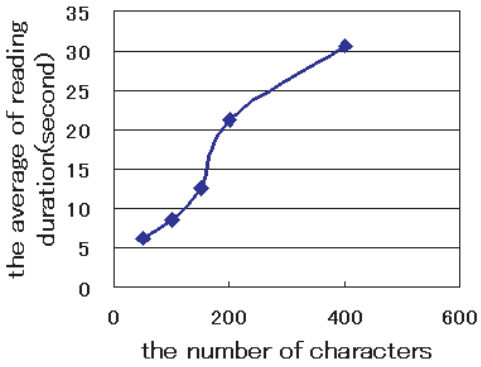

Figure 2: The relation between the number of characters and the average of reading duration.

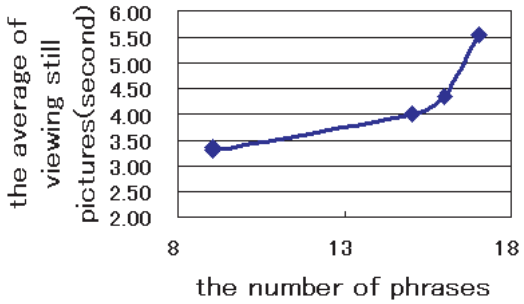

Figure 3: The relation between the number of phrases and the average viewing duration for a still picture.

Table 1: Ex-ante questionnaire: Questionnaire entries about preferences.

Q1	**Whether do you like cats or not?**
Q2	**What character of cats do you like?**
Q3	**What posture of cats do you like?**
Q4	**What movement of cats do you like?**

Fig. 3 shows that the duration for confirming the content of a text of 16-17 phrase length was five seconds. The duration was comparable to confirm the content in the form of a still picture.

- Pilot Study 3

  Verification Contents: The time of watching still pictures
  Stimuli: a number of still pictures of dogs
  Method: Fifteen still pictures of different dogs are presented on the screen. experimentees are told to choose one favorite still picture when they finished confirming one by one.
  Measurement: The time of confirming fifteen still pictures (from starting time of presentation of the still pictures to the time pushing a button)
  Results
  The average time of confirming fifteen still pictures was about eighteen seconds. Thus the time of browsing per a still picture is assumed to be about one point two seconds.

From these results, we consider a five-second moving image, four still pictures and a text of fifteen phrases are equivalent in terms of comprehending duration for content in each medium presentation.

2.2 Main Experiment

The main experiment is done as below. First, we inquire experimentees' preferences about "cats"(Table 1) before the experiment. experimentees are instructed to choose a cat for purchase, browsing electronic advertisements on a large-screen display and pushing a touch-panel button switches among media. We give instructions to experimentees for browsing advertisements of each cats and decide which cat to buy. In the experiment, we record the time of pushing buttons and the chosen medium. Finally, we ask a questionnaire about experimentees' introspection(Table 2).

We regarded the duration from the time switching to one kind of medium to the time switching to another kind of medium as the browsing duration for the particular kind of medium. Fig. 4 shows the ratio of the browsing

Table 2: Ex-post questionnaire: Questionnaire entries about introspection.

Q1	**Favorite presentation medium?**
Q2	**Describe the reason of your answer for Q1.**
Q3	**Did you hesitate when you chose a cat?**
Q4	**Which medium is a determining factor when you hesitated?**
Q5	**Describe the reason of your answer for Q4.**
Q6	**The most difficult presentation medium to understand?**
Q7	**Describe the reason of your answer for Q6.**
Q8	**The most impressive presentation medium?**
Q9	**Describe the reason of your answer for Q8.**
Q10	**How well each medium represents character of cats?**
Q11	**How well each medium represents posture of cats?**
Q12	**How well each medium represents movement of cats?**
Q13	**Comment or impression of the experiment.**

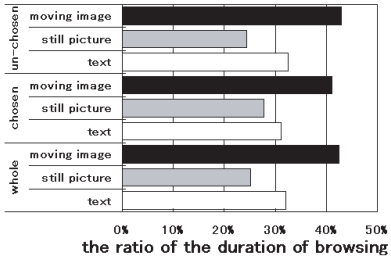

Figure 4: The browsing duration for each medium presentation. Dependency to choice of object is small.

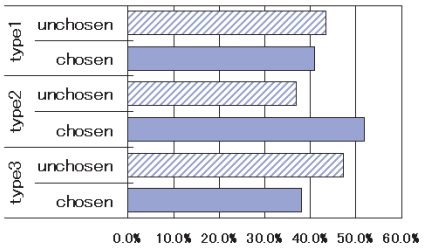

Figure 5: Preference to movement and the browsing duration for each medium presentation.

duration for advertisements in each kind of medium and the ratios of the browsing durations for advertisements in terms of item selection. On the whole, the time of browsing moving image advertisements was the longest, and subsequently the time of browsing is longer in the order of still picture, then text. Independent to the chosen or the unchosen cat, there is no significant difference in the time of browsing. Here, "chosen" means that the item is finally selected to "buy" and "unchosen" means that the item is not selected to "buy". According to the questionnaire, we classified experimentees into three types based on the favorite characters of cats:

type 1) the experimentees who like motionless cats,

type 2) the experimentees who like active cats, and

type 3) the experimentees who like both motionless and active cats.

The trends of the browsing duration for each medium presentation in every type of above is shown in Fig. 5. This figure shows that the ratio of the browsing duration for the chosen cat is higher than that for the unchosen cats for the experimentees who like active cats(type 2).

In the questionnaire about introspection, we asked experimentees to rate the effectiveness of the each medium presentation referring to three entries about 1)character, 2)posture and 3)movement of cats on a seven-scale. We quantified these from zero(=very ineffective) to six(=very effective) in sequence and calculated median. Fig. 6 illustrates the trend of scores. Testing the scales with the Mann-Whitney's U-test, the moving image and the still picture receive higher point than the text about posture significantly. Also there was a significant difference in the moving image as compared to the other media about movements(See Table 3).

Next, the answers to Q1, Q4 and Q6 in the questionnaire about introspection are shown in Table 4. The moving images obtained the highest scores as a good presentation medium of movements of purchasing objects. Therefore moving image is useful for product advertisements dealing with moving purchasing objects. Although the still pictures and the moving images were given high scores as a good presentation medium of posture of purchasing objects, the browsing duration for the still pictures is shorter than the browsing duration for the moving images. Thus, we can conclude that still picture is efficient in non-moving product advertisements such as vases.

There was not a significant difference between the browsing duration for a chosen object and that for unchosen objects in view of all the cases. Consequently, the hypothesis that there is a positive correlation between shopping decision frequency and the browsing duration for the interesting advertisements using moving images was rejected. However, this hypothesis is accepted only to those who like movements of purchasing objects(figure 5, type 2). If their preferences are known in advance, we

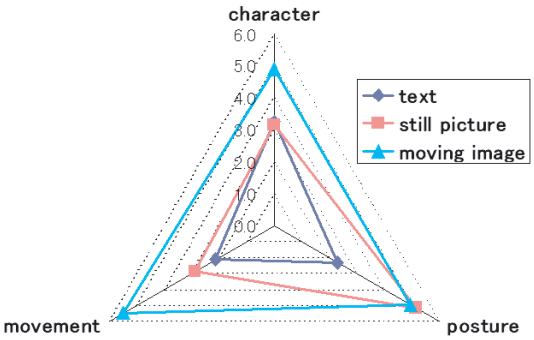

Figure 6: Profile curve of preferences in each medium presentation.

Table 3: The results of Mann-Whitney's U-test for preference profile.

character	moving image $>$ text ($p < 0.05$, two-side test), moving image $>$ still picture ($p < 0.01$, two-side test)
posture	still picture $>$ text ($p < 0.01$, two-side test), moving image $>$ text ($p < 0.01$, two-side test)
movement	moving image $>$ text ($p < 0.01$, two-side test), moving image $>$ still picture ($p < 0.01$, two-side test)

Table 4: The results of ex-post questionnaire: Affirmative answer to the question.

	text	still picture	moving image
Q1: the favorite presentation medium	%	55%	45%
Q4: the deciding presentation medium	0%	50%	45%
Q6: The most difficult presentation medium	95%	0%	5%

can select the most effective medium in an advertisement.

3. Summary

We investigated the browsing duration for in each medium and its relation to the shopping decision through a subjective experiment. We observed the following:

1) User's satisfaction was high for that moving images convey movement information of objects.

2)User's satisfaction was higher for that both still pictures and moving images convey posture information of objects.

3) Still pictures for posture were more efficient in terms of browsing duration than moving images for it.

Also, the hypothesis that there was a positive correlation between the shopping decision frequency and the browsing duration for the interesting advertisements using moving images was accepted for those who like movements of purchasing objects.

Remaining tasks are to investigate the effects of the combination of three kinds of media presentation for shopping tasks and to make it clear the relation between cooperating works and presenting media.

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