Scale Orientation, Grids and Modality Effects in Mobile Web Surveys

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Background

- Maritz and Decipher have measured an increasing number of email-based online surveys being accessed on mobile devices.
Objectives

• We want to develop evidence-based suggestions for survey formatting, particularly scale direction and grid design.
• We would also like to better understand if the bias we’ve seen before between mobile phones and PCs come from true mode differences or possibly interpersonal differences between respondents using mobile phones versus PCs.
• Finally, we’d like to know if data collected on mobile phones, where the possibility of distraction seems greater, is worse than data collected on PCs.
Research Design

• Web-based initial survey fielded November 28 - December 5
  – 1,505 respondents completed the survey (40% PC, 60% mobile web)
  – Respondents self-selected into mobile or PC completion cells
• Recontact study was fielded seven days after completion of the initial survey
  – 79% of the respondents completed recontact study
Research Design: Sample Treatments

<table>
<thead>
<tr>
<th>Cell</th>
<th>n</th>
<th>Mobile or PC</th>
<th>Scale Direction</th>
<th>Grid or Separate Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>202</td>
<td>PC</td>
<td>Horizontal</td>
<td>Grid</td>
</tr>
<tr>
<td>2</td>
<td>301</td>
<td>Mobile</td>
<td>Horizontal</td>
<td>Grid</td>
</tr>
<tr>
<td>3</td>
<td>201</td>
<td>PC</td>
<td>Horizontal</td>
<td>Separate</td>
</tr>
<tr>
<td>4</td>
<td>300</td>
<td>Mobile</td>
<td>Horizontal</td>
<td>Separate</td>
</tr>
<tr>
<td>5</td>
<td>201</td>
<td>PC</td>
<td>Vertical</td>
<td>Separate</td>
</tr>
<tr>
<td>6</td>
<td>300</td>
<td>Mobile</td>
<td>Vertical</td>
<td>Separate</td>
</tr>
</tbody>
</table>
How would you rate your satisfaction with this survey experience compared to other online surveys you have taken recently?

Select one

- A lot worse
- A little worse
- About the same
- A little better
- A lot better
- No other survey experience
Scale Presentation, Horizontal; Mobile Phone View
Using the scale below, please indicate how satisfied you are with [pipe: servicepipe].

Select one

- Not at all Satisfied - 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- Completely Satisfied - 100%
Scale Presentation, Vertical, Mobile Phone View
Grid Question, Standard Battery Format; PC View

Please indicate how well [pipe: service] performs on the following aspects:

Select one in each row

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Very Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convenience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picture Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selection Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Service</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fees</td>
<td></td>
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<tr>
<td>Subscription Terms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Grid Question, Standard Battery Format; Mobile View
Grid Question, Individual Horizontal Scale; PC View

- The broken grid option broke each of the nine attributes into individual horizontal scaled questions

Please indicate how well [pipe: service] performs on the aspect of Picture Quality:

Select one:

<table>
<thead>
<tr>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Very Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
Analysis Plan

• For survey presentation:
  – Mode productivity
  – Completion rate
  – Length of interview
  – Bias in rating scales
  – Respondent self-reported satisfaction

• For data quality
  – Test-retest reliability
  – Straightlining
Results
Equivalence of PC and Mobile Web Respondents

• We captured gender, age, income, employment and education demographics from all respondents and, for the most part, the PC and mobile audiences were similar.

• Only significant difference was that the gender split more heavily favored females in the mobile quota (74%/26% female/male split in mobile versus 60%/40% split on PC)

• Question by question analyses were run with and without these covariates and no significant differences were found.
Survey Presentation: Mode Productivity

<table>
<thead>
<tr>
<th>Device</th>
<th>% completing recontact study</th>
<th>% of recontact completes on proper device</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC Web</td>
<td>86%ₘ</td>
<td>95%ₘ</td>
</tr>
<tr>
<td>Mobile Web</td>
<td>75%</td>
<td>72%</td>
</tr>
</tbody>
</table>

Data from these tests indicates that on the recontact study the PC experience was more productive than the mobile web experience.
Survey Presentation: Completion Rate

<table>
<thead>
<tr>
<th>Scale Presentation Grid Format</th>
<th>Horizontal Standard</th>
<th>Horizontal Broken</th>
<th>Vertical Broken</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC</td>
<td>81.9%_M</td>
<td>81.1%_M</td>
<td>79.2%_M</td>
</tr>
<tr>
<td>Mobile</td>
<td>76.5%</td>
<td>74.1%</td>
<td>74.4%</td>
</tr>
</tbody>
</table>

- Completion rates on the horizontal standard grid test group were the highest in both audiences, which surprised us.
Survey Presentation: Survey Length, PC versus Mobile

- We are not surprised to see that the survey took significantly longer to complete on mobile devices than PCs.
Survey Presentation: Survey Length, Horizontal vs Vertical

- Vertical scales and horizontal scales took significantly longer to complete than did the traditional grid format.
Survey Presentation: Bias in Rating Scales

• Our analysis of variance of 17 substantive questions (including eight overall measures and nine attributes), shows NO significant differences between the PC and mobile phone respondent groups.

• Moreover, we see no differences based on whether respondents received horizontal or vertical scales or whether their nine attributes appear as a grid or as nine individual rating scale questions.
Survey Presentation: Respondent Satisfaction

- At the end of the initial survey respondents were asked to rate their satisfaction with the survey experience using a standard five point scale.

- Our analysis showed no significant differences between the mobile and PC group or the various scale and grid presentations.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Mean Mobile Score</th>
<th>Mean PC Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid</td>
<td>4.51</td>
<td>4.59</td>
</tr>
<tr>
<td>Horizontal</td>
<td>4.52</td>
<td>4.53</td>
</tr>
<tr>
<td>Vertical</td>
<td>4.51</td>
<td>4.55</td>
</tr>
</tbody>
</table>
Data Quality: Test-retest Reliability

- The table below shows correlations between the initial survey data and the recontact data for the overall satisfaction question:

<table>
<thead>
<tr>
<th></th>
<th>Mobile Reliability</th>
<th>PC Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical</td>
<td>.65</td>
<td>.73</td>
</tr>
<tr>
<td>Horizontal</td>
<td>.73</td>
<td>.66</td>
</tr>
</tbody>
</table>

- We found it very interesting that the horizontal format and the mobile respondents produced the more reliable data than the vertical format and PC respondents in this study.
Data Quality: Straightlining

- Analysis of variance shows no significant difference in straightlining between mobile and PC respondents and across the various scale and grid presentations.
Summary

- The reduced acquiescence bias (the tendency to give agreeable answers) we have noted in mobile web relative to PC-web surveys appears to result from demographic and psychographic differences between respondents, not to the mode per se.

- Based on this research, we should use horizontal rather than vertical formatting of rating scales.

- Short grids seem to shorten survey length and have no significant impact on abandon rates or data quality relative to grids broken into individual scale questions.

- Our test showed no measurable differences in the quality of data collected on PCs versus mobile devices.
Opportunities for Future Research

• We believe there are opportunities to further test optimal scale and grid presentations
  – This was a relatively short survey and we would like to conduct similar tests among mobile and PC respondents on a longer survey

• We would like to test the impact that background images and progress bars have on mobile and PC respondents.

• Maritz and Decipher also exploring new mobile/PC reporting options
Bibliography


