In Search of Gender Differences in Marketing Communication: an Historical/Contemporary Analysis

Mary L. Carsky, The University of Hartford, Connecticut
Mary Ellen Zuckerman, McGill University, Quebec

[to cite]:
Mary L. Carsky and Mary Ellen Zuckerman (1991), "In Search of Gender Differences in Marketing Communication: an Historical/Contemporary Analysis", in GCB - Gender and Consumer Behavior Volume 1, eds. Dr. Janeen Arnold Costa, Salt Lake City, UT: Association for Consumer Research, Pages: 43-52.

[url]:
http://www.acrwebsite.org/volumes/15549/gender/v01/GCB-01

[copyright notice]:
This work is copyrighted by The Association for Consumer Research. For permission to copy or use this work in whole or in part, please contact the Copyright Clearance Center at http://www.copyright.com/.
In Search of Gender Differences in Marketing Communication:  
An Historical/Contemporary Analysis  
Mary L. Carsky, The University of Hartford, Connecticut  
Mary Ellen Zuckerman, McGill University, Quebec  

This paper centers on issues surrounding gender differences in advertising both from an historical and contemporary perspective. The theory on gender differences in information processing and interpretation of advertising is reviewed. Results of four preliminary empirical investigations of gender differences in marketing communication are reported and explanations for the findings are explored.

Gender differences in consumption have been recognized since the turn of the century when industry turned its attention to the development of products for the home—to make lighter work of housekeeping. Early on, business men sought the advice of women in helping to unravel the mystery of understanding the feminine point of view. In 1911, the J. Walter Thompson agency established separate men's and women's copy writer groups and a 1917 house advertisement read, "If you are selling an article to women, you will be interested in discussing it with the organization in which such a staff has been developed." The gender differentiated copy groups continued at JWT until 1940. During the 1950's and 1960's marketing entered a period of androgyny where the rise of 'economic man'– the rational decision maker — was seen to encompass both males and females. Gender differences were minimized and believed, by many, to be nonexistent.

A resurgence of interest in gender differences seems to have occurred in the late 1970's when a number of marketing scholars focused their research on women, most notably in the field of advertising. While there was some variation, the majority of these inquiries centered on the portrayal of women in advertising (e.g. Sexton and Haberman 1974; Poe 1975; and Skelley and Lundstrom 1981) along with advertising stereotypes (See Courney and Whipple 1980). More recently, Meyers-Levy (1989) incorporated gender differences in conceptualization and information processing into a theoretical framework termed the selectivity hypothesis.

Based on the hypothesis, she proposed that differential advertising strategies be used to target men and women.

This paper centers on issues surrounding gender differences in advertising from both an historical and contemporary perspective. Meyers-Levy's selectivity hypothesis is used as the theoretical basis for examining historical and contemporary examples of male and female differences in both the development and the perceptions of advertising. The paper reviews the theory and perspectives on gender differences in information processing and the application of the theory to marketing communication. The results of preliminary empirical studies are reported and explanations for the findings are explored.

BACKGROUND

Research conducted on gender has shown that men and women differ in information processing and cognitive structuring which culminate in different world views (see, for example, Belenky et al. 1986; Carlson 1971; Gilligan 1982). These differences are expected to have pervaded the advertising copy written by male and female copywriters during the first half of the century, and likewise, these are expected to mediate the response of men and women to advertising communication within a contemporary environment.

RESEARCHING ON GENDER DIFFERENCES IN ADVERTISING INTERPRETATION

There is ample evidence that earlier in the century gender differences were considered in the development of advertising copy, and that the differential responses of men and women had been documented through research (Fowler 1897; Gale 1900). Gender theory, as interpreted more recently by Meyers-Levy, should provide a theoretical premise for examining early advertising
and identifying differences between advertising developed by men and by women—at least, to the extent that gender schema are fundamental and enduring. Furthermore, gender differences in responses to advertising should be detectable though inquiry.

GENDER: A SOCIAL CONSTRUCT

Gender as a social construct has been given considerable attention in the psychology literature. Researchers have been successful in meting out differences in ego functioning (Carlson 1971) as well as in behavior such as aggression (Eagly and Steffen 1986), influenceability (Eagly and Carli 1981), and helping behavior (Eagly and Crowley 1986). However, some of the findings have been weak, and in need of more detailed explanation (Deaux 1984).

In consumer behavior, a meager amount of research on sex role differences has been conducted—and according to Meyers-Levy, inquiry in this field has met with limited success (Meyers-Levy 1988). Golden, Allison and Clee (1978) conducted a study to identify sex typed products, and Alreck, Settle and Belch (1984) investigated response difference to advertisements for gendered products. Both of these studies utilized quantitative methodology involving the use of Likert scaled items; both found weak effects. The Golden et al. study found significant main effects for both masculine and feminine perceptions based on sex roles (e.g. male, female, androgyny), but no main effect for sex of respondent on the masculine perceptions. Alreck et al. found that sex-role of women did not affect their acceptance of a masculine brand. These authors also found that sex-role was a factor of age, education, occupation and other demographic variables.

Meyers-Levy (1988) conducted two experiments and found gender differences based on agentic or communal ego functioning of men and women only when a mediating variable was introduced. In one experiment, she found that the use of sex role priming brought out gender differences in response to varying message orientations. In another experiment, the use of influencing information resulted in a significant effect, but this effect was limited to attitude measures of female subjects after use of the product; female subjects did, however, rate the product more favorably than males.

GENDER THEORY AND ADVERTISING

Meyers-Levy (1989) applied these gender differences to the interpretation of advertising. In proposing a selectivity hypothesis, she posits that men and women select different cues from the environment and interpret them in dissimilar ways. This affects their modes of inquiry. For example, females engage in comprehensive processing and attempt to assimilate all available cues; whereas males use heuristic devices to select singular cues often driven by reliance on those that are highly available and particularly salient in the focal context. Women are more interpretive and inferential in processing available information; males' processing is characterized by efficiency-striving heuristics whereas females' is characterized by pronounced attempts toward maximizing the comprehensiveness of processing of available cues.

Based on the Selectivity Hypotheses, Meyers-Levy suggests that marketers might find their advertisements to be more successful if when targeting them:

1. Utilize copy that "touts self expression"—adhering to one's own values against the trends or overcoming obstacles to achieve success.

2. Focus on attributes that imply a single concept.

3. Use strong single pictorial cues that visually summarize key product features, and then describe the features in copy.

4. Focus on objective features rather than subjective interpretation (user benefits).

5. Place the headline, or most "compelling claim" at the top of the copy as males make decisions based on the first piece of information.

By contrast, in designing appeals to women, the Selectivity Hypothesis suggests that marketers:

1. Utilize multiple cues and focus on disparate product features.

2. Scrutinize the copy for implied claims as females are likely to generate subjective inferences on the basis of features characterized.
3. Make ample use of cues that imply positive associative thoughts and images.

4. Focus on user benefits rather than on product features.

5. Place the headline or most "compelling claim" at the end as women are most likely to base judgements on the last bit of information. (Meyers-Levy 1989, 245-254).

EXAMINATION OF CASE STUDIES ON GENDER DIFFERENCES IN ADVERTISING

In this section, the results of four separate studies which hypothesized gender differences will be reported. The first investigation examined gender differences in advertising copywriting from the 1920's. Respondents were asked to analyze ads developed by JWT during the time period. The remaining three were experimental designs based on Meyers-Levy's selectivity hypotheses. These three tested gender differences associated with advertising format and content, source credibility of testimonials, and differential attitude change following exposure to advertising related to sexually transmitted diseases. The hypotheses of difference for all studies were rejected; however, some weak, though tangential, effects were detected.

GENDER THEORY IN RETROSPECT

Contemporary gender theory supports some early assertions about the differences in advertising to men and to women. At the turn of the century, studies on the psychology of advertising showed that men and women interpret advertising differently (Fowler 1897; Gale 1900). Manufacturers and advertisers alike valued this unique perspective as women were increasingly recognized as purchasing agents for the household.

Concurrent with the recognition of women's roles in the economy, books and monographs on advertising began including special sections on advertising to women (e.g. Curtis Company 1913; Hotchkiss 1924). Soon whole books on the subject appeared (Naeve 1928). The belief that these differences existed, culminated in J. Walter Thompson's structuring its New York copy department into two divisions: one comprised of men and one comprised of women. The agency actively promoted its gender structured copy groups as having specific expertise on "selling" to women.

Articles in the J. Walter Thompson News Bulletin in the 1920's verify the notion that copywriters learned that communication of benefits was more important to [female] consumers than the identification of product features. These articles extolled the value of employing emotion in advertising (Lewis 1922), the "woman appeal" (Maule 1924), the use of snob appeal (Maule 1923), the importance of recipes in food advertising (Hale 1923), as well as the merits of "using enough copy to tell the story fully, impressively, convincingly" (Anderson 1922, 17). Several articles in the series focused on understanding the consumer-- her needs, interests, and problems as critical to the development of advertising that would have the right focus and appeal (Maule 1923, 1924).

IN SEARCH OF GENDER DIFFERENCES IN ADVERTISING COPYWRITING

The purpose of this study was to determine whether there were differences in the style and content of the advertising campaigns developed by men's and women's copywriter groups, whether women were truly better able to target female consumers as JWT believed. The general hypothesis was that the advertising developed by women's copy groups would show evidence of women's contextual manner of cognitive structuring and information processing, and that this would be contrasted with men's separatist way of isolating individual cues from the environment.

Advertising campaigns for eight client products of the J. Walter Thompson Agency between 1925 and 1930 were used for the analysis; four developed by women's copy groups and four developed by men's. From the advertisements available three separate ads were randomly selected for inclusion in the study. Students enrolled in an undergraduate advertising research class (each) evaluated eight of the selected ads. The evaluation instrument, developed by the researchers, was based on Pollay's categorizations (1985) as well as those of Rena Bartos (1989), and included questions germane to this study.

The data were analyzed to determine whether the
ads developed by the women's copy groups focused on user benefits rather than product features, whether the women targeted distinct (female) market segments versus the mass market; whether the women had utilized more multiple appeals, concepts, and points of information than the men; whether the women showed the product in a context versus in isolation; and whether the women's groups relied more heavily on emotion and mood appeals. The results of the study showed weak support for the hypotheses. The major finding was that the women's copy groups used more appeals (t = 3.742; p = .0002) and that these specific appeals were more emotional than rational or economic. There was no empirical evidence to support the notion that women's groups differed from men's in the style and content of the advertisements developed. Our evaluators did not perceive the primary appeals used in the advertisements to be emotional; they viewed the advertisements to be highly informational, rational, or educational. Furthermore, they perceived the focus of the ads to be largely on the product and the product features. These results did not confirm Polay's empirical findings nor did they support the literature on advertising during the twenties (Fox 1984). In addition, there was no gender effect for the evaluators; male and female students did not differ from one another in terms of their perceptions of the advertisements.

EXPERIMENT I: IN SEARCH OF GENDER DIFFERENCES IN PERCEPTIONS OF ADVERTISING COPY

This study was based on the premise that women's processing is more comprehensive than men's. The experiment was designed to examine gender differences in information processing of one-sided and two-sided advertising messages. It was hypothesized that two-sided messages would be associated with a more positive attitude among both men and women, and that overall, women's attitude change would be greater with a two-sided message whereas men's attitudes would not differ due to message type.

One-sided and two-sided ads were developed for a gender neutral product (toothpaste) that was not available in the Canadian market where the study was conducted. A pretest identified the five most important attributes of toothpaste. These five were used in the copy for the one-sided ad; two less salient attributes were used as refutations in the two-sided copy. Two hundred undergraduate non-business students were asked to carefully read one of four variants of the ad and then to evaluate the product. The test instrument, developed by the researchers, utilized both closed and open ended questions. Likert scaled items were used to assess likability, effectiveness, believability, persuasiveness, intent to purchase, and rating of brand attributes. Open ended questions were used to test retention of the ad information and the depth of comprehension. The time required for each respondent to read the ad was recorded by the researchers.

The results did not generally support the hypotheses that two-sided messages would be associated with a more positive attitude and that the difference in attitudes between the message types would be significant for the women, but not for the men. No differences between sex and between message type were found on the dimensions of likability, believability, persuasiveness or intent to purchase. Subjects did rate the one-sided ad higher on effectiveness than the two sided ad; and women rated both variants of the ad higher than did the men.

Some gender differences in information processing were detected, thus indicating that women do, in fact, engage in more comprehensive processing. For example, the women took longer to read the ad (x = 55.84 sec.) than the men (x = 48.76). In both message types, men wanted more statistical information but indicated that there was too much information overall in the ads (87.5% vs. 12.5% of the women). Women mentioned two product attributes more frequently than the men. For both message types, significantly more women mentioned whitens teeth (79.4% vs 20.59%). This gender difference was greater in the one-sided condition. More women noted the flavour of the toothpaste, but the difference was greater for message type than for gender. In the one-sided message 94.1% of the women noted the fresh mint flavour whereas it was noted by only 5.9% of the men. In the two-sided message, 64% of the women and 36% of the men noted that only one flavour. In summary, women processed more of the information that was available in the ads than did the men.
EXPERIMENT II: IN SEARCH OF GENDER DIFFERENCES IN ADVERTISING TESTIMONIALS

The purpose of this study was to examine the effect of gender of the endorser on consumer perception of advertising credibility. Based on the expectation of a pro male gender bias, it was hypothesized that male testimonial would be perceived as more credible and thus more persuasive than female testimonials.

Three non-gendered products were chosen for inclusion in the study: Tylenol, Bailey's Irish Cream, and Club Med vacations. Testimonials were developed only for Club Med Vacations. A simple quote, It was the best vacation of my life! The sports, the people, the parties -- I could do anything that I wanted -- even nothing, was attributed to either Michael or Michelle Davison. This test ad was embedded between the non-testimonial ads for Tylenol and Bailey's Irish Cream. A six item test instrument queried respondents on the believability, persuasiveness, likelihood of use/purchase, attitude toward the ad, and one question which related to a specific ad (e.g. Creamy, Smooth Bailey's...Is this a quote from the ad? and what is the gender of the endorser?)? One hundred subjects evaluated either the male or female testimonial along with the two remaining advertisements.

The hypothesis was not supported. No difference in credibility of the ad was associated with the gender of the endorser, nor was there an interaction between the gender of the endorser and the sex of the respondent. In addition, no differences were found in the believability, persuasiveness, likelihood of use/purchase, or attitude toward the ad. Only three differences were detected in this experiment--one of which was not germane to the hypothesis. The advertisements for Club Med Vacations with the testimonials were found to be more credible, believable and persuasive than those without testimonials; there were no differences due to gender of the endorser or of the respondent. Women consistently assigned higher ratings to all aspects of the three ads. In response to the question on gender of the endorser, of those given the male testimonial (n = 53), none were mistaken and six were unsure. By contrast, among those given the female testimonial (n = 47), four mistakenly assigned the quote to a male endorser, and nine were unsure.

EXPERIMENT III: IN SEARCH OF GENDER DIFFERENCES IN ATTITUDE CHANGE

The purpose of this study was to measure the change in attitudes toward condoms following exposure to informational messages on sexually transmitted diseases and a condom advertisement. The investigation was based on the notion that women engage in more comprehensive processing and would, therefore, be more likely to assimilate the information, and as a result exhibit a greater change in attitude. Because males process selectively, men in the study were not expected to process all the information available, and, therefore not exhibit attitude change toward sexually transmitted diseases.

One hundred undergraduate students participated in the study. Subjects were asked to respond to a twenty-eight item questionnaire dealing with the topics of sexually transmitted diseases (STD's), athletic shoes, and television viewing. Upon completion of the pretest, they were asked to view a set of three black and white ads and one magazine article. The advertisements were for a brand of athletic shoe, a brand of condom, and AIDS/STD prevention. Following exposure to the advertisements and article, respondents completed a second (22 item) questionnaire which asked their feelings and beliefs about the product after viewing the advertisement. Data obtained on the running shoes and television show were not analyzed, as these were included only as fillers.

Attitudes towards STD's were found to change as a result of the condom and AIDS/STD prevention advertisements. The belief of being at risk without using a condom, using condoms in conjunction with other contraceptives, and perceived risk of contacting STD's showed significant increases. However, differences in attitude change between men and women were not statistically significant. Close examination of the data does show that men tended to exhibit a slightly larger change in attitude than the women. The hypothesis was not supported; in fact, a more sensitive test might show that the results were significant but in the opposite direction from that hypothesized.
DISCUSSION

The four investigations reported herein found weak effects for the hypotheses of gender differences. Each of the studies has unique characteristics which might have attenuated the results, but there might also be some issues common to all four, and these could be common to studying gender differences in consumer behavior. Because there has been little research on gender effects, it is important that in building the paradigm, that the findings of individual studies be compared, and that commonalities be identified. It is also important that we consider the appropriateness of the conceptual and technical aspects of this research: the conceptualization of the individual inquiries, the research design and methodology, the data analytic techniques, and the effect sizes for investigations on the topic.

Meyers-Levy (1989) proposed the selectivity hypothesis which provided the theoretical framework for these four studies. The hypothesis is grounded in the body of research on gender difference and appears to offer a sound base from which to conduct empirical investigations on consumer behavior topics associated with advertising and marketing communications.

METHODOLOGICAL ISSUES

Three of the four studies used experimental designs to examine gender effects in perceptions of advertising copy; the fourth was a descriptive study to examine gender differences in developing advertising copy. The scientific method, according to Belenky et al. (1986), is more appropriate to male information processing. Because females process information contextually, isolating one aspect of a behavior in a contrived setting, may not capture the differences in male and female response particularly as that response would be generated in a naturalistic environment. Deaux (1984) cautioned that it might be difficult to tap gender differences in an experimental setting. She stated that in an experiment, males and females alike will take on the role of "subject" and process information literally rather than as they naturally would. In the three experiments conducted, this is a possible explanation for the findings of no differences.

The methodologies used in these studies differed somewhat, but all used forced-choice closed-ended questions. This methodology, according to feminist scholars, will not be as effective in capturing women's perceptions, attitudes, and beliefs. The use of open-ended questions might be more appropriate in measuring gender differences. For example, in experiment 1 where open-ended questions were used to measure differences in retention of the information, women were found to recall product attributes more frequently than men. In addition, the women were more likely to recall the headline of the advertisement. It is also interesting that one of the attributes noted more often by female respondents was a refutation in the two-sided copy which was placed at the bottom of the ad. In experiment 3 where attitude change on condom use was measured, open ended questions might have been more effective in obtaining the subjects feelings about the use of condoms and anxiety regarding STD's. The use of open-ended questions could also reduce the likelihood of socially desirable responses on a sensitive issue.

In experiment 2, the only finding of difference in testimonials by men and women was that more respondents were mistaken about the sex of the endorser when this person was a woman. While this might appear to be an indirect measure of credibility differences associated with sex of the endorser, it could have been due to a methodological artifact. In selecting names for the endorsers, a non-ethnic surname (Davison) was chosen. The given names of Michael and Michelle were used for the male and female endorsers. Because the name, Michelle is close in spelling and visual appearance to Michael, and, therefore, not as distinctly female as a name such as Mary, this might have been cause for the incorrect responses.

The results of the study to measure the differences in advertising copy written by men and women were undoubtedly attenuated due to methodological issues. First of all, college age students were asked to evaluate advertisements that were developed in an earlier era (1920's)--an era when advertisements were much more informative than they are today. According to Pollay (1985), information in print advertising began to decrease in the 1920's and continued to decline through 1980. In comparison to today's
ads, those of the 1920's would have appeared to be extremely informative. In addition, a qualitative methodology in which the students were asked to give complete descriptions of the ads, might have revealed more differences in the copy written by men and by women.

All four of the studies used college students. In comparing advertising evaluations of students to members of the general population, Soley and Reid (1983) found significant differences between the two groups and suggested that using students as subjects should be approached with extreme caution. Of the four studies reported, the use of student subjects appears to have been problematic only in the investigation on advertising copywriting. Using college students in studies to identify gender differences might be generally problematic in that this group might be more androgenous than the population at large.

Univariate statistics to analyze the data in all four of the studies. Gender differences in information processing are likely to be mediated by other demographic variables. For example, age and life cycle differences, as well as social class and lifestyle differences are likely to be interacting with gender. For example, in looking at the gendered ads, Alreck et al. (1984) found that older people, homemakers, less educated, and those in lower status occupations responded to gendered ads. Multivariate statistical tests and the use of covariates would enable the construct under study to be isolated more readily.

**EFFECT SIZES**

Research on gender differences has a history of findings of weak effects (Deaux 1984; Meyers-Levy 1988). Effect sizes for the present studies were small and significant results were found on minor points of each study. These results could be attributed to the methodological issues previously discussed, they could be attributed to gender differences decreasing as the sex roles of men and women become blurred, or they could be due to the myriad of additional influences on consumer behavior which attenuate or weaken the gender differentiated responses. For those of us who believe that these differences do exist, it is important that we not discard the these studies because of weak effects. We should, however, be certain to report all differences found, even as they may appear tangential to our hypotheses. Over time, an accumulation of studies might show distinctive patterns of male and female consumer behavior.

---

1. In contrast to books published earlier (e.g. Nystrom 1929), books on consumption written during the period (e.g. Cochrane and Bell 1956; Engel, Kollat and Blackwell 1968) do not list women, gender, sex, female in their subject indices.

2. This is at least partially due to the absence of gender from the consumer behavior texts as noted previously and to the "beliefs" of textbook writers as shown in the previous footnote.

3. The most reliable figures available [in 1917] show that sales made to women were as follows:

   - department stores 80%
   - drug stores 68.3%
   - grocery stores 89.1%  
   - automobiles 50.9%

[emphasis added] (Advertising Club News 1918). Contrast these figures with a quote from a 1986 Consumer Behavior text: "Marketers may be paying more attention to women as consumers because there are more women than men in the population. Since 1950 women have outnumbered men; with increased buying power gained from entering the workforce in greater numbers and attaining higher paying positions than ever before, women represent a growing market segment for many products" (Harrell 1986, 303).

4. Pollay (1985) content analyzed over 2000 print ads appearing in magazines between 1890 and 1980). Dimensions of analysis included the nature of the advertiser, ratio of editorial space to art, depiction of product, format, rhetorical focus (credibility realized by source, tone, logic), tactical focus (product attributes vs. user benefits).

5. Manipulation checks showed that the product category (e.g. food, clothing, personal care, home furnishing) was significantly associated with the points of information in the ad, but not with the total number of appeals.

6. Women's groups utilized appeals to glamour, emulation, comfort, vogue, and testimonials more often (p < .05); men used appeals to uniqueness and success more often ( p < .005).

---

49
The STD/AIDS advertisements and information incorporate a genuine fear appeal on an issue that is salient to college students. The fear appeal was expected to produce anxiety which would lead to an attitude change.

REFERENCES


Fowler, Nathaniel (1897), About Advertising and Publicity, New York: Publicity Publishing Company.


Gilligan, Carol (1982), In a Diffent Voice, Cambridge, MA: Harvard University Press.


J. Walter Thompson Archives, William R. Perkins Library, List of copywriter groups and accounts in
the New York Office 1924.

Advertising Club News (May 5).


Naether, Carl (1928), Advertising to Women, New York: Prentice-Hall, Inc.


APPENDIX

In searching for gender differences, we need to consider or question the reason for weak results. We need to determine whether, in fact, gender difference as a social construct is fundamental and enduring, or whether it is dynamic and likely to be more evident in different subcultures, social classes, or at different points in time. In addition, other aspects of the research process need to be considered. In a meta-analysis on the outcomes of specific topics, analyzed for gender of the researcher (Eagly and Carli 1986; Eagly and Crowley 1986) found that researchers are more likely to report behaviors that are desirable for members of their own sex. Other investigations have found interactions between sex and the task characteristics in experimental design. Results indicated that some tasks are not gender-neutral and that either males or females are more likely to excel (See Deaux 1984).

The results could be affected by the research design, conceptualization, or methodology. For example, the studies reported above all employed traditional positivistic methodology. The Alreck et al., Golden et al., and Meyers-Levy studies all employed forced choice, closed end questions to measure the effects in experimental investigations. Feminist research methodology is oriented toward contextualizing the research process, the researcher, and the subject of the research based on a nondualistic world view. The feminist approach based on women's tendency to view things within a context or a frame of reference, calls for qualitative data collection, to obtain a depth of information rather than a breadth of information that might be superficial and not tap the construct as it exists (Zuckerman and Carsky in review).

Specifically, in examining gender differences we need to consider:

1. Our conceptualization: Are the differences genuine, and fundamental?

2. Our research design: Does the scientific method permit the gathering of data that truly represents women's perspectives?

3. Paradigmatic influences on methodology: To what extent are the beliefs of our discipline, guiding the research, and to what extent are these
appropriate to the line of inquiry?

4. Our effect size: To what extent are gender differences embedded in other demographic and psychographic variables, and therefore, likely to yield only weak effects?

5. Data analysis: Are we using the most appropriate data analytic techniques?