Prerequisites for international segmentation

van Herk, H.; Verhallen, T.M.M.

Published in:
Marketing today and for the 21st century

Publication date:
1995

Prerequisites for international segmentation

Hester van Herk[1]

and

Theo M.M. Verhallen

Dept. Marketing and Marketing Research
Tilburg University, The Netherlands

1. Introduction.

In marketing research the use of rating scales for obtaining information is common practice. The use of these scales in an international setting can elicit different responses due to these scales by respondents from different cultures. For example: respondents in Asia are less likely to use the extremes of a rating scale as compared to US respondents (Lee & Green, 1991) and Greek respondents are giving more positive answers as compared to their French counterparts. These response effects can be due to real cross-cultural differences, response bias or a combination of both. When data from respondents of different countries are combined, as in international segmentation research, response effects may have severe influence on resulting segments. A main concern in international research therefore is the comparability or equivalence of data from different countries (Douglas and Craig, 1983).

Equivalence is important in all phases of a study. Many aspects of equivalence, e.g. translation equivalence, can be established at the start of the study. Metric equivalence, concerning reaction to and usage of measurement scales can be determined at the end of the study only.

In international marketing research the establishing of metric equivalence is necessary before valid cross-cultural comparisons can be made. Metric equivalence exists when "a

---

[1] Tilburg University, Faculty of Economics and Business Administration
Marketing and Marketing Research
P.O. Box 90153 5000 LE Tilburg The Netherlands
Telephone: (31) (0)13-663236/3043; Telefax: (31) (0)13-662875
E-mail : H.vHerk@KUB.NL

numerical value on the scale refers to the same degree, intensity, or magnitude of the construct regardless of the population of which the respondent is a member" (Hui & Triandis, 1985).

To establish metric equivalence different methods for standardising (giving the same mean) and normalising (giving the same mean and variance) data can be applied. These methods however do not guarantee that scores having the same mean value across countries also have the same meaning. A '5' in countries A and B can refer to a different magnitude of the measured construct or '5' in country A can have the same meaning as a '4' in country B when referring to the construct.

For establishing the same meaning on a rating scale, external reference data ('anchor' variables) having the same metric across countries can be used (Poortinga, 1989; Greenleaf, 1992) for validating results. E.g. an attitude variable measured on a rating scale (e.g. 'I eat a lot of fat') can be validated with overt behavior (e.g. the grams of fat eaten in one week) to establish metric equivalence. Metric equivalence at the individual respondent level of such attitude scores can be assured by using a different standardisation per country based on 'anchor' variables.

In this paper methods for standardising and normalising data for obtaining metric equivalence will be compared and their implications for international segmentation research will be given. The main goal of this study is to investigate the effects of procedures for correcting response effects while analysing data at an individual level as for example in international segmentation research.

2. Current international marketing research.

In marketing research literature little has been published on metric equivalence of scales. Most international research focuses on the cross-national applicability of models. In an article by Parameswaran & Yaprak (1987) the degree to which unreliability of measures impairs the comparability of cross-national research findings is explored. They used analysis of variance designs and reliability analysis to determine country and construct effects. Netemeyer et al. (1991) compared the use of the American based CETSCALE in various countries, thereby emphasising the validation of the measurement instrument itself. In other articles American based models like the Fishbein model (Lee & Green, 1991) or the Rokeach Value Survey (Schwartz & Bilsky, 1987, 1990) are validated in other countries.

The common denominator of these studies is establishing congruence of the internal structure of the research instrument by various methods. In these studies data are analysed at an aggregate level. This procedure is sufficient for validating theoretical constructs in different countries. It is not sufficient however for (international) segmentation purposes, because then metric equivalence has to be present in the data at the individual level.

3. International segmentation.

For international segmentation the data from various countries should have the same meaning at the individual level. When standardising by imposing the same mean for each country real differences can be eliminated. For obtaining the same meaning data must be corrected for real bias effects, but not for real cross-cultural differences. By using 'anchor' variables bias can be separated from real cross-cultural differences. After removal of bias variables having the same meaning over countries can be obtained. The subsequently remaining differences can be interpreted as real differences. Only when data are corrected for cultural bias, valid cross-national segments can be revealed.

In most international research data from different countries are analysed separately. Results are compared and similarity between the outcomes is investigated. In other studies metric equivalence is implicitly imposed by using covariance matrices. The use of covariance matrices implies that each country is implicitly given the same mean (zero). It is however not certain that the then equal means refers to the same meanings across countries. An equivalent structure obtained from these matrices therefore is a necessary but not a sufficient requirement for metric equivalence at an individual level.

For international segmentation purposes data should be equivalent (in meaning) in the countries being studied, because respondents from different countries will be compared directly. Therefore, data used in segmentation studies have to be corrected for response effects. Greenleaf (1992) refers to response effects as (1) yeasaying effects (more positive answers given) and (2) standarddeviation effects (only certain parts of the scale used). When respondents from different countries are analysed simultaneously without correcting for yeasaying effects, resulting international segments may reveal the countries themselves.

4. Research-set-up and Method.

An international study on cooking behavior was carried out in three European countries: France, Greece and Italy. The study comprised two phases: a qualitative and a quantitative phase. In the qualitative phase 30 to 60 families per country were observed during cooking and meal preparation using video cameras. In the quantitative phase a sample of 600 families in each country, representative for the national population, took part in the study. Information was gathered on psycho-graphics, cooking behavior, food buying behavior, product usage, general attitudes towards cooking and demographics.

During the research process equivalence in construct, translation and data collection procedures was established. Metric equivalence of the data was established by several methods including the method using 'anchor' variables. Based on these different sets of equivalent data segments crossing borders were formed.

5. Results.

In our study the underlying structure of psychographic variables concerning cooking behavior, measured on a 5-point Likert scale, was determined. In all three countries the same underlying structure was found, implying that a first step for obtaining metric equivalence was satisfied.

A next step in the research process was the standardisation of data for obtaining metric equivalent data at the level of individual respondents. Data were obtained using different standardisation and normalisation procedures (see figure 1).

Figure 1. Standardisation in cross-national research.

Code	Analysis	Mean	Standard-deviation	Bias
I.	Intra-cultural	n.a.	n.a.	n.a.
II.	Pan-cultural	unequal	unequal	assumed absent
III.	Cross-cultural A	equal	unequal	only yeasaying
	Cross-cultural B	equal	equal	yeasaying+stddev
	Cross-cultural C	equivalent	equivalent	yeasaying+stddev

In the Intra-cultural approach data are analysed separately per country and segmentation results are compared thereafter. Here standardisation procedures are absent, since country effects cannot have any influence.

The Pan-cultural approach assumes constructs to be valid across countries, so differences found between countries are only interpreted as real differences. In the Pan-cultural approach (I) data of Italy, France and Greece are analysed simultaneously without correcting for bias effects. Response effects will be present in the final segments, but differences are not expected to reveal real cross-cultural differences or bias in consumer behaviour. Differences are interpreted as individual differences rather than cultural differences.

Within the cross-cultural approach different possibilities to equalize differences are used. In approach (A) it is assumed that respondents of all countries use extreme scale values equally. Respondents in one country are however expected to be more positive about a construct than respondents in another country. Therefore only corrections for differences in mean are applied. In approach (B) it is assumed that respondents from one culture are both more likely to give positive answers and to use more extreme values on the scales. For making comparisons across countries these effects have to be removed before valid comparisons can be made. In approach (C) the effects of approach (B) are expected and corrections are made also on 'anchor'-variables.

In the first cross-cultural approach (A) a correction for mean effects is made per country by normalising data (mean=0). In the second approach the data are standardised per country (mean=0, stddev=1). In the third approach (C) data are standardised by using 'anchor' variables resulting in data equivalent in meaning as well as in metric. Data concerning product usage and meal preparation were used as 'anchor' variables in this procedure. Following each standardisation procedure data are analysed simultaneously over all countries, using

clustering techniques, for obtaining cross-national segments.

Results of these different approaches are compared and implications for international segmentation research are given. Resulting segments from the different approaches will be compared in terms of psychographic and demographic as well as behavioral characteristics and product usage. Results will give insight into the validity of cross-national segments based on psychographic data. Implications for marketing strategies will be discussed.

6. References.

Berry, J.W., Y.H. Poortinga, M.H. Segall and P.R. Dasen, Cross-cultural psychology, Research and Applications, (1992), Cambridge University Press.

Douglas, S.P. and C.S. Craig, International Marketing Research, (1983)
Englewood Cliffs, N.J.: Prentice Hall

Douglas, S.P. and C.S. Craig, "Advances in international marketing", International Journal of Research in Marketing, Vol. 9 (1992), p. 291-318.

Greenleaf, E.A., "Improving rating scale measures by detecting and correcting bias components in some response styles", Journal of Marketing Research, XXIX, May (1992), p. 176-188.

Hui, C.H., H.C. Triandis, "Measurement in cross-cultural psychology: a review and comparison of strategies", Journal of Cross-Cultural Psychology, Vol. 16, No. 2, June (1985), p. 131-152.

Lee, C., R.T. Green, "Cross-cultural examination of the Fishbein behavioral intentions model", Journal of International Business Studies, Second Quarter (1991), p. 289-305.

Netemeyer, R.G., S. Durvasula, D.R. Lichtenstein, "A cross-national assessment of the reliability and validity of the CETSCALE", Journal of Marketing Research, Vol. XXVIII, (1991), p. 320-327.

Parameswaran, R., A. Yaprak, "A cross-national comparison of consumer research measures", Journal of International Business Studies, Spring (1987), p. 35-49.

Poortinga, Y.P., "Equivalence of cross-cultural data: an overview of basic issues", International Journal of Psychology, 24 (1989), p.737-756.

Schwartz, S.H., W. Bilsky, "Toward a universal psychological structure of human values", Journal of Personality and Social Psychology, Vol. 53, No. 3. (1987), p. 550-562.

Schwartz, S.H., W. Bilsky, "Toward a theory of the universal content and structure of values: extension and cross-cultural replications", Journal of Personality and Social Psychology, Vol. 58, No. 5. (1990), p. 878-891

Van Herk, H. and D. Sikkel, "Problemen en oplossingen bij cross-nationaal onderzoek", Onderzoek, 6/7 (1993), p. 9-11.