Relating consumer preferences to sensory attributes of instant coffee

by

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'Excellence of taste' or more collectively 'sensory qualities' in food, dictates the success of a food product in the marketplace. The connection between the sensory qualities and consumer reaction is often of interest and preference mapping is a valuable sensory tool that gives a clear presentation of the relationship among the products and the individual differences in preference by consumers for these products.

An experiment was carried out to determine consumer perceptions of instant coffee quality using eleven commercially available products. The products included four pure instant coffees (PC), six instant coffee blends (CB) and one chicory instant drink (CID). The coffee samples differed widely in price and general composition. Coffee samples marketed by three manufacturers were included.

The Generic Descriptive Analysis test method was used to identify the differences in appearance, odour and flavour attributes among the dry coffee powders and prepared coffee samples. The descriptive sensory panel consisted of 12 members that created an instant coffee lexicon containing 29 descriptors to profile the various coffees. Evaluations made by the trained panel

were analysed using Principal Component Analysis (PCA). Differences in coarseness, density and colour characterized the appearance of the dry coffee powders. Descriptive terms like root and earthy described the odour quality of coffee blends in contrast to pure coffees that were depicted as roasted, toasted, spicy and cocoa-like. Pure coffees were perceived as more fullbodied, bitter, toasted and nutty and coffee blends tended to have earthy, sweet flavour notes.

More comparisons were made between the coffee samples in terms of colour, aroma and caffeine content, which were measured by means of a Minolta chromameter CR-200, an Aromascan Labstation A325 electronic nose and capillary electrophoresis, respectively. The L a b colour values supported the observations made by the trained sensory panel and it seemed that the higher the a-value the lighter a sample was perceived to be by the human eye. However, many factors such as granule size, lighting and angle of observations can influence colour perception. The electronic nose seemed to group the coffee samples similar to the product map obtained from the sensory panel's evaluations of the aromatic characteristics of the eleven coffee samples. No significant correlation could be made between caffeine content and bitterness perception.

The consumer perceptions and preference assessments were measured using an in-home-use evaluation method. A total of 200 instant coffee users in two South African city areas were included in this study. Internal preference mapping separated consumers that favoured the sensory properties of pure coffee samples from those that preferred coffee blends. Applying cluster analysis, four distinct groups of consumers were distinguished. One group (37% of consumers) did not show any definite preference for a specific coffee group but tended to find all samples fairly acceptable, 30% preferred coffee blends, 23% favoured pure coffee samples and 9% scored all coffees as low in terms of acceptability.

By studying the product profiles generated by descriptive sensory analysis in conjunction with the consumer preference maps, trends in specific consumer segments could be identified. This knowledge can be used to development coffee samples that fit consumer needs better, resulting in higher sales and thus ultimately increasing profit.

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