Increasing Capacity and Efficiency Through Remote QDA Profiling

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Background

Due to increased demands for descriptive testing at the Global Science Centre in Reading, UK, a novel way of collecting descriptive data was investigated to alleviate onsite capacity constraints and increase result throughput without the need for further infrastructure investment.

As we utilize both the QDA methodology, a primarily behavioural approach to descriptive analysis and Compusense @-hand™, which is web-based data collection software, we set out to determine if we could conduct data collection offsite. A pilot study and success criteria were put in place to validate descriptive data collection remotely via a secure internet connection.

As a group, panellists generated a common consumer based language and evaluation protocols before evaluating samples both onsite, in controlled booths; and offsite, in the panellist's home.

Method

Two pilot studies were completed to verify that consistent results were collected across flavour types in pellet gum format; peppermint and fruit.

Samples: Study 1: Five peppermint pellet gums
Study 2: Five red fruit pellet gums

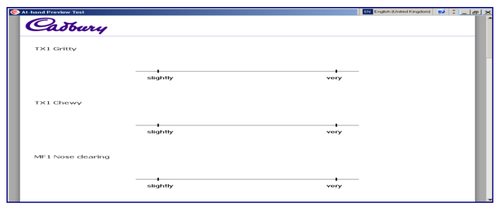
Training and Profiling Method:

Each study was conducted separately using the Tragon® QDA Methodology. Subjects generated attributes and definitions together as a group and had a total of 4 training sessions of two hours for each study. Once training was completed, subjects profiled peppermint samples across 6 replications, both in controlled booths onsite and offsite at home (via Compusense Inc.® @-hand web-based data collection software) over a period of six sessions. This method was repeated separately for the Red Fruit gums. Samples were presented monadically using a design that was balanced for position over the 6 replications. Offsite serving orders were replicated identically per panellist to eliminate sample order effect.

Statistical Methods for Analysis:

Results were analysed with QDA™ software (Tragon) using Analysis of Variance (ANOVA). The Duncan minimum significant difference was calculated in order to determine for each attribute, those samples which were significantly different within each subset. PCA (Principal Component Analysis) was run to graphically highlight the comparison between Onsite and Offsite profiling.

To assess rank order repeatability across both data sets, the sensory scores were converted into rank orders (1-5) for each assessment by each panellist. The samples were evaluated by each panellist 6 times Onsite and 6 times Offsite. Therefore, the first three replications were considered jointly as assessment one and the next three repetitions were considered as the second assessment. A comparison of the product ranks between these two assessments for significant attributes was run for both the onsite and offsite assessments for each panellist via ANOVA. This analysis allowed us to understand rank order repeatability at the panellist and panel level.



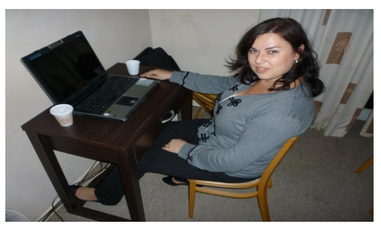
Compusense Inc ® @-hand web-based ballot used for both offsite and onsite profiling of the gums.



Group Language Generation



Onsite Booths



Offsite Workstation

Results and Discussion

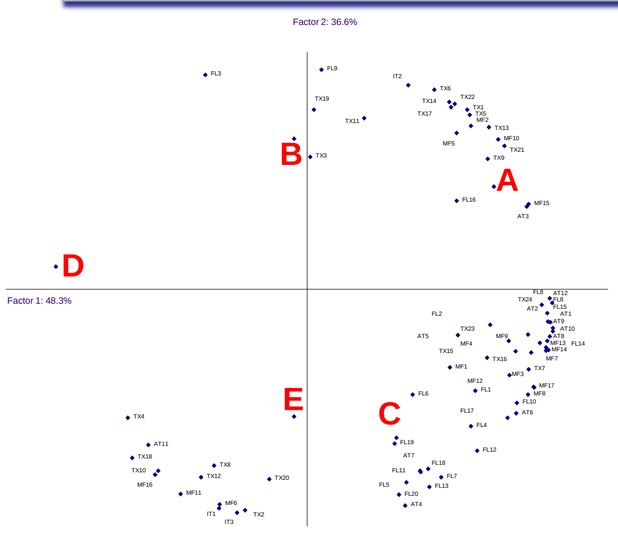


Figure 1: ONSITE Peppermint Pellet Gums
(F1&F2 85%)

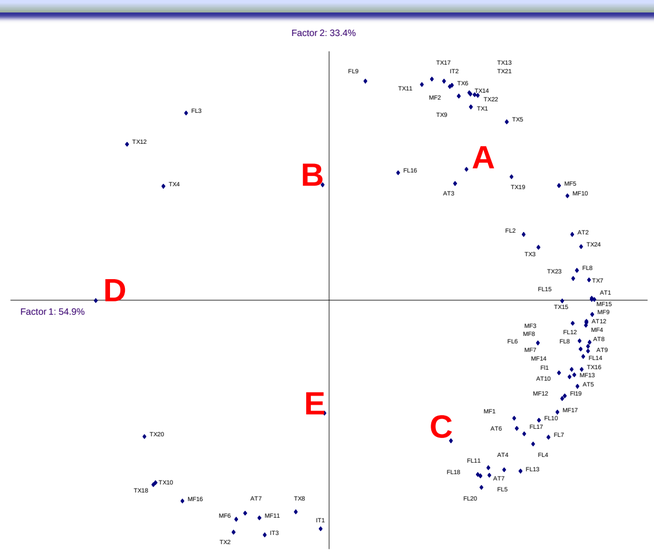


Figure 2: OFFSITE Peppermint Pellet Gums
(F1&F2 88%)

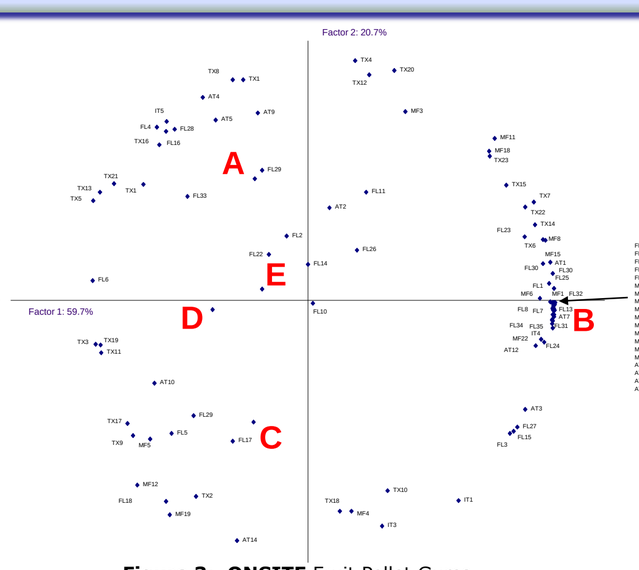


Figure 3: ONSITE Fruit Pellet Gums
(F1&F2 80%)

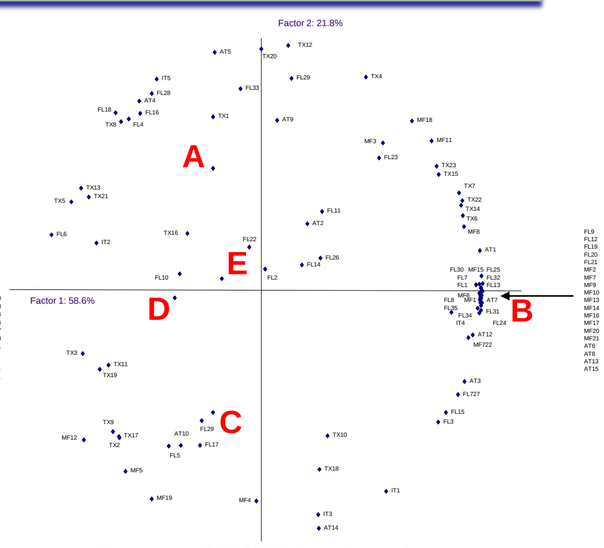


Figure 4: OFFSITE Fruit Pellet Gums
(F1&F2 80%)

PCA maps show products were categorized similarly when comparing Onsite vs. Offsite assessments (Figure 1 vs. 2, and 3 vs. 4). PCA pictorially demonstrates consistent similarities between products for both the Peppermint and Red Fruit gums whilst assessed by panellists both onsite and offsite.

When looking at rank order repeatability measures, the panel results for both Onsite and Offsite demonstrated consistent rank order variability. In general, very few sensory attributes showed significant interaction 'product*assessment': 12.3% for the onsite test vs. 19.4% for the Offsite test for the Peppermint Gums (Figure 5) and 7.5% for the onsite test vs. 4.1% for the offsite test for the Red Fruit gums (Figure 6). Almost without exception, a change in rank order between Assessment 1 and 2 did not reflect a difference in Duncan significance due to common sharing of letters within the brackets.

MINT GUMS	**Panel** (%)
Onsite	12.3%
Offsite	19.4%

Figure 5

RED FRUIT GUMS	**Panel** (%)
Onsite	7.5%
Off site	4.1%

Figure 6

Conclusion

Data sets for both studies produced consistent product profiles, results and recommendations, regardless of profiling location. Successful ongoing monitoring of offsite performance has allowed for full time use of remote descriptive profiling, for gum. This tool has increased weekly throughput two fold and halved staffing requirements, compared to the original onsite only QDA panel.

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