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Determining cross-cultural wine quality drivers: a chemical, sensorial and data fusion approach

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Photo by Stefan Els

Introduction

South African wine consumer preference to South African style wine:

- Changing markets
- Cost of wine
- Various food and beverage trends
- Quality and wine style
- Variety of wines
- Country rich in diversity of cultures
- Wine knowledge of the South African wine consumer

Source: Pictures – Tastry; Ebay

Introduction

South African (SA) wine styles

Wine work

In depth consumer insights

Data fusion approach: chemistry, sensory and consumer

Understand SA wine consumer preference for SA style wines produced

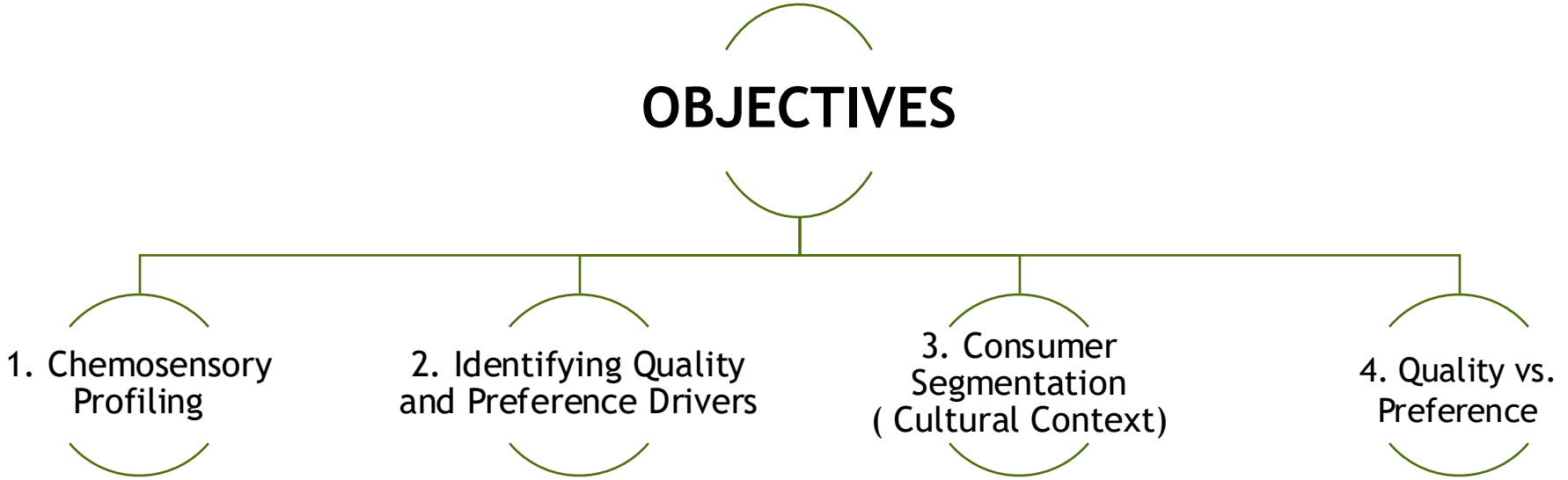
Source: Pictures – Freepick; Media update;

Aim:

To determine the relationship between cross-cultural consumer preference, quality and chemosensory wine profiles

Source: Picture – Dreamstime.com

Objectives


OBJECTIVES
1. Chemosensory Profiling
2. Identifying Quality and Preference Drivers
3. Consumer Segmentation (Cultural Context)
4. Quality vs. Preference

Materials and Methods:

Sample set selection and approach:

Sauvignon blanc

Shiraz

- Easy recognizable cultivar aromas
- To span SA Shiraz and SA Sauvignon blanc sensory space

Highlight difference and similarities:

- Expert Quality
- Consumer liking

Source: Pictures – wine.co.za; Picture 123RF

Experimental Design and Workflow: Wines

Sauvignon blanc
Association of SA,
donated and purchased

→

Sauvignon blanc
n=62

→

Sensory evaluation by
wine experts

SHIRAZ SA

Shiraz
Association SA, donated
and purchased

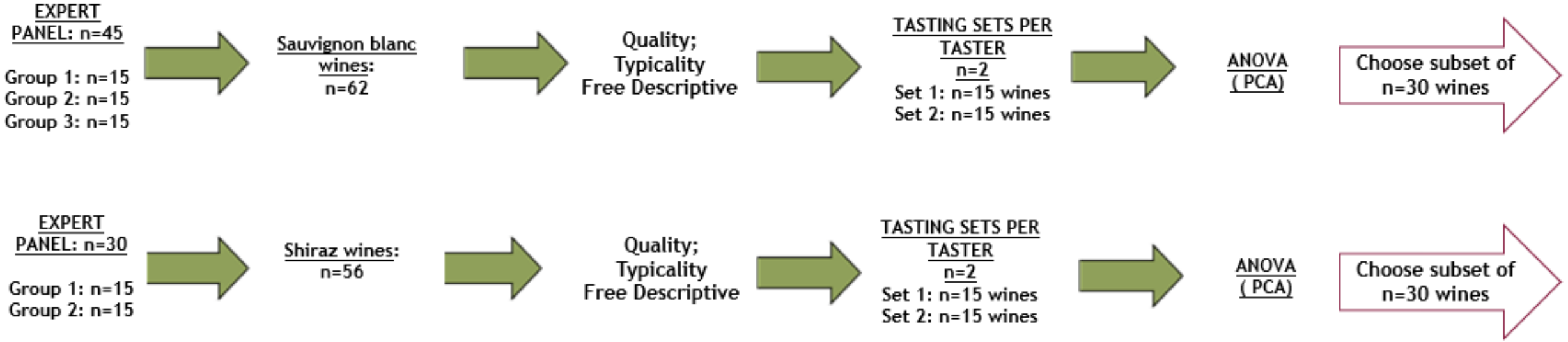
→

Shiraz/Syrah
n=56

→

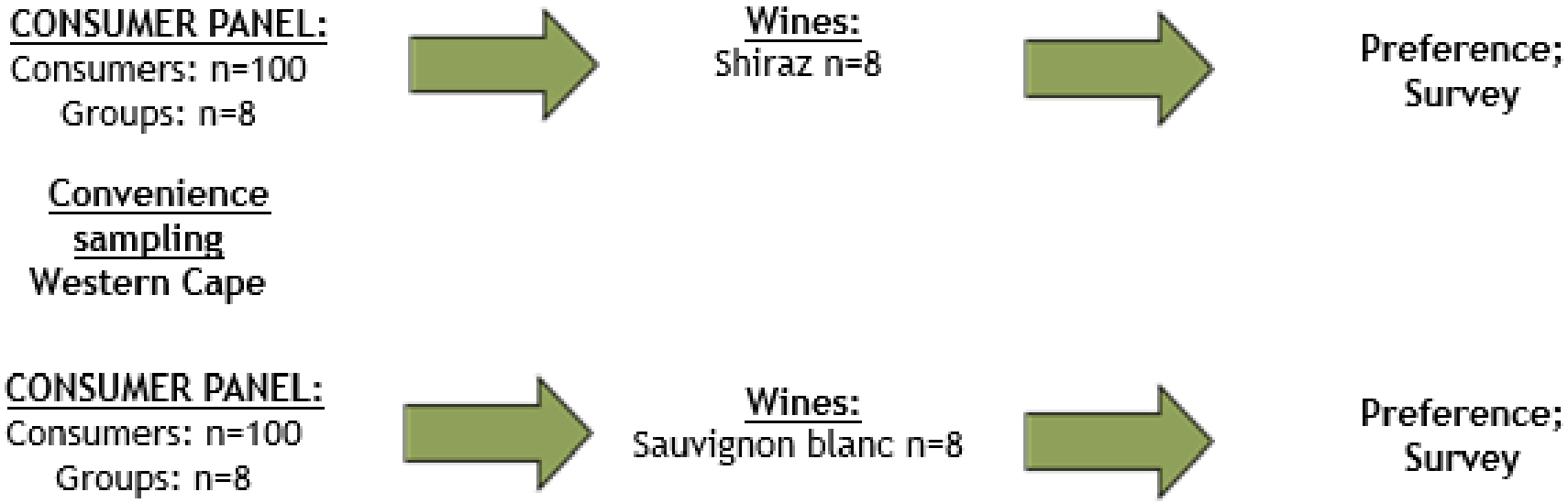
Sensory evaluation by
wine experts

Experimental Design and Workflow: Expert panel



Experimental Design and Workflow: Trained panel

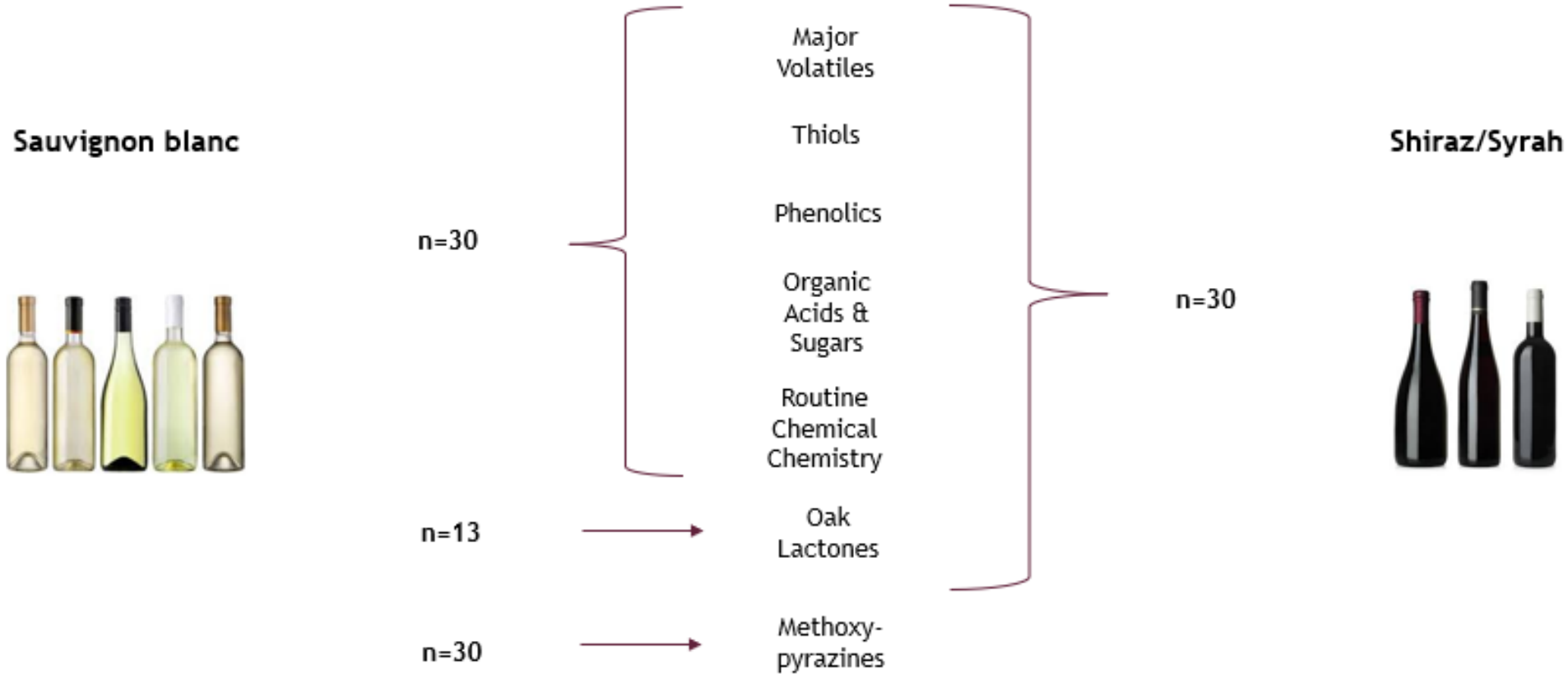
Experimental Design and Workflow: Consumer panel



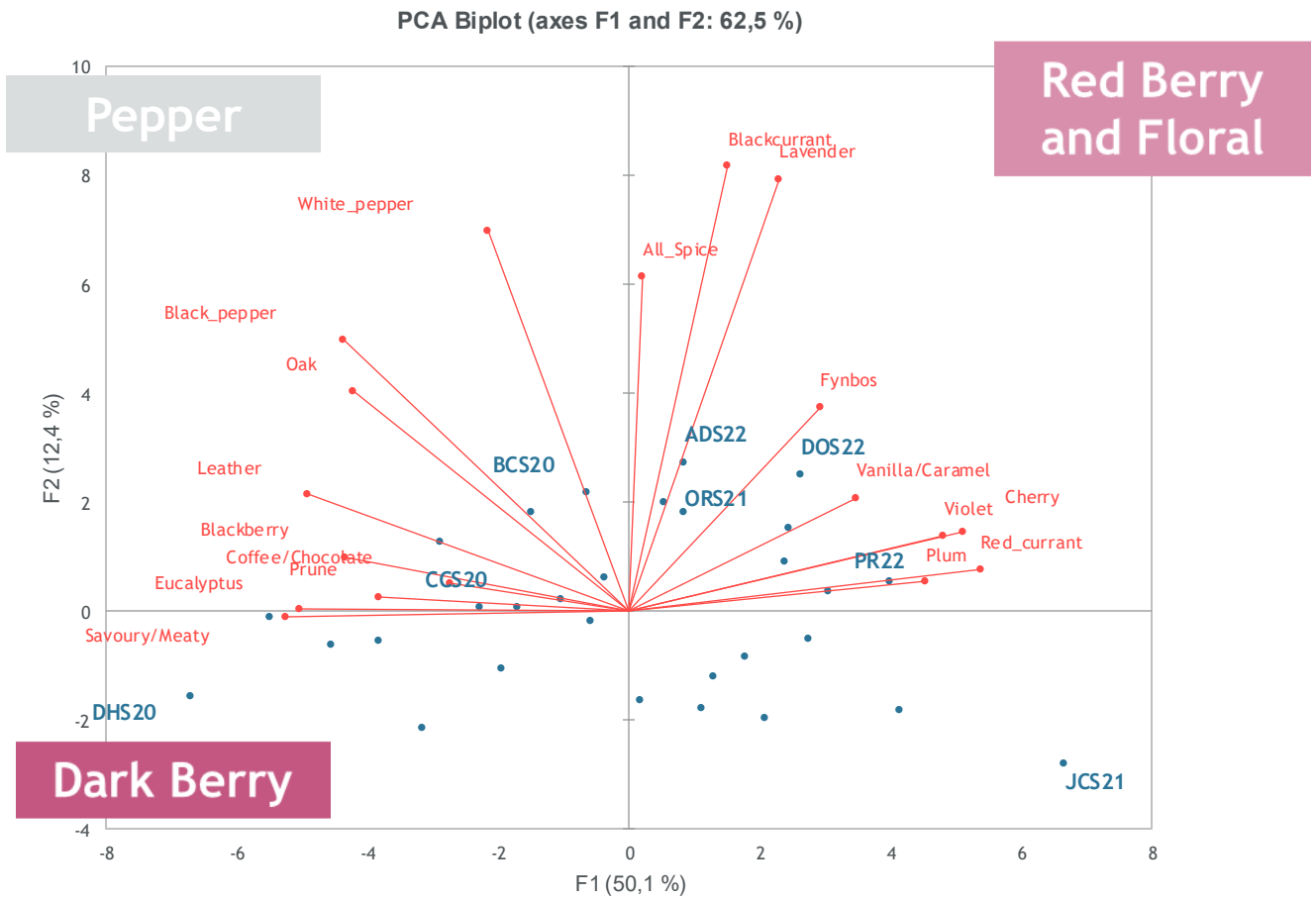
Consumer Perception Experimental Design

Cultivar:	Shiraz	Sauvignon blanc
Wines:	n = 8	n = 8
Consumers:	n = 100	n = 100
Preference:	Ranking	Ranking
Product description:	Own language, brief English translation	Own language, brief English translation
Language groups:	n = 5	n = 5
Languages:	English, Afrikaans, Zulu, Xhosa, Sotho	English, Afrikaans, Zulu, Xhosa, Sotho
Cultural Context:	Rural vs City	Rural vs City
Age range:	Gen Y & Z: 27 - 40	Gen Y & Z: 24 - 40

Experimental Design and Workflow: Chemistry



PCA-Shiraz Trained Panel Multivariate Map



Trained Panel

Wines n = 30

Wines n = 8

Consumer tastings

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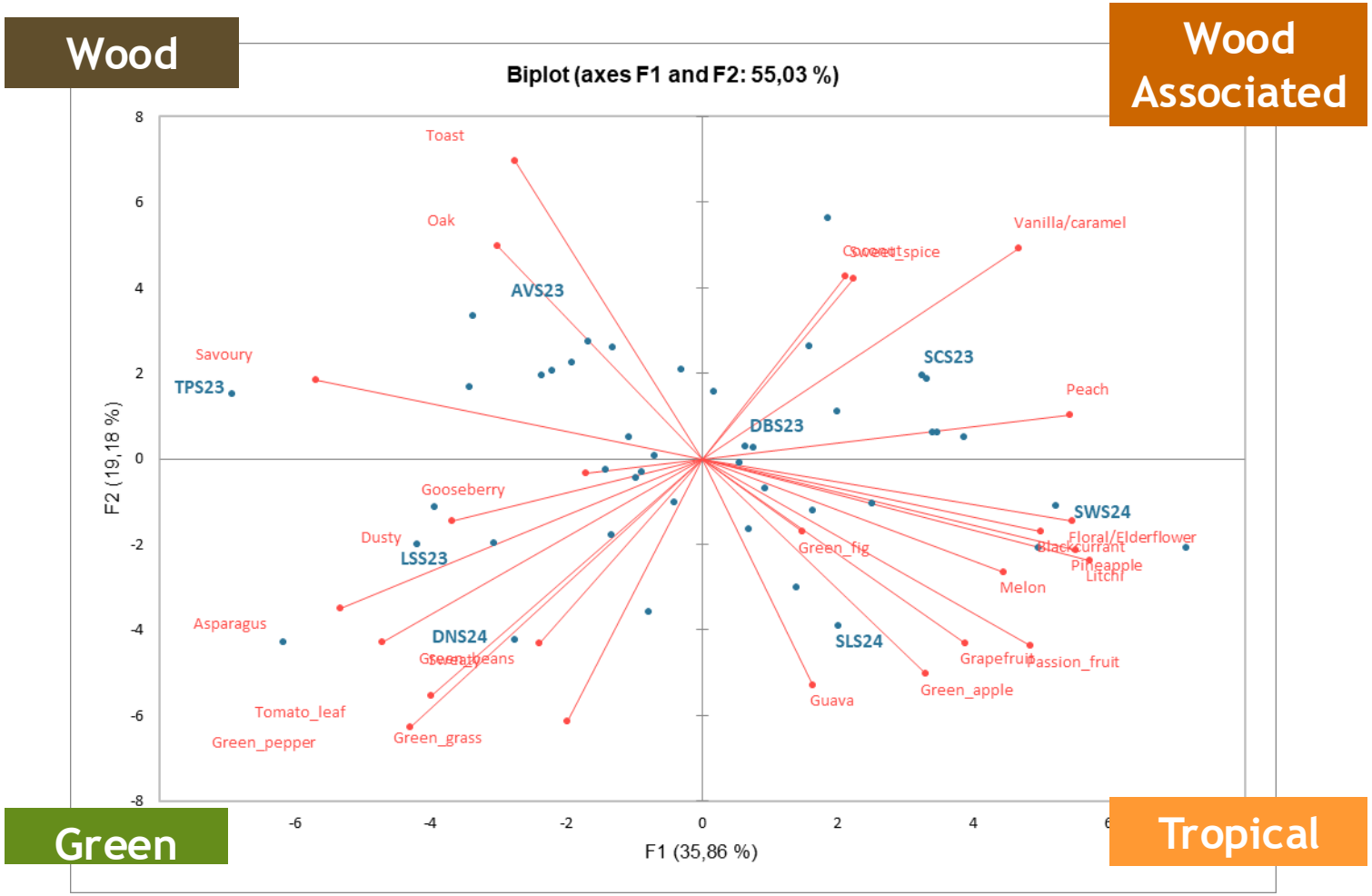
PCA - Sauvignon blanc Trained panel - Multivariate map



Trained Panel

Wines n = 30

Wines n = 8

Consumer tastings

PCA: Product Character All

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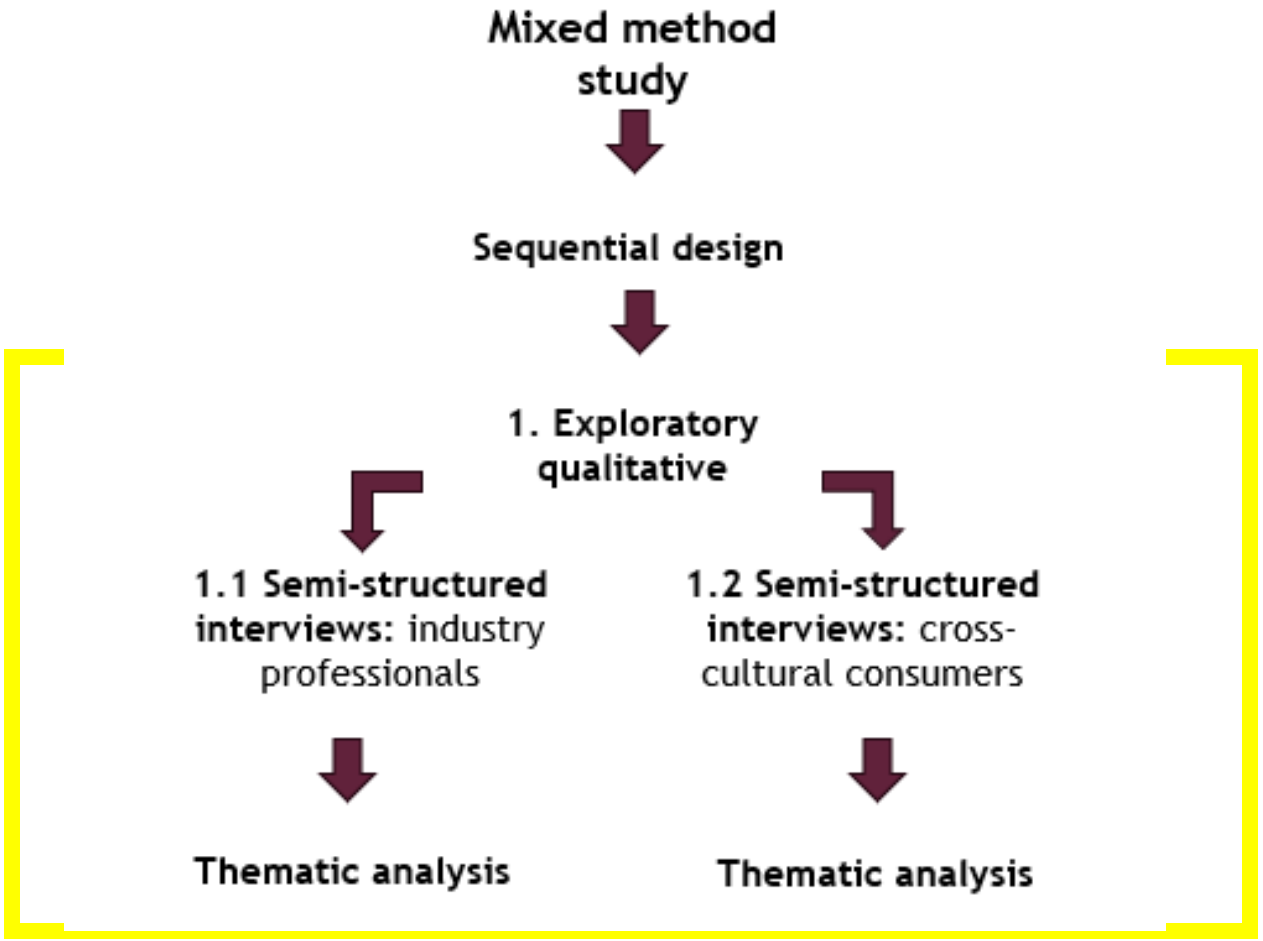
Focus groups: Sequential design - qualitative



Focus groups: Industry professionals-Thematic analysis

Industry professionals:

- Producers: Volume movers vs. Boutique
- Wine style: Easy drinking / safe; more serious
- Wine market: From a beer drinking nation to a wine drinking nation.
- Wine education: needed
- Market segmentation: Look (extrinsic)/ who does it relate to/ intrinsic – understand cultures
- Wine preference: some are content; others adventurous
- Expand market: Western Cape, Gauteng, Africa
- Constant quality of intrinsic

Focus groups: Consumers-Thematic analysis

Consumers: Generation-Y

- Association: Grapes, classy, bitter, home food, fun, festivities
- Type of wine: English: sweet to later less sweet; Sotho, isiXhosa & isiZulu: sweet; easy drinking, lower alcohol
- Enjoyed: English - with a meal(diet); other cultural groups seen as glamorous and fancy.
- Preferred wine: English - white or red; other cultural groups – red
- Red wines: English - more wooded; other cultural groups – less wooded; all red blends, sweet and fruity
- Wine style: accessibility and price
- Packaging: CANS vs glass; 4.5L BIB vs 275ml or 750ml

Focus groups: Consumers-Thematic analysis

Consumers: Generation-Y

- How to grow the market: English – more wines to choose from, lower alc%; isiZulu: wine seen as feminine – need different branding to include men. Sotho: rely on people already drinking wine – wine education
- Intrinsic taste of wine is important for all cultural groups, brands not as much.
- Extrinsic cues are important for all cultural groups.
- Wine cultivar is important for all cultural groups
- Wine education – confidence is important for all cultural groups
- Inclusivity and relatability (labels/ easy name pronunciation)
- Wine festivals, road shows and activities,
- Food and wine pairing – traditional dishes –taste and flavours

Outcomes of research project:

South African (SA) wine styles

Inclusivity
Aroma
wheels

In depth
consumer insights

Data fusion approach:
chemistry, sensory
and consumer

Wine education
Wine availability

Source: Pictures – Shiraz wheel: South-African Wines; Sauvignon blanc wheel: South African Sauvignon blanc association

Outcomes of the research project:

- Gender differences for Sauvignon blanc not significant, but some cultural differences were.
- Both gender and cultural differences for Shiraz. Either different trend per cultivar or white vs. red wine
- Data obtained can support the South-African wine industry for more inclusivity of consumers over our countries diverse, cultural demographics.

Source: Picture – Dreamstime.com

Future work

- Consumer sampling: more consumers
- Consumer tasting: different provinces in South Africa
- Sample wine availability
- Translation of wine aroma wheels - inclusivity
- More wine education
- Food (local dishes) and wine
- Focus groups: Quantitative Analysis - Consumer surveys
- Mixed method statistical data analysis on integration of quantitative and qualitative data

Acknowledgements

- Supervisor – Dr Jeanne Brand
- Co-supervisor – Dr Sulette Oelofse
- South Africa Wine
- Heineken Beverages SA
- Sauvignon blanc Association of South-Africa
- Shiraz Association of South-Africa
- CA Lab SAWGRI
- CAF Lab
- Affinity Labs

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Source: Pictures – Shiraz Association of SA; Sauvignon blanc Association of SA; Heineken Beverages