FROM SENSE TO QUALITY
What can sensory evaluation bring to quality control?
July, 25-27, HoChiMinh City, Vietnam

PISE 2014

ROLE OF SENSORY EVALUATION IN QUALITY CONTROL: A TEXTUAL POINT OF VIEW

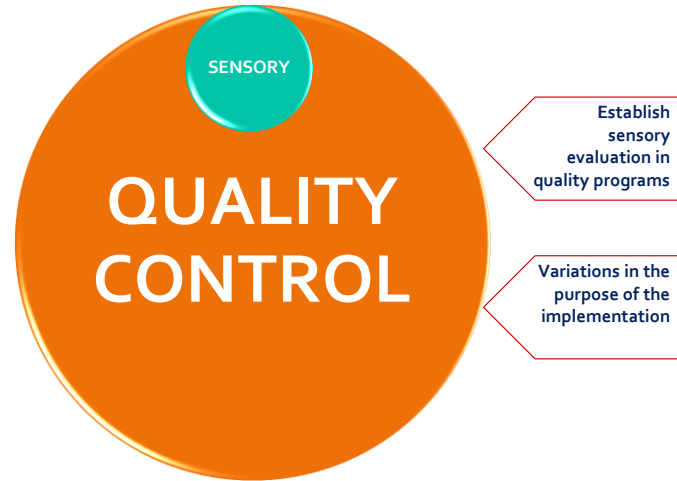**Nguyễn, Q.D.[*a], Lê, M.T.[b] and Nguyễn, H.D.[c]**

(a) University of Technical Education Hồ Chí Minh City, Vietnam
(b) Agrocampus Ouest, Rennes, France
(c) Hồ Chí Minh City University of Technology, Vietnam

*Email: dungnq@hcmute.edu.vn

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INTRODUCTION

SENSORY

PRODUCT QUALITY

CHEMO-PHYSICAL

MICROBIAL

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INTRODUCTION

SENSORY

QUALITY CONTROL

Establish sensory evaluation in quality programs

Variations in the purpose of the implementation
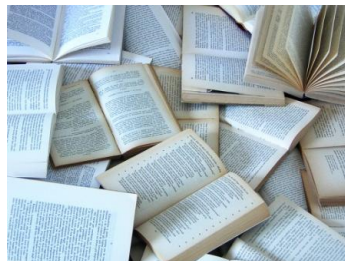
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OBJECTIVES

Identify key issues and trends of sensory evaluation in quality control

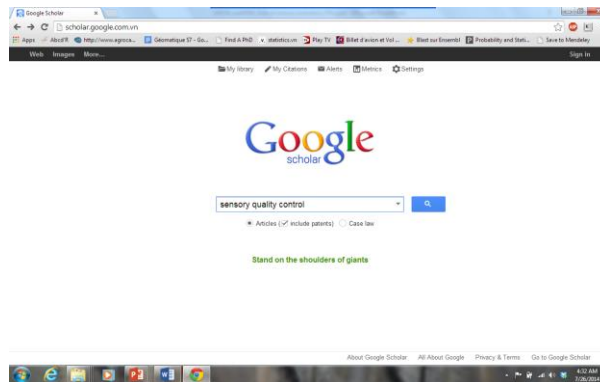Doing literature review...

...but with a textual analysis approach

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METHODOLOGY

1. Selection of articles

Using Google Scholar
with the key words "*sensory quality control*"

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METHODOLOGY

1. Selection of articles

Title	Year	Code
Decision trees in selection of featured determined food quality	2011	P1
Analysis of sensory data of different food products by ANOVA	2004	P2
Examining the case of green coffee to illustrate the limitations of grading systems/expert tasters in sensory evaluation for quality control	2002	P3
A consumer-focused QC/sensory program in the food industry	2002	P4
Expanding the sensitivity of conventional analytical techniques in quality control using sensory technology	2002	P5
Advances in sensory evaluation for quality control	2002	P6
Food quality certification: An approach for the development of accredited sensory evaluation methods	2007	P7
A method for the analysis and control of sensory properties during processing—application to the dry sausage process	2004	P10
Sensory quality control for food certification: A case study on wine	2010	P11
Descriptive sensory analysis: past, present and future	2001	P12
Sensory quality control for food certification: A case study on wine. Panel training and qualification, method validation and monitoring	2010	P13
A comparison of sensory methods in quality control	2002	P15
Dimensions of sensory quality: a critique	1995	P16
Sensory Analysis in Quality Control: The Gin as an Example	2011	P17
The Sensory Quality System: a global quality control solution	2002	P18
Sensory evaluation in quality control: an overview, new developments and future opportunities	2002	P19

16 articles, restricted to the last 10 years

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METHODOLOGY

2. Article pre-treatment
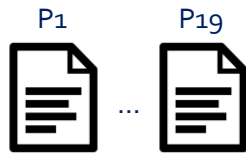
P1 ... P19

Transform the set of articles into text files.

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METHODOLOGY

2. Article pre-treatment

P1 ... P19

Transform the set of articles into text files.

TEXT
Document

Import the text files into a text document (corpus).

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METHODOLOGY

2. Article pre-treatment

P1   P19
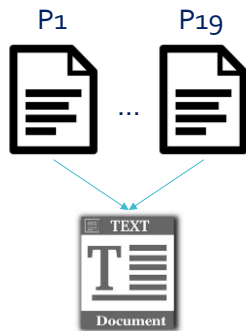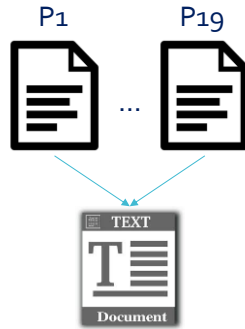
... (TEXT Document)

Transform the set of articles into text files.

Import the text files into a text document (corpus).

Group the inflected forms of a word.

- **8087 distinct words**
- **5631 terms retrieved after lemmatization**
- **412 terms (frequencies >= 20)**
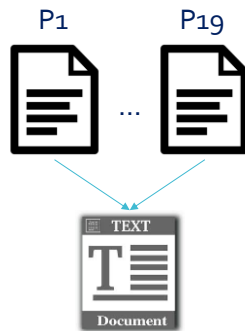
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METHODOLOGY

2. Article pre-treatment

P1   P19

... (TEXT Document)

Transform the set of articles into text files.

Import the text files into a text document (corpus).

Group the inflected forms of a word.

412 terms

16 articles

FREQUENCY OF OCCURRENCE

Compile into a term x article matrix

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METHODOLOGY

3. Textual analysis

The size of the words in the cloud represent their frequencies of occurrence in the text document.

Figure 1. Illustration of the word cloud constituted from the most frequent distinct words.

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METHODOLOGY

3. Textual analysis

General topics

Figure 1. Illustration of the word cloud constituted from the most frequent distinct words.

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METHODOLOGY

3. Textual analysis

Figure 1. Illustration of the word cloud constituted from the most frequent distinct words.

Implementation methods

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METHODOLOGY

3. Textual analysis

Figure 1. Illustration of the word cloud constituted from the frequent distinct words.

Objects of interest:
"attribute, difference, reference, defect, panelist, consumer, expert"

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METHODOLOGY

4. Corresponding analysis (CA)

412 terms

16 articles

FREQUENCY OF OCCURRENCE (red box) — Active individuals

Years

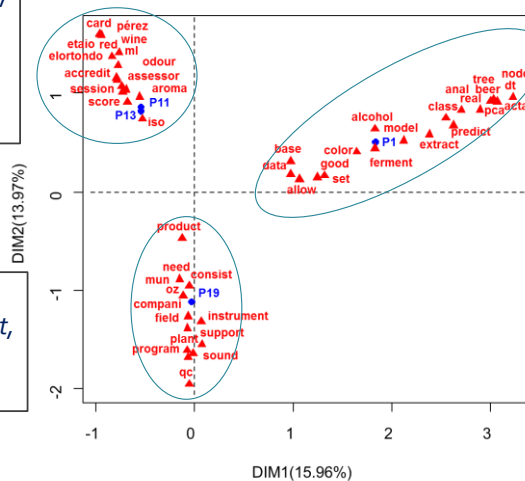**FREQUENCY OF OCCURRENCE** (green box) — Supplementary individuals
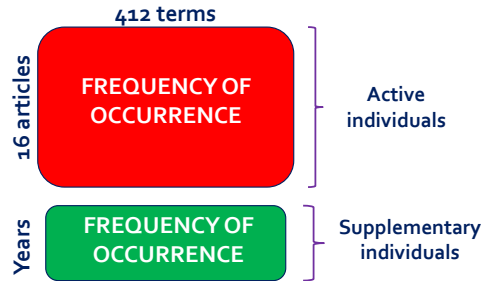
Statistical software: R version 3.0.2, using these packages:
"**tm**": text processing (Feinerer, 2008), (Feinerer et al., 2008).
"**wordcloud**": text graphic performance (Fellows, 2013).
"**FactoMineR**": CA performance (Husson et al., 2012).

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RESULTS

1. Sensory evaluation in quality control: Key issues

P11, P13: "*card, accredit, assessor, session, score, iso*"

P1: "*node, tree, class, PCA, model, predict*"

P19: "*qc, program, plant, instrument, company*"

Figure 2. The first factorial plane obtained by using CA for the 16 scientific articles.

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RESULTS

2. Trends of sensory evaluation in quality control

2007, 2010: the introduction of sensory evaluation in food quality certification

2002: the importance of quality control and sensory evaluation programs within companies
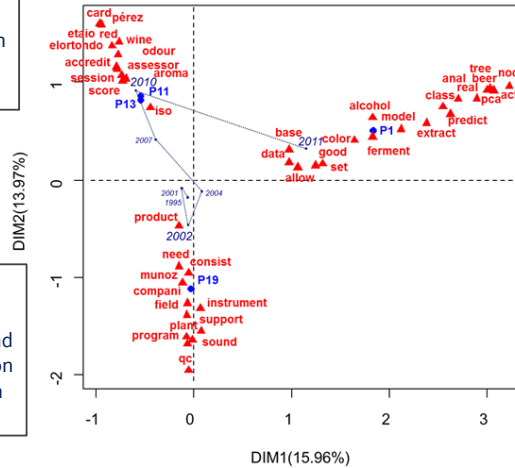
2011: the development of statistical models used to predict food grades"

Figure 2. The first factorial plane obtained by using CA for the 16 scientific articles.

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CONCLUSION

- Apply text mining as a tool for rapid literature review

- Visualize the correlation between the articles and terms

- Highlight the issues and trends in the development of sensory evaluation in quality control

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