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C'ing is believing: What types of characteristics are found on bottles of wine? Do more characteristics mean more online presence?

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ABSTRACT: Wine bottles feature various textual and visual elements. Aside from necessary legal information, wine-branding decision-makers choose what goes on the bottle. They may also choose a bottle shape that is out of the ordinary to draw more attention. Rather than a cork, they may opt for a screwcap so that the opening of the bottle requires no corkscrew. The bottle's base may be flat, or it may be concave. In sum, decisions are made either to blend in with the other wines on the shelf or to stand out. This research set out to tackle two subjects. Firstly, what are these characteristics and how can they be called? Secondly, are wines with more characteristics also more present online? This article proposes a framework, "The C Matrix", codifying these characteristics so that they all begin with the letter "C". Still, white, rosé and red wines sold by three different mass retailers in Los Angeles (LA) County in California in the USA priced between US$5 and US$15 were studied. LA is an important market in terms of volume consumed. Furthermore, the presence of both domestic and foreign wines makes it an interesting place for a wine-packaging study. The US is the largest country importer of wine in volume and in value. The goal is to better understand what types of characteristics are featured on a mid-range bottle of wine in this lucrative yet competitive market. Calculations reveal a slightly positive coefficient correlation, namely wines with more bottle characteristics are also more prevalent online. This may mean that, in LA, it is beneficial to provide more information and to stand out from crowd.

KEYWORDS: wine internet, wine labelling, wine packaging, wine social networks, wine marketing

Introduction

After bottled water, alcohol is the most consumed packaged beverage worldwide (Statista, n.d.-b). Wine is an international and globalised product, produced in many countries and consumed worldwide. Some 28 countries (of the ±195) make up 85% of the global production (World Population Review, n.d.-c). The store of the wine museum of Bordeaux, France, sells wine from over 70 countries including: Syria, Ethiopia, Namibia, Peru, Bali and Tahiti (laciteduvin.com). The global wine trade value is independent of production volumes. For example, the UK is the 11th largest exporter in value (US$685 million) (World Population Review, n.d.-c) and is the second largest importer in volume and value. Yet, the UK produces only around 150 000 litres (The International Organisation of Vine and Wine [OIV], 2023), whereas the smallest production volume mentioned in the "State of the Word Vine and Wine Sector in 2022" is a million hectolitres (OIV, 2022). As a global product, there is relevance in studying wine packaging and wine's internet presence as the former may be a driver for the latter. Knowing more about which characteristics are found on wine bottle packaging is information to be considered in making marketing decisions. These in turn can have an impact on the sustainability of viable wine businesses worldwide. This is an inclusive look to identify and codify the many types of text and visual elements, i.e. the "C" characteristics, that can be found on a bottle of wine. This article proposes a codification of the many characteristics that can be present on a bottle of wine. One contribution is the codification of these characteristics. This is coupled by the extent to which the number of these characteristics has an impact on the wine's popularity online. Bottles priced at US$5 to US$15 before sales tax per bottle fall in the mid-range and this is what we examined and defined. A brief definition of each type of wine studied is presented in Table 1. In terms of product categories, wines that are light, white, rosé, red, non-sweet, non-aromatised are the subject of this study.

TABLE 1: Types of wine studied and their definitions

Wine type	Definition
Still	Wines without significant bubbles
Light	Wines that are not fortified by the addition of more alcohol
White, rosé, red	All three colours of wine
Non-sweet	Wines that are dry
Non-aromatised	Wines to which no flavouring or fragrance has been added

Research questions

Two questions were asked in this research. Firstly, which characteristics are found on wine bottles in LA, and how can they be codified? Secondly, do wines that present more characteristics on the bottle show up more on the internet? Breaking down these research questions, it is important to define what is meant by each term.

The characteristics identified through the empirical research conducted in three supermarkets were codified such that each begins with the letter "C". For example, "commentary", "crest" and "catchphrase". The word "characteristic" is used because it encompasses words, images, symbols and other visuals and makes no value judgement as would the word "attribute" (Janssen et al., 2020; Parr, 2020; Stanco et al., 2020). The chosen word is also free from a direct relationship to the consumer, unlike the words "quality cue" (Carsana & Jolibert, 2017; Faraoni et al., 2017; Mukherjee & Pandelaere, 2023). "Wine" is defined by those sold in three retail chain stores of different types. The wines were all three colours, still and dry, priced between US$5 and US$15 excluding the sales tax as they are shown on the shelf of the supermarket. "Bottle" is chosen as these characteristics (the Cs) pertain to the front and back labels, the capsule at the top of the bottle, additional stickers, as in gold medals from wine competitions ("contest"), the bottle's closure type ("closure") and the shape of the bottle itself ("container" and "concave"). "LA" means in Los Angeles County, California, with a population of over 10 million (World Population Review, n.d.-b). The codified "C" characteristics with a binary nature then became the subject of the second research question.

The thought was that more characteristics would convey more information and so the second question was: Would a wine with more characteristics be more prevalent online? By "online", we mean Google, wine-searcher.com, winespectator.com, Facebook and Instagram.

Literature review

How wine bottle packaging has been studied

Articles on wine bottle packaging have focused on small groups of characteristics (Celhay, 2010; Janssen et al., 2020), or on small groups of them (Barber & Almanza, 2006); Lockshin et al., 2006; Zhao, 2008; Mueller et al., 2010; Celhay et al., 2020). The approach has most often been analytical rather than holistic, with few exceptions (Celhay & Remaud, 2018). A holistic model, the "computational wine wheel" initially identified 985 binary attributes and created a new field of research "wine-informatics". While some of these attributes may also be featured on the wine labels, the attributes were mined from wine reviews and not from the wine packaging (Chen et al., 2014).

Currently, there is a dearth of literature that tackles the question of how wine bottle packaging relates to the internet. Articles about digital marketing, internet and wine and the social networks focus on some aspect of wine other than the packaging itself (Quinn, 2012; Cuomo, 2015; Kolb & Thach, 2016; Dolan & Goodman, 2017; Denić et al., 2018; Teague, 2018; Tach et al., 2020). Also, we have yet to find literature that tries to identify and codify those wine bottle characteristics that could be qualified as wine marketing decisions in any given market.

In the literature, analytical approaches are used to focus on one or more of the characteristics. The most holistic approach to date focuses on wine reviews and not the various features of wine packaging. Wine and web-related articles do not pair online presence with packaging, and a model that proposes a codification framework for wine packaging does not exist.

Methodology

Research methods

The wines in the sample analysed vary in price from US$5 to US$15 excluding tax which means that they are in the mid-range. By avoiding wines tagged at less than US$5 and above US$15, an assumption was made that the price may not be relevant. Furthermore, it was assumed that this range represents the heart of the mass retail off-trade/off-sales market. Ultimately, perhaps, the characteristics featured on the bottles may play an important role in the marketing and online presence of a wine.

White, rosé and red still wines made up the sample group. Sweet, sparkling and fortified wines were excluded. While not counted in this study, by far most wines available on the supermarket shelves in this study are dry (and not off-dry, semi-sweet, or sweet). Because "bubbly" is sparkling, its effervescence puts it in a smaller overall group than still white, rosé and red wines. Fortified examples, like Port, are in a category of their own (taxfoundation.org). If they were present in the supermarkets, their selection was small compared to the sample set. While they are indeed a type of wine, their stronger alcohol content is what excluded them from this study.

The data comes from three different types of chain store: a supermarket; a medium-sized retailer specialising in imported foods and beverages; and a membership warehouse. These shops were chosen because together they cover the array of the different types of non-governmental US mass retail chains that sell beverage alcohol. The stores are in the Los Angeles County, California.

The choice of Los Angeles County was made as it is the most populous in the state (World Population Review, n.d.-a). California is by far the largest US consumer of wine (Florida as the second state consumes half as much) (Statista, n.d.-c). Overall, the United States of America is the largest importer of wine in terms of value (Workman, n.d.). The US also ranks fourth in volume of wine produced (OIV, 2022), and is a consumer of domestically produced wine.

This empirical study meant taking two photographs for each of the wines that fit the categories of the sample set and the price range. The first photograph was taken of the front of the bottle and the second of the back of the bottle. The reasoning behind this approach was to allow the sample set to be referred to on several occasions while the various characteristics were being identified and codified. For example, it was not until many photographs had been taken that the "C" for "contents" was identified and codified. This included the amount of free sulphur dioxide and the grams of residual sugar, and both were mentioned on the back label of some wines.

While the first goal was to identify and codify the characteristics, and in so doing establish "The C Matrix" for wine characteristics, the second goal was to conduct tests to see if a correlation existed between the total number of characteristics and the total number of search results online.

A consumer thirsty for knowledge yet inundated with images and brand names in a section of the store that already often presents the largest number of options. So, as one research

team asked, "Is less more or a bore?" or *is more indeed more*? (Favier et al., 2019).

A quantitative approach was used to see if a relationship exists between the number of "C" characteristics and the number of search results on the internet. To test the relationships, a correlation coefficient was run between the total number of "C" characteristics for each wine and each one of the websites previously mentioned. The "C" characteristics in this article are binary in nature, which means a "chateau" of some type, for example, is either present somewhere on the wine bottle, or it is not. In the resulting framework, there are 31 "C" characteristics.

Since the goal was to see if a positive, negative, or no correlation existed between random bivariate variables x and y, the total number of "Cs" (x) and the total number of Google search results, for example, (y), Pearson's *r* coefficient correlation was used (van den Heuvel & Zhan, 2022).

Formula 1: Pearson's r coefficient correlation

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

The internet study domain was delimited to five websites (Table 2). All websites that we studied rank in the top five of their respective categories of number of website visits, or "traffic". Winespectator.com is the sole exception as it ranks 78 in its category of "food and drink" (similarweb.com, n.d.-e). Its inclusion in this research is explained by its over 385 000 wine reviews (commentaries and scores on a 100-point scale) accessible via the website's internal search engine. These reviews have been found to be largely unbiased (Reuter, 2009) The online edition's capacity to promote a certain wine ideology to its visitors and its 2.3 million paid subscribers underlines its importance (Kuennen, 2017). Additionally, winespectator.com has been included in the literature through a branch of study called "wine-informatics", which is defined as using data to uncover useful information for producers, distributors and buyers. In the current literature, this focuses on the quantitative analysis of wine reviews (Chen et al., 2014; Chen et al., 2018; Chen, 2020; Palmer et al., 2020; Dong et al., 2021; Kwak et al., 2021; Kwabla et al., 2021; Tian et al., 2022; Yang et al., 2022).

The web is used as a portal for research, purchasing, learning, and sharing information, this is why we selected search engines, wine reviews and social networks. The number of search results are a metric of how prevalent a wine is on the internet. The internet popularity analysis meant the number of search results were recorded on a spreadsheet. For social networks, the number of Instagram account "followers" and the number of the wine's most often used "hashtag" (#) on Instagram were also noted on the same spreadsheet.

Findings

The 31 characteristics of the "C" matrix'

As the two photographs were being taken of each wine bottle during the empirical portion of the research, words that began with the letter "C" were looked for. "Chateau", "critter" and "crest" were among the first to be observed and codified. At one point of the in-store phase of the research, the idea came to codify all the "C" characteristics that were observed and thus create a framework reminiscent of the "Ps" (Product, Price, Promotion, Place). Indeed, it was The Marketing Mix Ps that became the impetus for 'The C Matrix'. (McCarthy, 1964). More Cs were added, "creation", "circumstances" and so on. Further analysis of the origin came to reveal the predominance of wines made in the United States. Some 66% of the wines studied were produced in that country. While the imports made up the remaining 34%.

Domestically, the wines from California lead in representation with 225 of the total 236 US wines (Oregon has four wines, and Washington State seven). In terms of imports, France (15%), Italy (7%) and Spain (3%) lead the list of foreign suppliers. These three countries are the giants both in terms of volume and of value of wine exports (OIV, 2022). This shows that while the market offering is strongly local, foreign wines still make up one third of the offering. Table 3 presents the sample's origin. The empirical research identified 31 binary "C" variables. As is the case with marketing's "Ps", other "C" variables may be added in the future. The current list of "Cs" in the research findings follow.

"C" characteristics codified and their definitions

1. Catchphrase: slogan, quote, phrase
2. Character: a personality or personage
3. Charmer: a real person, as in a winemaker, the brand owner(s), for example
4. Chateau: a castle, building, estate, vineyard, landscape, the production and/or production site evoked
5. Chronicle: a story of some type
6. Circumstances: how the wine should be enjoyed in food pairings, food matching and/or circumstances on its own, i.e. with friends
7. Closure: an alternative to a (synthetic or natural) cork is used like a screwcap

TABLE 2: Internet websites studied, their type, the total US monthly visits, desktop and mobile, category and category rankings

Website	Type	Total monthly visits (from USA)*	Category*	Category ranking in USA*
Google	Search engine	23.3 billion	Computers, electronics and technology > search engines	1
wine-searcher.com	Specialised search engine to locate retailers**	2.3 million	Food and drink > beverages	5
winespectator.com	Online magazine	354 000	Food and drink > beverages	78
Facebook	Social network	3.9 billion	Computers, electronics and technology > social media networks	1
Instagram	Social network	1.3 billion	Computers, electronics and technology > social media networks	3

*Source: similarweb.com (n.d.-a; n.d.-b; n.d.-c; n.d.-d; n.d.-e) **Search results are from retailers worldwide who sell the sought-after wine

TABLE 3: Wines in the sample

Country origin	Number of wines	Percentage of total sample set US$5–US$15
USA	236	66%
France	54	15%
Italy	25	7%
Spain	12	3%
New Zealand	9	2.5%
Germany	7	2%
Argentina	5	1.5%
Chile	4	1.25%
South Africa	3	1%
Israel	2	0.5%
Australia	1	0.25%
Total	358	100%

8. Code: a QR (quick read) logo, a hologram with the purpose of attesting to the product authenticity/appellation, AR (augmented reality)
9. Comedy: an attempt at being amusing, e.g. the wine brand *Ménage à Trois*
10. Commentary: a tasting note describing the wine itself
11. Composition: an image or a drawing
12. Concave: the base of the bottle is not flat and has a small or a pronounced "punt" or "kick-up"
13. Contact details – Facebook: the wine's Facebook page is referenced somehow (with a logo, written, or both)
14. Contact details – Instagram: the wine's Instagram account is referenced somehow (with a logo, written, or both)
15. Contact details – telephone:a telephone number is shown
16. Contact details – Twitter (now X): the wine's Twitter handle is referenced somehow (with a logo, written, or both)
17. Contact details – website: the online internet site is featured
18. Container with a unique shape: a bottle shape that strays away from the standard (typical Bordeaux/Cabernet Sauvignon, Merlot-style high-shouldered bottle, Burgundy/Chardonnay, Pinot Noir-style sloped shoulder bottle, Loire-style sloped shoulder, elongated neck bottle, Italian high shoulders, long-neck style). However, this would not mean simply swapping a Pinot Noir bottle for one usually used for Cabernet Sauvignon or Merlot blends. Rather, this means a noticeable departure from the common, aforementioned shapes.
19. Contents: the ingredients of the wine, like free sulphur dioxide (SO_2) expressed in milligrams
20. Contest: a medal, some critical acclaim
21. Coordinates: a map, the positioning of the vineyards, or the region in which the grapes are grown
22. Craving: these are ideas, actions, or states of being: to pay tribute (the wine called "Tribute"), psychedelia ("Zinfandelic" wine as a play on words of the grape variety "Zinfandel" and "psychedelic"), being fit or in good physical shape ("Fitvine" is a portmanteau of "fit" and "vine"), ecology ("Bonterra" wine name refers to "bon" as in "good", and "terra" as in "earth").
23. Collection year of the harvest: wines that display a vintage, the year the grapes were picked.
24. Cookies: These are edible like layer cake ("Layer cake" is the name of the wine), butter ("Butter" is the name of a wine, making direct reference to the eponymous food), meat (animal meat is evoked by the wine named "Carnivor").
25. Creation: About how the wine is made
26. Crest: As in a family crest, or a coat of arms
27. Critter: An animal or creature, real or fictional
28. Cultivar: The grape variety/varieties from which the wine is made
29. Cutaway: A place on the labelling where there is a cut-out
30. Cuvée: Cuvée means a secondary brand name that may have different sources. The grape vines may be planted in an identified soil, as is the case with *Dr Loosen's* cuvée, "Blue Slate". The wine may come from a particular identified vineyard plot (e.g. Ranch 500). It may be made with grapes from a particular type of vine (as in the cuvée "Old Vine"). The wine's cuvée may reflect its special maturation (e.g. "Roasted Oak: Aged on Espresso Toasted French Oak"). The cuvée may be a blend (e.g. "14 blend"). A brand having more than one wine differentiates the products of its range with a cuvée name (e.g. the brand "Josh" showed its "Reserve", "Family Reserve" and "Joseph Carr" cuvées in the sample set). The brand may market different appellations. For example, Edna Valley Vineyard markets a wine called "Central Coast Chardonnay". It is in this way that producers can use origin to create cuvées within their ranges. Cuvée's etymology comes from *cuve*, French for "vat".
31. Non-conventional: Wines that are made organically, biodynamically, or in an otherwise natural way (that may involve less use of pesticides, herbicides, fungicides)

While there are indeed 31 Cs, not all of them were found on a single bottle of wine. Rather, the highest number of Cs on a wine was 14 and the lowest had only one. The number of different wines in the sample is 358. The reason why more supermarkets were not added to this study is that saturation in the sample set appeared because many wines were carried in all three stores. Saturation was reached when a quarter of the wines were deleted to eliminate doubles.

"The C Matrix" and positive correlation

The statistical results showed positive correlations for all relationships analysed (Table 4). The correlation coefficient formula, also called Pearson's *r*, was used to make the calculations. The total number of "Cs" per wine was then correlated with the number of Google search results, then with the internal search engines of wine-searcher.com and winespectator.com. For Facebook, the total number of fans on the official fan page of the wine brand was used. For Instagram, the total number of followers is considered. Regarding the "Instagram hashtag", any Instagram user can use any word or words with a hashtag in front in their posts. This became quickly apparent as early empirical research showed that more than one hashtag may be used for a brand. Therefore, for reasons of simplification, the "Instagram #" in these findings corresponds to the largest number of hashtags used by Instagram users to reference the wine brand in their posts.

Positive correlations are found with positive numerical values, negative correlations with negative numerical values and when the result (*r*) is zero, it means that there is no correlation between the variables. The closer the value is to 1 (in positive correlations) or to –1 (in negative correlations), the stronger the relationship between the variables. So, the above values show that there is a positive correlation between the total number of "Cs", the wine packaging characteristics codified here and the websites studied. Therefore, more Cs indeed means more online

presence. However, these findings could be debated as these correlations are not qualifiable as "strong".

Discussion

The creation of the "C matrix" required researcher interpretation. The characteristics of wine packaging that all begin with the letter "C" needed first to be named, then the wine's packaging characteristics needed to be classified according to the matrix. This is an approach that is more interpretive in nature as different people using the matrix may classify the "C" characteristics differently.

An attempt was made to mitigate researcher bias by defining each of the Cs. For example, a chateau is a castle, building, estate, vineyard, or a landscape. Also, one variable could be classed more than once, for instance a vineyard drawing on the front label falls into the category of both "chateau" and "composition". In this way, the matrix favours certain variables more than others. This bias had two sources: prevalence and inevitability. That is, as soon as a "characteristic" was deemed prevalent, like a map, it was codified ("coordinates"). The inevitable nature came from the fact that one "C" may also encapsulate another. For example, a family "crest" may contain a mythical lion, leading to "critter". All types of "compositions" were recorded as being binary, i.e. present or absent, and the nature of that image was recorded for further research, i.e. a dragon, a goat. What was imagined to be the brand's perspective was also considered. The Californian wine brand *Ménage à Trois*, with its sexual connotation of "threesome" may be seen by some consumers as "less-than-coy", or outright offensive (Dreizen, 2020). However, an attempt of researcher interpretation of brand perspective gives the brand both the "C" for "comedy" and the "C" for "craving". The sampling of this study took place in supermarkets. Specialised stores like wine stores or alcohol superstores may reveal different "Cs". While wine brands exist and are distributed in California that are apparently meant to be extremely provocative like, "White Girl Rosé", "Family times are tough", or "Bitch", "Cs" for "crass" or "crude", this type of shock value branding could be added when observed in other sample sets. Thus, the lexicon of "C" characteristics remains open to new additions.

When it came to online research, key word choice proved to be problematic. This research could not be replicated unless future researchers had access to the spreadsheet upon which all data were recorded. This is because for different websites, different methods were used. So, despite our desire to be as simple as possible, the wines' brand, grape and cuvee names needed at times to be added to yield a representative search result. Additionally, the word "wine" had to be added, especially when the name of the wine was a person's name (e.g. Emma Reichart). The justification of this interpretivist approach is that is what people do, i.e. we "tweak" the key words when doing online research to find the best results.

Despite these nuances, the goal became to establish as rigorous a collection method as possible, and this entailed noting the research terms alongside the number of research results.

The relationship is the weakest with the most used Instagram # (correlation of 0.14), and the strongest with the number of Facebook fans (0.45). The other in-between values could be said to show a weak positive correlation. The reasons behind user-generated support being the weakest via the Instagram # and the brand-owned Facebook fan page being the strongest deserve further investigation. In terms of statistical analysis, other associations could be studied using different formulae like Spearman's rank and Kendall's tau correlation (van den Heuvel & Zhan, 2022).

TABLE 4: The positive correlations between the "C" wine characteristics and the internet

Website	Coefficient correlation
Google	0.22
Wine-Searcher	0.25
Winespectator.com	0.30
Facebook	0.45
Instagram	0.22
Instagram #	0.14

Managerial implications

These characteristics of wine bottle packaging convey information to people who see them. The bottle is a communication vector, at times a storyteller, and sometimes amplified by the presence of online commentary. The managerial implications are that decision-makers in wine production, marketing, import, distribution and retail worldwide can favour wines showing more characteristics on the bottle, as they tell more about themselves and in turn give everyone more to say about them. When making branding decisions for which characteristics should be featured on the labels, capsule, closure and bottle shape, the Cs can be used as a checklist. As the biggest exporters continue to dominate, and as new producers and brand owners worldwide come to the shelves and to the web, the "C matrix" may be used a branding tool.

When deciding how many, it appears that "more is more" (see the maximum of 14 Cs present). Additionally, this framework can be used as a sales tool in business-to-business commercial and journalistic contexts, and for end-users who share their comments, images and videos online. An example of using "The C Matrix" may read like this: Is there a family *crest* on the front label? Is there a tasting *commentary* featured on the back label, that then refers to a *charmer*, the winemaker, to whom a *non*-conventional way of wine *creation* is attributed? Are the *coordinates* offered with a map that shows us where the vineyard is? Are the *contact* details as a website featured, or is there a QR *code* to be scanned for more information? Is the wine enclosed in a unique *container*, an out-of-the-ordinary bottle, with a *concave* bottom and with a screwcap *closure*?

Further research

Further research is needed to test individual "C" variables or groups of "C" variables (rather than all of them) to see if there are other relationships between wine bottle packaging characteristics and online presence. Qualitative analysis of the Cs would shed light on what is being featured on a bottle of wine, going further than the simple binary duality of a C's presence or absence. Along these lines, what characteristics are present?

As outliers may have commercial success, other Cs like "colours" could also be studied. Is it appropriate for brand owners to break the "green" code of the sauvignon blanc universe and the gold of the chardonnay bottles? Is bottle shape a success factor; does it make sense to invest in a uniquely shaped container? Effective packaging design may mean

employing a culture-specific approach (Machiels & Orth, 2018). Analysing which Cs are more prevalent in a market may permit the identification of must-have points of parity. Differences in packaging characteristics therefore could be made more consciously rather than by chance.

This first attempt to broadly identify and codify the variables and what has become "The C Matrix" of wine marketing may have turned out to be a compelling contribution of the present research.

Conclusion

Wines with more product characteristics on the bottle are more present on Google, wine-searcher.com, winespectator.com, Facebook and Instagram. The number of binary characteristics identified in this study is 31, and a maximum of 14 were recorded on a single bottle of wine. This may mean that while graphic artists are able to provide a number of characteristics, there may be a limit to how many could be put on one bottle. The striking shelf appeal created by a simple front label would mean that more characteristics are conveyed on the back label. Further research can shed light on each of the "C" characteristics by including more about the literature of each one and conducting future variable testing of individual characteristics and groups of them. In terms of the retail distribution circuit and cultural branding, the results of this research pertain to supermarkets in Los Angeles County in California, and these results may differ by market studied. More universally, however, characteristics convey information. A wine with more characteristics gives everybody more to say about the wine both offline and online.

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