Analysis of Portugal´s Wine Certifying Entities' Social Networks as Communication Channels

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INTRODUCTION

To build and grow virtual communities that enable people to learn more about the brand's content and engage with it, organizations have used social media networks as highly effective and powerful communication platforms (Ashley & Tuten, 2015; Egaña et al., 2021). Organizations may spread the word about new products, advertise new services, build relationships with customers, and eventually influence people's purchasing decisions by having an online presence, in this case, the purchasing decisions of wine consumers (Fiore et al., 2016; Sogari et al., 2017; Pucci et al., 2019). These social media networks are made up of internet-based technologies (Kaso et al., 2021) that let people and organizations register accounts, browse other users' content, and communicate with one another (Eslami et al., 2022).

Facebook is the most popular social media network worldwide, with 2,910 million users globally as of January 2022 (Statista, 2022; DataReportal, 2022). In Portugal, it is also the most popular and used social network. A significant part of the country's internet users is registered on this platform, allowing its users to connect and interact with one another. Instagram is also one of the most popular and used social media channels globally, with very progressive growth in the last years, with 814.5 million users worldwide, in 2019. In January 2022, this platform presented 1,130.2 million users globally (Statista, 2022). For Portugal, the Digital News Report indicates a progressive growth in the percentage of Portuguese internet users on Instagram, cementing this social media platform as the fifth most used social media for general use in Portugal in 2021(Obercom, 2021). Given that it is one of the top product categories mentioned in Internet discussions, wine can be considered a social product. The Internet is an excellent platform for wine promotion, particularly on social media sites like Facebook and Instagram (Costopoulou et al., 2018).

Like other agricultural products, the wine industry has advanced through internationalization and globalization. One of the driving forces behind the rise in global trade is the decline in wine consumption in European wine-producing nations and the steadily rising consumption in non-producing nations (Gomes et al., 2021). Looking at Portugal is considered a country of excellence for wine production. For the consumers, doubts usually arise in interpreting the quality versus classification of wines. The certifying entities assume a prominent role in legitimizing the information provided on the labels in addition to their mission of promoting a product that follows the positive trend of export and other agricultural products (IVDP, 2022a; IVBAM, 2022; IGF, 2022).

Social networks, including Facebook and Instagram, are important communication platforms for promoting a social product such as wine to build, cultivate, and involve virtual communities that allow people to learn about their wines. As such, like many other organizations, Portuguese WCEs need to understand how they are taking advantage of these platforms and how they can improve their products' social awareness.

This study aims to analyze the activity and effectiveness of the Portuguese wine certifying entities (WCE) on their Facebook and Instagram pages from 1st January 2022 until 31st March 2022. To accomplish this, the Facebook and Instagram pages from these WCE were analyzed using the updated PRGS (Presence, Response, Generation, Suggestion) model developed by Interactive Advertising Bureau (IAB) Spain Research on their social media study between 2012 and 2022. The updated PRGS model uses the variables Presence, Response, Generation, Suggestion, and Engagement, and by 2016, it was updated with the concepts of Interaction and Efficiency (IAB Spain, 2016; IAB Spain, 2020). The data collection for the study was done with Fanpage Karma, an online social-media monitoring and data collection tool.

This research is structured in the following way. First, a literature review related to Engagement, Facebook, Instagram, social media, Portugal's wine sector, models of usage analysis on Facebook and Instagram, and wine certifying entities is presented. Then, a chapter with the chosen methodological framework is presented. That chapter is followed by the presentation of the results, their discussion, and their conclusions and recommendations for future practice and research.

LITERATURE REVIEW

Social media engagement and communication

The last decades have been crucial for technological development on the Internet, with emerging platforms like social media, which make it possible for individuals to share and absorb knowledge from others in a very accessible manner (Obermayer et al., 2022). With these developments, several changes were made within the organizations and their marketing dynamics, changing how these same brands communicate their services externally and how the relationships with their consumers are built (Siamagka et al., 2015; Eslami et al., 2022). New platforms were adopted by these brands and businesses' communication, like social media networks.

A social media channel is an internet-based tool (Kaso et al., 2021) where brands and individuals may create a semi-public or public profile inside a limited system, create connections with other users and visualize relationships established inside this system in a relatively inexpensive and accessible communication approach (Parveen, Jaafar & Ainin, 2015; Breton-Miller & Miller, 2016; Herrera-Torres et al., 2017; Kallmuenzer et al., 2018; Eslami et al., 2022).

Brands and businesses are progressively exploring these social media communication channels since consumers' usage has shown severe growth in recent years. The brands they use will follow the consumers' path (Ashley & Tuten, 2015; Egaña et al., 2021). This phenomenon is developing new communication dynamics between the two parts and new types of value from existing or potential consumers, which will ultimately weigh in a consumer's decision to buy a specific product or service from a brand or business (Mosa, 2021).

The consumer-brand relationship is today a crucial subject for both parts since a well-established fan base will positively impact a buying decision from a customer (Pansari & Kumar, 2017; Kujur & Singh, 2020; Calderón-Monge & Ramírez-Hurtado, 2022). This type of relevance for a consumer shows how important social media mediums have become in the last years, not only for consumers but also for brands and businesses that are now heavily exploring all the resources available in the multiple social media channels worldwide (Pekkala & van Zoonen, 2022).

The engagement concept

Engagement can be defined as the customer's consumption of multimedia content, passively or through direct interactions on that content with reactions, comments, or shares in an active way (Taylor & Kent, 2014; Ashley & Tuten, 2015; Schivinski, Christodoulides & Dabrowski, 2016). Characterizing customer engagement as a behavior besides the core transaction distinguishes this concept from behavioral loyalty, like repeated purchases and other transaction-focused behaviors frequently studied in marketing (Harmeling et al., 2017). However, defining engagement as any activity beyond purchase, it subsumes a wide variety of customer behaviors (e.g., product returns, product usage, product disposal, brand learning), potentially at the expense of retaining surplus meaning, that could dilute the effectiveness of the term) (Harmeling et al., 2017).

Paruthi and Kaur (2017) define customer engagement as "the mechanics of a customer's value addition to the firm, either through direct or indirect contribution". It is also a consistent definition compared to the one presented by Kumar et al. (2010) since it attributes direct contributions to customer purchases and indirect contributions to referrals provided by customers, social media interactions about the brand between customers, and feedback on the organizations or brands made by customers. This concept has been gaining value and currently develops through content and the participation of customers on social media platforms by brands or businesses (Egaña et al., 2021).

Facebook and Instagram in Portugal

There are dozens of social media channels available today. However, Facebook is the biggest and most popular worldwide, with Statista (2022) and DataReportal (2022) pointing to 2,910 million users as of January 2022. Facebook is a very flexible and speedy social network with various attributes like user connection, information sharing, and pages, groups, or user interactions (Kim et al., 2021; Blázquez et al., 2020). The users can also explore their profiles and third ones, with all of this done by communicating with mobile devices and personal computers. The Digital News Report Portugal (Obercom, 2021) indicates the global tendency in Portugal, with Facebook residing at the first spot

regarding popularity and usage, with 73.7% of the total Internet users in the country using Facebook. In the DN Insider (2019), the Country Manager at Facebook Iberia, Irene Caño, exposed a 1 million user growth if comparing 2015 to 2019, with 6.2 million in Portugal by 2019.
The Instagram social media platform is another valuable and powerful tool that wine marketing professionals consider building and creating communities around their brands and products. This social network, whose name emerged from the junction of the words "instant" and "telegram", allows its users to interact visually with each other, using photos or videos to illustrate their experiences alongside captions that might contain hashtags (Hellsten & Leydesdorff, 2020; Schouten et al., 2020; Martina et al., 2021).
The combination of "visual" and "social" creates the ideal atmosphere for telling and spreading a tale (Hellsten & Leydesdorff, 2020). It has been growing exponentially in the last years (Hellsten & Leydesdorff, 2020), with 814.5 million users worldwide in 2019, and as of January 2022, this social media presents 1,130.2 million users globally (Statista, 2022). The Digital News Report Portugal suggests Instagram has seen a growth in the percentage of users, growing from 46.6% (2020) to 48.3% (2021), positioning it as the 5th most used platform for general use in Portugal in 2021 (Obercom, 2021).

Wine: a social product communicating on social media

Since wine is a vital component of any region's history and culture and is considered a part of its heritage, the identity of a place may be determined by the wine produced there (Rodríguez-Fernández et al., 2017). Given that it is among the top eight product categories that are the subject of online debates (Costopoulou et al., 2018), wine may be viewed as a social commodity in the modern day. Ingrassia et al. (2020) consider wine to be a product of "high involvement" since this type of product represents the personality, status, and lifestyle of those who may consume it. As a result, consumers must know about wine before purchasing it, unlike other food goods such as commodities (Saura et al., 2019).
Wine consumers increasingly rely on information obtained via the Internet from wine influencers, producers, or regular customers sharing their experiences to improve their understanding of wines (Pérez-Rodríguez et al., 2022). Leigon (2011) asserts that social media platforms encourage wine consumption by enabling users to exchange knowledge and encourage others to try different wines. According to Wilson and Quinton (2012), social media platforms also enable users to share knowledge and persuade others to try out new wines. Wine marketers can manage brand experiences and social media exposure and provide interactions to impact current or potential customers significantly.
Additional research by Ingrassia et al. (2018) illustrates the usefulness of mobile applications and QR codes in the wine purchase decision and the significance of social media in today's wine marketing strategies. Due to their potential as an informative resource for wine consumers (Dean & Forbes, 2016), online wine forums, comments, and Facebook profiles have benefited the placement of tourism companies (Rodríguez-Fernández et al., 2017; Sánchez, 2020).

Wine: the role in promoting the tourism and hospitality industries

In 2020, the European Commission adopted a new Action Plan for the Circular Economy, which constitutes one of the main foundations of the European Green Agreement, Europe's new roadmap for sustainable growth (European Commission, 2023). The Tourism Strategy 2027 (ET27) is currently the strategic reference for Tourism in Portugal. It focuses on assets that aim at the sustainability and competitiveness of the "Portugal" destination (Turismo de Portugal, I.P., 2023). In the framework of strategic assets mentioned in ET27, the Gastronomy and Wine asset is considered a qualifying asset, which means that it is an asset that enriches the tourist experience and adds value to the offer of territories, leveraged by differentiating assets. These anchoring attributes form the basis and substance of the national tourist offer.
According to this strategy, Portugal developed the Tourism Plan + Sustainable 20-23, whose purpose is to position Portugal as one of the most competitive, safe, and sustainable tourist destinations in the world through economic, social, and environmental development throughout the territory (Turismo de Portugal, I.P., 2021). Regarding the actions of the Tourism Plan + Sustainable 20-23, Axis I – Structure provides for the promotion of a Gastronomy and Wine selection program, whose objective is the implementation of the new Sustainable Gastronomy segment.

Regarding wine tourism and the promotion of wine products, Serra et al. (2014) refer to the urgency of creating a joint strategy on the part of different players that can help break down barriers between the wine, cultural, tourism, and hotel sectors, improving the quality of infrastructure and services provided. Simultaneously, they also refer to the need for a single platform that allows for information processing homogeneously, developing an integrated and effective communication process in communicating with the different types of public.

The Portuguese wine sector

The wine culture is historically connected to Portugal as an agricultural activity of great economic and social relevance. Due to its edaphoclimatic conditions, Portugal's wine has unique characteristics and qualities recognized worldwide. In the 20th century (1907/1908), the official regulation of several Portuguese denominations of origin began. In 1933, the *Federação dos Vinicultores do Centro e Sul* was created to regulate the market. *Junta Nacional do Vinho* (JNV) replaced this official organization in 1937.

With the entry of Portugal into the European Economic Community (EEC) in 1986, the *Instituto do Vinho e da Vinha* (IVV), an official organization adapted to the structures imposed by the new market policy resulting from membership of the EEC, replaced the JNV (IVV, 2022). Also, in 1986, there was a redefinition of the wine production areas and a reorganization of all the demarcations, which gave rise to the creation of the Regional Wine Commissions (*Comissões Vitivinícolas Regionais*) (CVR). The CVRs are interprofessional associations governed by their statutes, which control the quality of wines produced in the regions where they are located. Also, attest to their provenance and denomination of origin through a guaranteed seal, thus having a fundamental role in preserving the quality and prestige of national wines (Infovini, 2022).

In Portugal, the wine certifying entities (WCE) that certify the quality and traditionality of wines are the 12 CVRs, namely: *Vinhos Verdes, Bairrada, Alentejo, Algarve, Beira Interior, Lisboa, Península de Setúbal, Távora-Varosa, Trás-os-Montes, Dão, Tejo* and *Açores* and two specific wine Institutes*, Madeira* and*, Douro e do Porto* (IVV, 2022a), that certify wines with the Protected Designation of Origin (*Denominação de Origem Protegida)* (DOP) or Protected Geographical Indication (*Indicação Geográfica Protegida) (*IGP*)* in each of its coverage areas (IVV, 2022d), according to Table 1 and figure 1. According to the legislation, each DOP or IGP must comply with a specification (DGADR, 2022).

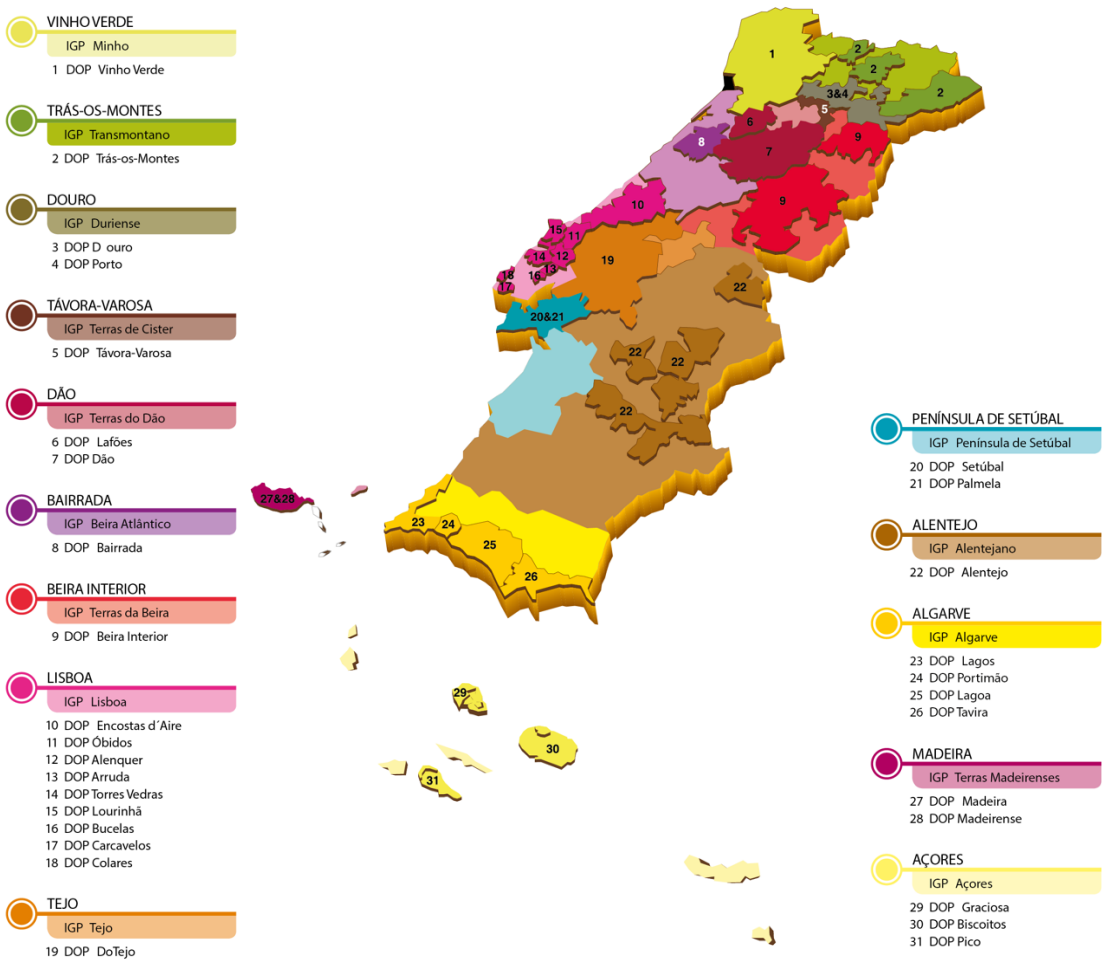
Table 1 – Portuguese wine certifying entities

Wine certifying entities (WCE) (abbreviation name)
Comissão de Viticultura da Região dos Vinhos Verdes (Vinhos Verdes)
Comissão Vitivinícola da Bairrada (Bairrada)
Comissão Vitivinícola Regional Alentejana (Alentejo)
Comissão Vitivinícola do Algarve (Algarve)
Comissão Vitivinícola Regional da Beira Interior (Beira Interior)
Comissão Vitivinícola da Região de Lisboa (Lisboa)
Comissão Vitivinícola Regional da Península de Setúbal (Península de Setúbal)
Comissão Vitivinícola Regional de Távora-Varosa (Távora-Varosa)
Comissão Vitivinícola Regional de Trás-os-Montes (Trás-os-Montes)
Comissão Vitivinícola Regional do Dão - F.V.D. (Dão)
Comissão Vitivinícola Regional do Tejo (Tejo)
Comissão Vitivinícola Regional dos Açores (Açores)
Instituto do Vinho, do Bordado e do Artesanato da Madeira, I.P. (IVBAM, I.P.) (Madeira)
Instituto dos Vinhos do Douro e do Porto, I.P. (IVDP, I.P.) (Douro e do Porto)

Source: IVV (2022a)

The main function of the WCE is the certification of wines from the region under their jurisdiction. However, these entities also promote and disseminate wine products from their region (Infovini, 2022; IVV, 2022a), which makes the use of social networks extremely important for this purpose (Capitello et al., 2014). The conclusions of Cristófol et al. (2020) show a relevant difference in the use of social networks between territories. Concerning tourist attractions, gastronomy stands out (alignment between posted messages and the hedonistic or pleasurable experience of consuming wine), and the wine landscape catalyzes lived experiences and the territorial imaginary (tourist attractions appear most often linked to the tradition as an emotional value).

Figure 1 – Portuguese wine regions, IGP and DOP



Source: IVV (2022d)

The international reputation of Portuguese wine is growing, and the exportation numbers have been growing in the last few years. By 2019, Portuguese wine exportation was worth 820 million euros (Viniportugal, 2022). In 2020, the number reached a total of 846 million euros, and by 2021 the growth continued, with an 8.11% growth in the value compared to 2020, worth 925 million euros (IVV, 2022). World wine production reached 250 million hl in 2021, showing growth compared to 2020, where the numbers peaked at 242 million hl. Portugal produced almost 7.4 million hl of wine in 2021, a 14.65% growth compared to 2020 (see Table 2), where the numbers peaked at 6.4 million hl (IVV, 2022).

Table 2 – Portugal wine production

Years	Wine Production (hl)
2018/2019	6,061,243
2019/2020	6,526,562
2020/2021	6,418,030
2021/2022	7,358,539

Source: IVV (2022c)

Portugal is a wine country par excellence. From North to South, vineyards produce wines with different characteristics depending on the planted varieties, the soil types, the climate, and the characteristic environment of each region. Over time, the need to make a logical separation of these regions has been evident, as in any part of the globe, creating appropriate legislation for each era (IVV, 2022). Due to the weight of Portuguese wine in international trade, in 1756*, Sebastião José de Carvalho*, the so-called *Marquês de Pombal,* created the first designation of origin for wines, then called the Douro Demarcated Region. Douro Demarcated Region was officially the first demarcated region in the wine-growing world (IVDP, 2022).
The vineyard area for wine production has been decreasing in Portugal. In 1986, the total vineyard area was 250,979 hectares (ha), and in 2021, an estimated 173,393 hectares (PORDATA, 2022). However, the interest in Portuguese wines in the international markets has been increasing. In 2021, Portuguese wine exports grew by 8.1%. It is worth noting the growth in exports in the United States of America, which increased by 13.1%; in the German market, which increased by 13.5% and in the Brazilian market, which increased by 8.7% (Viniportugal, 2022; IVV, 2022b).
Analyzing the European markets, Estonia was the country that registered the highest percentage growth, increasing by 96.0% in 2021, representing 2,717 M€. However, the large volume and financial value of wine exports, also accompanied by an excellent growth performance in 2021, occurs in countries such as Poland, which recorded an increase of 19.5% (30,979 M€), followed by Germany, which increased by 13.5% (54,672 M€) and France, with a rise of 4.8% (116,203 M€). Regarding non-European countries, it is to emphasize exports of Portuguese wines to the USA (+13.1%), Brazil (+8.7%), and Russia (+34.5%), representing a total sale of 104,317 M€, 73,772 M€, and 10,983 M€, respectively. To China, 14,267 M€ were exported, which represented a growth of 9.5% compared to 2020. This considerable increase in sales in value almost doubled in 2020, with significant growth in new markets and substantial improvement in exports to Portugal's traditional markets (Viniportugal, 2022; IVV, 2022b).

METHODOLOGY

This study aims to analyze the activity and effectiveness of social media channels Facebook and Instagram by the Portuguese wine certifying entities (WCE) following an exploratory and comparative approach. Scopus and Google Scholar were used to conduct a literature review on Engagement, Facebook, Instagram, social media, Portugal's wine sector, models of usage analysis on Facebook and Instagram, and wine certifying entities. These databases were used to find relevant articles, book chapters, and conference articles on the abovementioned topics.
This research analyzes the Facebook and Instagram profiles of Portuguese WCE (see Table 3). Facebook is the most popular social media network worldwide and in Portugal (Statista, 2022; DataReportal, 2022). Capitello et al. (2014) examined social media strategies adopted by leading Italian wineries and found that Facebook is the most used medium. Instagram is also one of the most popular and used social media channels globally, with very progressive growth in recent years (Statista, 2022). Costopoulou et al. (2019) studied 100 German and 105 Greek wineries and social media usage, respectively 96% use Facebook, 28% use Instagram, 72% use Facebook, and 37% use Instagram. There are 14 WCE in the country, 12 CVRs, and two wine institutes, summing a total of 28 pages, with each entity possessing two profiles: one on Facebook and the other on Instagram. The Instagram pages of the *Comissão Vitivinícola Regional dos A*çores and the *Comissão Vitivinícola Regional de Trás-os-Montes* could not be analyzed because they are personal profile types and not business profiles. Due to

restrictions on the data collection tool, Fanpage Karma only allows data retrieval from a business profile.
The data collected corresponds to three months, between 1st January 2022 and 31st March 2022. The online tool Fanpage Karma was used for the data collection. This online tool, Fanpage Karma, an online social-media monitoring and data collection tool, has been used in various studies like Jayasingh and Venkatesh (2015), Montoya, Jiménez and Coronil (2018), De las Heras-Pedrosa et al. (2020) and Calderón-Monge and Ramírez-Hurtado (2022). Microsoft Excel was used to analyze the retrieved data.

Table 3 – Portuguese wine certifying entities (WCE) Facebook and Instagram profiles

Wine certifying entities (WCE) (abbreviated name)	**Facebook**	**Creation date of Facebook Page**	**Instagram**
Açores	https://www.facebook.com/cvracores95	11/08/2017	https://www.instagram.com/cvr_acores
Alentejo	https://www.facebook.com/vinhosdoalentejo	15/12/2009	https://www.instagram.com/vinhosdoalentejo
Algarve	https://www.facebook.com/VinhosdoAlgarve	27/07/2011	https://www.instagram.com/vinhosdoalgarve
Bairrada	https://www.facebook.com/Comiss%C3%A3o-Vitivin%C3%ADcola-da-Bairrada-156854137706588	12/03/2011	https://www.instagram.com/bairrada.oficial
Beira Interior	https://www.facebook.com/beirainteriorwines	18/08/2020	https://www.instagram.com/beirainteriorwines
Dão	https://www.facebook.com/CVRDAO	18/04/2012	https://www.instagram.com/daowines
Douro e do Porto	https://www.facebook.com/VinhosdoDouroedoPorto	08/07/2009	https://www.instagram.com/ivdp_ip
Lisboa	https://www.facebook.com/oficialvinhosdelisboa	03/04/2013	https://www.instagram.com/vinhosdelisboa
Madeira	https://www.facebook.com/ivbamipram	08/03/2021	https://www.instagram.com/ivbam.ip.ram
Península de Setúbal	https://www.facebook.com/vinhosdapeninsuladesetubal	20/04/2012	https://www.instagram.com/vinhosdapeninsuladesetubal
Távora-Varosa	https://www.facebook.com/vinhoseespumantestavoravarosa	14/05/2021	https://www.instagram.com/vinhoseespumantestavoravarosa
Tejo	https://www.facebook.com/Vinhosdotejo.Tejowines	28/10/2010	https://www.instagram.com/vinhosdotejo.tejowines
Trás-os-Montes	https://www.facebook.com/vinhos.trasosmontes	08/07/2014	https://www.instagram.com/vinhosdetrasosmontes
Vinhos Verdes	https://www.facebook.com/vinhoverde	08/05/2010	https://www.instagram.com/vinhoverdeoficial

Source: IVV (2022a)

There are multiple models to assess social media strategy and analyze social media usage, like the one developed by Huertas et al. (2015). This model is formed by the variables: Contents, Interactivity and Visibility. Huertas et al. (2015) model has been utilized in various studies, including Pérez-García and Torres-Valdés (2019) in tourism promotion, Amaral and Santos (2020) for Portuguese universities, Rodríguez-Fernández et al. (2017) for analyzing the positioning of Galician Designations of Origin on the social medium Facebook, and Rodríguez-Fernández et al. (2016) identifying the positioning of Ecuador's wine companies on the social medium Facebook. However, for the analysis of the social media pages of Facebook and Instagram of the Portuguese WCE, an adaptation of the updated PRGS model was used (see Table 4). IAB Spain Research proposed the PRGS model to elaborate a study

about the activity of brands in social media between 2012-2022 (IAB Spain, 2012; IAB Spain, 2016; IAB Spain, 2020). This model aims to respond to the Measurement market demand for performance indicators (KPI) in Social Networks and the need to apply qualitative values to quantitative data and to measure the situation of a brand in the new social media environment (IAB Spain, 2012). This model also been applied in multiple studies, like Castello-Martinez (2013), Sánchez Casado and Giraldo Cardona (2015), Villena Alarcón et al. (2020), Calderón-Monge and Ramírez-Hurtado (2022) and Martínez et al. (2022).

The updated PRGS model presents a formula to measure the situation of a brand in the new digital environment and measure user engagement with the brand, focusing on the PRGS concepts of Presence, Response, Generation, Suggestion, or Viral, Engagement and by 2016 updated with the concepts of Interaction and Efficiency (IAB Spain, 2016; IAB Spain, 2020).

Presence measures the size of the community and the volume of brand activity given by brand-generated content on social media. The *Response* variable establishes brand users' reaction to the brand's presence through likes. *Generation* involves the creation of content by users in social media where the brand is presented and refers to proactively generated content by the user with posts posted on the fan page wall by a fan. *Suggestion* or *Viral* is a recommendation by the user to their community. Recommendations are a retweet on Twitter and a share on Facebook. Interaction measures users' reactions through likes, content creation by users, and user recommendations (IAB Spain, 2016).

By crossing the values from these four concept indicators, it generates attractive ratios for brands: (1) Activity rate, (2) Generation rate, (3) Recommendation rate, (4) Engagement rate, and (5) Efficiency rate. With the Engagement rate, the model aims to measure the implication of users with the WCE and combines Response, Generation, and Suggestion that represent the user Interaction. The formulation and calculation of the Engagement rate have been explained in several studies Oviedo-García et al. (2014), Buhalis and Mamalakis (2015), and Jiménez et al. (2018). All the variables and indicators from the research model used for data analysis are presented in Table 4. The Efficiency rate combines Interaction with the volume of brand activity given by brand-generated content on social media and is represented by the number of posts during a period (IAB Spain, 2016).

Table 4 – The model used with its variables and indicators

	Variables	**Indicators / Ratios**	**Description**	**References**
Brand	Presence P	Community (Number of fans) P1	Community given by the absolute number of fans of the pages. Number of users on the last day of the selected period who like the Page is called fans (Facebook) or followers (Instagram).	IAB Spain (2012) IAB Spain (2016) Luna Hernández et al. (2020) Calderón-Monge and Ramírez-Hurtado (2022)
		Activity (Number of posts) P2	Activity is represented by the content generated by a brand. Total number of posts published in the selected period.	IAB Spain (2012) IAB Spain (2016) Luna Hernández et al. (2020) Calderón-Monge and Ramírez-Hurtado (2022)
		Activity rate	P2/P1 (Number of posts / Number of fans)	IAB Spain (2012) IAB Spain (2016)
User	Response R	Number of Reactions/Likes	Total number of reactions (Facebook)/likes (Instagram) on publications in the selected period.	IAB Spain (2012) IAB Spain (2016) Luna Hernández et al. (2020) Calderón-Monge and Ramírez-Hurtado (2022)
	Generation G	Number of comments	Total number of comments on publications in the selected period.	IAB Spain (2012) IAB Spain (2016) Luna Hernández et al. (2020)

	Variables	Indicators / Ratios	Description	References
				Calderón-Monge and Ramírez-Hurtado (2022)
		Generation rate	G / P1, number of comments per fans	IAB Spain (2012) IAB Spain (2016)
	Suggestion S or Viral	Number of shares	Total number of shares on publications in the selected period.	IAB Spain (2012) IAB Spain (2016) Luna Hernández et al. (2020) Calderón-Monge and Ramírez-Hurtado (2022)
		Recommendation rate	S / P1, Shares per fans in the selected period.	IAB Spain (2012) IAB Spain (2016)
	Interaction	Interaction	R + G + S in the selected period.	IAB Spain (2016) IAB Spain (2022)
	Engagement	Engagement rate	(Interaction / P1) / number of months in the selected period.	IAB Spain (2016) IAB Spain (2022)
	Efficiency	Efficiency rate	Interaction / P2	IAB Spain (2016) IAB Spain (2022)

Source: adapted from IAB Spain (2012, 2016, 2022)

RESULTS AND DISCUSSION

This section exposes the research results from the data analysis of the activity and effectiveness of the Portuguese WCE on their Facebook and Instagram pages. Data were retrieved from the 1st January 2022 until the 31st March 2022 using the Fanpage Karma tool and analyzed with the IAB Spain updated PRGS model.

Presence analysis (P)

The Presence variable is related to the activity of a WCE in a social network like Facebook and Instagram. This Presence variable measures the size of the community (P1) with the number of fans and the volume of brand activity with the number of publications (P2) on social media. The Activity rate contributes to Presence analysis combining community with activity to determine the brand-generated content intensity for every studied network. Table 5 shows the ranking of the Presence variable led by WCE from Alentejo, Douro e do Porto, Vinhos Verdes, and Dão, which shows values for the Presence superior to the average. Presence has a mean value of 28,604 and a standard deviation of 46,246. The WCE from Alentejo represents almost 50% of the total value. Combined with the WCE from Douro e do Porto, they represent almost 80% of the total, which causes the values of the Presence variable to have a long-tail distribution (see Figure 2). Figure 5 shows that Facebook has the most significant quote, with 71% from the Presence variable.

Figure 2 – Presence by WCE

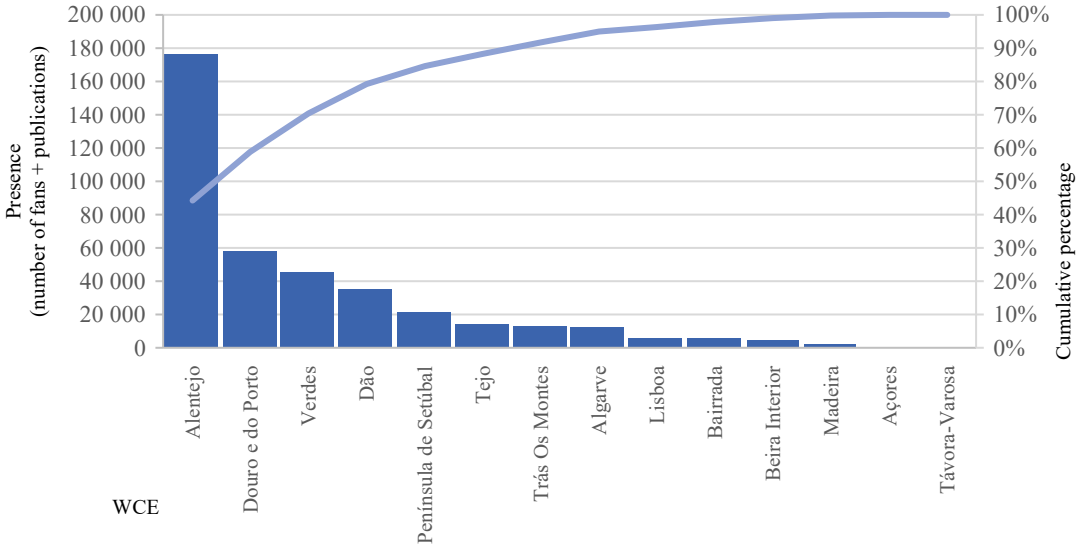
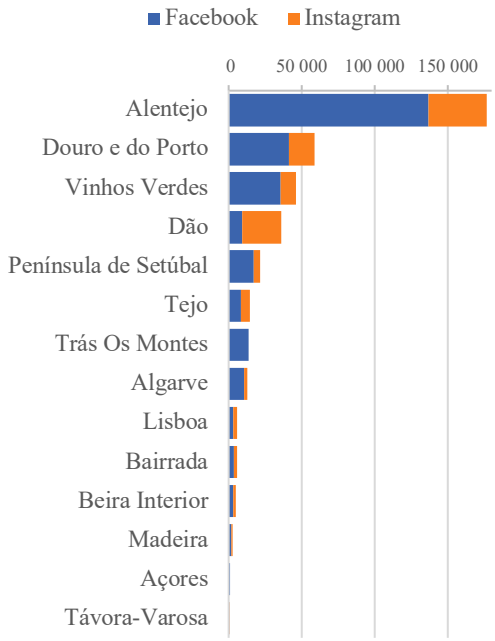
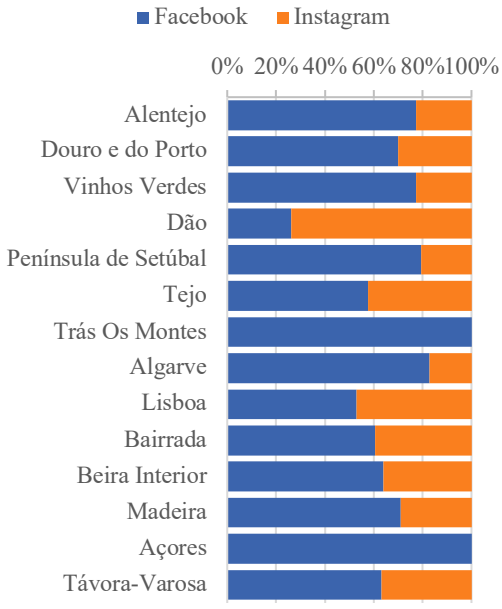


Figure 3 – Presence by Social Media and WCE *Figure 4 – Presence % by Social Media and WCE*





Community (P1) analysis

Community is part of the Presence variable results (see Table 4 and Table 5). The number of fans indicates the size of the community, and the Portuguese WCE community has 400,451 fans. It is one of the most important for the complete analysis since it directly allows us to understand the page's visibility beyond its offline community (Amaral & Santos, 2020). Frequently, this variable is the only one taken into account. This choice could be a mistake because a fanbase by itself does not imply that a fan page's strategy or goals have been achieved (Rodríguez-Fernández et al., 2016). Observing the social network Facebook, the WCE from Alentejo stands out as the biggest page, with more than triple the numbers of the second biggest page, the WCE from Douro e do Porto. There is a big gap between the pages, with more than 136 thousand fans separating this list's first and last page. While observing Instagram, WCE from Alentejo stands out again with the biggest community, followed by a much closer second place, the WCE from Dão page. The gap in the number of fans is also significant on Instagram but not as big

as on Facebook. Comparing both social network numbers, all the pages have more prominent communities on Facebook, except for the WCE from Dão page, with a much bigger community on Instagram than Facebook (see Figures 3, 4, and 5). This fact can be explained due to Facebook's popularity rising way sooner than Instagram and still being the most significant social media network worldwide. Figure 5 shows that overall, Facebook has the most significant chunk of the Community variable, with 71% of it. Similar to this result, Montoya et al. (2018) studied social networks as a means of tourism promotion in Ibero-American countries and found Facebook with 67.2% of the fans and Instagram with 10.7%. Capitello et al. (2014) examined web-marketing models adopted by several leading Italian wineries and found that Facebook has the highest number of fans. Jiménez (2018), in his study of the use of social media in tourist promotion, also found that Facebook (57.2%) has more fans than Instagram (4.5%). Also, Magadán-Díaz and Rivas-García (2020), studying Spanish publishing companies on social networks, and Sánchez Jiménez et al. (2019), studying social networks to promote tourism in Spain, found Facebook with more fans than Instagram. However, the ability to generate more fans is stagnating on Facebook, and Instagram presents a growing tendency. This variable is significant for WCE digital marketing strategy because it will significantly affect the results of the Activity, Recommendation, Generation, and Engagement ratios, with the possibility of large fan communities failing to ensure desirable engagement levels (Magadán-Díaz & Rivas-García, 2020). When the principal difference lies in the Community variable, fans must be active, commenting, and sharing content to secure a high engagement rate. If this does not occur, the engagement rate falls (Rodríguez-Fernández et al., 2017).

Activity (P2) analysis

Activity is also part of the Presence variable results (see Table 4 and Table 5). The volume of brand activity is measured with the number of publications (P2) on social media. The more published posts, the more likely the information will reach more people (Rodríguez-Fernández et al., 2016). According to Rodríguez-Fernández et al. (2016), the average number of Facebook channel updates should be between 3 and 5 per week. The number of posts on Facebook during the period analyzed is very high for the WCE from Vinhos Verdes page (99), with the highest numbers in both social networks (178) followed by the WCE from Dão (151) and Algarve (134). Most pages have more than 20 posts for the analyzed period, but some have a meager number. All this information is displayed in Table 5. Figure 7 shows that overall, WCE has similar activity on Facebook and Instagram.

Figure 5 – Presence by Social Media

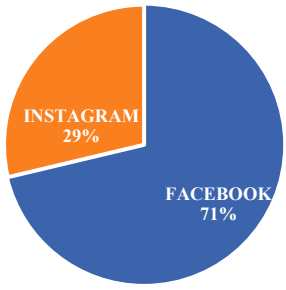


Figure 6 – P1 Fans by Social Media

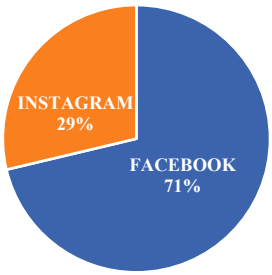


Figure 7 – P2 Publications by Social Media

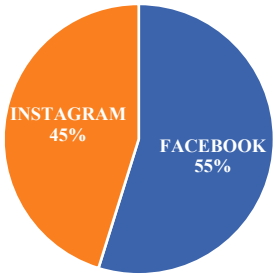


Table 5 – Presence, Community (Number of Fans), and Activity (Number of Posts)

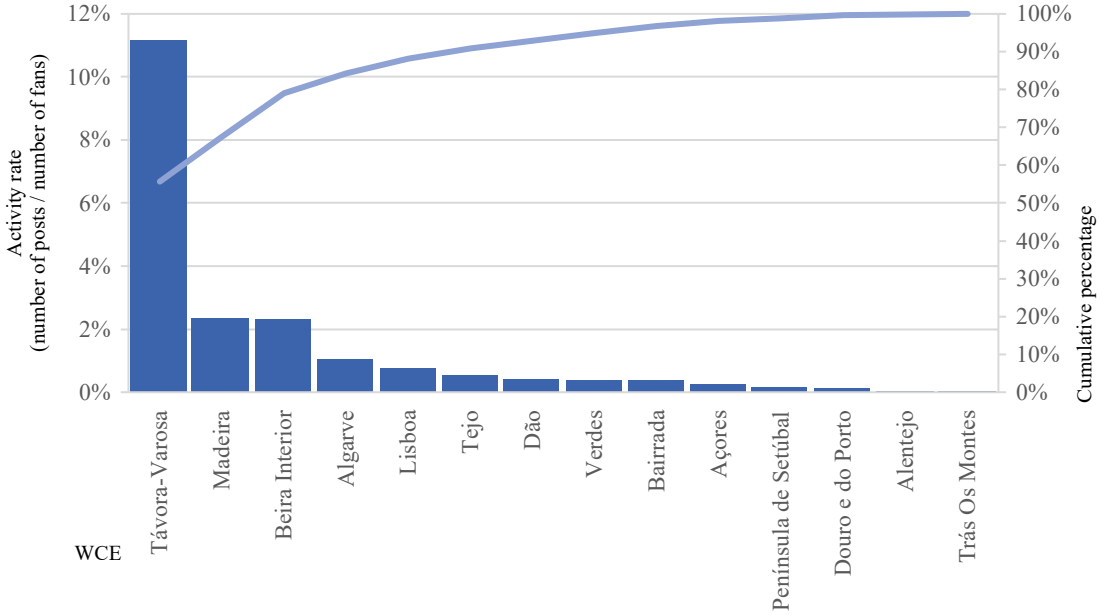
WCE (abbreviated name)	Community (Number of Fans)			Activity (Number of posts)			Presence
	Facebook	Instagram	Total (P1)	Facebook	Instagram	Total (P2)	
Alentejo	136,763	40,026	176,789	49	40	89	176,878
Douro e do Porto	41,014	17,533	58,547	48	39	87	58,634
Vinhos Verdes	35,427	10,413	45,840	99	79	178	46,018
Dão	9,311	26,341	35,652	76	75	151	35,803
Península de Setúbal	17,268	4,465	21,733	26	8	34	21,767
Tejo	8,282	6,100	14,382	42	35	77	14,459
Trás-os-Montes	13,669	(a)	13,669	5	(a)	5	13,674
Algarve	10,648	2,149	12,797	76	58	134	12,931
Lisboa	3,041	2,688	5,729	22	22	44	5,773
Bairrada	3,454	2,226	5,680	5	17	22	5,702
Beira Interior	2,969	1,662	4,631	57	50	107	4,738
Madeira	1,990	800	2,790	41	25	66	2,856
Açores	798	(a)	798	2	(a)	2	800
Távora-Varosa	243	133	376	21	21	42	418
Total	**284,877**	**114,536**	**399,413**	**569**	**469**	**1,038**	**400,451**
Mean	**20,348**	**9,545**	**28,530**	**41**	**39**	**74**	**28,604**
Standard Deviation	**35,769**	**12,417**	**46,230**	**29**	**23**	**54**	**46,246**

Note: (a) is a missing value since Fanpage Karma cannot retrieve data from personal profiles like these profiles.

Activity rate analysis (P2/P1)

The Activity rate contributes to Presence analysis by combining community with activity to determine the brand-generated content intensity for every studied social network. Figure 8 shows that the WCE from Távora-Varosa has the most effective rate, with about 55% of the overall value being the WCE with more brand-generated content intensity about its community. The Activity rate presents a long-tail distribution, verifying eleven WCE with an Activity rate under 2.5%, and the WCE from Trás os Montes is the one that publishes content in a minor amount considering its community size. Because the number of publications is not much higher on Facebook WCE pages, and two-thirds of the Presence is from Facebook, the Activity rate on Instagram WCE pages is higher than on Facebook.

Figure 8 – Activity rate P2/P1



Response analysis (R)

The Response variable establishes the reaction of users to the presence of the brand through the number of likes. Figure 9 shows that overall, WCE have similar reactions from the users to the presence on both Facebook and Instagram. The WCE from Vinhos Verdes, and from Alentejo pages stand out on the number of likes observable in figure 10, with the highest number of likes on Facebook, respectively. There is a big gap in these numbers comparing the highest numbers to the lowest, with more than 20,000 likes of difference. The WCE from Távora-Varosa page has a very low number of likes, which can be explained since they have the smallest community on Instagram. The WCE from Dão, Douro e do Porto, and Vinhos Verdes' pages stand out as the WCE with the highest numbers of reactions and likes on Instagram. The Facebook numbers for the WCE from Vinho Verdes Verde and Alentejo pages are very high compared to the Instagram ones, which are poorer (see Figures 11 and 12). The WCE from Távora-Varosa page has the smallest number of fans on Facebook, but not the lowest number of reactions of the analyzed pages, only with a higher number than the WCE from Açores page. Figures 9-12 present the results for this indicator.

Figure 9 – Response by Social Media

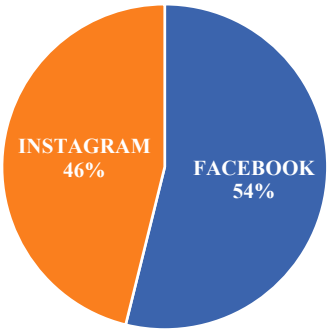


Figure 10 – Response by WCE

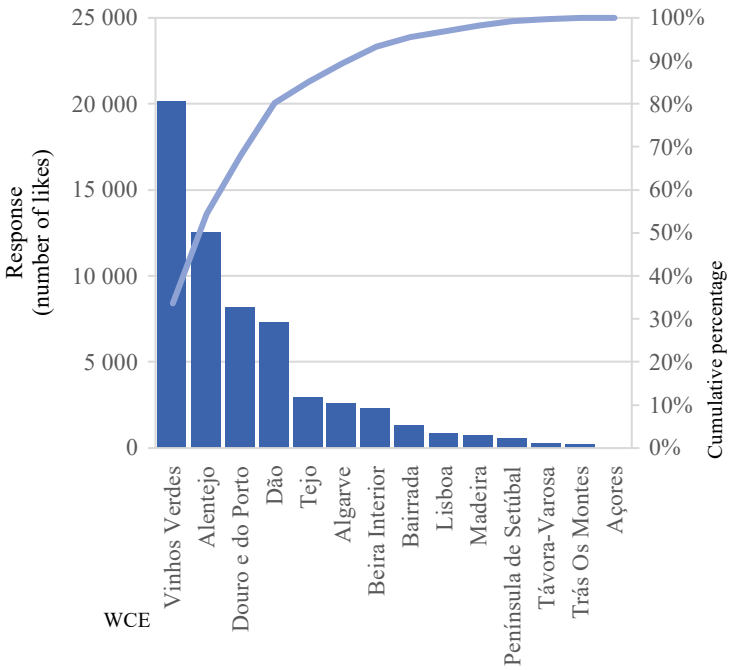


Figure 11 – Response by Social Media and WCE

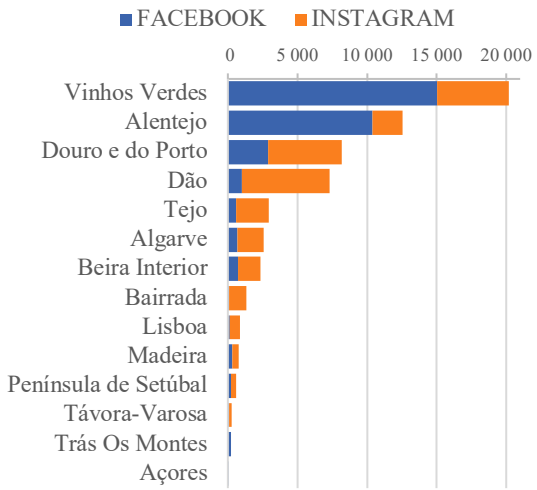
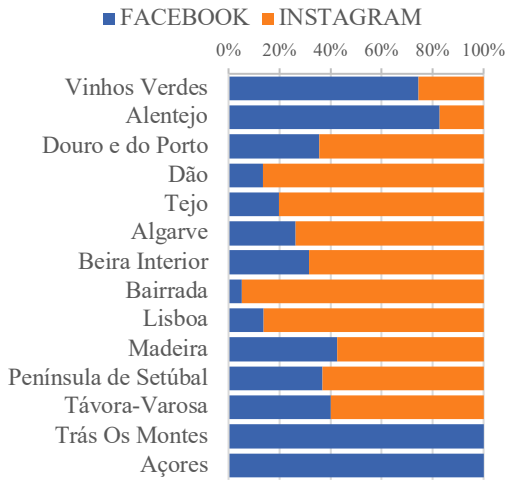


Figure 12 – Response % by Social Media and WCE



Generation analysis (G)

Generation involves the creation of content by users in social media where the brand is presented. Generation refers to proactively generated content by the users, like a post made by a fan on a fan page. Figure 13 shows that overall, WCE pages have more than 46% generated content by users on Instagram than on Facebook. The WCE from Algarve page stands out with many Instagram comments, as presented in figures 14 and 15; the rest of the pages have significantly lower numbers. The three WCE from Vinhos Verdes, Alentejo, and Douro e do Porto are above but near the mean value of 139 comments, a much smaller range compared to the 942 comments of the WCE from Algarve page (see Figure 16). This difference can be explained due to some giveaways on the WCE from Algarve page or even content that promoted interaction via comments like questions. A small note for the WCE from

Algarve page that stood out with a very high number of comments on Instagram, but on Facebook, the total was lower, with 22 comments.

Figure 13 – Generation by Social Media

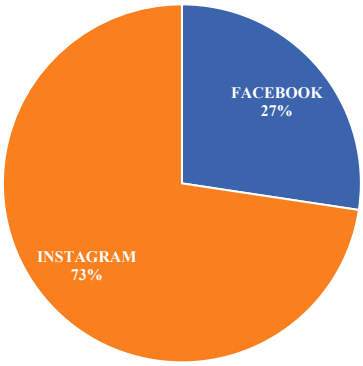


Figure 14 – Generation by Social Media and WCE

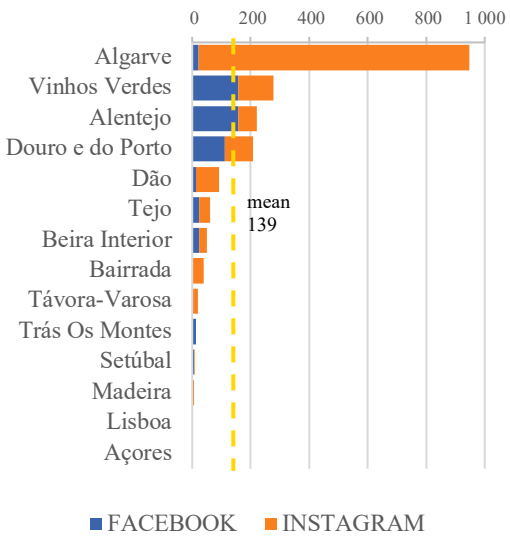


Figure 15 – Generation % by Social Media and WCE

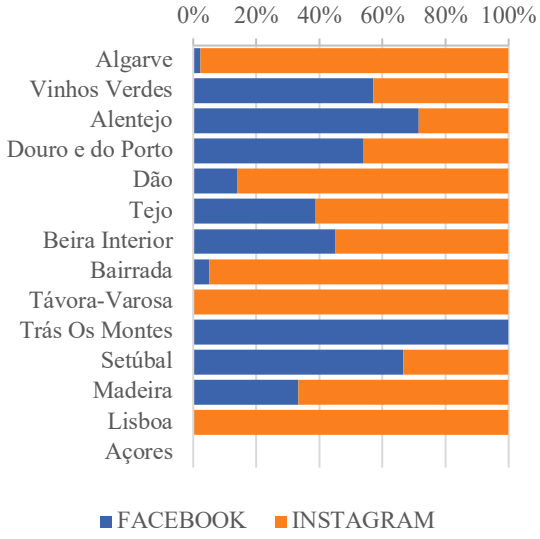
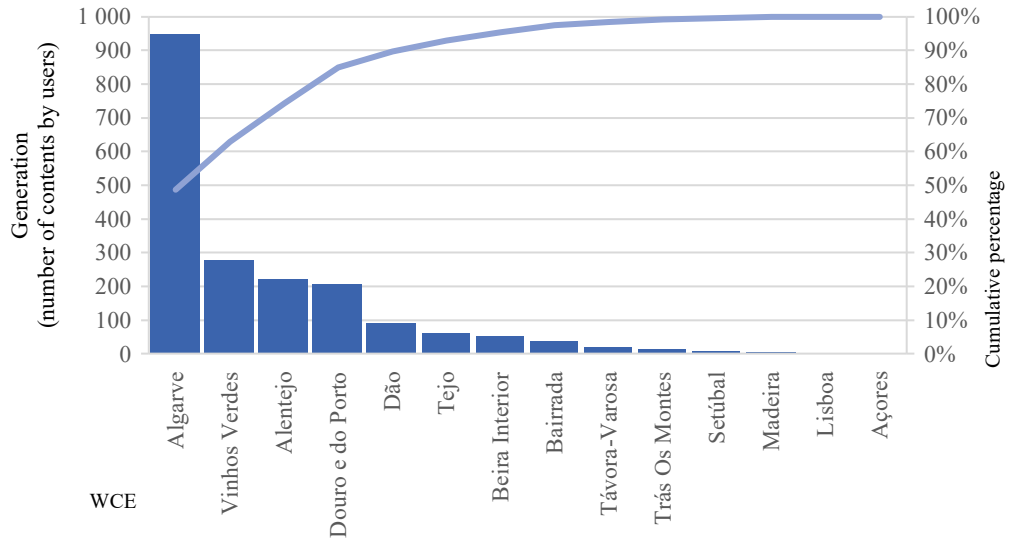


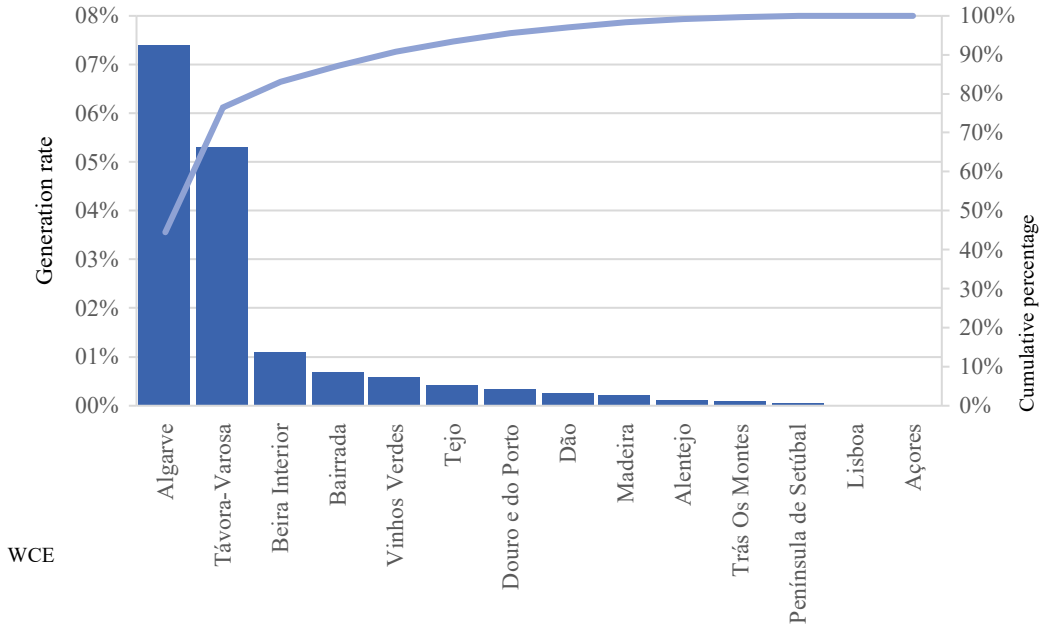
Figure 16 – Generation by WCE



Generation rate analysis (Generation/P1)

The Generation rate contributes to Generation analysis by combining the number of comments with the community to determine the user-generated content intensity for every studied social media. Figure 17 shows that almost 45% of the Generation rate belongs to the WCE from Algarve page, which makes it the WCE with the most brand-generated content intensity. This value stands out from the rest since the other have lower numbers than the Algarve WCE. The Generation rate presents a long-tail distribution.

Figure 17 – Generation rate G/P1



Suggestion or Viral analysis (S)

Suggestion or Viral is a recommendation by a user to their community. Recommendations consist of Facebook shares on posts. The Instagram platform does not have any available indicators to measure this concept (see Figure 18). Figure 19 shows the ranking of the Suggestion variable led by WCE from Vinhos Verdes, Douro e do Porto, and Alentejo, which have superior values compared to the average.

Suggestion has a mean value of 188 and a standard deviation of 258. The WCE from Vinhos Verdes, Douro e do Porto represent almost 50% of the total value, and combined with the WCE from Alentejo, they represent almost 70%.

Figure 18 – Suggestions by SM

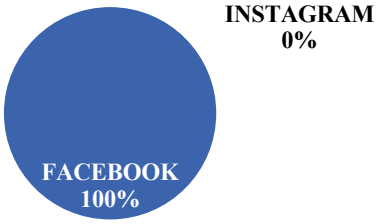
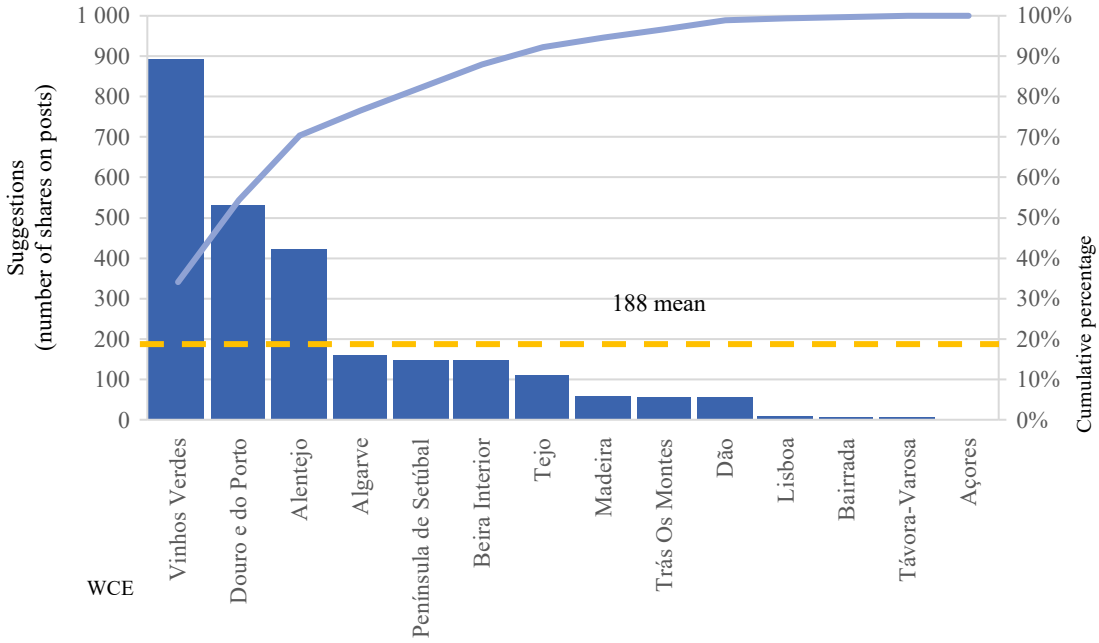


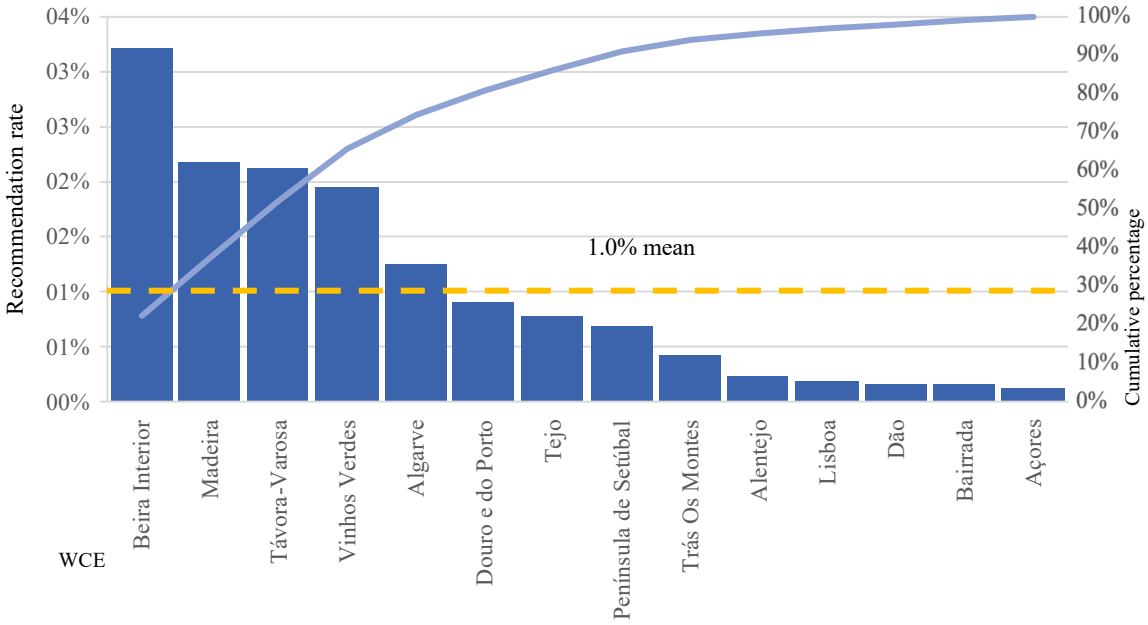
Figure 19 – Suggestions by WCE



Recommendation rate analysis (Suggestion/P1)

Observing the shares per fan results in figure 20, the WCE from Beira Interior page stands out, followed by the WCE from Madeira, Távora-Varosa, and Vinhos Verdes pages with values above the mean. Even though this is a relevant indicator, it is pertinent to consider some attention since some of the shares may be made by the page owner's profile and close friends and family trying to promote businesses. This indicator is led by the WCE from Beira Interior, with more than 3.0% for the value, in an indicator with a 1.0% average value for all the WCE. Above this value, there are some WCE like Madeira, Távora-Varosa, and Vinhos Verdes with very close numbers. The Algarve WCE is a little above the 1.0% mark, and the last WCE is above the average number since the next WCE is the Douro e do Porto, underneath the 1.0% mark.

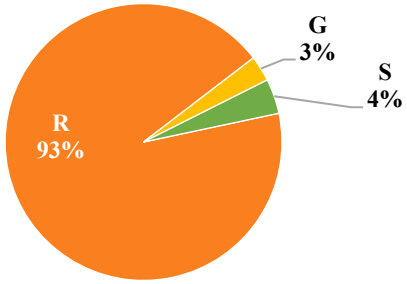
Figure 20 – Recommendation rate S/P1



Interaction analysis

Interaction measures the reaction of users through likes, the creation of content by users, and the recommendations by the users (IAB Spain, 2016). Martínez et al. (2022) studied Instagram use in tourism promotion and found that picture quality directly affects fans' interaction. Jiménez (2018), in his study of the use of social media in tourist promotion, found that Instagram generates more interactions followed by Facebook. In general, Figure 21 shows that the interaction generated by the variable Response stands out concerning the other ones in the analysis (93%), meaning that the reaction of users to the presence of the brand through likes evidence the volume of WCE activity. The Generation, which involves the creation of content by users on social media where the brand is presented, refers to the content proactively generated by the user, namely a post posted on the wall of a fan page by a fan, which is not evident (3%). Meanwhile, the variable Suggestion or Viral, which implicates user recommendations or shares to their community, also presents a low interaction, with a 4% mark.

Figure 21 – Interaction by R, G, and S



Figures 22 and 23 represent the interaction disaggregated by WCE in value and percentage by variable Response, Generation, and Suggestion. All WCE follow the macro trend evidencing the variable Response. In the relationship Generation vs. Suggestion, the variable Generation is only notoriously more evident in the WCE from Algarve. Moreover, the variable Suggestion is more evident in WCE from Açores, Trás os Montes, and Peninsula de Setúbal.

Figure 22 – Interaction by R, G, S and WCE

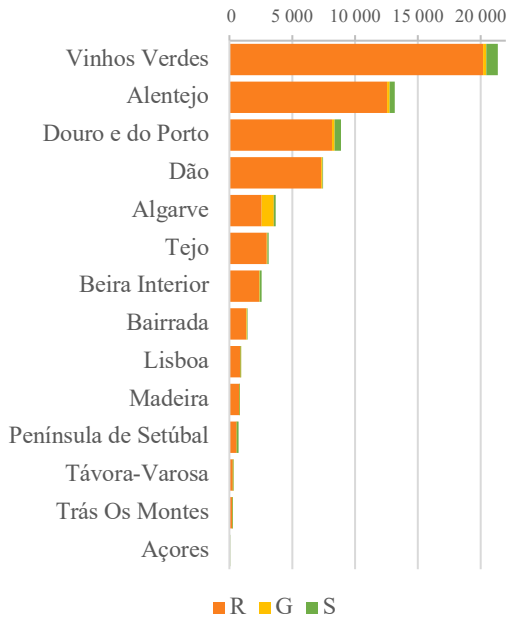


Figure 23 – Interaction % by R, G, S and WCE

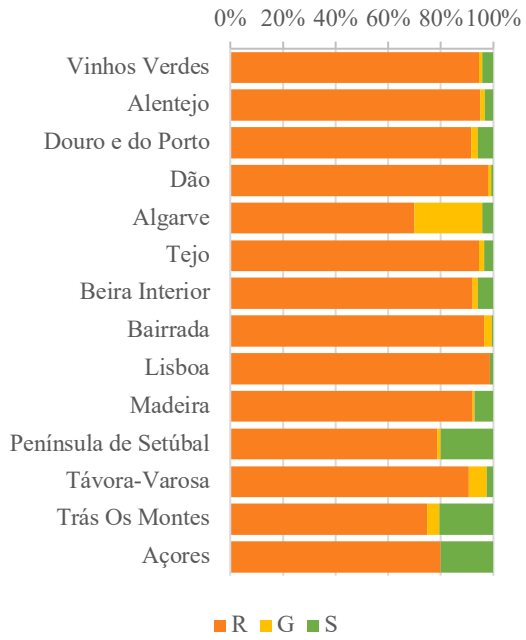
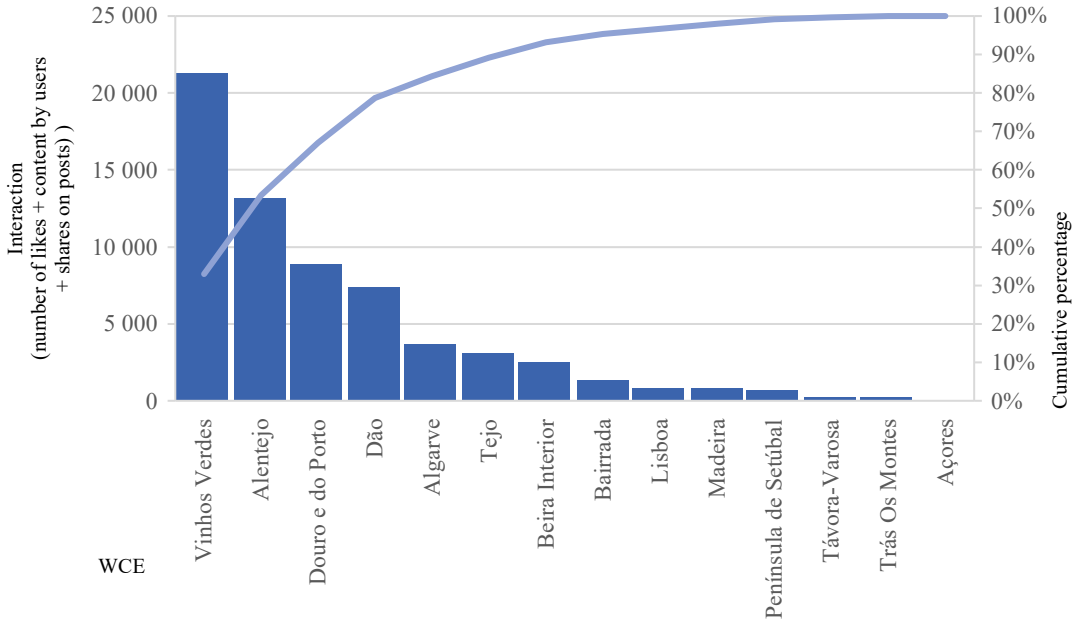


Figure 24 shows that the WCE from Vinhos Verdes has the most significant interaction value, with about 35% of the overall value, making it the WCE with the highest interaction. This value stands out from the rest since the other WCE have lower values than WCE fromVinhos Verdes. The interaction rate has a long-tail distribution with WCE from Vinhos Verdes, Alentejo, Douro e do Porto, and Dão having about 80% of the overall value.

Figure 24 – Interaction by WCE

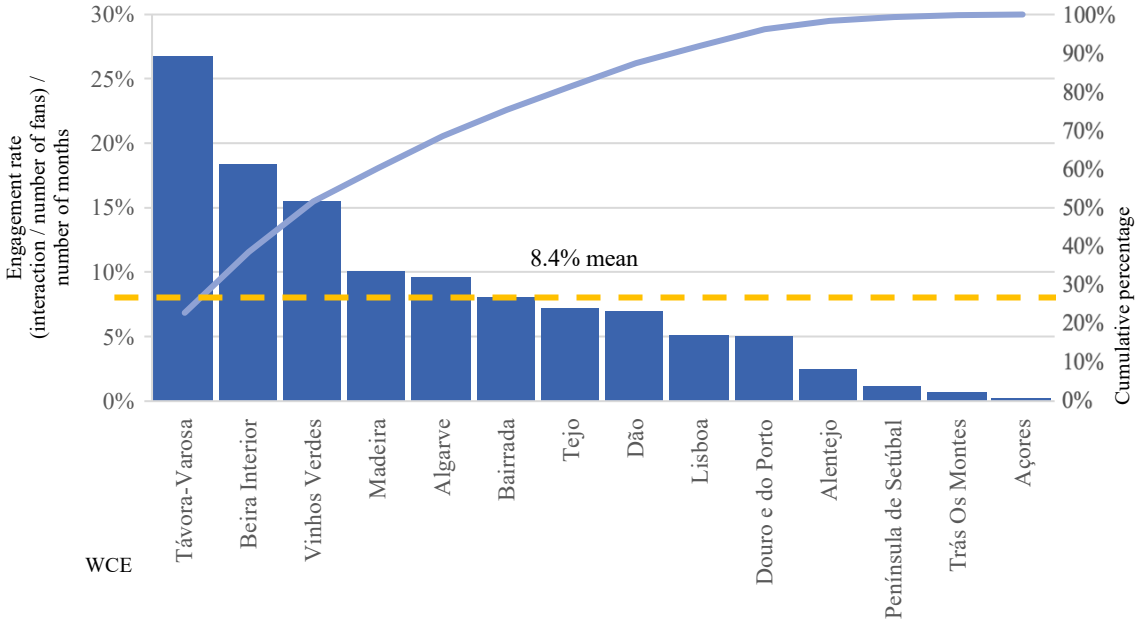


Engagement rate analysis (Interaction / P1) / Months

Engagement rate measures the implication intensity of users with the WCE combining the user Interaction with the size of the community (P1) represented by the number of fans and during the

number of months of the analysis. Engagement rate analysis must consider that the level of interaction in a small community differs from that in a large community. In small ones, engagement tends always to be higher; the larger the community, the less the engagement ratio (IAB Spain, 2022). Observing the results of the Engagement rate indicator in figure 25, the WCE page from Távora-Varosa stands out. This result means that this combination between the interaction of users and the size of the community is the most significant, followed by the WCE pages from Beira Interior, Vinhos Verdes, Madeira, and Algarve of them, with above-average values. The WCE from Bairrada has a value that is coincident with the average. The results of the engagement rate were greatly influenced by the size of the communities, with the WCE from Távora-Varosa page that has a smaller community than the WCE under study, having the best engagement rate.
In contrast, despite having the highest number of fans (176,789), the WCE from Alentejo fan page has a relatively low degree of engagement compared with most WCE. This type of result also occurred in the winemaking sector work of Rodríguez-Fernández et al. (2017), with the Designations of Origin with greater community observing the lower results of the Engagement rate. To ensure desirable engagement levels, WCE with large fan communities and weak engagement ratios should rethink their digital marketing strategy (Magadán-Díaz & Rivas-García, 2020), ensuring that fans must be active, commenting and sharing content (Rodríguez-Fernández et al., 2017).

Figure 25 – Engagement rate by WCE

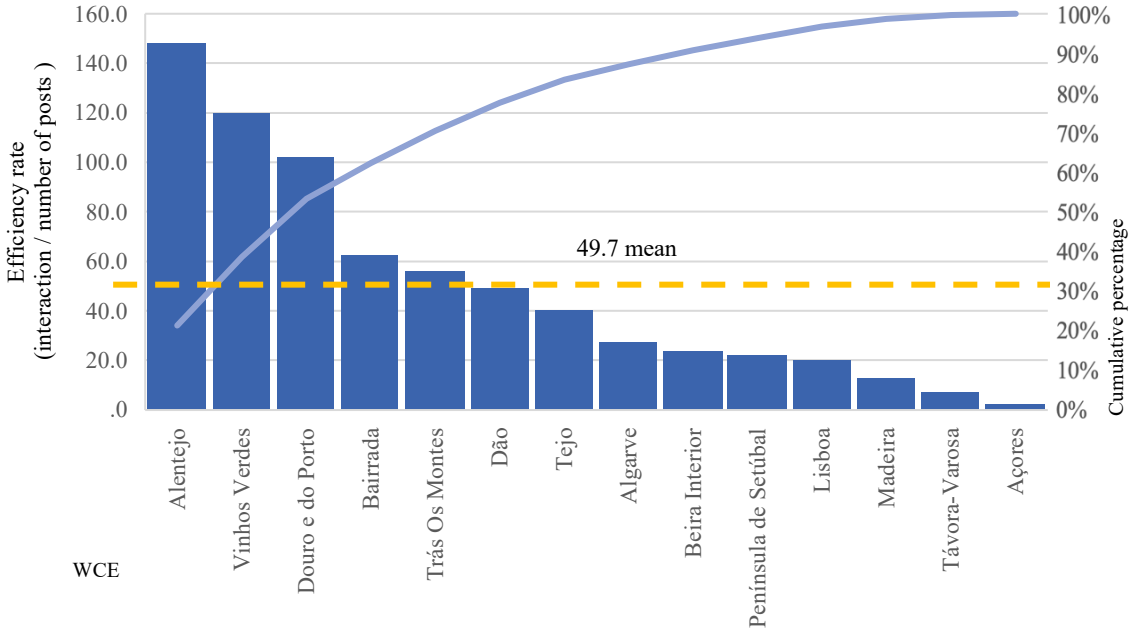


Efficiency rate analysis

The Efficiency rate combines Interaction with the volume of brand activity given by brand-generated content on social media and is represented by the number of posts during a period (IAB Spain, 2016). Observing the results of the indicator Efficiency rate in figure 26, the WCE page from Alentejo stands out, which means that the combination between the interaction of users and the volume of activity of the brand is the most significant, followed by the WCE pages from Vinhos Verdes, Douro e Porto, Beira Interior, and Trás-os-Montes, all of them have above-average values. The WCE from Dão value is coincident with the average number. Montoya et al. (2018), Sánchez Jiménez et al. (2019), and Jiménez (2018) found Instagram as the social media that generates more interactions with the posts, being the best media to generate engagement with users in tourist information and promotion area. Also, Magadán-Díaz and Rivas-García (2020), studying Spanish publishing companies on social networks, found Instagram to have better results. This finding could be related to the domain of the image in its contents. Sánchez Jiménez et al. (2019) observed the Efficiency rate values with a negative tendency

and possibly motivated by a crescent disinterest in general and in particular on the part of young people, and also by the changes in the Facebook algorithm.

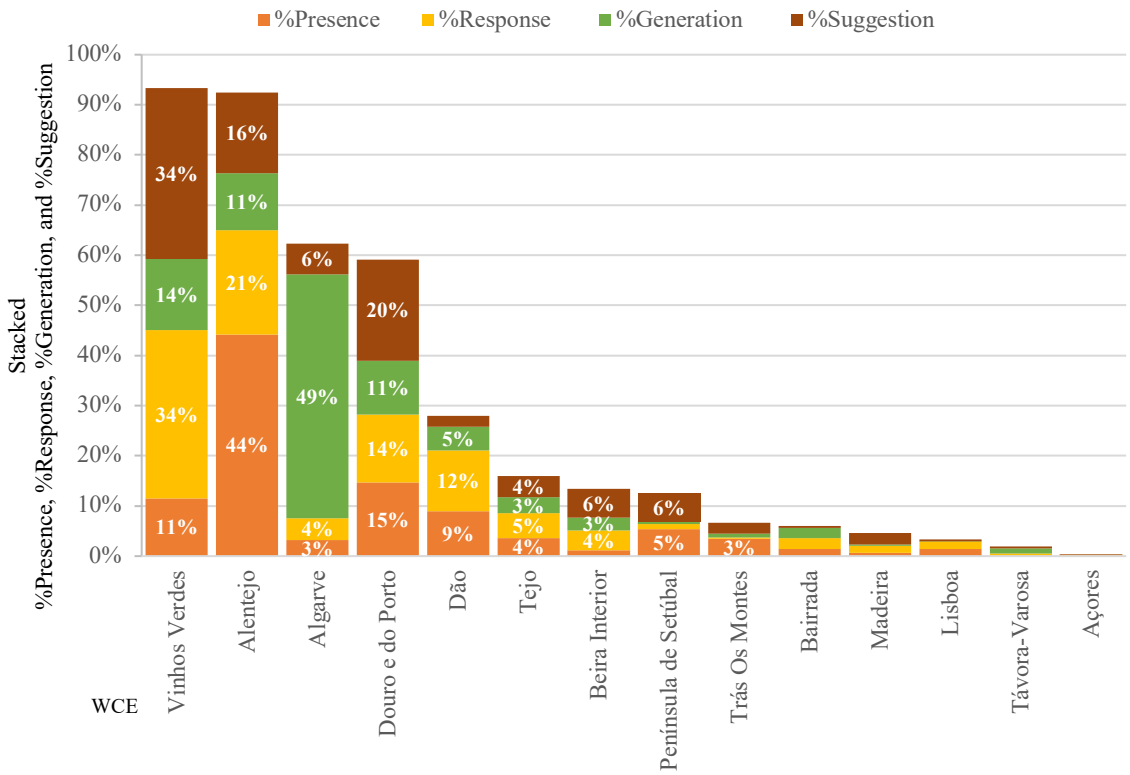
Figure 26 – Efficiency rate by WCE



%Presence, %Response, %Generation, and %Suggestion by WCE

Figure 27 presents the sum of percentage weights from Presence, Response, Generation, and Suggestion by WCE, where five groups of WCE stand out. The first group stands out with the best values, a little bit above 90%, and is formed by WCE from Vinhos Verdes, and Alentejo. WCE from Vinhos Verdes has a sum of percentage weights of 93.3% and Response and Suggestion have equal weights of 34%, being the best perform among all WCE, and these two variables add up to 68% of a total value of 93.3%. In this WCE from Vinhos Verdes, the Interaction (Response, Generation, and Suggestion) total share is 82%, and Presence with a small weight of 11% allows improved results in Engagement rate and Efficiency rate KPIs. WCE from Alentejo stands out, having 44% of Presence share, with the largest community from all WCE. This value represents close to half of the percentage weights total (92.5%), enabling a weak performance in Engagement rate KPI.
In the second group, with percentages around 60% we have WCE from Algarve, and Douro e do Porto. WCE from Algarve stands out from the remaining WCE with a weight of 49% for Generation. Also, having for Interaction and Presence, weights of 59% and 3%, respectively, allows improved results in Engagement rate KPI. In WCE from Douro and Porto results, the variable Suggestion has the highest value concerning the various variables, with 20% among all WCE. In this WCE, the Interaction has a weight of 75% which enhances Efficiency rate KPI, but at a lower level than WCE from Vinhos Verdes.
The third group is formed by WCE do Dão with a sum of percentage weights close to 30%. The fourth group with the sum of percentage weights between 15% and 10%, is formed by WCE from Tejo, Beira Interior, and Península de Setúbal. A fifth and last group with a sum of percentage weights less than 10% is formed by the remaining six of the fourteen WCE.

Figure 27 – %Presence, %Response, %Generation, and %Suggestion by WCE



CONCLUSION

This research, based on an analysis with the IAB Spain updated PRGS model, captured the activity and effectiveness of the Facebook and Instagram pages of the Portuguese WCE between January and March 2022. For this analysis, the research model was structured with the concepts of *Presence*, *Response*, *Generation*, and *Suggestion* and updated with the concepts of *Engagement, Interaction*, and *Efficiency*. The research measured the indicators of this model through the retrieved data from the online social-media monitoring and data collection tool Fanpage Karma.

Overall, the analysis shows that all the Portuguese WCE are present on both social media networks studied (Facebook and Instagram), and some are using their pages in a very active way, containing large communities with relevant interactions from them too.

Considering the *Presence* variable, Facebook has wider communities, with most pages having more fans there than on Instagram, except for the WCE from Dão page. The number of posts is also higher on most Facebook pages, but not much, showing that most pages are more active on this platform, with few exceptions, like the WCE from Dão, which prefers Instagram, being more active there. Facebook was the first social media adopted for most of these entities, and Instagram has been progressively introduced to the marketing dynamics of these entities in the latest years, which may explain why some communities show low numbers compared to Facebook. It is expected that the older Facebook pages have less ability to attract new users than the latest pages. In general, small communities should seek to grow, and large ones naturally seek to improve engagement (IAB Spain, 2022). The WCE from Alentejo *Presence*, with 176,789 members, is positioned as the WCE that maintains the largest community in social media, followed by WCE from Douro e do Porto, and Vinhos Verdes, with 58,547 and 45,840 respectively.

Even though all the entities are present in both social media channels, some of the variables tell us that Instagram is somewhat new for some of these entities, and they are still developing and expanding their communities since their number of likes is inferior when compared to Facebook. In this sense, the tendency to attract new users is expected to increase on Instagram.

Additionally, regularly posting new content on Instagram pages is crucial to draw in new followers and keeping those who are already interested. The number of posts made on these two social media platforms reveals that Facebook dominates most pages. Publications should be frequent and have Facebook and Instagram-adapted content because social media are an audiovisual channel for communication and customer service par excellence. All Instagram WCE pages are advised to maintain a more balanced presence on this social media platform by making more posts. The *Activity* rate shows WCE from Távora-Varosa, with about 55% of the overall value being the WCE with more brand-generated content intensity about its community, followed by WCE from Madeira and, thirdly, WCE from Beira Interior. The *Activity* rate presents a long-tail distribution, verifying eleven WCE with an *Activity* rate under 2.5%, publishing content in a minor amount considering their community size. Because the number of publications is not much higher on Facebook WCE pages, and two-thirds of the *Presence* is from Facebook, the *Activity* rate on Instagram WCE pages is higher than on Facebook.

Looking at *Response* via interactions by the number of likes and reactions, overall, WCE have a similar reaction of users to the presence on both Facebook (54%) and Instagram (46%). Regarding Response, Instagram is, in relative terms, the dominant social network in 10 of the 14 WCE, with a number of likes higher than Facebook. Vinhos Verdes is the WCE that generates the most excellent Response among all WCE, followed by WCE from Alentejo, and WCE from Douro e do Porto occupy the second and third place.

The number of comments representing the *Generation* variable is also higher for the Instagram channel (73%), with the WCE from Algarve standing out with more comments, something that can be explained by the page producing content like giveaways, where it is usually mandatory to comment on the post to participate. To increase *Generation*, WCE must make promotions to increase users' participation and be aware of proactively generating conversations (IAB Spain, 2018).

For the *Suggestion* variable represented by recommendations or by the number of shares indicator, Instagram is not analyzable since this feature is not available on this social media network, only for Facebook. The *Suggestion* variable ranking is led by Vinhos Verdes, Douro e do Porto, and Alentejo, all with values superior to the average. Regarding the variable *Interaction*, which takes form by means of reactions, comments, and shares, the reactions represent 93% of all interactions. To enhance this variable, multimedia formats like images or videos are recommended; partner up with Influencers since they will bring their prestige and followers and create clean, direct, and impactful content (Valls Ponce, 2021). Making sure a business is up to date and linking up with recent and trendy phenomena is key to maintaining the relevance of a product virtually. It is recommendable that the WCE do not conform with achieving a high value of *Response*. It is preferable for WCE to work more on the quantity and quality of the content they publish on social media, looking for engagement, adding value, and quality of experience, even if that means reducing their volume of publications (IAB Spain, 2022).

Engagement rate measuring the user *Interaction* with the size of the community and during the number of months from the period of analysis, the WCE page from Távora-Varosa is one of the highlights, followed by the WCE pages from Beira Interior, Vinhos Verdes, Madeira, and Algarve, all of them with above-average values. The results of the *engagement* rate were greatly influenced by the size of the communities, with the WCE from Távora-Varosa page that has a smaller community than the WCE under study, having the best *engagement* rate. To ensure desirable engagement levels, the WCE with the largest fan communities but weakest *engagement* rates should reflect upon their digital marketing strategy and adjust them so that this number can improve (Magadán-Díaz & Rivas-García, 2020). The results for this variable suggest that there is potential for more engagement from the public since the interactions in the form of reactions, comments, and shares are lower, and the communities are significant. Enhancing marketing strategies with content that promotes public commenting or sharing may improve the numbers. When comparing the number of interactions on the two social media platforms, Facebook pages have lower numbers despite having larger communities.

The *Efficiency* rate combining Interaction with the number of posts during the time frame of this analysis shows that the WCE page from Alentejo has the best result, which means that the combination between the interaction of users and the volume of activity of the brand is the most significant, followed by the WCE pages from Vinhos Verdes, Douro e Porto, Beira Interior, and Trás-os-Montes all have above-average values. The WCE with the best *efficiency* in their posts tells us that their activity is much better optimized than the others, which denotes more excellent care, adaptation, or quality of the

published content. This fact will enhance the WCE online presence, ultimately influencing consumer purchasing behavior (Sogari et al., 2017; Pelet & Lecat, 2014).

The research has several limitations that can also be considered for a future research line: (1) the Instagram pages of the WCE from Trás-os-Montes and Açores are personal profiles, which disabled the data retrieval by the Fanpage Karma tool; (2) the results could have been different if another period had been chosen or even if this period had been analyzed over more time; (3) the research not considered and analyzed concerning the posts, the type of publications image, video, carousel, and hours and days of publication, factors that can determine variations in the type, volume, and intensity of interactions by the communities. For future research, it would be interesting to apply qualitative and content analysis techniques for the data analysis, to have a profound comprehension of the types of content these pages are posting on their profiles and how it differs between the various regions of the country. Also, it would be interesting to research how WCE communities evolve and if, in some way, Instagram surpassed Facebook.

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