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Exploring hospitality employment perceptions in the Algarve during COVID: a three-way data analysis

Exploração das percepções sobre o emprego na hotelaria no Algarve durante a COVID: uma análise de dados de três-vias

Exploración de las percepciones del empleo en la hostelería en el Algarve durante la COVID: un análisis de datos de tres-vías

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Keywords:

COVID-19 impacts;
Hospitality employment;
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Resilience;
COSTATIS.

Abstract

The Travel and Tourism (T&T) industry is highly sensitive to extreme events like pandemics (Price *et al.*, 2022; OECD, 2020). The COVID-19 pandemic severely disrupted the sector, leading to mobility restrictions and closures (Chowdhury and Jomo, 2020). However, it also presented opportunities for innovation (Price *et al.*, 2022). The economic impact on Portugal's GDP was significant, with T&T's contribution dropping from 17.1% in 2019 to 8.7% in 2020 and recovering in subsequent years (WTTC, 2022). Given the Algarve's dependence on tourism, this study highlights the need for new strategies to overcome challenges (EURES, 2022). This research aims to analyse how Algarve's (South of Portugal) hospitality (hotels and restaurants) employers and employees perceived the Portuguese government's measures to address the COVID-19 crisis via a Three-Way Data Analysis multivariate statistical procedure, namely the COSTATIS method, which can be considered a more advanced or specialized version of STATIS, offering more flexibility and refinement in handling complex data relationships. The statistical procedure supports the assessment of 27 varieties of perceptions of the pandemic crisis that were collected from respondents distributed in four hospitality professional categories (restaurant and hotel managers and employees). The conclusions identify that association with a professional category in the hospitality industry tends to affect ideas regarding the potential for coping and *resilience* associated with organizational challenges. Members of the diverse professional categories think of the crisis in different ways due to their status and hierarchic position in business organisations. More attention should be given to what those professionals with lower status have to say about the organisational climate in the event of future crises.

Palavras-chave:

Impactos da COVID-19;
Emprego na hotelaria;
Organização empresarial;
Resiliência;
COSTATIS.

Resumo

A indústria de Viagens e Turismo (T&T) é altamente sensível a eventos extremos como pandemias (Price et al., 2022; OCDE, 2020). A pandemia de COVID-19 causou uma grave disrupção no setor, resultando em restrições de mobilidade e encerramentos (Chowdhury e Jomo, 2020). No entanto, também trouxe oportunidades para a inovação (Price et al., 2022). O impacto econômico no PIB de Portugal foi significativo, com a contribuição do setor de T&T caindo de 17,1% em 2019 para 8,7% em 2020, recuperando nos anos seguintes (WTTC, 2022). Dada a dependência do Algarve em relação ao turismo, este estudo destaca a necessidade de novas estratégias para superar os desafios (EURES, 2022). Esta investigação tem como objetivo analisar como empregadores e empregados da hotelaria (hotéis e restaurantes) no Algarve (sul de Portugal) perceberam as medidas adotadas pelo governo português para enfrentar a crise da COVID-19, utilizando um procedimento estatístico multivariado de Análise Tríplice de Dados, especificamente o método COSTATIS, o qual é considerado uma versão mais avançada ou especializada do STATIS, oferecendo maior flexibilidade e refinamento no tratamento de relações complexas entre dados. O procedimento estatístico sustenta a análise de 27 tipos de percepções sobre a crise pandêmica, coletadas de respondentes distribuídos em quatro

categorias profissionais da hotelaria (gerentes e funcionários de restaurantes e hotéis). As conclusões indicam que pertencer a uma determinada categoria profissional dentro da indústria hoteleira tende a influenciar as ideias sobre a capacidade de enfrentamento e resiliência diante de desafios organizacionais. Membros de diferentes categorias profissionais percebem a crise de formas distintas, conforme seu status e posição hierárquica nas organizações. Maior atenção deve ser dada ao que os profissionais de status mais baixo têm a dizer sobre o clima organizacional em possíveis crises futuras.

Palabras clave:

Impactos de la COVID-19;
Empleo en la hostelería;
Organización empresarial;
Resiliencia;
COSTATIS.

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Resumen

La industria de Viajes y Turismo (T&T) es altamente sensible a eventos extremos como las pandemias (Price et al., 2022; OCDE, 2020). La pandemia de COVID-19 afectó gravemente el sector, provocando restricciones de movilidad y cierres (Chowdhury y Jomo, 2020). Sin embargo, también presentó oportunidades para la innovación (Price et al., 2022). El impacto económico en el PIB de Portugal fue significativo, con la contribución del sector de T&T disminuyendo del 17,1% en 2019 al 8,7% en 2020, recuperándose en los años posteriores (WTTC, 2022). Dada la dependencia del Algarve del turismo, este estudio resalta la necesidad de nuevas estrategias para superar los desafíos (EURES, 2022). Esta investigación tiene como objetivo analizar cómo los empleadores y empleados del sector de la hostelería (hoteles y restaurantes) del Algarve (sur de Portugal) percibieron las medidas adoptadas por el gobierno portugués para hacer frente a la crisis del COVID-19, utilizando un procedimiento estadístico multivariado de Análisis de Tres-vías, concretamente el método COSTATIS, lo cual es considerado una versión más avanzada o especializada del STATIS, que ofrece mayor flexibilidad y precisión en el tratamiento de relaciones complejas entre datos. El procedimiento estadístico respalda el análisis de 27 tipos de percepciones sobre la crisis pandémica, recogidas de encuestados distribuidos en cuatro categorías profesionales del sector de la hostelería (gerentes y empleados de restaurantes y hoteles). Las conclusiones indican que la pertenencia a una determinada categoría profesional dentro del sector tiende a influir en las ideas sobre la capacidad de afrontamiento y resiliencia frente a los desafíos organizacionales. Los miembros de diferentes categorías profesionales perciben la crisis de manera distinta, de acuerdo con su estatus y posición jerárquica en las organizaciones. Se debe prestar más atención a lo que los profesionales con menor estatus tienen que decir sobre el clima organizacional en caso de futuras crisis.

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1 INTRODUÇÃO

The Travel and Tourism Industry (T&T) is a leading force in the World Economy (WTTC, 2022) which is expected to surmount its much-studied sensitivity and vulnerability (Price et al., 2022; OECD, 2020) to extreme events, such as natural disasters, political violence, infectious diseases, terrorism, and epidemics/pandemics (Khan, Bibi, Lorenzo, Lyu & Babar, 2020; Gössling et al., 2020; Khan, Bibi, Lyu, Latif, & Lorenzo, 2021).

There is evidence that the sector has a history of endurance to severe economic, environmental, and social impacts (Kitamura, Karkour, Ichisugi, & Itsubo, 2020; Chowdhury and Jomo, 2020). Accordingly, the new question for hospitality resilience experts is how the major professional categories across the hospitality industry - hotel manager, hotel employee, restaurant manager, restaurant employee - viewed the COVID-19 challenge and how they retained their agility during the most critical period of the coronavirus crisis, between March 2020 and May 2021.

Since the beginning of 2020, the coronavirus pandemic – COVID-19, has compelled governments worldwide to stop high mobility associated with tourism (Huang et al., 2020; UNWTO, 2023). Several restrictions to domestic mobility and international travel during the COVID 19 were accompanied by social distancing measures and compulsory lockdowns, including closures of accommodation and hospitality facilities, leisure activities, restaurants, and show businesses. As expected, these restrictions led to a severe disruption of the travel and tourism supply chain, impacting both the sector and tourism/hospitality employment (Chowdhury & Jomo, 2020). The unusual aspect of those impacts was associated with high "speed and level of impacts", "the persistence of impacts in time", and "territorial diverse impacts", because the crisis has exacerbated the pre-existence of poor job security perceptions (Pierce et al., 2020).

The pandemic crisis potentialized employment terminations, a decline in job offers, unemployment, redundancies as well as furloughs (Pierce et al., 2020), and closures (Cheer, 2020). Whilst facing an unprecedented crisis, tourism/hospitality employees, and employers (directors/managers/owners) resilience confronted a set of negative impacts from the pandemic. On the other hand, those high challenges have promoted opportunities to build a new normal (Price et al., 2022).

The crisis also became a moment to innovate and re-think the tourism industry. So, the two strands of the pandemic were the pandemic crisis's challenges and the possibility for a recovery based on more ethical and controlled management (Price et al., 2022). The pandemic crisis was thus a window of opportunity for tourism and hospitality businesses and policymakers to re-imagine how each tourist destination would make sense of the pandemic and its impacts on their business.

The importance of T&T's economic impact on Portugal's GDP and employment is well recognised in the country's development strategy. Before the pandemic, the total contribution of T&T to GDP was 17,1% (in 2019), but it plunged to only 8,7% in 2020, and the total contribution of T&T to jobs of 21,3% (2019) fell down to 18,2% of total employment (2020) (WTTC, 2022). In the year 2021, Portugal has undergone a significant recovery in T&T's total contribution to GDP and employment (with a growth respectively of +21.7% and +6,7%); T&T represented 10.9% of total economy and 18.9% of total jobs (WTTC, 2022). The recovery has continued throughout 2023, being reinforced in 2024 with a T&T contribution expected to reach €54 billion (WTTC,2024). The sector's position as a major economic driver was further cemented by an increase of 24.3% over 2019, representing 20% of the national GDP. The T&T industry sustains 1.14 million jobs, representing a 126,000 increase over 2019 levels.

For the future, by 2034, the sector is predicted to contribute an estimated 22.4% of Portugal's GDP, and about 1.4 million people countrywide, or one in four workers, are anticipated to find work in this expanding industry, which is also anticipated to be a significant source of job creation. (WTTC, 2024)

The economic downturn experienced by T&T in Portugal is used here to justify an assessment of the hospitality industry and labour market in the country's major sun and sea inbound tourist region - the Algarve. In this region, between 2019 and 2020, the European Commission (2021) registered a negative variation in overnight stays of 62, 1%. During 2020, the unemployment rate was 7 %, the highest in mainland Portugal, showing the acute impact of the pandemic on hotels and restaurants (EURES, 2022). Throughout 2021 and 2022, Algarvean tourism and hospitality stakeholders witnessed the industry's recovery (EURES, 2022, 2024).

As per Tavares, Cândido, Caleiras, and Carmo (2021), due to the Algarve region's high dependence on tourism, this was the most impacted region in Portugal, presenting both negative effects on employment and the highest growth of unemployment (namely in Albufeira municipality). This was in accordance with its economic sectorial structure reliant on the region's resources (such as sun and sea), mainly founded on six strategic sectors: hospitality, restaurants and tourism, health, ICT, creative activities, the food industry, and maritime activities (INE, 2020). This dependence on tourism enhances the need for new strategies to overcome the challenges based on a synergetic network of revaluation and development. This is in line with the launch in 2021 of the action plan "Reactivate Tourism - Building the Future" in Portugal and the subsequent launching, in 2022, of new tourism programmes to support businesses and the tourism workforce, namely the Empresas Turismo 360º, Formação +Próxima, and Portugal's Sustainable Tourism Plan 2020-23 (complying with the Agenda 2030 and Portugal's 2027 Tourism Strategy). Presently, the Tourism Strategy 2035 is being designed.

Against the gloomy background recalled above, this paper sets out to investigate how the COVID-19 crisis impacted Algarvean hospitality employment - hotels and restaurants subsectors, during the second lockdown (March-April 2021), as perceived by representatives of four professional categories - employers and employees, respectively of hotels and restaurants. This inquiry illuminated a few aspects of the recovery process, such as: (1) the patterns of perceptions regarding the impacts of COVID-19 on the hospitality employment in the Algarve; (2) how professionals adapted to governmental business management measures and their perspectives on fostering resilience; (3) the tendencies of agreement and disagreement among professional categories regarding the primary impacts and concerns experienced, in order to foster a dialogue on innovative approaches to sustainable tourism employment policy formulation. This conversation will acknowledge the significance of the demands and expectations of hospitality professionals at all hierarchical levels within the industry.

The above objectives opened the way to a discussion of how concepts such as crisis, resilience, organisational climate, and normal vs. transformation interlock. Simultaneously, it supports propositions imparting new evidence in support of the recovery approach (back to normal) versus the sustainability transition approach (repair and prepare) (IDEA Consult, Goethe-Institut, Amann & Heinsius, 2021). The first approach is based on a short-term view focusing on repairing the damage, and it assumes that the hospitality industry was healthy before the COVID-19 crisis. The second approach combines the short-term (repairing the damage) and long-term (preparing for a long-term future) points of view. The repairing-preparing model considers the new normal as part of a long-term transformation by effectively and sustainably addressing the fundamental causes of unsustainability, a transformation that

will make the sector crisis-resistant (IDEA et al., 2021). Additionally, it is important to underline that economic stimulus packages may help to enhance tourism recovery from crises (COVID-19). However, the level of a country's resilience is a fundamental factor (Okafor, Khalid & Gopalan, 2022).

This research aims to analyse how Algarve's (South of Portugal) hospitality (hotels and restaurants) employers and employees perceived the Portuguese government's measures to address the COVID-19 crisis. Using survey data that covers a representative sample of the hospitality industry (hotels and restaurants) in the Algarve, this study applies the Three-Way Data Analysis multivariate statistical procedure, namely the COSTATIS method, which can be considered a more advanced or specialized version of STATIS, offering more flexibility and refinement in handling complex data relationships.

2 THEORETICAL FRAMEWORK

In the literature review, crises and employment/unemployment are frequently interconnected. Since the 1929 Great Depression crisis and the emergence of the Keynesian paradigm, unemployment has been understood as involuntary and the effective demand a major determinant of employment.

Several authors foreseen not only the severe impacts of COVID-19 on employment but also predicted its severity in the short, medium, and long term (Deb & Nafi, 2020; Michálková & Gáll, 2021; Perles-Ribe et al., 2023) because contact-intensive services are at the core of tourism and travel sectors. The shock primarily affected part-time and temporary workers and inflicted profound changes in consumption patterns and business organisations in the tourism sector (Priss & Chukhno, 2021).

The positive correlation between the pandemic crisis with higher levels of qualitative (dangers of weakened quality in labour relationships, such as a reduction in wages, deteriorating work conditions, and loss of insurance) (Maiti, 2023) and quantitative (dangers of an individual's job loss in the near future) aspects of job insecurity (Tan et al., 2020; Talukder et al., 2021) is seen as potentiating negative impacts on employees' attitudes, behaviours and 'work engagement' (Karatepe, Rezapouraghdam & Hassannia, 2021).

Those shocks were felt across the hospitality and its subsectors, being often allied with 'high level of precarity for employees' (Baum, Mooney, Robinson, & Solnet, 2020; Robinson et al., 2019), subemployment, seasonality, as well work-related stress, leading to emotional and mental trauma among employees due to persistent rises in job insecurity (Khan et al., 2021; Dube, Nhamo & Chikodzi, 2021; Raub, Borzillo, Prewritten & Schmitt, 2021; Cepni, Dogru, & Ozdemir, 2023).

This is in line with studies drawing attention to the important role of organisational support and organizational climate (Tsui, 2021) in mitigating anxiety, work stress, depression, and low job satisfaction caused by a crisis or calamity (Watkins, Ren, Umphress, Boswell, & Zardkoohi, 2015; Kim & Niederdeppe, 2013).

In this context, it is important to point out that job satisfaction is recognised as lower among tourism workers and that significant differences exist between factors impacting tourism job satisfaction and the rest of the service sector (Lillo-Bañuls, Casado-Díaz, & Simón, 2018).

Following this standpoint, Huang et al. (2020) suggested that the pandemic raised consciousness concerns about occupational health and safety, knowledge gaps, technology implementation implications, and work restructuring (specifically, in the framework of a deeper complexity of the relationship between labour regulations and efficiency), asking for a sustainable tourism planning and management (Lillo-Bañuls, Casado-Díaz & Simón, 2018; Mamatzakis, Pegkas & Staikouras, 2023). Simultaneously, several studies highlighted the asymmetrical effect of the COVID-19 crisis (e.g., Duro, Perez-Laborda, Turrion-Prats & Fernández-Fernández, 2021), depending on sectorial typology (tourism and culture sectors as the most impacted), territorial dynamic and stakeholder's interconnection (networks amongst the public sector, private tourist companies, and local communities).

In this framework, tourism and hospitality employment in sun and sea tourism-dependent destinations are among the most damaged. The assumption is that further comparison between those types of destinations potentiates a broader understanding of the consequences faced by workers in the sector and the measures adopted to soften these impacts. For instance, regarding Spain and its 50 provinces, Duro et al. (2021) constructed a vulnerability index for COVID-19. They pointed out the importance of indicators related to hospitality, tourism, and leisure sectors, such as intensity and density, the weight of the domestic market, the weight of the closest international markets, the amount of rural accommodation supply, tourism seasonality, and the incidence of the pandemic itself. Addition-

ally, they underline a strong correlation with the actual evolution of employment the association to be positive because tourism accounts for most job losses and ERTEs (Temporary Redundancy Plans) in Spain. According to the findings, the Balearic Islands, the Canary Islands, the provinces containing the two major state capitals (Barcelona and Madrid), and several provinces along the Mediterranean coast rank first in terms of tourist vulnerability.

2.1 Crises and their implications

Faulkner's (2001) Tourism Disaster Management Framework (TDMF) underlines four main phases in the response to crises (and disasters), namely (1) shock at both the individual and the collective level, (2) denial or defensive retreat, (3) an acknowledgement [that it] represents a turning point whereby the community accepts the reality of the change, and (4) adaptation. The last of Faulkner's phases tends to be associated with a concept of "resilience" grown over time to entail overcoming adversity (Altshuler and Schmidt, 2021), particularly in the perspective of preparedness to cope with crises. This may suggest a disaster research theory that is truly interdisciplinary (Kendra, Clay & Gill, 2018).

Because crises have transformational connotations, COVID-19 could be seen as a model and opportunity for attitudinal changes amid hospitality stakeholders in support of hospitality work and hospitality workers (Baum et al., 2020). Crises events have the potential to spur innovation and identify new markets, as well as to have unfavourable effects (Faulkner, 2001). This is in line with aspects of chaos theory, which describes chaos as primarily a creative process instead of a destructive one (Faulkner, 2001).

Resilience is a complex and dynamic concept with several definitions associated with various scientific fields of research (Coaffee, 2013; Khalid, Okafor and Shafiullah, 2020) and "contradictions of scale" (Altshuler and Schmidt, 2021).

However, modern resilience approaches have consistently focused on adaptation and adversity (Țiclău, Hintea & Trofin, 2021). When focusing on the individual level of overcoming psycho-social stress, these two conditions - shock/adversity and positive response - must be present for resilience to manifest. Additionally, organizations shall prove their capacity to respond quickly, forcefully, and transformatively to unanticipated and significant events that could endanger long-term survival (Lengnick-Hall & Beck, 2009).

In an abridged mode, a set of variables may emerge when researchers consider the resilience of a particular sector. Those variables can be associated with the following factors: (a) community background factors (demographic, socioeconomic, political, cultural, organisational, and resource level characteristics), (b) events (factors triggering the cause or causes of the incident); and (c) impact as an immediate and observable result (number of fatalities, and property damage) (Faulkner, 2001).

Due to its multifaced character, the business resilience composite score may consider variables like business size, business situation, impact on turnover, eligibility for government assistance, financial resources, and renting premises, among others (Ntounis et al., 2022). The pandemic exposed underlying weaknesses in the wider tourism economy, once it is mostly composed of small- and medium-sized enterprises (SMEs) and, in the European Union (EU) (European Parliament, 2021), they represent 99% of all business entities. On the above-mentioned business size and situation, Amann and Jaussaud (2012) examined the resilience of Japanese businesses during the Asian Crisis of 1997, exploring the differences between family and non-family businesses. They found that family businesses had "stronger resilience" both during and after an economic crisis compared with non-family businesses. Other categories in connection to "individual" and "behavioral" aspects of crises and resilience emerged in the literature (Förster & Duchek, 2017; Cooper, Flint-Taylor & Pearn, 2013).

Apropos of the tourism and hospitality sector resilience level, some controversy was, however recognised. There is a lack of industrial resilience to significant external shocks, as some academics have noted the devastating impact of crises on tourism (Khalid et al., 2020). There is also the supposition that the tourism industry appears to show little resistance but significant resilience (Huang et al., 2020).

Present investigations into tourism and hospitality industry resilience have explored diverse types of crises, for example, climate change (Becken, 2013) and natural disasters (Aleffi & Cavicchi, 2020; Henderson, 2007; Sydnor-Bousso et al., 2011), economic crashes (Khalid et al., 2020), and terrorist attacks (Chen, 2011). Additionally, disease outbreak impact studies focused on SARS (Ntounis et al., 2022), Ebola, and COVID-19 (Chohan, 2022), amongst others.

Reflecting on the industry context, Norris, Stevens, Pfefferbaum and Wyche (2008) suggested the concept of resilience as a procedure for connecting a group of adaptive skills to a successful course of functioning and adaptation following a disturbance. It is also acknowledged as having the physical and structural capacity to recover from the catastrophe and reinvent itself (Brown, Rovins, Feldmann-Jensen, Orchiston & Johnston, 2017). Consequently, adaptation, survival, and innovation are the three key elements of organizational resilience (Khan et al., 2021). Also, Carvalho, Ribeiro, Cirani and Cintra (2016) researched innovative and non-innovative businesses in Brazil and observed that innovative enterprises are more likely to be resilient and able to maintain higher performance than their peers. The value of planning, problem-solving, and decision-making for developing resilience was further supported by other studies (Sobaih, Elshaer, Hasanein & Abdelaziz, 2021).

Resilience enhancement may also potentially be bolstered through fostering effective, adaptive, and creative leadership (Altshuler & Schmidt, 2021) built on a steady and adaptable attitude. Organizations and networks that have solid relationships in place prior to a crisis and/or strengthen them as the crisis unfolds may have a better chance of obtaining support, information, and limited resources during or after a disaster (Altshuler & Schmidt, 2021).

Zhong, Sun, Law, Li and Young (2022) provided evidence on the relevance of stakeholder's "reaction" to crise in the Chinese tourism industry, namely governments (financial support), business (marketing management), industry (cooperative networks), and employee (relationship management and e-training). OECD (2020:2) has already underlined that "Job retention (JR) schemes" and "ad hoc wage subsidies" are the main "policy tools in many OECD countries to contain the employment and social fallout of the COVID-19 crisis". This fits together with the recognition that risk or uncertainty are constitutive parts of the resilience and sustainability core, which demands an interconnected environment resilience, infrastructure resilience, energy resilience, water resilience, economic resilience, and societal resilience (WEF, 2022).

2.2 Situational evaluation

Resilience has again been categorised as the ability to correctly assess a situation bouncing back and doing better than before (Taylor, 2020). Whereas bouncing back is reverting to the previous situation, it can also evoke the ability to endure and blossom during the crisis (Khan et al., 2021). However, Baum et al. (2020) believed that the pandemic's impact on tourism and hospitality resilience was merely an intensification of routine practices like rapid-fire recruitment and staff reduction based on demand, which were accelerated by the virus's speed and the inability of government initiatives to deal with the social vulnerabilities of workers and communities where tourism is the dominant sector (Ntounis et al., 2022).

On a more upbeat note, Niewiadomski (2020) had already suggested that the global tourism industry was only getting one chance for a re-boot to re-develop in line with the principles of sustainability, fostering, for example, more domestic staycations (Prayag, 2020). Similarly, the impact of the economic downturn on T&T profits could lead to a pause in the global tourism system, enabling the reconsideration of how it operates (Sigala, 2020) and an agenda for a further sustainable and resilient future that is more democratic and inclusive (Carr, 2020). It could mean extra opportunities for social justice with less exploitation (Higgins-Desbiolles, 2020).

Taking context, Fromhold-Eisebith (2015) emphasized that industry sectors have different resilience patterns. New research on contexts of distress in the T&T industry is key to reiterating that enterprises' resilience (planned and adaptive) is a supportive tool for sustainable development (Fatoki, 2018). Consequently, it is crucial to identify both internal and external factors that influence the link between company resilience and sustainable tourism (Price et al., 2022). Planning, managerial expertise, creativity, and invention are examples of internal elements. Governmental support and a nation's economic performance are examples of external influences (Fatoki, 2018).

2.3 Organisational climate

Denison (1996) compared organizational climate and organizational culture and noted that climate researchers are more interested in how organizational systems affect both groups and individuals. Climate researchers tend to place emphasis on organizational members' perceptions of visible routines and modus operandi that are nearer to the organizational life surface. But whereas climate alludes to an objective collection of organizational conditions it also signifies climate as the personal interpretation of individual and organizational attributes.

Managers who believe that their workplace fosters participation in decision-making and tolerates innovative behaviour are likely to be happier and perform better. The reason for this is that organizational climate normally depends on an individual's perceptions of a particular scenario (Pettigrew, 1990).

Early studies proposed that six factors influence organisational climate, and those are: (1) perceptions of the magnitude of organisational constraints, rules, and regulations; (2) individual responsibility as a sense of autonomy; (3) feelings associated with confidence and being appropriately rewarded; (4) perceptions of the grade of challenge and risk in the work situation; (5) feeling of general good fellowship and helpfulness predominant in the work location and (6) degree of assurance that the organizational climate can tolerate and endure, divergent opinions (Litwin and Stringer, 1968).

The perceptual measurement of individual and organizational attributes, as well as the multiple measurements of organizational attributes combining perceptual and more objective measurements, can all be applied to the study of organizational climate (Denison, 1996). According to Manning et al. (2012), psychological climate may be operationalized as the psycho-social environment at a person's place of work. Climate has been conceptualized as the culture's outer layer in tourism and hospitality literature (Gamage & Tajeddini, 2022).

Whereas organizational culture refers to what characteristics of a firm most motivate an employee or a manager to work there and the values that they believe are most prevalent in that firm (Arz, 2019). Organizational climate is thus an intangible concept referring to the workplace psycho-social environment contributing to organizational success and employee satisfaction. Regarding employees of franchise hotel branches in Taipei City, Tsui (2021) demonstrated a significant association between job stress, wellness, and organizational climate in the hospitality industry.

Patterson et al. (2005) discussed 17 scales of the Organizational Climate Measure (OCM), which were not specifically developed from responses of hospitality industry employees but relied on the views of manufacturing industry employees. Such scales could, however, prove helpful in explaining the perspectives of hotel and restaurant managers and employees during the COVID-19 crisis context because they rely on fundamental constructs for the building of resilience. Those constructs are "Autonomy, Integration, Involvement, Supervisory support, Training, Welfare, Formalization, Tradition, Innovation and flexibility, Outward focus, Reflexivity, Clarity of organizational goals, Efficiency, Effort, Performance feedback, Pressure to produce, and Quality" (Manning et al., 2012, p.3).

3 METHODOLOGY

This research aims to analyse how Algarve's hospitality (hotels and restaurants) employers and employees perceived the Portuguese government's measures to address the COVID-19 crisis. The objective was to acknowledge perceptions of COVID-19 impacts on the Algarve hospitality employment, as well as to determine how professionals coped with government measures at the start of the COVID-19 crisis and how business management perceived the need to build resilience. Accordingly, a literature review was undertaken with attention to articles associated with the COVID-19 pandemic crisis, tourism/hospitality employment, and resilience. The review was followed by empirical research based on a questionnaire applied to 72 hotels and restaurants Algarvean professionals during March and April 2021. The data were analysed using a Three-Way Data Analysis multivariate statistical procedure, namely the COSTATIS method, which can be considered a more advanced or specialized version of STATIS, offering more flexibility and refinement in handling complex data relationships.

Applying the COSTATIS method in this study on the impacts of COVID-19 in hotel and restaurant employment across the Algarve has three specific objectives. First, it made it possible to determine behavioural patterns in the responses of sector professionals on how they dealt with government measures and business management during the pandemic period. Knowledge of such behavioural patterns helped the researchers to identify strategies adopted by professionals to face the challenges posed by the health crisis. It also allowed observing how professionals perceive the building of resilience in the hotel and restoration sectors, which made it possible to understand approaches and perspectives on overcoming obstacles and adapting to new realities in the pandemic context. Finally, it helped to recognize trends in agreement and disagreement within different professional categories, which made it possible to identify impacts and concerns shared by professionals, as well as divergent points of view. In summary, the application of the COSTATIS method achieved a more comprehensive understanding of the perceptions of professionals in the hospitality sector, on the impacts of COVID-19 in the Algarve, providing valuable insights for future strategies and decision-making processes.

In accordance with this, it is important to emphasize that even if the results of the COSTATIS method may seem descriptive, this does not necessarily mean that they are poorly interpreted and that they cannot be used to provide useful information.

3.1 Simultaneous Analysis of K Data Matrices

The measurement of a variable over a set of individuals allows no more than the construction of a vector of observations with a single entry or path, the individuals. If a set of variables is considered, the information is organized in a data matrix, and two paths are obtained, one for the individuals and the other for the variables. If, additionally, repetitions are performed for each of the data matrices on different occasions or experimental conditions, a three-dimensional data structure is configured. That is, a Three-Way structure is created with individuals, variables, and occasions in K matrices.

Kiers (1988, 1991) conceived that these Three-Way structures correspond, in their most simplified form of data organization, to Cubic or Triadic Data structures. In such structures, observations of the same set of individuals are measured in the same set of variables at different times.

Three-Way Data Analysis has the fundamental purpose of detecting similarities and/or differences observed on several occasions in the behaviour of individuals and variables. This approach captures stability or instability as well as changes in the internal structures of the data "cubes". In other words, behavioural patterns are detected.

3.2 The STATIS and COSTATIS Methods

STATIS and COSTATIS are methods used in multivariate analysis, specifically for analysing and interpreting data from multiple tables or datasets. However, the differ in terms of their application, the type of data they handle, and the way they approach the analysis (Bénasséni & Bennani Dosse, 2012).

The STATIS method is a symmetric exploratory procedure to analyse the stability of the relationships between the structures of a series of data matrices. COSTATIS (Component-wise Optimization of STATIS) is an extension of STATIS. It introduces an optimization process that takes into account the variability in the tables while also ensuring the maximization of the inter-table correlation. COSTATIS involves a more complex formulation, where different components of the tables are analysed separately but in a coordinated manner (Sabatier & Vivien, 2008).

3.2.1 The STATIS method

STATIS stands for "Structuration des Tableaux A Trois Indices de la Statistique" (Structured Analysis of a Table of Intra-Table Similarities) (Stanimirova et al., 2004), is a method used for analysing multiple tables (or datasets) that represent the same set of objects (e.g., individuals, items, locations) measured on different variables or under different conditions. It is based on the principle of optimizing the joint configuration of the data tables. STATIS maximizes the common structure across datasets. The purpose of STATIS is to thus to enable a joint analysis of multiple datasets with common objects. STATIS typically uses Principal Component Analysis (PCA) or similar techniques to maximize the variance shared across datasets (Corrales & Rodríguez, 2014).

At the genesis of the STATIS method stand two approaches to Three-Way Data Analysis, that of the French school, which highlights methods such as the Double Analysis in Principal Components (Bouroche, 1975; Escoufier, 1973; L'Hermier des Plantes, 1976; Lavit, 1988; Lavit et al. 1994), and the Multiple Factor Analysis of Escoufier and Pagès (1985). In the field of tourism and hospitality, the STATIS method facilitated the study of competitiveness in Portugal´s regions by means of business performance (Peixoto, 2021). The STATIS methods was also applied to the study of safety and security in the Algarve (Castela, Fé Bras & Silva, 2020).

The method is based on Euclidean vector spaces and compares configurations of individuals or variables on different occasions to detect a common, stable, and representative structure of all data matrices. The STATIS method is carried out in three phases: Interstructure Analysis, Compromise Analysis, and Intrastructure analysis, that is: (1) Interstructure Analysis consists of a global comparison of data matrices to identify similarities and/or differences, not identifying the individuals and/or the responsible variables; (2) The representation of the Interstructure in a factorial plan makes it possible to assess the possibility of establishing a Compromise matrix which, as its name implies, is a matrix that characterizes a structure common to the original series and representative of all data matrices; (3) The definition of compromise, in turn, makes possible the Euclidean representation of the "positions" of the different individuals. In other words, by detecting the associations between the variables and the individuals, it becomes possible to interpret the "positions" of individuals in the compromise space regarding the similarities/differences between the original variables, finally leading to the identification of those responsible for the Infrastructure Analysis. Lastly, from the compromise space, the trajectories that describe the evolutionary behaviour of each individual or each variable are traced.

3.2.2 The COSTATIS method

COSTATIS optimizes each dataset's component independently while considering their contribution to the overall data structure. COSTATIS is useful when dealing with more complex situations where datasets vary more in terms of the objects or variables and where it's important to consider different components of the data independently. The method thus involves a more refined optimization approach that considers specific relationships and aims to preserve the overall structure while focusing on the individual components of the data.

Santos, Ribeiro, Castela and Da Silva (2017) used the COSTATIS approach to explore the dynamics between economic growth and living standards in EU countries. Medina-Hernández et al. (2021) worked with COSTATIS to promote a multiway data analysis of gender inequalities in time use in Colombia. Medina-Hernández et al., 2024) again applied a multi-way analysis to study Sustainable Development Goals.

COSTATIS efficiently inspects large datasets and its coherent interface that allows for easy interpretation of results. Additionally, the method has been shown to reduce the time and resources required for data analysis compared to traditional methods. Thioulouse (2011) highlighted some advantages of the co-inertia analysis of the compromises of two k-table analyses. Because it is based on k-table methods and co-inertia, it benefits from the advantages of STATICO (STATIS and COinertia) and Between-Group Co-Inertia Analysis (BGCOIA). It has the same optimality properties of k-table analyses as STATICO (i.e., the maximizing properties of the compromise), but it retains the simplicity of BGCOIA. Vega-Hernández and Patino-Alonso (2021) identified other reasons for preferring COSTATIS as a method of analysis, such as because it is an eigendecomposition technique that considers the whole space. An eigen decomposition is a way of breaking down a matrix into its constituent parts, such as eigenvectors and eigenvalues. This process is commonly used in linear algebra to simplify complex calculations and better understand the behaviour of a matrix. Peixoto (2021) preferred COSTATIS as a method to diagnose hotel businesses in the Algarve because traditional statistical methods applied in the study of real phenomena of nature multivariate fail to capture the changes that simultaneously occur in the behaviour of the analysed variables. To overcome this limitation, the methods of Multivariate Data Analysis introduced developments in research using multiple datasets and multidimensional structures that detect the dynamics underlying the analysis of all the variables involved. Table 1 condenses the main steps involved in the analysis to facilitate the grasp of the COSTATIS application which optimised datasets independently while coordinating them

Table 1 - COSTATIS - Methodological steps

1	Two three-dimensional structures of data (X and Y) are individually prepared. In other words, you prepare data structures for subsequent simultaneous analysis of two matrix sequences, with the same p or q variables, for all k repetitions and with the same n individuals in both Series.
2	Two PTAs are used simultaneously to calculate two commitment matrices in relation to X and Y. That is, the stability of or the instability in the two sources of information.
3	"Couple" the two commitments through a CIA, which provides an average picture of the existing cost structure. That is, through the cross-covariances (Z) matrix, the interrelationship between these two compromises is analysed to measure differences or similarities.
4	Explain the relationships that are established between the perceptions of the crisis and the professional positioning of managers and employees in the hotel and hospitality sector with the help of the method used. The knowledge and mastery of these relationships will enable politicians in Portugal to use a powerful decision-making tool applied to management.

By explaining relationships between variables used throughout the COSTATIS approach, policymakers can formulate their future decisions on the tourism business in critical times based on reliable results because the behaviour of the variables under study during the COVID-19 crisis will disclose important relations involving tourism and hospitality managers and employees during critical times in the Algarve.

4 RESULTS

In order to acknowledge perceptions of COVID-19 impacts on the Algarve hospitality employment (see Table 2), a questionnaire was applied. Seventy-two professionals in the region have answered.

Table 2 - Questions from the questionnaire presented to hospitality professionals in the Algarve

	Label
Has the pandemic had an impact on your employment situation	IPES
Closed	C
Open	O
Decrease in revenue	DR
Employee dismissals	ED
Decrease in employee working hours	DEWH
Paid dismissal from work	PDW
Telecommuting adoption	TA
Layoff adoption	LA
Flexible hours	FH
Increased autonomy at work	IAW
Decrease in new hires/contract renewals	DNHCR
Decreased career advancement opportunities	DCAO
Improved hygienic conditions at work	IHCW
Improved safety at work	ISW
Cut in costs	CC
Decrease in service quality	DSQ
Decreased quality in interpersonal relationships between staff and their hierarchical superiors	DQIRSHS
Decrease in the quality of relationships between co-workers	DQRCW
Degradation of the work environment	DWE
Increase in working pressure	IWP
Employee emotional stress	EES
Employees unable to work due to being infected by COVID-19	EUWI
Recourse to State funding	RSF
Fast recovery (2nd half of the year 2021)	FR21
Medium-term recovery (year 2022/year 2023)	MTR
Long-term recovery (from 2024)	LTR24

Source: Own elaboration.

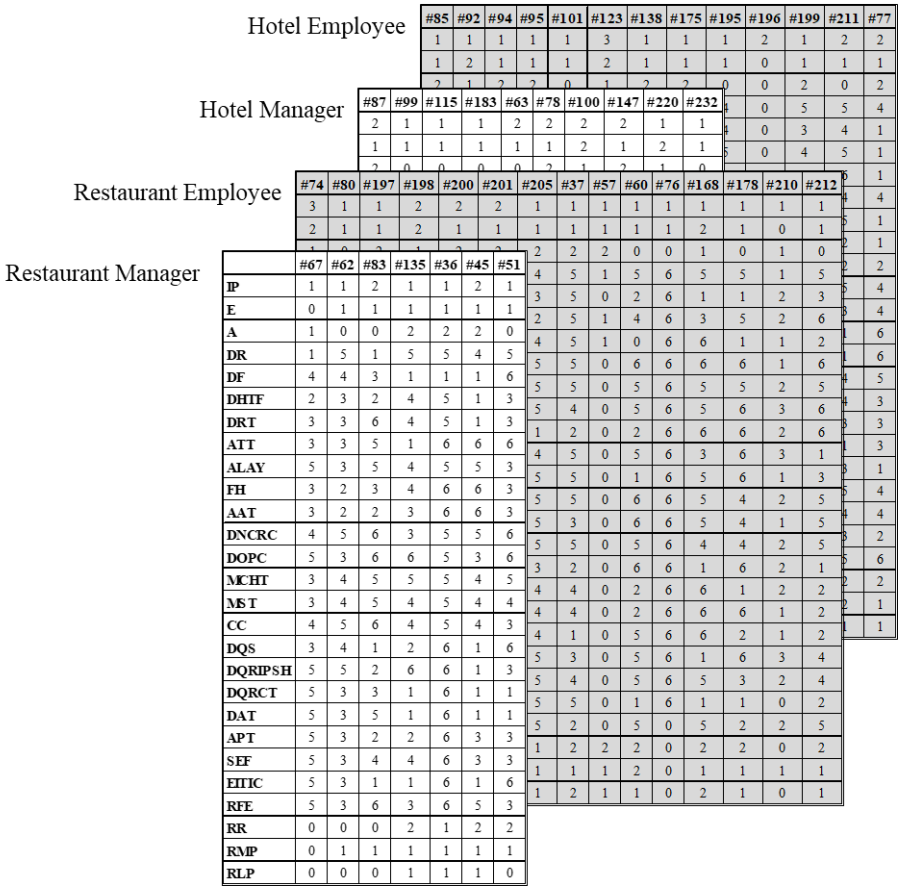
However, only 45 questionnaires were validated due to the proportion of non-answers obtained. The information collected was organized according to four professional categories of the hospitality sector: (1) restaurant manager, (2) restaurant manager, (3) hotel manager, (4) hotel employee (Table 3) and later arranged in a Three-Way structure as shown in Figure 1, in which the lines present the 27 perceptions collected, the columns represent the 45 respondents, grouped into the four professional categories, which permitted the construction of a Three-Way structure.

Table 3 - Profiles of professionals in the hospitality sector in the Algarve

	Restaurant Manager (n = 7)	**Restaurant Employee (n = 15)**	**Hotel Manager (n = 10)**	**Hotel Employee (n = 13)**
Sex	Male	Male	Male	Male
Age	38 to 47 years	16 to 27 years	38 to 47 years	16 to 27 years
Marital Status	Married	Single	Married	Single
Locality of work	Loulé e Olhão	Olhão	Loulé	Albufeira
Education level	Secondary	Secondary	Graduation	Secondary
Years of Experience	more than 10 years	1 to 5 years	more than 10 years	1 to 5 years
Net Monthly Salary	600 to 800 €	600 to 800 €	800 to 1500 €	600 to 800 €

Source: Own Elaboration.

Figure 1 - A Three-Way structure with four studies

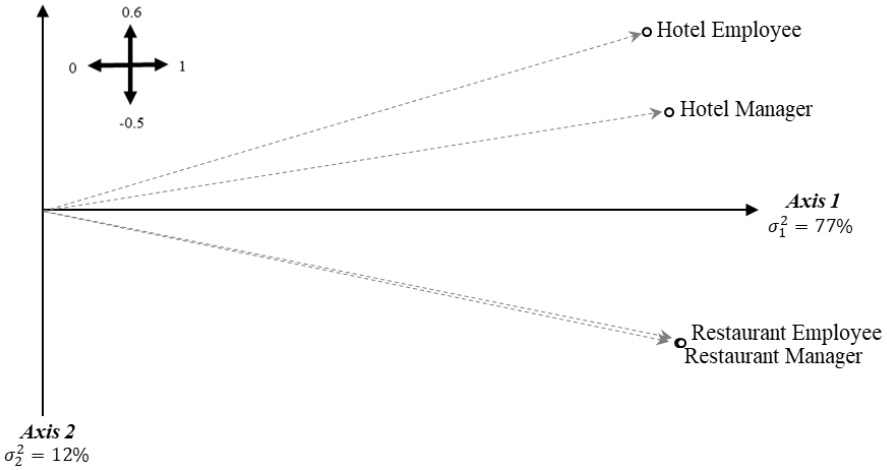


Source: Own Elaboration.

4.1 Interstructure Analysis

Through the Escoufier vector correlation, coefficients were obtained from the data structure (Figure 1), and it was possible to recognize clear differences in the four studies relating to managerial and subordinate professional categories in hotels and restaurants. The perceptions in the hotel subsector diverged from those in the restaurant subsector, as shown in Figure 2. However, along the horizontal axis characterised by the greatest inertia, with 77% of interpretability, it was observed that managers and employees in the food subsector were the most correlated with each other, scoring above managers and employees in the accommodation subsector. Therefore, perceptions regarding COVID-19 impacts on the Algarve hospitality employment seem to be more similar among restaurant professionals and less similar across hotel professionals.

Figure 2 - Euclidean Representation of the Interstructure



Source: Adapted from MultiBiplot.2016 outputs (Vicente-Villardon, 2025).

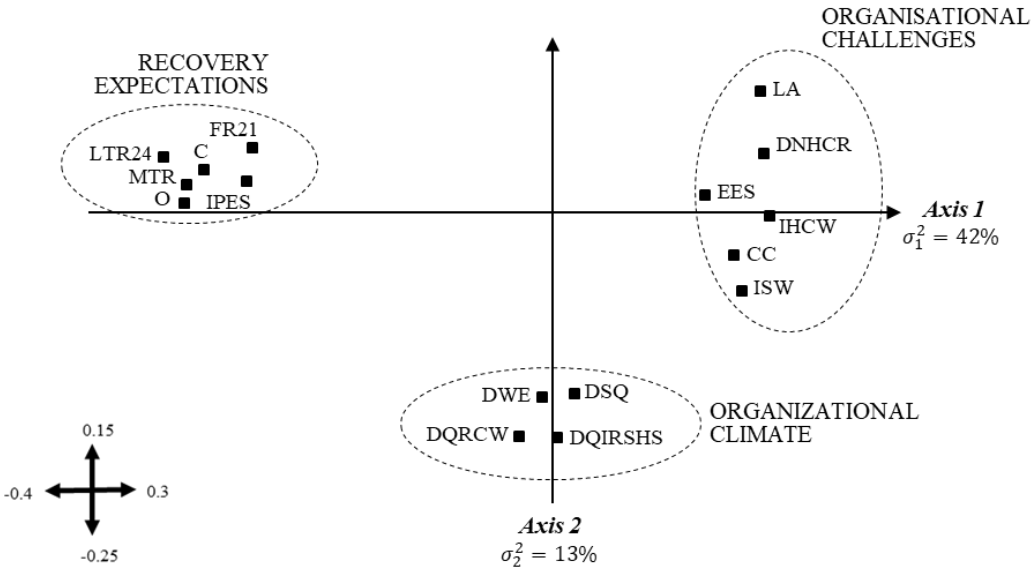
In summary, the analysis detected a stable interstructure in terms of the four studies being explored. This analysis demonstrated that perceptions of crisis management across the accommodations and food sectors require tailored and targeted solutions.

4.2 Compromise Analysis

A compromise analysis facilitated the study of similarities and differences detected in the answers given by 45 respondents (Table 3) to 27 survey questions submitted to them (Table 2). In calculating the compromise matrix, only the responses that contributed the most to the Euclidean representation were considered. Thus, 16 responses were considered in the reproduction of the compromise matrix in a factorial plan (Figure 3) that revealed the existence of three patterns in the perceptions of hospitality professionals:

- Pattern 1: associated with Axis 1 and located in the 1st and 4th quadrants, was formed by six types of perceptions: Layoff adoption (LA), Decrease in new hires/contract renewals (DNHCR), Employee emotional stress (EES), Improved hygienic conditions at work (IHCW), Cut in costs (CC) and Improved safety at work (ISW). With an interpretability of 42%, a high similarity between these perceptions was perceptible, which permitted the researchers to designate this pattern as ORGANISATIONAL CHALLENGES.
- Pattern 2: also associated with Axis 1 and located in the 2nd and 3rd quadrants, was formed by six other types of perceptions: Fast recovery (2nd half of the year 2021) (FR21), Closed (C), Long-term recovery (from 2024) (LTR24), Medium-term recovery (year 2022/year 2023) (MTR), Open (O) and Has the pandemic had an impact on your employment situation? (IPES). Likewise, with an interpretability of 42%, a high similarity between those perceptions of the pandemic impact on the hospitality sector was observable, which allowed the researchers to designate the pattern as RECOVERY EXPECTATIONS.
- Pattern 3: related to Axis 2 and located in the 3rd and 4th quadrants, a 3rd pattern was detected as being formed by four other types of perceptions: Degradation of the work environment (DWE), Decrease in service Quality (DSQ), Decreased quality in interpersonal relationships between staff and their hierarchical superiors (DQIRSHS) and Decrease in the quality of relationships between co-workers (DQRCW). With a residual interpretability of 13%, a high similarity between these perceptions was evident, which allowed the researchers to denominate this pattern as ORGANIZATIONAL CLIMATE.

Figure 3 - Euclidean Representation of the Compromise



Source: Adapted from MultiBiplot.2016 outputs (Vicente-Villardon, 2025).

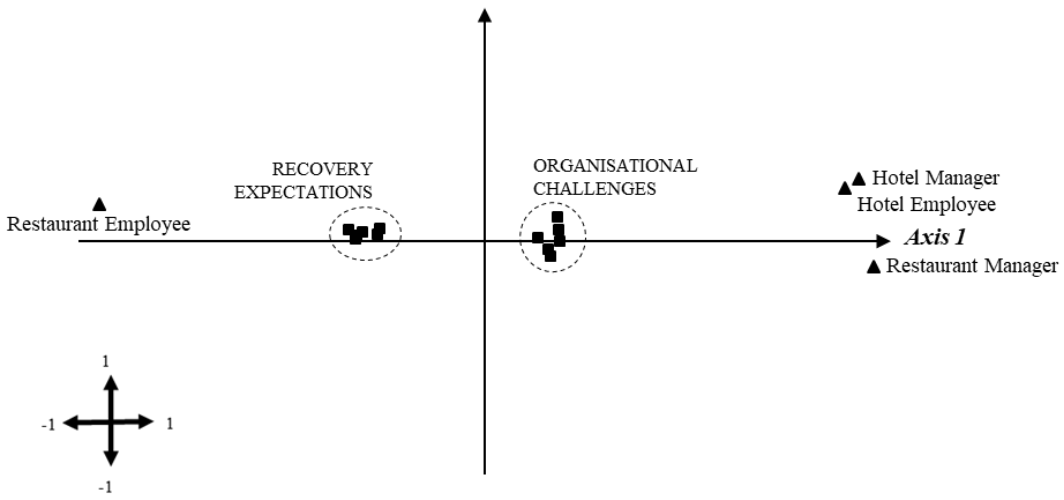
In summary, the perceptions regarding COVID-19 impacts on the Algarve hospitality employment were interpreted in terms of responses given by representatives from 4 professional categories through two different perspectives of analysis, one about ORGANISATIONAL CHALLENGES & RECOVERY EXPECTATIONS and the other about ORGANIZATIONAL CLIMATE.

4.3 Intrastructure Analysis

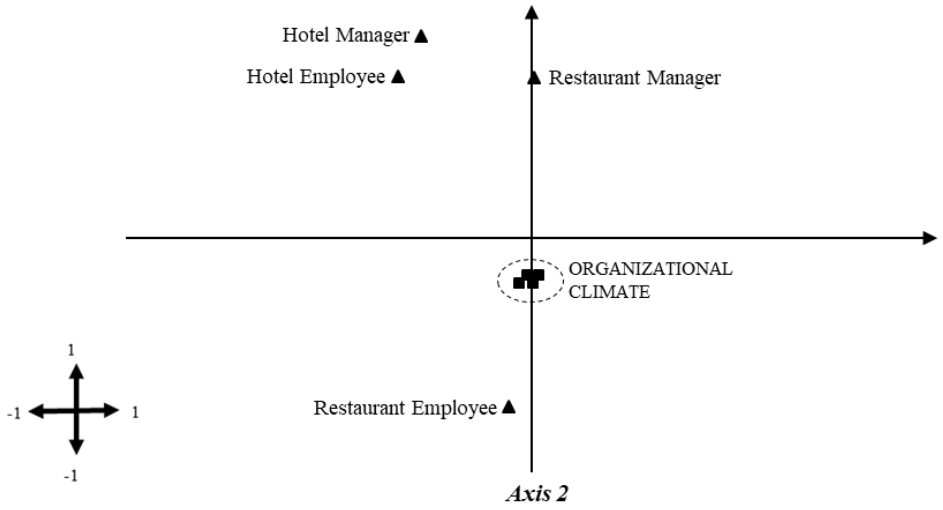
Pertaining to an intrastructure analysis, this analysis detected associations between the four studies and the three patterns detected in the professionals' perceptions of the crisis. With the projection of the four studies of professional categories into one compromise space, it was possible to observe the consistency of the three perception patterns. Through a summary of the most significant correlation coefficients among the professionals, it is possible to observe in **Figure 4** the associations that individuals displayed, with three detected perception patterns. To establish an explanation of the consistency of these associations, **Figures 4A** and **4B** display two certainties: a) – certain professional categories contributed the most to the existence of these three patterns of perceptions of crisis, and b) - Positions of agreement and disagreement had to have the professional categories among themselves.

Figure 4 -Intrastructure analysis

A: Correlations among the separated studies and the Axis 1 of the compromise Euclidian space



B: Correlations among the separated studies and the Axis 2 of the compromise Euclidian space



Source: Adapted from MultiBiplot.2016 outputs (Vicente-Villardon, 2025).

In summary, vis-à-vis COVID-19 impacts on the Algarve hospitality employment, the accommodation professionals and the restaurant managers contributed more to the dimension of the ORGANISATIONAL CHALLENGES perceptions, and the restaurant employees converged more with the RECOVERY EXPECTATIONS and ORGANIZATIONAL CLIMATE perceptions. For both sectors, managers' perceptions were similar, and employees' perceptions differed from each other depending on the type of establishment they worked for.

4.4 Supplementary Data

Additionally, professionals' opinions were collected on the main concerns related to COVID-19 impacts on the Algarve hospitality employment through open questions. Those opinions are described in Table 4, which lists the most mentioned concerns regarding their work, which the pandemics triggered.

Table 4 - Individuals' main perspectives on the COVID-19 impacts

	Restaurant Manager	Restaurant Employee	Hotel Manager	Hotel Employee
Can you mention the **main threats to employment in the company where you work** (or worked) owing to the pandemic?	**Job Insecurity**			
	0%	17%	17%	**67%**
Can you mention **the main threats to employment in Algarve's** hotels and restaurants owing to the pandemic?	**Losing job in the short or long term**			
	0%	**50%**	17%	33%
The fact that Algarve is a **seasonal employment** destination, **how has this influenced employment during the pandemic?**	**Negative impact of seasonal job**			
	13%	**38%**	13%	**38%**
What are your **expectations regarding the 2nd lifting of lockdown measures compared to the 1st**?	**Business Reopening Positive Perceptions**			
	0%	**50%**	10%	**40%**
	Business Reopening Negative Perceptions			
	25%	25%	0%	**50%**

Source: Own Elaboration.

Table 3 presents evidence that, for the most part, the hotel employees felt more threatened by Job Insecurity in their workplace, and the restaurant employees felt more threatened by the thoughts about Losing jobs in the short or long term due to the pandemic. However, both employees consider the existence of a Negative impact of seasonal jobs during the pandemic. Regarding the 2nd lifting of lockdown measures compared to the 1st, the employment

expectations were mainly related to Positive Perceptions of Business Reopening. On the other hand, the restaurant managers showed residual concerns about Business Reopening Negative Perceptions.

5 CONCLUSION

This study implemented an exploratory approach that is normally used to investigate phenomena or problems when there is a lack of prior knowledge or when a broader understanding of a given topic is desired. Unlike deductive or confirmatory studies, this type of investigation does not start from pre-established hypotheses. Instead, it allows for capturing information and identifying patterns, trends, or relationships that would not have been considered initially, thus leading to new hypotheses and insights on the subject under study.

Accordingly, this study's single goal covered three different facets of the post-pandemic recovery in the Algarve's hotel sector: (1) trends in the way professionals in the hotel industry responded to government regulations and company management during the pandemic; (2) how experts saw the development of resilience in the hospitality and catering industries and (3) patterns of agreement and disagreement across many professional domains. In this sense, this research based on a COSTATIS Three-Way Data Analysis was able to capture both stability and change to the internal structures of the data and suggested that the COVID-19 crisis event triggered significant convergences between hotel managers, hotel employees, and restaurant managers who associated resilience to surmounting Organisational challenges. This pattern 1, which resonates with a sustainability transition approach (also known as "repair and prepare") or transition to a new normal, assembled a degree of concordance around the positive aspects of layoff adoption (LA) and the need to prepare professionals in the accommodations and food establishments for a decrease in new hires/contract renewals (DNHCR) due to a need to implement a cut in costs (CC). Part of the organizational challenges was to heal Employees emotional stress (EES), to provide Improved hygienic conditions at work (IHCW), and to offer Improved safety at work (ISW). This set of issues was responsible for an interpretability of 42% of how professionals viewed the crisis allied to a sustainability perspective, as defined by the OECD (2020) Building Better Sustainable, Resilient Recovery. An enhanced "quality of life" is the goal of UNESCO's paradigm for future thinking, which balances societal, economic, and environmental concerns (Huang et al., 2020).

Conversely, data analysis procedures also generated evidence of divergence between three professional categories (Hotel managers, Hotel Employees, and Restaurant Managers) in contrast to restaurant employees who associated expectations of recovery in the short term with visions of going back to normal via reactive emergency measures.

The distance between hotel managers, hotel employees, and restaurant managers was again confirmed with regard to the positioning of those professionals along another dimension called organisational climate regarding its subdimensions (such as autonomy, integration, involvement, supervisory support, training, welfare, innovation, and flexibility, outward focus, reflexivity, clarity of organizational goals, efficiency, effort, performance feedback, pressure to produce, and quality). Adopting a sociological perspective, it is possible to say that the organizational systems across restaurants in the Algarve have different impacts on the group of restaurant employees and managers. The crisis thus exposed a gap separating distinct mentalities regarding the organizational climate during the COVID-19 crisis, which needs to be assessed in the post-pandemic phase.

It is fair to say that the organizational climate similarly impacted hotel managers and hotel employees, signalling a more integrated or solid organizational climate across hotels. Issues on the impact of organizational climate on performance, leadership style, and job satisfaction of restaurant managers and employees would need further study. It is possible that as family businesses are well represented in the restaurant sector across the Algarve, family business managers may be failing to promote their organization's climate to support participation in decision-making. There is a need to explain whether restaurant intolerance is producing disillusioned amid employees keen to adopt innovative behaviours to solve critical problems. Intolerance could deter both satisfaction and performance levels in future critical moments and encourage job migration.

This study uncovered a few interconnections between short-term views of crisis, resilience, innovation, and return to normality as compared with long-term systemic change or transformation, which seems to be more perceptible to professionals in the hotel industry as well as perceptible to restaurant managers.

The lessons learnt from the study can help us stress the significance of resilience in handling crises and disasters. Although a framework of fiscal, budgetary, legal, and sanitary laws is essential during times of crisis, it is also essential to improve the quality of services, relationships with coworkers, and the working environment in order to overcome organisational challenges. This will lead to the growth of sustainable tourism.

Another contribution of this study derived from applying COSTATIS analyses to outline perceptions of resilience amongst hospitality professionals. As established, those perceptions concern organizational challenges, recovery expectations, and organizational climate, which hospitality business management must consider in the future. The results demonstrated the importance of the betterment of organizational climate as a source of resilience, akin to ideas of human-centered transition.

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