



# The Impact of Information and Communication Technologies on Hotel Competitiveness: a study in Inhambane and Macaneta, Mozambique

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**ABSTRACT:** This study aims to analyze the use of Information and Communication Technologies (ICT) as a competitiveness factor by hotel companies located in Inhambane and Macaneta, Mozambique. This is a descriptive study with a qualitative approach. For data collection, a semi-structured interview script was used, which was applied to ten hotel managers from Inhambane and Macaneta (five participants in each case). The data was analyzed using categorical content analysis. The results showed that the interviewees recognize the importance of technology for the hotel's competitiveness, but do not use software, limiting themselves to simpler programs. It was found that Wi-Fi services and the use of social networks are perceived as sources of competitive advantage in the context investigated. The research points to practical contributions that shed light on the need to make resources available for the application of ICT in the hotel sector.

**Keywords:** Hotels;  
Competitiveness;  
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## INTRODUCTION

Information and Communication Technologies (ICT), especially in the context of hospitality, are relevant to the functioning of the industry since they are customer service-oriented. In this sense, Ip, Leung, and Law (2011) argue that for hotels to remain competitive, they need to understand the advantages of ICT and take advantage of its benefits. Therefore, the appropriate use of ICT can favor the competitiveness of hotels, improving their market share and standing out among competitors (Hua, 2020).

A portion of the study on this subject is devoted to analyzing the relevant literature. The study by Bauer et al. (2020) investigated the use of ICT in museums and found that is beneficial for comprehending visitor behavior. ICT improves communication with tourists and helps to promote tourist destinations, according to Medeiros, Sousa, and Mendes (2021). Studies in this field concentrated on the perspectives of suppliers and consumers, as demonstrated by Soares et al. (2022). In a different approach, the study by Bonfim, Velasquez, and Leal (2019) showed that hotels may employ ICT as a sales channel strategy. In turn, the research by Oliveira and Batista (2022) revealed that these technologies also influence the choice of collaborative lodging facilities.

Researchers in the area have previously produced scientific papers involving ICT in the context of tourism, but the study of its impact on hotel enterprises' competitiveness still has gaps. It is considered relevant to investigate this issue given that these technologies if applied effectively, can improve the quality of the hotel business, as well as contribute to market forecasting and revenue management (Napierała et al., 2020).

In Inhambane and Macaneta, Mozambique (locus of the research), investment in the hotel sector is evident through the emergence of new infrastructure and ongoing projects. The intense competition in this sector means that investors are looking for new ways to manage their businesses to improve service provision and, consequently, satisfy customer needs. In this scenario, it is believed that the introduction of ICT is an important tool for optimizing the services provided, boosting the competitiveness of the local hotel industry.

The locus of the research also stands out due to its potential for attracting tourists. Tofo Beach and Barra Beach are two popular tourist destinations in the province of Inhambane that draw visitors searching for warm water suitable for surfing. On TripAdvisor (2022), Praia do Tofo has an overall score of 4.5, with 168 excellent reviews. In Macaneta, the main attraction is the beach of the same name, with very rough seas and strong winds. Macaneta Beach is approximately 40 kilometers from the capital Maputo.

Given this context, this study aims to answer the following question: How do ICTs impact the competitiveness of hotels in Inhambane and Macaneta, Mozambique? The aim of the research is therefore to analyze the use of ICT as a competitiveness factor by hotel companies located in Inhambane and Macaneta, Mozambique.

On the one hand, this research contributes to verifying how the competitiveness of hotels can be influenced by technologies, that will be increasingly inherent in tourism and hotel business. On the other hand, it contributes to the sector's managers giving greater importance to the proper application of ICT in lodging establishments, since they can serve as a significant source of competitive advantage for the enterprise. In addition, it is believed that this study can promote literature about hotels, technology, and competitiveness in the context of developing countries such as Mozambique. Considering that the adoption of technology by the hotel sector is increasingly intense, it seems relevant to assess how this dynamic manifests itself in places that do not yet have consolidated infrastructure and technological capacity.

## THEORETICAL FRAMEWORK

### ICT in the context of tourism

For Gössling (2021), ICT makes it possible to navigate tourist life. This is because, according to the author, these technologies make it possible to understand tourist behavior in greater depth. He points out that ICT can be used to observe various aspects of tourism consumption, such as customer preferences, purchasing behavior, personal data, economic status, and personality. Bethapudi (2013) highlights online bookings as one of the possibilities offered by ICT in the tourism context. In the author's view, they become relevant in this scenario because travel is one of the most important things in terms of tourism. It is therefore necessary to allow these technologies to be widely used in the sector.

The study by Adeola and Evans (2020) showed that ICT has a positive effect on increasing tourism demand. Thus, the use of these technologies allows destinations to increase their online presence, which is necessary to be competitive. Kumar and Kumar (2019) also identified that technology boosts tourism demand. According to the authors, the development of ICT improves the infrastructure of the place, improving the arrival of visitors.

Research by Ali and Frew (2014) revealed that these technologies are innovative for managing and distributing information for decision-making in tourism. They also help with marketing and communication manage-

ment at destinations. Analyzing the role of ICT in tourism management, Pierdicca, Paolanti, and Frontoni (2019) argue that technological resources are useful for obtaining information about tourists' preferences and needs. Berné et al. (2015) found that ICT favors the performance of tourism businesses in distribution channels, as it allows for an increase in the intensity and number of relationships between members.

In the view of Mandić and Praničević (2019), ICT affects marketing and management in tourist destinations to the extent that it contributes to innovation, sustainability, and accessibility. Likewise, Ivars-Baidal et al. (2019) argue that destination management is evolving towards a technological landscape. Therefore, the implementation of ICT must consider the needs and possibilities of local management.

The study by Soares et al. (2022) conducted a systematic review of the scientific production on the subject and identified that research is divided into a few classes: consumers, analyzing customer behavior, purchase intention, and quality assessments; suppliers, assessing the use and impact of ICT and their potential as working and organizational tools; and destination management, investigating the management of tourist locations' different elements. The authors also state that studies in this area are important for assessing the impact of technologies on society, tourists, destinations, and companies in the tourism sector. Table 1 summarizes the studies covered on this topic.

Table 1 Summary of studies on ICT in tourism

Authors	Key ideas
Bethapudi (2013)	Online reservations are one of the main technological resources in tourism.
Ali and Frew (2014)	ICT in tourism helps to manage and distribute information for decision-making.
Berné et al. (2015)	ICT favors the performance of tourism businesses in distribution channels.
Mandić and Praničević (2019)	ICT affects marketing and management in tourist destinations, as it contributes to innovation, sustainability, and accessibility.
Gössling (2021)	ICT makes it possible to understand tourist behavior in greater depth.

Source: Research data (2021).

Considering the above, ICT in the context of tourism plays different roles, from planning to destination management. In this way, they can be applied to multiple facets of the sector, bringing benefits for more effective

management of tourism elements. In this study, it is proposed that these technologies can influence the competitiveness of hotels, which is discussed in the next topic.

### Technologies for Hotel Competitiveness

Although it is a more obvious aspect these days, the study of technologies in the hotel sector is not new. This is because research on the subject began to be published as early as the 1980s. Sheldon (1983) stated that the use of technology by the hotel industry would certainly grow in the future. In addition, Pine (1992) pointed out that the use of ICTs by hotels could only be achieved if there was proper training and qualification of staff, as well as preparation of managers. In this way, the simple application of technology does not guarantee superior performance in hotels, as other factors need to be considered.

Competitiveness in hotels based on technology was highlighted in the study by Tsai, Song, and Wong (2009). For the authors, ICT provided it is integrated into the company's strategy, can be seen as a source of competitive advantage. As pointed out by Hua (2020), information technologies have a direct impact on the competitiveness of hotels. This is because, according to the author, they allow the enterprise to improve its market share. It is therefore important to maintain an ICT-related workforce to ensure an adequate level of technology operation and performance.

The study by Cohen and Olsen (2013) showed that the use of information technologies by the hotel sector influences the improvement of service provision and competitive strategy. However, the research points out that ICT needs to be implemented correctly, considering aspects such as technical infrastructure, employee skills, and management processes. In addition, Ezzaouia and Bulchand-Gidumal (2020) argue that the competitiveness of hotels can be leveraged through technologies to the extent that they help to better respond to customer needs and expectations.

Hua et al. (2020) believe that investing in ICT is advantageous for the performance of accommodation facilities, as it helps to save energy, water, and food. In addition, the authors point out that such technologies can reduce labor costs without affecting the quality of service; allow for more efficient communication with guests; and improve online reservations and customer service. In addition, research by Melián-Alzola, Fernández-Monroy, and Hidalgo-Peñate (2020) indicates that a hotel's technological capacity is a strategic differentiating factor, as the global market is continually developing. The study showed that ICT influences hotel agility, therefore, effective management of technological assets must be carried out, since they create a new competitive scenario.

Understanding performance as a relevant factor for

gaining competitive advantage (Davcik & Sharma, 2016), the study carried out by Melián-González and Bulchand-Gidumal (2016) revealed that technologies are relevant to the performance of four hotel activities: operational productivity, employee productivity, customer services, and marketing. In the first of these, it was found that ICT provides important information for managing operations in a hotel. In the second, it was identified that technologies make it possible to carry out more tasks with fewer employees. In the third activity, the research showed that technologies help meet the demands of guests. Finally, the internet stands out as an important means of marketing and learning about customer opinions and behavior. For Bilgihan et al. (2011), four aspects need to be carefully analyzed when applying ICTs in the hotel context: coherence between technology strategies and decisions; types of technologies; expected benefits; and decision-making style. When such technologies are applied effectively, the hotel can reduce costs, improve agility and innovation capacity, add value for customers, and improve its service offerings. In addition, as Law and Jogaratnam (2005) point out, technologies in hotel enterprises can improve operational efficiency.

Table 2 Summary of studies on ICT in hotel competitiveness

Authors	Key ideas
Law and Jogaratnam (2005)	Technology in hotel developments can improve operational efficiency.
Bilgihan et al. (2011)	Analysis of four aspects: coherence between technology strategies and decisions; types of technologies; expected benefits; and decision-making style.
Cohen and Olsen (2013)	ICT in the hotel sector influences the improvement of service provision and competitive strategy.
Melián-González and Bulchand-Gidumal (2016)	ICT in hotels improves four activities: operational productivity, employee productivity, customer service and marketing.
Ezzaouia and Bulchand-Gidumal (2020)	Hotel competitiveness can be boosted through technology.

Source: Research data (2021).

Table 2 summarizes the studies covered on this topic. Considering the above, hotels can apply ICT as an important factor in their competitiveness. The studies discussed provide evidence that technologies can have an impact on hotel operations, increasing operational performance and generating a greater competitive

advantage over competitors. The next topic, which deals with the study's methodological procedures, presents how this problem was investigated in the locus of the research (Inhambane and Macaneta, Mozambique).

## METHODOLOGICAL PROCEDURES

This research is characterized as descriptive, as it aims to describe how facts and situations happened without any manipulation of the variables (Tripodi & Bender, 2010). In this case, it describes how hotel managers in Inhambane and Macaneta/Mozambique adopt technologies as competitiveness strategies. To this end, the qualitative approach was the most appropriate, as it allowed for a deeper understanding of the reality experienced by the study participants (Nikolenko, Koltcov & Koltsova, 2017).

Between March and June 2021, when the research was conducted, Mozambique experienced a decline in tourism demand, with one notable exception in April, when both domestic and foreign travelers, particularly those from South Africa, arrived in anticipation of the Christian Easter. Carrying out the research during this period made it possible to find some managers who were willing to give interviews, despite some limitations in terms of scope. The interviews were therefore carried out over two consecutive weeks, which were preceded by the preparation of data collection instruments and the scheduling of interviews by telephone with the managers of the accommodation establishments.

The research participants are ten managers of leading hotel establishments located along the coast of Inhambane and Macaneta/Mozambique (five participants in each case). There was a limit to the number of establishments covered due to difficulties in contacting managers and accessing certain locations. For data collection, semi-structured interviews were used as an instrument. This stage of the research took place in March 2021.

The data was analyzed using content analysis (Bardin, 1977). This process was carried out in four stages: organization of the analysis; coding; categorization; and treatment of the results, inference, and interpretation of the results. Firstly, the material obtained was organized in such a way as to make it possible to assess its relevance to the research, by tabulating it in an Excel spreadsheet.

For coding, the raw data was transformed into a representation of the content that was collected (Bardin, 1977). The data was coded based on the theme (influence of ICT on hotel competitiveness). For categorization, the quality criterion related to objectivity was chosen. The categories were therefore defined as a) the influence of ICT on hotel competitiveness (Inhambane case) and b) the influence of ICT on hotel

competitiveness (Macaneta case). Table 3 shows the

Table 3 Analysis categories

Category of analysis	Purpose
Influence of ICT on hotel competitiveness (Inhambane case)	To check whether the competitiveness of the hotels investigated in Inhambane was influenced using ICT.
Influence of ICT on hotel competitiveness (Macaneta case)	To see if the competitiveness of the hotels investigated in Macaneta was influenced using ICT.

Source: Research data (2021).

expected objective of each analytical category.

To process the results, the findings of the study were compared with the theoretical framework (Bardin, 1977). To do this, a spreadsheet was made of all the studies presented in the theoretical framework and their main results. With this, it was possible to obtain a unified view of the theoretical framework that would guide the analysis of the data collected, favoring comparison between them, and making it possible to extract information relevant to the research objective. This methodological path culminated in the results discussed in the next topic.

## RESULTS ANALYSIS AND DISCUSSION

Regarding Inhambane, the establishments whose managers were interviewed acknowledged the existence of management software and its importance for the smooth running of hotel operations, which can favor competitiveness. However, none of them claimed to use such software, limiting themselves to basic computer packages such as Excel and Cardex. The interviewees claimed that the cost of installing and maintaining these programs is quite high, which would not be sustainable for the business. However, they said that not using them would make the management of the hotel's daily activities less efficient, with a negative impact on its competitiveness. It is suggested that the appropriate use of ICT in the hotels investigated could improve the operational efficiency of the enterprises, as emphasized by Law and Jogaratnam (2005).

These findings make it possible to take up the arguments of Tsai, Song, and Wong (2009), who say that technologies are a source of competitive advantage in the hotel context. Therefore, the ineffective application of ICT in hotel operations hinders the competitiveness of hotels in the municipality investigated in this research. Making use of these technological resources is important because they have a direct impact on the competitiveness of hotels, as Hua (2020) points out.

On the other hand, it is necessary to consider the reality of the destination in terms of favoring the application of ICT. The two locations analyzed (Inhambane and Macaneta) belong to the country of Mozambique, which, according to data from the 2019 edition of the Travel and Tourism Competitiveness Report (World Economic Forum, 2019), in terms of the item 'readiness for information technologies', the country has a very low score (2.1), revealing the precariousness found about this aspect. Therefore, the difficulty in applying technologies to ventures may be a reflection of the weaknesses pointed out in the Report. According to Cohen and Olsen (2013), ICTs need technical infrastructure to be implemented, which is not evident in the cases investigated. In addition, it is believed that there is a weakness in terms of staff training and qualifications for implementing ICT in the hotels investigated. These aspects are important for the use of technology in the hotel sector, as argued by Pine (1992).

In the case of Macaneta, the reality is like Inhambane. The hotel managers interviewed unanimously stated that they are aware of the benefits that come from implementing technology in services. They also recognize that technology is a factor in improving services and can enhance the competitiveness of companies. However, they complain about the costs associated with them, claiming that their capacity would not support the costs of maintaining IT systems. At this point, we can see the importance of ICT in offering services to customers - in line with Melián-González and Bulchand-Gidumal (2016). Bilgihan et al. (2011) also highlight the idea that evaluating the expected benefits is one of the aspects that needs to be considered for the proper application of technologies in hotels.

It was therefore found that the application of ICT in the enterprises investigated is superficial, using only simple Excel databases that help with internal management, customer service, accommodation, and catering. None of the interviewees indicated that they would implement specific hotel management software due to the high costs. Despite the limitations inherent in the destination itself regarding the availability of ICT, it is recommended that public management provide more effective possibilities for the use of technologies in hotel enterprises, given that they increase competitiveness by meeting the needs and expectations of consumers (Ezzaouia & Bulchand-Gidumal, 2020).

In addition, it was noted that the managers consider the internet to be a relevant element for the competitiveness of the resort, specifically the provision of Wi-Fi. However, only three of the hotel establishments analyzed offer this service, even though they all agree that it is essential for the guest's stay. In this sense, we can observe how the availability of a technology considered basic by many customers acts as a strategic differentiator in the case investigated, revealing the technological capacity of the lodging establishment, as



supported by Melián-Alzola, Fernández-Monroy, and Hidalgo-Peñate (2020).

Regarding the use of social media, three of the lodging establishments interviewed invest in Facebook and websites to publish marketing communications. Furthermore, the responsibility for such publications lies with the owner of the resort, and there is no professional dedicated to this task. These technologies are useful for destination marketing and communication management (Ali & Frew, 2014; Mandić & Praničević, 2019). It emerged that the destination does not have well-defined promotion and competitiveness strategies. This is because, according to the interviewees, the public sector is more interested in collecting taxes and association dues without trying to promote the locality or encourage the growth of the tourism sector. Given this, it is suggested that ICT be used to help manage the site, considering the possibilities that can be taken advantage of (Ivars-Baidal et al., 2019).

## CONCLUSION

By highlighting the conclusive aspects that emerged from the data analysis, it is possible to return to the aim of the research, which is to analyze the use of ICT as a competitiveness factor by hotel companies located in Inhambane and Macaneta, Mozambique. It was found that although the managers interviewed recognize the importance of technology in boosting the competitiveness of the enterprise, there is no effective use of software aimed at managing hotel operations. As discussed, this reality reflects the economic situation in Mozambique, which does not allow for the application of very robust technologies.

On the other hand, it was possible to see that the main technologies implemented in the accommodation facilities analyzed are the availability of Wi-Fi and the use of social media for marketing communications. They can determine the competitive advantage of hotels in the observed scenario, particularly Wi-Fi, which is a service expected by most guests and a determining factor in their decision to stay. As a result, establishments that offer this technology are more favorably positioned in terms of competitiveness.

As far as the destination is concerned, there is tourism potential, but there is still a need for in-depth investment in developing local tourism. It is believed that a starting point for dealing with this problem would be an inclusive government action plan, technological awareness for local operators, and actions that support the full development of the tourism sector. Greater attention from the public sector is also recommended to make resources available for the implementation of technologies in hotel developments.

As discussed throughout this study, ICT is one of the driving forces behind technological change in the hotel industry. This is because they facilitate operational pro-

cesses, provide access to information, create value for the customer, and improve the range of services offered by hotels. In an increasingly digitalized consumer scenario, it is clear that hotels must use different technologies to remain active in the market as well as guarantee a competitive advantage over their competitors. In the research site investigated, it was seen that there is still a need for more investment and qualification in the implementation of ICT in hotels. This reality is the result of a developing economy, which ends up not being able to provide essential subsidies so that Mozambique's hotel chain can consolidate itself as an adopter of technologies for the operationalization of services and as a source of competitive advantage. However, the professionals interviewed are aware of the benefits that ICT can bring to the sector. Given this, it is suggested that managers form partnerships or organizational alliances to acquire management software and other technologies so that the services offered can be improved, impacting customer satisfaction and the intention to return.

From a theoretical point of view, the research contributes to studies relating to ICT and competitiveness in the tourism sector. In other words, this research has shown how a hotel's competitiveness can be affected by the existence (or absence) of technologies, providing theoretical advances about studies that have already analyzed hotel competitiveness but without considering the role of ICT. In addition, this research complements studies on the subject in the African context, in which Mozambique is located (Adeola & Evans, 2020).

In managerial terms, hotel managers can see the importance of ICT in managing and monitoring the operations of the hotel more effectively, contributing to its competitive advantage. For the managers in charge of the destination, the study provides information that highlights technology as a strategic differentiating factor. Considering that tourist destinations are becoming increasingly competitive, it is important to take advantage of technology as a way of gaining a deeper understanding of tourist behavior. In this way, more optimized marketing practices can be developed that offer solutions to the visitor's needs.

As for the study's limitations, we would highlight the number of participants, which was reduced due to problems with access to the enterprises. Although they provided data that enabled the research objective to be achieved, it is believed that the opinion of more managers could broaden the research findings, allowing for greater generalization. For future research, we suggest investigating different classifications of accommodation facilities to see if ICT has a different impact on the competitiveness of the enterprise depending on the type (hotel, inn, resort, bed and breakfast, etc.).

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