5 Extended marketing mix elements: (P)hysical Evidence: Delimitation and integrative approach with SCM

Introduction

The physical evidence found within an environment for the provision of services, also known as servicescape, comprises a very important and integral part in strategic business differentiation. It greatly influences the perceived experience and satisfaction of a company/organization from both the employees' and customers' point of view, and consequently, their behavioral reactions. The provision of high-value services assumes very good knowledge of the many dimensions of servicescape, as well as the way these dimensions interact to meet the needs and desires of the involved parties. The company's main goal is the design of an appropriate service delivery environment, which will result from the good cooperation of all the main stakeholders in both its internal and external supply chains.

Learning goals

After reading this chapter, you will be able to answer the following questions:

- What are the strategic goals of servicescape?
- What are the main kinds of servicescape, and what are their basic features?
- What are the main theoretical models that explain servicescape in the internal and behavioral reactions of staff and customers?
- What are the main dimensions of servicescape, and how do they influence the behavior of the people present within that environment?
- Why is good cooperation very important among stakeholders in the internal and external supply chains when designing an appropriate service delivery environment?

Structure

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5.1 Introduction to the physical evidence of services

A basic feature that distinguishes services from material goods is *intangibility*. In contrast to material goods, customers cannot feel, taste, smell or check services macroscopically in order to help them evaluate a service before they receive it. Even so, customers utilize the five senses to evaluate the quality of services, before, while and after they receive them, through the stimuli they receive from the physical evidence of the environment they come in direct contact with, through the company's employees, while they are receiving the service. Physical evidence plays a decisive role in the effective and efficient flow of the processes involved when delivering a service, so that it contributes to the total experience, and subsequently, to customer satisfaction, especially in high-contact services (Wirtz & Lovelock, 2016, 2018; Avlonitis et al., 2015; Baker et al., 2020; Wilson et al., 2016, Zeithaml et al., 2018; Hoffman & Bateson, 2010; Verma, 2012; Rao, 2011; Bruhn & Georgi, 2006; Mudie & Pirrie, 2006; Bordoloi et al, 2018).

The physical evidence involved in services refers to elements of the service delivery environment, i.e. the place where customers meet with frontline employees, who perceive customers' feelings and influence their whole experience. Physical evidence concerns elements that customers perceive through sight (colors, size, shapes of objects, and installations), sound (music, noise), smell (odors, scents), touch (temperature, textures), and even taste (e.g. a sweet offered to children by a pediatrician to make them feel more comfortable). The physical evidence of services includes both the external and internal business environment – the servicescape – as well as the people – employees and other customers – who are also present during the service delivery process that the customer is experiencing; this also includes business websites (Figure 5.1) (Kotler, 1973, 1974; Baker, 1986; Bitner, 1992; Wilson et al., 2016; Zeithaml et al., 2018; Baker et al., 2020).

The external environment comprises the location of the business premises, the architecture of the buildings and their surroundings (gardens, internal pathways, etc.). For some services, these elements are crucial in the perceived quality of the provided services, e.g. catering, accommodation, leisure and the tourism supply chain in general. All services that require a customer's physical presence must have easy-to-access, clean, secure parking spaces that facilitate people's access to a company's premises, with adequate signage in the surrounding area. It is also very important to ensure easy access to business spaces with clear, detailed instructions for customers.

The internal environment includes the design of the interior spaces regarding their spatial planning and functionality, with the necessary equipment, installations and signage to facilitate service delivery and ensure good communication between frontline staff and customers. Besides the practical issues, however, special attention should be paid to esthetic components, e.g. the atmospheric conditions that will contribute to the creation of a pleasant environment where customers meet with company staff. Care should therefore be taken to design it, bearing in mind things like desirable temperature, color combinations, scents and music, and avoidance of unpleasant odors and annoying sounds, among many other aspects of interior planning.

Service companies often focus on elements of the internal and external environment, paying less attention to other aspects of physical evidence, such as informational leaflets, brochures, business cards, invoice forms, receipts, etc. Due to the contact customers have with employees and other customers of the company, the consistency

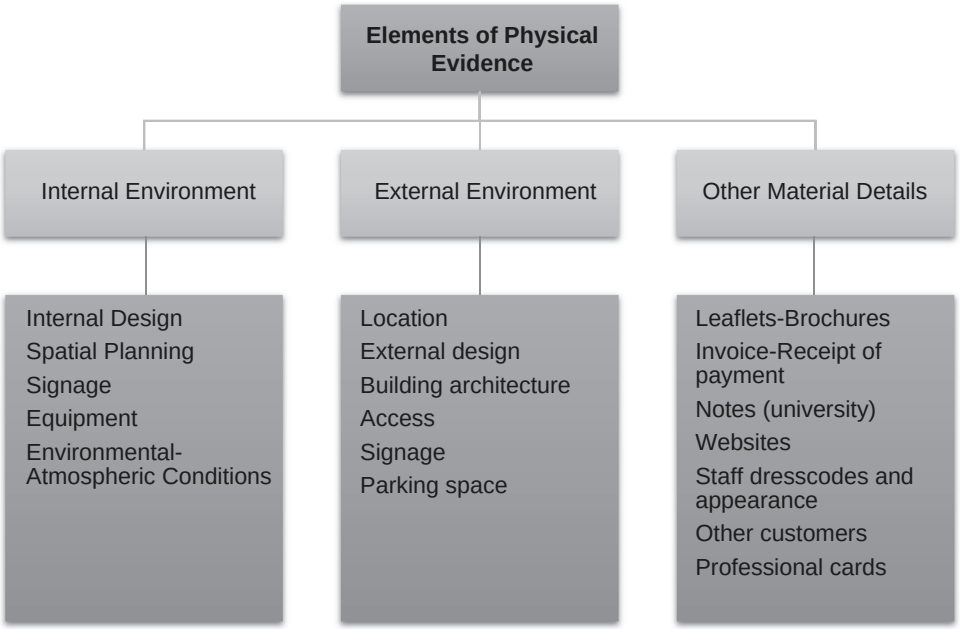

Figure 5.1 Elements of physical evidence.

of appearances, dress codes and behaviors also constitute components of physical evidence. The websites of service providers also form an integral part of their overall physicality. The lesser attention paid to other material elements can be explained by the fact that they are often of secondary importance to customers; fierce competition between service providers however has now highlighted the importance of those other physical elements in the diversification of a company's value offer, as all competing companies recognize that they cannot lag behind in any aspects of physical evidence.

The challenge for all service companies is the design and successful implementation of an appropriate combination of the elements of their "physicality" which will communicate to the customer the differentiated as well as the expected level of quality of the service they provide. It takes just a minor failure of any elements, or a perceived inconsistency in the combination of the components that make up the physical evidence to lower the perceived overall quality of the provided service from the customer's point of view, contrary to what the company wanted/intended to offer.

To illustrate this, Figure 5.2 summarizes the various components of physical evidence in the service delivery flow that may affect the experience of the clients of a private medical center. The effects of physical evidence begin before the visit to the medical center: potential as well as existing customers visit its website and see images of the service environment through the various forms of advertising that the center chooses to use. If they decide to use the medical center's services, customers' satisfaction will be influenced by elements of the physicality, such as the location of the facilities, the ease of access and proximity to them in particular, possibly also in relation to other services (e.g. a pharmacy). The architecture of the buildings, the

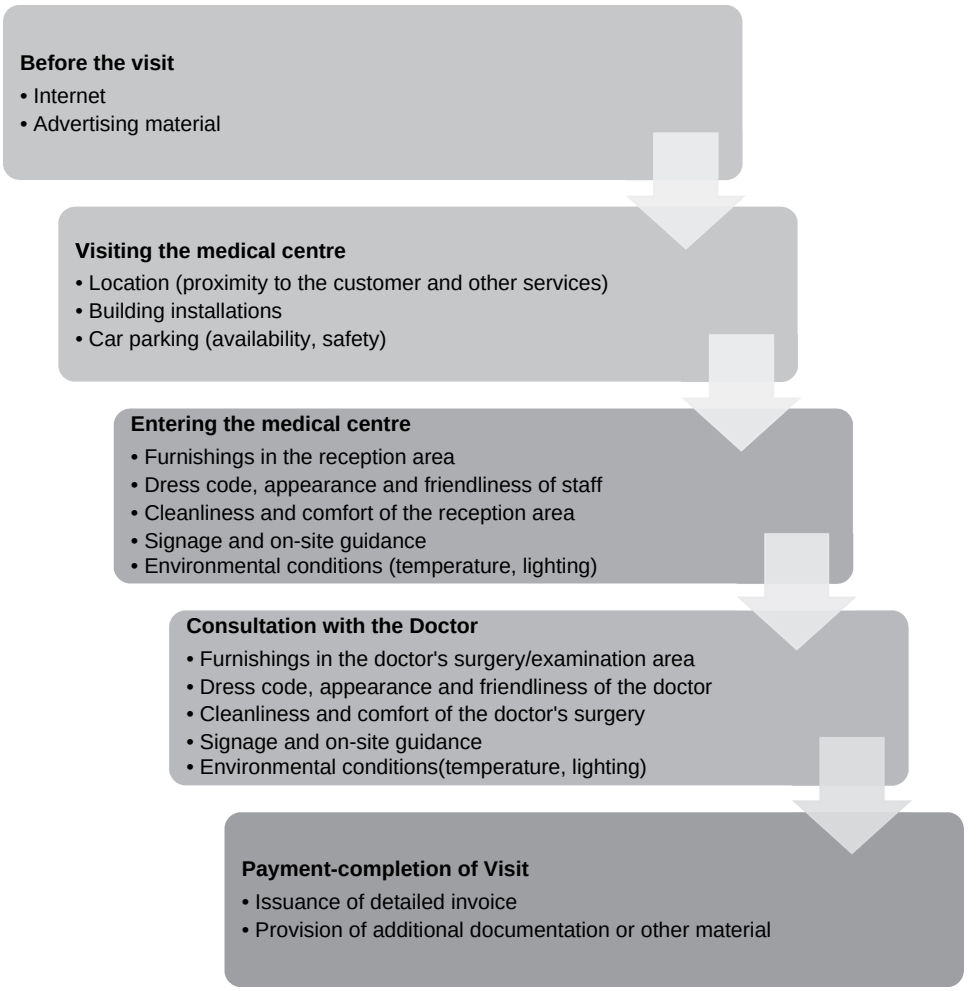

Figure 5.2 Physical evidence of a private medical center.

cleanliness of the surrounding area, and the immediate availability of secure parking facilities are also elements that are highly valued by customers.

Upon entering the medical center, clients' impressions will be based on the reception area (location, cleanliness, comfort), environmental conditions (temperature, air quality, music, aromas and scents, lighting), furniture, equipment, signage and decoration, which are all related to its general functionality. The dress code, appearance and friendliness of the reception staff are also integral elements of the overall experience. Clients will evaluate the physical evidence of the doctor's surgery/examination room using similar criteria. The clients' experience of the medical center's physicality is completed with the issuance of a detailed, error-free, easy-to-understand invoice, with clear, detailed instructions regarding the correct application of the client's treatment. For their younger clients, however, perhaps the most important

element of the physical evidence may be the sweet treats (e.g. cookies, candies) offered as a reward for their cooperation with the doctor.

It is therefore clear that the environment where the service is provided plays a very important role in the customer's overall experience and satisfaction, and consequently, in the profitability and development of the business. The environmental influence is expected to be higher in services where there is a high level of contact with customers and business staff (e.g. a hotel), compared to services that are offered remotely (e.g. online technical support services for telecommunications and electricity). It is also believed that the environment contributes more to the overall value offer in highly mixed services (e.g. a wedding banquet vs. a fast food meal). In any case, the business environment is called upon to play some very important roles: facilitating the service process, communicating the differentiated service and its expected quality, guiding the behavior of both customers and employees. Given customers' wide-ranging desires and preferences, some large hotel chains (e.g. Marriot) aim to meet the needs of different customer groups by creating corresponding hotel brands: each brand has an original servicescape which is configured to maximize the expected experience of the targeted customer group (Zeithaml et al., 2018).

The analysis of the service environment is usually carried out from the customer's point of view. However, it should not be overlooked that the business's physicality plays an even more important role in employees' levels of satisfaction; so a company should make an effort to retain the most able employees, since these particular employees will spend a lot of time in the business premises on a daily basis. The contribution of satisfied and highly creative employees, especially at the frontline, in the perceived value of the provided services, and consequently in customer satisfaction, is crucial (see Chapter 4 (People) for a more detailed discussion). Acquiring and maintaining a competitive advantage presupposes good cooperation with all the people involved in a company's supply chain; thus, the design of the servicescape should take into account common goals and visions, as well as the priorities and limitations of their strategic partners. Likewise, the physical evidence of service companies performs the aforementioned roles in the context of the operation of their supply chain. The choice of location should be based on a detailed investigation of the concerns of the customers, the employees and the strategic partners of the supply chain. Supply chain partners take into account the differentiation and expected quality of various services, which are highlighted by the company's physicality in terms of the form and extent of the cooperation it has with its partners. The spatial arrangements of the indoor environment also include areas that are not visible to customers, such as the goods receipt area in a supermarket, which should not be perceived as causing any inconvenience to customers.

In summary, the arrangement of the physical evidence is one of the cornerstones of developing and maintaining a competitive advantage for businesses and their supply chains. The servicescape design requires a detailed systematic analysis in order to determine the appropriate combination of its individual elements, which implies knowledge, experience and a degree of artistic licence. The formation of an efficient and effective physicality environment, which is an integral part of a company's long-term planning, also requires the investment of high-value, financial and time resources. Potential failures in the design and creation of the servicescape bear significant negative consequences; in most cases, making any necessary modifications (e.g. more space, change of location) is difficult and usually comes with high implementation costs.

5.2 Strategic roles of servicescape

The intangibility nature that characterizes services does not allow customers to use their senses to evaluate them in the same way as material products. The difficulty of evaluating services before receiving them is what servicescape is called upon to cover, which plays multiple important roles in the successful transactions that take place between customers and businesses. The main roles of a company's physicality can be classified into: (a) positioning the company's differentiation strategy, and communicating the corporate image and brand, (b) facilitating the production process, (c) acclimatizing those involved in the service delivery process, and (d) identifying the key components of the diversification strategy (Wirtz & Lovelock, 2016, 2018; Wilson et al., 2016; Zeithaml et al., 2018; Hoffman & Bateson, 2010; Verma, 2012; Rao, 2011; Mudie & Pirrie, 2006; Bordoloi et al., 2018; Avlonitis et al., 2015).

5.2.1 Positioning of the differentiation strategy and communication of the corporate image and brand

Physical evidence is to services what wrapping or *packaging* is to material products, which is why the physical evidence is often called the packaging of a service. Physical evidence provides customers with information about the type and expected quality they can expect of a business service. Environmental elements provide information that is decoded by customers, helping them to draw conclusions about the business's differentiation strategy. Physicality also helps reduce the level of the perceived risks associated with using a service, as well as increasing customer satisfaction and loyalty from the services provided.

Physical evidence is therefore a very important element of a service's marketing mix, with the aim of placing its differentiated value offer at a desirable point in the perceptual map of targeted customer segments, in addition to provoking the desired sensory and emotional reactions. The company's corporate identity, philosophy and esthetics are highlighted through its physicality. As the packaging of the service, physicality takes on a more important role in enticing potential/new customers. The consistency and correct combination of the elements of the physical evidence provide positive indications that contribute to creating and strengthening of potential/new clients' trust in the company, resolving any possible doubts and second thoughts that they may have. In high-contact customer service, the service environment is in fact an integral part of the brand differentiation strategy, as is the case, for example, of large hotels, restaurants and fast-food chains.

Besides the elements of the external and internal environment, equally important for the customers' overall evaluation of a service is the role of the staff's appearance, dress code and friendliness; the similarity of their external features goes in tandem with the similarity of other customers' behavior. Since we are all using the internet now, a company's website and social media posts also contribute to communicating its differentiated image and the quality of its services. Unlike manufacturing companies that produce material goods where product packaging plays a critical role, in the case of service providers, it is often found that investments made in the physical evidence are not always commensurate with the service's importance. But successful service providers, especially those with high customer contact (e.g. catering, accommodation, playgrounds, entertainment, etc.), generally place great emphasis on shaping their

physical evidence and do in fact invest significant resources in renewing and improving them at regular intervals.

5.2.2 Facilitation of the production process

The final result of the service delivery process reflects the interaction of the human, natural and artificial (anthropogenic) elements that make up the production system. Physicality affects the production process, since it influences both the customers and the employees of a company. Therefore, the service environment should facilitate production processes with the ultimate goal of ensuring the best possible satisfaction of the needs of the customers, employees and supply chain partners, as well as optimizing the efficiency of the production system. For example, it is particularly useful for the facilities of a university (e.g. lecture theaters, laboratories, administrative services) to be located in the same place wherever possible in order to facilitate movement between them for all stakeholders (students, academic and administrative staff), so that the layout of the spaces ensures the efficient flow of students and professors, students and administrative staff, administrative staff and visitors, etc.

The business environment also indicates the kind of behavior that a company's customers, employees and strategic partners are expected to display, e.g. the process they should follow when serving/being served, the places reserved for the exclusive use of staff, etc. Spaces should be designed to make it easy for guests to navigate complex areas, such as a large hotel with a large number of separate spaces that have different uses (e.g. restaurants, meeting rooms, cafes, playgrounds, etc.). or a large hospital with a variety of clinics (areas for diagnostic tests, administrative services, etc.). In many cases, however, businesses neglect to show care toward simple and seemingly insignificant environmental elements such as signage, which leads to frustration for customers and frontline staff alike.

Therefore, the company's physicality plays a decisive role in the correct implementation of the planned service delivery scenario, as well as in motivating customers to make spontaneous purchases. The ultimate goal of planning the business environment should be to enhance the sense of enjoyment and to create a positive mood for customers, as well as employees who spend a considerable of their daily lives on the business premises. If the business environment is not well planned, people will feel frustrated, with negative consequences on their satisfaction and the overall evaluation of their experience with the company, whether they are employees or customers. Consider, for example, a hospital with poor quality ventilation, lighting, lack of seating, inadequate standards of cleanliness in the waiting area, with an expensive canteen selling low-quality food and drink. From the above discussion, the reasons as to why private clinics invest heavily in their physical evidence become apparent, as they try to provide patients and their companions with high-quality hotel-like facilities, which complement their medical services.

5.2.3 Socialization of the participants in the service delivery process

Physical evidence contributes to the definition and communication of rules, principles, roles, values and expectations, which facilitate good cooperation between customers and frontline employees, as their roles, behaviors and relationships are clearly delimited. Possible shortcomings or failures in identifying and communicating customers' and

employees' roles lead to frustrations on both sides, resulting in the inability of a business to achieve the desired goals. In high-contact employee-customer services, the service environment plays a crucial role in shaping customers' experiences because it can invoke the right feelings for both the client and the employee. Therefore, it can influence purchasing behavior by facilitating the service delivery process and the interaction between customers and frontline employees.

The business environment informs customers about their expected behavior, e.g. what procedure they must follow during the service procedure, which of the staff will deal with them according to their needs, the parts of the premises that are off-limits to customers, etc. Consider a student restaurant: think about the appropriate signals that inform customers about the location of the salad bar, how to be served at the salad bar, where students should return their trays after the end of the meal, etc. Or a hospital: patients and their companions need to know where and how to fill in the necessary documents upon admission to the Emergency Department, how they can arrange an appointment with the Outpatients Clinics, visiting hours, etc. Some businesses, such as cafes, encourage their customers to stay longer on the premises (and therefore spend more money) by providing features such as free internet access or specially designed tables and spaces for individual or group work, further contributing to their acclimatization there.

The main purpose of this socialization process is to project a positive consistent image to the public, which, however, depends on the image that each company employee conveys when s/he comes into contact with customers. For example, an employee's uniform provides a number of benefits, such as facilitating customers in identifying company staff, highlighting the corporate image, suggesting a coherent organizational structure, providing clues as to the employees' roles according to the company's hierarchy (e.g. the army, security services), etc. (Hoffman & Bateson, 2010).

The benefits of an appropriate configuration of the physicality, especially the internal environment, are not limited just to customers. Physical evidence plays an important role in encouraging, strengthening and facilitating good cooperation between company employees by their own as well as the other operational parts of the company. It also facilitates new recruits to understand their role in the business relatively quickly and clearly, and their respective position in its hierarchy. For example, the most spacious and well-equipped offices are usually intended for senior/top business executives. Physical evidence also contributes positively in creating good conditions for the most efficient operation of the representatives of the strategic partners in the supply chain that the company takes part in.

5.2.4 Identification of the key components of the differentiation strategy

Physicality contributes not just to communicating the differentiated services; very often, it is the main component of a business's differentiation strategy. In high-contact services such as hotels, theme parks and playgrounds, physical evidence is a key pillar on which the whole differentiation strategy of a company's services is built on, in relation to their main competitors. Due to fierce competition, companies very often try, through regular improvements and renewals of the service environment, to relocate their services in order to attract new market segments. For example, restaurants, hotels, cafes and nightclubs regularly make expensive renovations to their décor, lighting, paintwork, furnishings and employees' dress codes (which often go

hand in hand with fashion trends), together with improvements and renovations to the external environment, etc. External appearances, particularly employees' dress code, form an important element in terms of a service's differentiation strategy. Customers generally consider the most well-dressed and diligent employees to be the smartest, most helpful and most pleasant to be served by (Hoffman & Bateson, 2010).

Companies often configure their spaces in alternative ways to better meet the needs of the different market segments they are targeting. A cruise ship for example provides different qualities of cabins/rooms (spaces, views, furniture, etc.), as well as restaurants, cafes and other onboard entertainment venues to better meet the different wishes and preferences of various market segments. Therefore, by shaping its premises in different ways, a company can ensure the successful implementation of discreet or differentiated pricing.

Potential "exaggerations" of the environment, such as luxury décor, may have a confusing effect on customers who tend to think that they may be charged more for this kind of appearance, which in essence, contributes marginally to the perceived value of the services rendered. It is therefore useful to find the right combination of physical elements that contribute to, but also effectively communicate, the business's differentiation strategy without resorting to unnecessary "luxuries" that lead to undesired connotations.

5.3 Types of servicescape

The particular features of a service play a crucial role in determining the appropriate mix of elements that make up its physical evidence; this includes the importance of the service environment in terms of the customer's experience and satisfaction (Wilson et al., 2016; Zeithaml et al., 2018; Hoffman & Bateson, 2010; Verma, 2012; Rao, 2011; Mudie & Pirrie, 2006; Bordoloi et al., 2018). Bitner (1992) proposed a typology of services based on two factors: users and the complexity of the service environment (Figure 5.3). Users can be only customers (self-service), both customers and staff (interpersonal service), or only staff (remote services). In the self-service environment, the customer performs almost all the individual activities of the service process on his/her own, without, or with just minimal assistance from a company employee, who may be absent from the environment (e.g. withdrawing money at an ATM), or discreetly be supervising customers (e.g. at a museum), or providing remote assistance when the case arises (e.g. online banking). The main goals of the service environment are to

		Users of the service environment		
		Only customers	Customers and staff	Only staff
Complexity of Service Environment	Low	Simple Self Service	Simple Interpersonal Service	Simple Remote Service
	High	Complex Self Service	Complex Interpersonal Service	Complex Remote Service

Figure 5.3 Types of servicescape according to users and the complexity of the physical evidence (Adapted from Bitner (1992)).

attract the targeted market segments, to facilitate the efficient completion of the process, with the least possible inconvenience to the customer and without the intervention of company staff wherever possible/desirable, and generally, to ensure the desired level of customers' experience and satisfaction, based on their expectations.

At the other end of the spectrum are the services where only the employees of a company are found in the service environment, and they may or may not come into live contact with customers. Examples of such cases are providers of telecommunications, electricity, water and sewerage services, online shopping for tangible and intangible goods, stock market advice, etc. The design of the physicality aims to motivate staff, promote and facilitate group work between company employees and representatives of the strategic partners in the supply chain, and to achieve the desired tradeoffs in terms of the efficiency and effectiveness of the work that the staff perform. To achieve these goals, successful businesses offer a pleasant working environment that includes, among other things, fully equipped lounges, leisure centers and gyms, as well as adequate and secure car parking .

The most demanding service environment is one where customers come into contact with the company's frontline staff and interact during the process required to produce the service. There are many examples of this, e.g. restaurants, hotels, medical centers, universities, theaters, etc. The design of the physicality presents great challenges, as it must simultaneously attract, facilitate and satisfy the needs, desires and expectations of both customers and employees, as well as their interactions. These challenges, in fact, are even greater if we consider that the business environment hosts not only the customers served by the contact staff but also other customers who are expecting to be served or are being served at the same time, as may be the case with employees from the company's support departments and the representatives of other stakeholders involved in its supply chain. Therefore, physical evidence should ensure harmonious coexistence and interaction, not only between customers and frontline employees but also between customers, and between the employees of the different departments of the company.

The complexity of the service environment ranges from low (simple environment) to high (complex environment). Some services, such as cash withdrawals from ATMs, require minimal space and limited equipment in terms of complexity. Particularly in less complex environments, where the simultaneous presence of customers and employees is not required, design decisions are relatively easy to make, as the parameters that must be taken into account are fewer. At the other end of the spectrum are the more complex environments, particularly those that host both customers and employees, such as hospitals and universities. For example, a university includes a large number of facilities, e.g. amphitheaters, laboratories, administrative support, catering, sports and entertainment centers, to cater for the different needs of the students and academic/administrative staff of the various faculties, departments and research centers that make it up the whole operation. In these complex service environments, managers face a number of challenges in finding the most appropriate balance to meet the needs, desires and expectations of tens of thousands of a diverse range of people, who are effectively the "customers".

According to Wakefield and Blodgett (1994), the importance of the servicescape where consumers are present depends on their length of stay at the premises and their main purchasing motivation. Depending on the customer's main purpose, services range from operational (functional motivation) to leisure (voluptuous motivation). For example, services such as those offered by the post office and locksmiths are

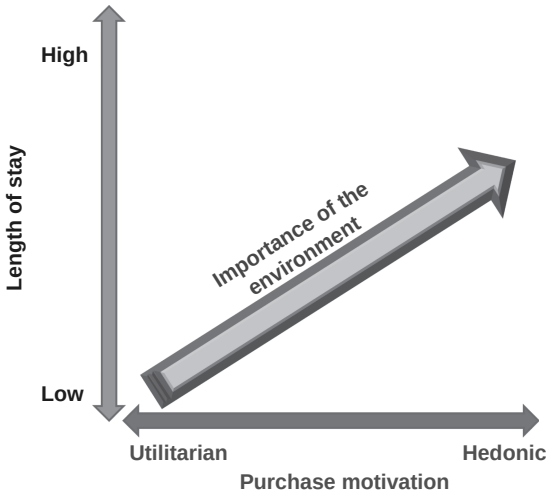

Figure 5.4 Importance of servicescape based on customer's length of stay and purchase motivation (Adapted from Wakefield & Blodgett (1994)).

functional, while leisure facilities and beauty salons are recreational. The length of stay in the service environment can range from a few minutes (less than an hour) at a post office for example, to full days at a hospital or seaside resort. Taking into account these two factors in combination, the importance of physicality, in terms of satisfying the needs, desires and expectations of consumers, ranges from relatively low when the length of stay is short and the motivation is functional, to very high when it comes to long-term leisure/pleasure services (Figure 5.4).

5.4 Theoretical models of the impact of the service environment

Environmental psychology is the interdisciplinary field that studies the interactions of people (customers and staff) with the elements of the man-made (artificial), natural and social environments. Theories and models developed in the context of environmental psychology are very useful tools for assessing the impact of the overall business/organizational environment on the behavior of customers and employees (Wirtz & Lovelock, 2016, 2018; Wilson et al., 2016; Zeithaml et al., 2018; Hoffman & Bateson, 2010; Verma, 2012; Rao, 2011; Mudie & Pirrie, 2006; Bordoloi et al., 2018; Avlonitis et al., 2015). Mehrabian and Russel (1974) proposed a very popular model still used today for interpreting the influence of the environment on the behavior of a business's customers and employees, called the Stimuli-Organization-Response (SOR) model. Bitner (1992) relied on the SOR model to create a more integrated and detailed model of the service environment, which she called "servicescape".

5.4.1 Mehrabian and Russel's SOR model

The SOR (Stimuli-Organism-Response) model by Mehrabian and Russel (1974) argues that stimuli from environmental elements affect people's emotional states, which

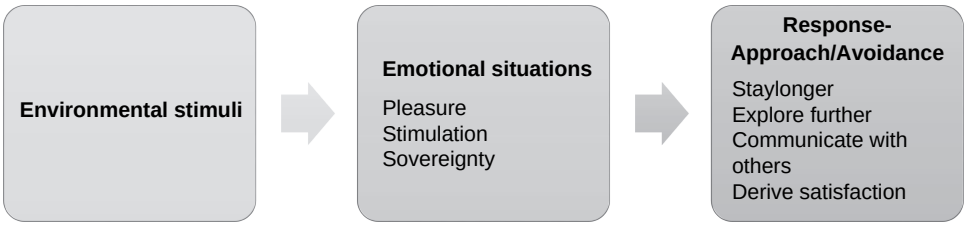

Figure 5.5 Stimulus-Organism-Response (SOR) model in the environment (Adapted from Donovan & Rossiter (1982)).

in turn affect people's behavior and reactions to their environment (Hoffman & Bateson, 2010; Verma, 2012; Wirtz & Lovelock, 2016, 2018; Wilson et al., 2016; Zeithaml et al., 2018; Rao, 2011) (Figure 5.5).

The elements of an organization's physicality, such as the interior, the exterior and other elements, form the set of environmental stimuli. These stimuli are perceived by the five human senses, of both customers and employees, which lead to the formation of expectations and perceptions about the services being provided. Therefore, it is very important for the company/organization to properly plan its physical evidence in order to invoke the desired stimuli among the audience that is interested in it.

Emotional states caused by environmental stimuli are the central variable of the model, which supports that emotions rather than perceptions and thoughts influence reactions to the environment. Therefore, the same environment can cause different emotions in different people; thus, different behaviors can be observed. According to the model, environmental stimuli influence three basic human emotional states: *satisfaction-dissatisfaction, excitement-relaxation* and *dominance-submissiveness*. Satisfaction-dissatisfaction refers to the extent to which customers and staff are satisfied with the overall process and experience of a service. Excitement-relaxation refers to the degree to which people feel that physical evidence excites and arouses them. Dominance-submissiveness is related to the degree to which customers and employees feel they can operate freely within the service environment .

Russel (1980) expressed the widely accepted view that emotional states that are caused or influenced by physical evidence can be described in two dimensions, namely pleasure-resentment and arousal-relaxation (Figure 5.6). The feeling of satisfaction (pleasure-dissatisfaction) caused by the environment is highly subjective. A young person may not be happy about listening to classical music in a cafe, as opposed to someone older and more initiated into this type of music, who may derive a sense of pleasure from it. Feelings of overcrowding will most likely cause dissatisfaction to train passengers especially in summer, but a large crowd will make watching a football match a more pleasurable experience. On the other hand, the feeling of excitement or relaxation due to a company's servicescape is clearly more objective and depends on the complexity of the environment. For example, a horror ride in a theme park will clearly cause more excitement than a classical music concert or a visit to the hair-dresser's. Therefore, companies must shape their physicality in such a way as to provoke the desired result, depending on whether this is excitement or relaxation, with the ultimate goal of creating a pleasant experience.

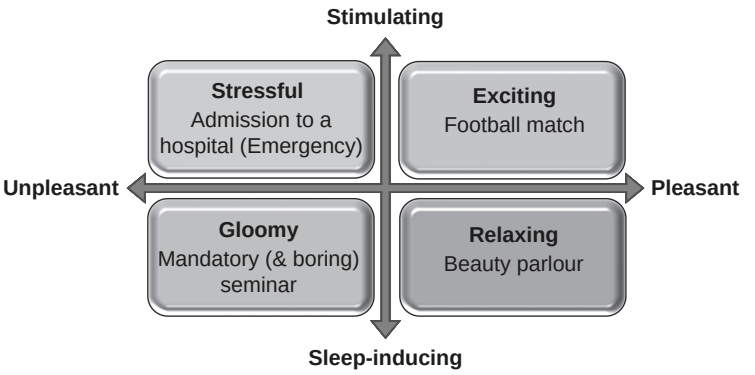

Figure 5.6 Model of Affect by Russell (1980) (Adapted from Mudie & Pirrie (2006)).

The last stage of the SOR model refers to people's reactions (customers and employees) to environmental stimuli. When someone visits a dentist with severe toothache, for example, it is obvious that the purpose of the employees at the dental clinic is to create a pleasant experience, or alternatively the least dissatisfaction as possible. The more satisfaction customers (and employees) derive, the more likely they are to choose a behavioral reaction that denotes "approach" instead of "avoidance", such as extending their stay at the service space, and further exploring and interacting with it. High levels of satisfaction are expected to lead to a greater desire to communicate with other people (frontline employees and other customers) in the service area. Customers' "approach" reactions are associated with increased direct purchases but also have a positive predisposition for future purchases.

If the physical evidence contributes to a customer's satisfaction, then the increased levels of arousal can create even more "excitement", resulting in even more positive reactions. But if the service is associated with unpleasant situations, such as the admission of a patient to a hospital, businesses will have to design procedures and environments that will alleviate this inherent dissatisfaction, at the same time as creating a relatively calm, relaxing environment to reduce the stress levels of patients and their companions. In any case, the environment should be in line with customers' expectations of a desired point in the arousal-relaxation spectrum, especially when it concerns strong emotional expectations. For example, parents organizing a birthday party for their child in a playground want the environment to excite the young guests, whereas for a romantic dinner, the environment is expected to contribute to the guests' relaxation.

5.4.2 Bitner's Servicescape Model

Bitner (1992) relied on the basic models of environmental psychology to formulate a complete model, which she called "servicescape" (Figure 5.7). A very important contribution of the servicescape model is that it explicitly recognizes the effect of physical evidence, not only among the behavior of customers but also of employees, including their social interactions. According to this model, the main environmental dimensions that ultimately affect the people's behavior in the service area are related

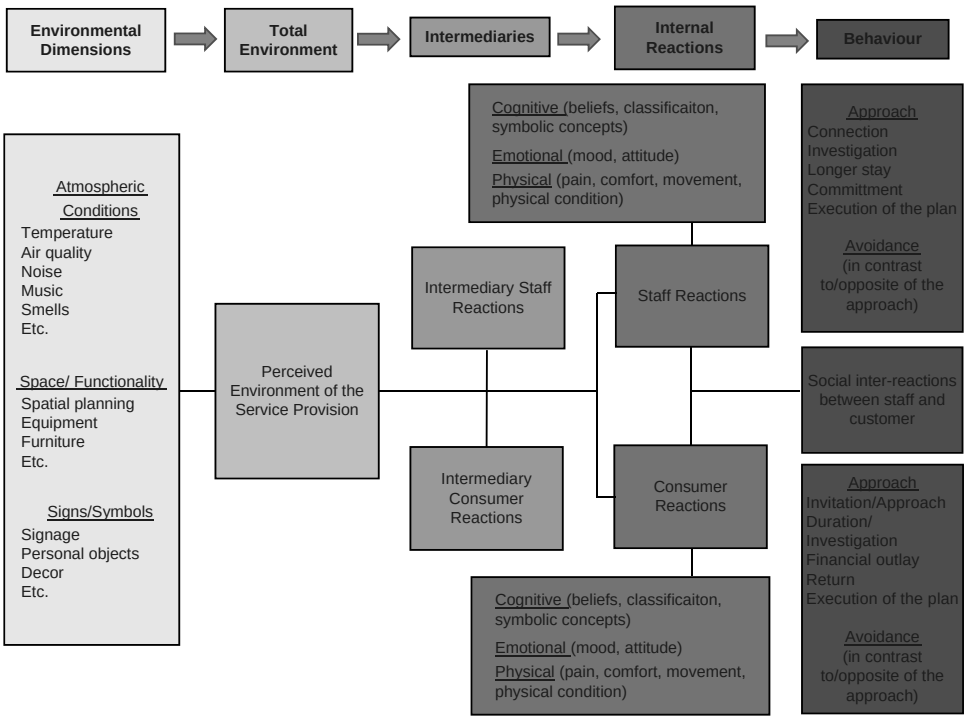

Figure 5.7 Servicescape model (Adapted from Bitner (1992)).

to the internal environment of the business, particularly the atmospheric conditions (temperature, air quality, music, noise, scents and odors), the spaces and their functionality (spatial planning, machinery, furniture) and the signs and symbols (markings, personal items, decoration style, etc.). In many cases the external environment of a business (location, ease of access) can have a catalytic effect on the customer's experience, compounded by the business's presence on the Internet (corporate website, participation in social media) for services such as retail chains of electronic items, hospitals, travel agents, etc.

Regardless of the individual dimensions of the physicality that are important for each business, customers and employees perceive the service environment as a whole and not just as a sum of individual elements. Therefore, the individual elements of the physical evidence should be in harmony with each other in order to create the appropriate service environment for the company's intended differentiation strategy. The way customers and employees perceive the overall service delivery environment is highly subjective, with often a wide range of views between stakeholders. However, targeted customer and employee segments tend to be relatively uniform; for example, a business targeting customers who are looking for bargains should create an environment that is well-planned, but not sophisticated and complex, because potential customers will classify it as an expensive shop. Conversely, if the company is targeting customers seeking luxury, then the environment should contain, for example, sophisticated furniture, rich decor, state-of-the-art technology, etc. (Hoffman & Bateson, 2010).

Customers/employees may form the same opinion about the perceived service environment, but each one's internal reactions are very likely to differ significantly due to each individual's personal characteristics. The main factors that mediate between the perceived environment and internal reactions concern personal characteristics, purpose of the visit to the company, temporary moods and cultural differences (Wilson et al., 2016; Zeithaml et al., 2018). For example, an extroverted client will react more positively to an environment that encourages socialization. A customer staying in a hotel for just one day for business reasons will react differently to the hotel's environmental stimuli than a family who intend to spend the next two weeks on vacation. Similarly, a customer who visits the bank during a short work break will experience the queue differently than a retiree who happened to meet an acquaintance and got caught up in a conversation. An example of cultural differences is the shopping mall: in countries like the United Kingdom and the United States, customers tend to get excited about the large size of shopping malls; in Greece, however, shopping malls tend to be much smaller, and many of them even find it difficult to remain in operation a few years after opening.

The fourth stage refers to the internal reactions of both customers and employees as a result of their overall exposure to the environmental stimuli. Internal reactions are classified into cognitive, emotional and physiological. Cognitive responses refer to the mental processes caused by environmental stimuli and concern beliefs, classifications and symbolic concepts. The service environment influences customers' beliefs about the quality of the services offered through the non-verbal messages it conveys. If a client is dissatisfied with the outcome of a lawsuit, if s/he perceives that the lawyer's office to be messy, and files can't be located easily, or the lawyer dresses casually, it is very likely that the client will form a negative view of the services that were provided to him/her and will probably blame the lawyer for the adverse outcome. Even when the environment conveys the "messages" of a successful lawyer (decoration style, atmospheric office elements, dress code, up-to-date file system, etc.), a dissatisfied client will probably look for other reasons to blame the lawyer for the undesirable result. In a restaurant, physical evidence also provides useful information to help a customer "classify" it as a simple diner or a high-class restaurant. Customers derive symbolic meanings from businesses' physical evidence, such as images and posters.

Emotional reactions do not arise from mental processes, but from subconscious connections of elements of the physicality, in relation to positive or negative past experiences. Therefore, it is usually difficult to give a logical explanation for emotional reactions, which we simply accept, even though they can greatly influence customers' and employees' behaviors. Russel's (1980) model is a particularly important aid in interpreting the influence of the environment on the emotional reactions of those involved in a service's productive processes.

A business's physical condition also plays a key role in the physiological reactions that are usually defined in relation to the physical pleasure or discomfort experienced by customers and employees. For example, if the music is too loud, or the temperature is too high/low, restaurant customers may feel intense discomfort and leave earlier than intended, or even avoid visiting it again. Similarly, when employees are at the business premises for many hours on a daily basis under conditions of work pressure, the service environment should facilitate their efforts in order to be effective and efficient at the same time. It is therefore very important for all employees that their work environment is comfortable, has all the necessary equipment and the appropriate

spatial layout, and ensures pleasant atmospheric conditions, such as temperature, air quality, scents, lighting, etc.

Internal reactions are the penultimate stage before the manifestation of both customers' and employees' behaviors, as well as their social interactions. In line with the SOR model, the servicescape model takes the view that individuals respond to environmental stimuli in two opposite ways, approaching or avoiding. If the overall internal reactions result in perceived satisfaction from the experience of the environment, then customers choose approach, which means that they stay longer, explore the business premises more, spend more money, and will most likely return for future purchases. Correspondingly, satisfied employees stay longer and increase the connection and commitment they feel for the company, their colleagues and customers, and consequently help the company achieve high returns. On the other hand, companies may deliberately configure their environment in such a way as to prevent certain unwanted groups of people from approaching it, such as playing classical music in certain shops, to discourage or limit the time spent by customers who do not fit their corporate image.

Environmental stimuli ultimately affect the social interactions between staff and customers. The layout, position and comfort of the seating, the physical proximity and total surface area, and the flexibility of the space will facilitate or complicate customer-employee customer-customer interactions.

5.5 Dimensions of the service delivery environment

5.5.1 Ambient factors

Atmospheric conditions are related to properties of the service environment that affect the five human senses; although they significantly affect people's emotional state, perceptions, attitudes and behavior, they are usually not recorded. Atmospheric conditions are made up of many sub-elements related to music and sounds, aromas and smells, colors, lighting, temperature, cleanliness and air quality. The aim is to find the right combination to enhance the desired behavior of customers and employees.

Temperature

Setting the temperature to the desired levels for each season plays a key role in customers' and employees' experiences (Rao, 2011; Baker et al., 2020). This requires the use of air conditioning and heating systems, in order to avoid unpleasant situations where people in service areas feel too cold in winter and too hot in summer. An ambient temperature contributes significantly to both customers' and employees' choice to approach or avoid a business and its premises, their intention to visit it in the future, length of stay, spending levels, as well as their interactions with employees and other customers. Cheema and Patrick (2012) concluded that relatively higher temperatures make the most difficult cognitive processes more difficult, and consequently, customers' willingness to make difficult decisions. However, high (relative to low) temperatures have been found to contribute positively to people's sense of social closeness to other decision makers, increasing their willingness to take into account the views of others when making purchase choices (Huang Mr. a., 2014).

Cleanliness of the space and air quality

Few studies have focused exclusively on the effect of cleanliness on the overall customer and staff experience from a company's physical evidence, but it has been included as a dimension in the overall quality index of the service environment (Baker et al., 2020). According to Barber and Scarcelli (2010), cleanliness determines customers' decisions to choose, stay or return to a store; in fact, customers' education level and gender are important factors that influence their perceptions of a service environment's level of cleanliness. Both customers and employees are drastically affected by air quality (Rao, 2011). Elements of air quality are the absence or presence of certain smells (e.g. in a restaurant), foul odors (e.g. in a butcher's shop), dust and other particles, and fresh air.

Music

The influence of music on customer' and employees' experience has been extensively studied (Wirtz & Lovelock, 2016, 2018; Rao, 2011; Baker et al., 2020; Hoffman & Bateson, 2010; Avlonitis et al., 2015). The main elements of music that were found to influence the formation of perceptions and the behavior of customers concern the genre, intensity, rhythm and relevance (agreement) with the type of service provided. Its effect depends on the preferences and general characteristics of each kind of customer (e.g. age, education). Recent research has shown that music alone is not a very important factor in the overall experience, but in combination with other elements of physical evidence, it determines customer and employee satisfaction (Garlin & Owen, 2006). However, more recent research has concluded that the presence of music alone is positively correlated with pleasure, satisfaction, and behavioral intentions (Roschk et al., 2017).

In general, high-pitched rhythmic music increases people's excitement, while soft intimate music contributes to their relaxation, leads to longer stays in the store, and increases spontaneous shopping. Soft music also has a positive effect on reducing customers' stress levels, so it can improve the overall customer experience of services that are inherently identified with high levels of concern, such as a visit to the dentist. Therefore, depending on its intentions to speed up or slow down customers' pace, a business such as a supermarket or a clothing store uses a corresponding volume and rhythm of music. The music genre and rhythm may vary in a store during the day depending on the kinds of customers that visit it at different times. Music that suits customers' preferences contributes positively to their mood while waiting in a queue. If the music "agrees" with the type of services provided by the company, it can increase customers' willingness to make more purchases and on more expensive items, also potentially securing another visit to the store in the future. On the other hand, music can be used to repel groups of people who usually display unwanted behavior or generally do not fit the desired corporate profile. For example, the use of classical music and, generally any genre and rhythm that are unfamiliar to relatively young people may contribute significantly to the reduction of vandalism in metro stations or other public and private facilities whose adequate surveillance is difficult.

Noise

Noises and various other sounds coming from a company's internal and/or external environment contribute negatively to customers' and employees' overall experience

and satisfaction, especially when it is high volume (Rao, 2011; Hoffman & Bateson, 2010). Common internal sources of annoying noises are the sounds machines make for the operation of the business (e.g. air conditioners, electricity generators) and announcements (e.g. at airport). Regardless of the source and intensity of the unwanted sounds, a business needs to isolate the service areas as much as possible from the internal sources of the "nuisance" to customers and staff. The sources of external noise vary: highways, airport, summer nightclubs, industrial facilities, etc. The business often has little, if any, control over them. In general, locations with loud and frequent noise should be avoided; where this is not possible, the best available sound insulation of the business premises should be ensured. The use of appropriate music can make a significant contribution to mitigating the impact of unwanted sounds on customers' and employees' experience and satisfaction levels. The professionalism conveyed in announcements also has a positive effect on customers' perceptions of the business.

Smells

Numerous studies highlight the great importance of scents in customers' positive perceptions, attitudes and customers (Wirtz & Lovelock, 2016, 2018; Baker et al., 2020; Hoffman & Bateson, 2010; Avlonitis et al., 2015; Roschk et al., 2017). For example, the pleasant aromas emanating from a bakery attract customers and are positively related to their intention to visit, linger, and increase their purchases. Hermann et al. (2013) found that plain scents resulted in higher sales, increased cognitive processing, and more favorable overall buying behaviors. As with music, aromas should be carefully chosen to match the smells that suit the circumstances and the customers, in order to provoke the desired reactions. According to Madzharov et al. (2015), "warm" smells (e.g. cinnamon, vanilla) as opposed to "cool" ones (e.g. mint) result in customers feeling that the space is more crowded. Warm smells also lead to the selection of goods of prestige, and higher prices for quality goods and generally, more money spent. All elements of the environment, including scents, work in combination with each other, so a business should look for the right combination of all these elements. On the other hand, companies should take care to avoid unpleasant odors in service areas, which will have a significant negative impact on customer satisfaction, as well as on employees' disposition. In addition to the use of pleasant aromas to mitigate unpleasant odors, appropriate ventilation systems must be installed that will make the atmosphere feel clean; this entails putting waste bins in the right place.

Colors

Colors are an important component of the service environment that can influence the moods and emotions of those present, and consequently, their perceptions and attitudes about the services offered. Therefore, they can have a significant impact on customers' behavioral responses, as well as on the overall evaluation of their experience and satisfaction (Wirtz & Lovelock, 2016, 2018; Rao, 2011; Mudie & Pirrie, 2006; Hoffman & Bateson, 2010; Avlonitis et al., 2015; Baker et al., 2020; Roschk et al., 2017). Colors are usually defined in three dimensions: hue, brightness and intensity. Shade refers to the basic group to which the color belongs, such as yellow, red, green, etc. Brightness determines how light or dark the color is, from absolute white to absolute black. Intensity refers to how bright or dull the color looks, which is due to its high or low density/saturation, respectively.

Various studies have shown that "warm" colors (yellow, orange, red) cause excitement and enthusiasm, as well as anxiety. They also make those present in the space feel comfortable and informal. They are generally considered to be more attractive to people, which is why they are often preferred in retail stores to attract customers. Warm colors also speed up decision making and are considered suitable for low-level decisions. In contrast, "cool" colors (green, blue, purple) are associated with sensations such as calmness, relaxation, happiness and formality. They help when decision making requires a lot of time and they are generally used for more complex decisions. It should also be noted however that intense purple can give rise to dissatisfaction, and even depression.

In terms of brightness, spaces that are painted with light colors tend to look bigger, while dark colors make them look smaller. It was also found that lighter colors help the lighting used in a business space to more easily be combined into the company's environment. On the other hand, darker colors attract customers' attention more, so they are useful for store spaces that customers tend not to visit much. In terms of intensity, bright colors make objects look larger than duller colors. Children prefer bright colors, while adults prefer duller shades.

As with all elements of the service environment, color choices and combinations, either on their own or in combination with other elements, require great care to achieve the desired result. In some cases, some colors are identified in people's consciousness with football teams, political movements, etc.; so if a business doesn't want to identify itself in this way, it would be wise to use certain colors carefully to avoid unexpected associations and reactions made by customers. It has also been found that colors can have different meanings for different countries/people, which companies must take note of if they have a simultaneous presence in different countries. For example, in China the color red is very popular; in India, white is considered the color of mourning, while in Greece it is black.

Lighting

Lighting is a very important element of a business's physical evidence, especially in high contact services (Rao, 2011; Baker et al., 2020; Hoffman & Bateson, 2010; Biswas et al., 2017; Mudie & Pirrie, 2006; Bilgili et al., 2020). When designing lighting, factors such as natural light (daylight), the colors used to paint the premises, the nature of the activity to be carried out in the space, visibility levels and the desired moods of customers/employees are taken into account. Low lighting levels exude more formality and serenity, so they are preferred when achieving low rhythms where less mental processing is required, such as in a restaurant or in queues. In contrast, brighter environments are noisier, they contribute to greater socialization among customers, as well as between customers and employees, and they exude a sense of informality, excitement and cheerfulness. It has also been found that in low lighting conditions, customers tend to consume more unhealthy foods than in more intense ones, which is attributed to the fact that bright lighting causes mental alertness.

5.5.2 Spatial planning and functionality

Very important elements of the service environment are also its spatial planning and functionality, which should facilitate the production process as a whole, as well as the individual functions that are performed by both employees and customers, including

employee-customer collaboration (Wilson et al., 2016; Zeithaml et al., 2018; Wirtz & Lovelock; 2016, 2018; Hoffman & Bateson, 2010; Haksever & Render, 2013; Mudie & Pirrie; 2006; Bordoloi et al., 2018; Avlonitis et al., 2015; Rao, 2011; Baker et al., 2020). Spatial planning implies the organization of the service area, as well as the type, shape and size of the furniture, machinery and other equipment used, and their location. Functionality is determined on the basis of the ability provided by the furnishings and machinery/equipment, including their organization in the space, to facilitate the service delivery processes based on the promises made to the customers, in the most efficient way possible.

Spatial planning and functionality are particularly important elements of physicality in self-service areas, where customers will have to go through all the stages of the production process without, or with very limited, assistance from the staff of the business. Examples of such services are cash withdrawals from ATMs, electronic banking, online shopping, etc. In addition to services such as catering, leisure activities, hotels and retail, spatial planning and functionality play a crucial role in the overall experience, purchasing behavior and perceived customer satisfaction.

Spatial planning and physical functionality take on even more imperative roles in complex service environments, such as hospitals, where the routine is to serve hundreds, often thousands, of patients at the same time, with a large staff numbering hundreds of employees, all with different specialties. In this case, the flow of the execution of the procedures should be as fast as possible, and at the same time highly efficient. Thus, communication and cooperation between medical staff, their direct access to the patients' treatment areas, the rapid transfer of patients to the various hospital areas (e.g. surgeries, diagnostic tests, beds), the movement of patients and their attendants within the various areas of the hospital, among many other activities should be facilitated as much as possible.

5.5.3 Signs, symbols and artistic effects

Brands, symbols and artistic effects contribute to the formation of an effective and efficient service delivery environment (Wilson et al., 2016; Zeithaml et al., 2018; Wirtz & Lovelock, 2016, 2018; Hoffman & Bateson, 2010; Mudie & Pirrie, 2006; Avlonitis et al., 2015; Rao, 2011; Nägele et al., 2020). Signs are elements of the internal and external service environment that contribute as direct or indirect signals for the convenience of customers, not just regarding the business's orientation but also within the business space (e.g. road signs leading to the business premises, the exterior of the company's buildings, guidance from the hall area to the restaurant playground). They can also send signals regarding expected behavior (e.g. smoking is prohibited). They help mitigate feelings of overcrowding and the consequent stress customers may feel while they are in the business premises.

Symbols are especially useful for customers who are visiting the business premises for the first time. Special care is required in the configuration of the environment of a company that serves a proportionately large number of new or irregular customers, especially if the production process is based on a high degree of self-service. It has been found that the lack of a clear signaling system that properly guides customers without the possibility of misinterpretation in the service delivery processes, leads to customer disorientation, stress, dissatisfaction and limited overall satisfaction. Symbols help customers learn the self-service process the size, shape, color and lighting of signs and

symbols play an important role in the corporate image. Examples of symbols are nameplates (toilets, amphitheater, and the manager's office), instructions (direction to the toilets, boarding gates), behavior instructions (shoe storage at a playground) and reminder of rules of conduct (no-smoking signs).

Symbols and artistic effects, such as decorative elements, carpets, photographs and wall hangings, indicate, in a more indirect, symbolic and esthetic manner, the importance of the space, the rules, as well as the expected behavior of those present. Items bearing the company logo, such as forms, mailing envelopes, business cards, should evenly highlight the logo in order to enhance the corporate image.

Well-designed signage of the service environment offers various potential benefits to customers and employees, and their interactions (Bonfanti, 2013). Providing information about the rules of operation and delimiting the roles of those present at the premises of the company contributes to a feeling of familiarity with the service environment, especially for new customers. When a customer loses their orientation, the intensity and confusion felt is mitigated when appropriate signage is used; this implies a reduction of the information that has to be provided by frontline employees, who can focus on their main tasks while offering greater customer satisfaction. Therefore, well-designed signage improves the efficiency and effectiveness of the production process, offers greater satisfaction to customers and employees, strengthens the corporate image and is an important component of differentiation from among the competition.

A recent study by Nägele et al. (2020) came to some interesting conclusions about the effect of small business objects with that customers come into contact with, which may affect their perceptions and behavior. They observed that customers' touching an object in a business has a positive effect on the behavioral intentions of the service provider, but only in cases where customers consider the object to have high esthetics. The same study also showed that these tangible objects are not only useful to enhance the psychological connection with new customers but also to strengthen relationships with existing customers.

5.5.4 Exterior storefront atmospherics

The external environment of service companies, especially its atmospheric elements, plays a decisive role in the choice of store that consumers will decide to enter for shopping purposes. Although the relevant literature is quite limited, two theoretical models have recently been developed which analyze the impact of the external environment on customers' satisfaction and behavior (Baker et al., 2020). According to the first model, the outdoor space includes the architectural and natural elements that are in the customers' view outside the business premises, such as decorative plants, awnings, tables and chairs, etc.; this does not include people, signage and the shop windows (Baker & Sirianni, 2018; Baker et al., 2020). The model argues that architectural and physical elements influence the informational components of the external environment design, i.e. their readability and coherence, and they consequently influence customers' behavior, in terms of approach or avoidance.

The model of Bloch and Kamran-Disfani (2018) adopts a broader and more comprehensive approach to the components of the external environment, which are divided into two interrelated subcategories: the location of the store and its surroundings, and the store's architecture. The location and surrounding area of the store

concerns the neighborhood or the wider area, the possibility of access on foot, the natural/plant environment, the fenced area, the view from the store, the store's image, etc. The architecture of the store refers to the elements related to the exterior design, such as size, style, color, signage, shop windows, entrance, lighting, etc. According to the model, the external environment affects customers' psychological reactions (cognitive and emotional aspects of the store, including its image), as well as their behavior (desire to enter, length of stay, loyalty, word of mouth). Between the external environment and the psychological/behavioral reactions, it is believed that a highly mitigating role is played by the personal customer information (personality, style preferences, goals, experiences) and consequential factors (weather, overcrowding, competing stores).

It therefore follows from the above that the design of the external environment, and especially the choice of the appropriate location, is a strategic decision, because it has a significant impact on the psychological reactions and overall behavior of customers, while the cost of corrective actions is very high, or even prohibitive.

5.5.5 Employees

The appearance and behavior of frontline employees are key components of fitness for most businesses, with the significant exception of self-service, as they come into direct contact with customers (Wirtz & Lovelock, 2016, 2018; Baker et al., 2020; Avlonitis et al., 2015; Al Halbusi et al., 2020). The presence of contact staff contributes to the overall experience, and consequently, to the perceived satisfaction from the provision of services. In companies such as restaurants, fast food restaurants, customer service stores for telecommunications companies, banks, and supermarkets, the management uses dress codes for staff that have contact with customers.

The main factors that have been investigated concern the clothing, physical features and employee density (employees per floor) of the contact staff. Employees' attire affects customers' expectations of service quality and behavioral intentions (Shao et al., 2004). Another study showed that the color of clothing worn by employees and the height/width ratio of employees' faces had an effect on customers' perceptions of the accuracy of the information provided (Bashir & Rule, 2014). Some physical features, such as obesity, have been found to have a negative impact on customers' evaluation of services (Cowart & Brady, 2014). A relatively high number of friendly employees per store floor also has a positive correlation on customers' arousal/excitement and satisfaction levels (Baker et al., 1992).

5.5.6 Other customers

Other customers are, inevitably, another element that shapes a business's physical evidence, as customers interact with each other (Avlonitis et al., 2015; Baker et al., 2020; Hanks et al., 2021; Al Halbusi et al., 2020). One of the main factors that a company can control in terms of customer interaction is density, i.e. the number of customers in a given space. When there are too many customers in a given space, a sense of overcrowding is felt. Crowding can be classified into spatial (when there are many a lot of "things", e.g. furniture, goods, shelves, etc.) and social (when there are many people present); spatial crowding is clearly associated with more significant negative effects on customer satisfaction than social crowding (Machleit et al., 2000).

Customers who have functional/practical incentives perceive higher levels of overcrowding, and therefore experience less satisfaction than those who shop for pleasure (Baker & Wakefield, 2012). Other researchers have also found an inverse "U" relationship between perceived crowding and customer attitudes and behaviors (Mehta et al., 2012; Pan & Siemens, 2011). In some circumstances overcrowding is desirable, to consolidate a sense of security (Maeng et al., 2013). It may even be a key component of the service experience, e.g. football fans watching their favorite team on the field (Avlonitis et al., 2015). Another critical factor is the perceived similarity, appearance and behavior with other customers: positive perceptions are significantly positively related to the behavioral reactions of the approach (Brocato et al., 2012).

5.5.7 E-servicescape

Due to the ever-increasing contribution of the internet in the service delivery process, most businesses also have an online presence. Various studies have highlighted the positive impact of the online service environment on the experience, perceived satisfaction and buying behavior of customers during their online shopping (Yadav & Mahara, 2020; Prabhu, 2019; Tankovic et al., 2018; Wu et al., 2017; Teng et al., 2018; Jain, 2021; Vijay et al., 2017). In previous chapters of this book, it has been pointed out that many companies, especially retailers, have adopted the omnichannel model of product distribution, i.e. through various channels that complement each other, for the fullest satisfaction of their customers. The main channels used include physical and online stores, which customers visit to complete the whole or a significant part of the service delivery process. Examples of such companies are telecommunications and electricity suppliers, electronics and white goods retailers, etc. Therefore, the physical evidence of the traditional physical store is enhanced by the atmospheric elements of the online store, which create a multi-channel environment (Lazaris et al., 2017).

Although relatively limited, some studies have explored the role of e-servicescape in shaping customers' perceptions of the overall quality of the service environment and corporate image, exploring their impact on their overall customer experience and their purchasing intentions when visiting physical stores. Customers' experiences of visiting the online store decisively determine their beliefs, and consequently, their expectations regarding the service environment of the company's physical store (Loupiac & Goudey, 2019). That is, consumers shape the image of the physical store based on what they see on the internet, in terms of colors, materials and the general environment. Therefore, they will most likely feel frustrated and confused if they find that these two environments are not aligned. The beliefs formed by consumers based on the company's website will also affect their attitudes toward the physical store, as well as their desire to visit it. The atmospheric elements of the internet play a decisive role in customer loyalty for physical stores located in shopping malls (Savelli et al., 2017), as does the evaluation of the company's name (Tsichla et al., 2016).

5.6 Servicescape design strategy in the context of supply chain

From the previous analysis, it becomes clear that the service environment cannot be treated as a patchwork of various components. Effective planning of a company's physicality requires a holistic and methodical approach, where decisions on the choice of the nature of the environment, and the location of its components should be taken

as a whole, and not in fragments (Wilson et al., 2016; Zeithaml et al., 2018; Wirtz & Lovelock, 2016, 2018; Verma, 2012; Rao, 2011; Baker et al., 2020). Below are some guidelines for the effective design of the service environment (Bitner, 1993).

5.6.1 Determining the strategic requirements of the physical evidence

The first step is to determine the contribution of physical evidence to the achievement of the strategic goals and the vision of the company. Physicality is a very key component, which should be harmoniously combined with other components in the overall strategy of a company's differentiation. Therefore, throughout the design process of the service environment, managers should keep in mind the company's strategic goals and vision. Any significant failures at this level will require significant resources and time to correct in the future and may be fatal to the company's competitiveness and viability. Therefore, it is vital to define the service concept, for both internal and external customers, as well as the future vision of the company. In recognition of the great importance of a company's operation in the context of its supply chain, it is also necessary to take into account the strategic goals and visions of the strategic partners of the company, and to seek the best mutual tradeoffs when substantial discrepancies are found.

5.6.2 Blueprinting of the service process

The next step is the blueprinting (mapping) of the service delivery process, which will allow all parts of a business to have a detailed view of the overall process required to provide customer services, as well as the individual underlying processes required for its successful implementation. The blueprinting of services is the basis of a comprehensive depiction of the ways in which people, processes and physicality (the 3Ps of service marketing) interact in the provision of service. The service plan contributes to understanding the role, and consequently, the determination of the type of physical evidence required for the specific service. When blueprinting a service, all the interactions with the processes of the strategic partners of the company's supply chain should not be overlooked. For example, a supermarket chain cannot ignore the fact that a significant part of customer satisfaction derives from the constant fullness of the shelves, which, however, presupposes the uninterrupted supply of goods by its suppliers.

5.6.3 Clarification of the roles of the attendees

As mentioned earlier, there are different types of services based on the users and the complexity of the service environment (Figure 5.3); it is therefore necessary to clarify the customers' and employees' roles in the production process. For example, when the only users of the service environment are customers, then physical evidence should be based on the customer's perspective, i.e. how to ensure maximum utility for the customer. Practically speaking, however, all companies, regardless of the service they provide and the way they operate, base their longevity on the efficient and effective work of their employees, as well as on the harmonious cooperation with their partners in the supply chain. Therefore, the design of the physical evidence should take into serious consideration the employees' roles and their contacts with the representatives of the company's associates, in order to ensure the optimal flow of the service process.

5.6.4 Identification and evaluation of opportunities to improve physicality

Businesses must regularly look for and evaluate potential opportunities to improve their physicality, in the context of striving to ensure the best possible satisfaction of both the customers and employees, as well as the strategic partners of the supply chain. In some cases, physical evidence doesn't contribute in the expected way in implementing a company's diversification strategy to provide high-quality services, as it may not provide the desired functionality that would facilitate good cooperation between customers and contact staff. In other situations, the physicality may not be well suited to the needs and preferences of the market segments that the company is targeting. The service environment is composed of many components, so it is not uncommon for there to be a certain degree of inconsistency/incoherence among components, resulting in confusing/conflicting messages.

Identifying potential opportunities to improve physical testimony can be achieved in a number of ways, such as carefully observing customers' behavior and reactions among all those involved in the business, as well as its supply chain partners. Alternatively, it is common for businesses to seek immediate feedback from customers and frontline staff through the use of standard tools such as questionnaires, search and follow-up discussions, comments on social media, and spontaneous suggestions and ideas provided by customers and frontline staff.

5.6.5 Updating and modernizing the servicescape

A key feature of all markets is the rapid pace of change, which is due, among other things, to continuous groundbreaking technological developments, resulting in the constant introduction of new innovative products and services related to the shaping of the service environment. Given the conditions of fierce competition between companies, the very good information flow and the constantly changing preferences of the customers, the need for relatively regular updating and modernization of companies' physicality becomes all the more imperative. In some cases, the need to modernize the physical evidence may arise as a result of efforts to improve the efficiency and effectiveness of the company's cooperation with others involved in its supply chain (e.g. new product cooling systems).

5.6.6 Cross-functional collaborations

Designing a service environment is usually the result of a complex and often time-consuming process involving people from different parts of the business: staff uniform decisions may be made by the human resource department, production process decisions may be made by the operations/production manager, servicescape decisions may be made by the management team responsible for the installations, and communications and pricing decisions may be made by the marketing department. However, each part of the business tends to make decisions based on its own priorities and constraints. Therefore, in order to avoid limiting functionality and efficiency, and transmitting conflicting messages, the servicescape design must result from the good collaboration of interoperational groups with active representatives from all the departments of a business.

Some service environments are very complex: a good example is a hospital where there are restaurants, canteens, florists, a post office and mini-markets, apart from the main operations of the hospital itself, so there is a need for harmonizing all the

collaborating businesses when shaping their physical evidence. The same applies in shopping malls which house a variety of retail stores, offices, restaurants and leisure businesses, all aiming to offer a unique combination of experiences to their visitors. In addition, the web atmospherics affect the image that customers form of the company's physical store. Therefore, the service environments of physical stores and companies' internet sites should be in good agreement, although they constitute usually separate distribution channels used by the company. It has been found that the staff's skills and friendliness in physical stores can determine the perceived usefulness of the online store and the pleasure that customers derive from it (Verhagen et al., 2019).

5.7 Location problem

The problem of location selection refers to the determination of the most advantageous geographical location to install the company's operations, in relation to the resources it deals with and the partners/customers it serves/trades with. It also has to do with the number, location, equipment and size of the new facilities, as well as cases of relocation, an increase or a decrease in the size of the existing facilities. Choosing the right location is one of the most important decisions a company makes. Most of the time it is a strategic decision, which means that it is made relatively infrequently; it is evaluated in the long term, and any wrong choice will have a significant negative impact on both time and cost. On the other hand, the location of all the company's operations is important, because it has an impact on costs (fixed and variable) and customer satisfaction, and thus the company's revenues.

For a retailer, a few meters can make all the difference between profit and loss. A factory installation in an area where there is difficulty in attracting staff with the necessary skills significantly affects the factory's productivity of the factory. Installing a distribution center away from major highways and terminals can create supply delays and increase operating costs.

The main goal in the choice of location is to maximize the benefits for the company. Of course, the orientation differs in decisions concerning location choice in the field of industry and services. In the case of industry, the focus is on cost: location is an important cost factor because the decision affects transportation and production costs (e.g. labor). Therefore, costs differ significantly between the different alternative locations; a small change in revenues between locations may be observed. Conversely, for decisions concerning location choice in the services sector, the focus is on revenues. Location is an important revenue factor because it affects the amount of customer contact and the workload, while there is a small change in cost between service locations.

5.7.1 Location selection process

The procedure for the selection of the location is done systematically, involving the following steps:

Step 1: First, the factors (criteria) that determine the selection of the location are identified. These criteria differ in different cases:

- Industrial units for goods production: land acquisition costs, proximity to suppliers, resources, terminals, markets, and industrial areas (zones) that provide financial incentives and favorable tax regimes, etc.

- Service provision companies: Proximity to customers, competitors' locations, demographic data, access to transportation means, etc.
- Warehouses/distribution centers: proximity to customers, terminals and road networks, cost of land acquisition, facilities provided, labor costs, etc.

Suppose a retail company is making a choice about the location of its new distribution center that will supply retail stores and other points of sale in Southern Greece. The following criteria were selected for this example: land cost, proximity to suppliers, resources, markets, and road networks, and favorable working conditions. It should be obvious that these criteria do not all carry equal weight. Land cost, proximity to road networks and favorable working conditions are considered more important, so they have the same weight.

Step 2: Alternative locations are then identified. Let's say the company concludes on the cities of Patras and Kalamata as possible choices, because they both meet the above criteria.

Step 3: The necessary information is gathered for consideration concerning the various alternative sites. The data are oriented toward the selected criteria.

Step 4: Data concerning quantitative factors are then analyzed and the alternative locations are graded on a selected scale. In the example under consideration, scoring is made on a percentage scale. The product of the scoring process is then calculated with the corresponding weight, and the sums of the products that constitute the final score of each alternative location are calculated. But that is of course not enough…

Step 5: Quality factors involved in the evaluation are also analyzed (Table 5.1).

The site selection process continues in the following way: two problem-solving techniques for site selection – Center of Gravity and Load-Distance – will be presented that take into account both the distances from the new location to the points of sale and the quantities required to be transported.

Figure 5.8 shows the coordinates of four units: X1, X2, X3 and X4. The coordinates of the new unit X (x*, y*) are required, which will cover the requirements (loads) of these points in pallets (p), specifically 10, 3, 6 and 8, respectively.

5.7.2 Center of Gravity

Center of Gravity finds the location (the x* and y* coordinates) of a distribution center that minimizes distribution costs, taking into account the following:

- Location (coordinates) of the points of sale (x1, x2, x3, x4).
- Volume of goods sent to these points (l1, l2, l3, l4).
- Cost of shipping (or distance).

Table 5.1 Example of site selection based on criteria: scoring model

		Score out of 100		*Weighted score*	
Criteria	*Weight*	*Patra*	*Kalamata*	*Patra*	*Kalamata*
Cost of land	.25	70	60	(.25) × (70) = 17.5	(.25) × (60) = 15
Proximity to suppliers/ resources	.05	50	60	(.05) × (50) = 2.5	(.05) × (60) = 3
Proximity to markets	.10	85	80	(.10) × (85) = 8.5	(.10) × (80) = 8
Proximity to road networks	.40	75	70	(.40) × (75) = 30	(.40) × (70) = 28
Favorable working conditions	.20	60	70	(.20) × (60) = 12	(.20) × (70) = 14
Total	**1.00**			**70.5**	**68**

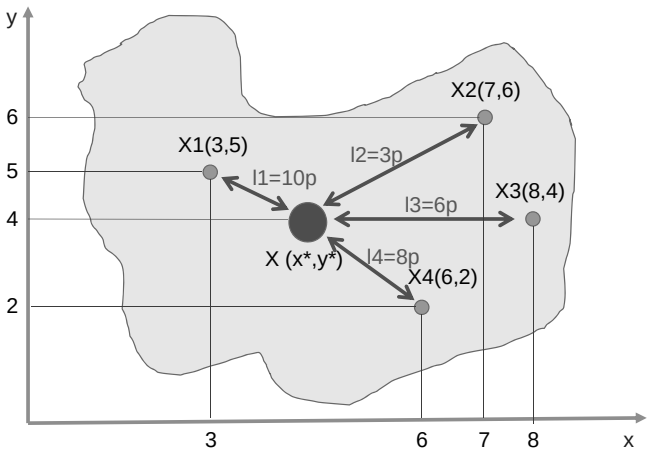

Figure 5.8 Location selection methods based on distances and loads.

- x* is calculated by multiplying the coordinate of each point by its load (l), summing these products and dividing by the sum of the loads.
- y* is calculated in a similar way.

The formulas that calculate the x* and y* coordinates of the new position, respectively, are:

$$x^* = \frac{\sum_i l_i x_i}{\sum_i l_i} \quad y^* = \frac{\sum_i l_i x_i}{\sum_i l_i}$$

Table 5.2 shows the coordinates of 4 units/points of sale and the corresponding loads required to be moved from these units to a distribution center whose location is being decided.

Table 5.2 Coordinates of 4 units/points of sale and the corresponding loads required to be moved from them

	Coordinates	*Load*		
Location	*(x, y)*	*(l_i)*	$l_i x_i$	$l_i y_i$
Unit 1 (X1)	(3, 5)	10	30	50
Unit 2 (X2)	(7, 6)	3	21	18
Unit 3 (X3)	(8, 4)	6	48	24
Unit 4 (X4)	(6, 2)	8	48	16
		27	**147**	**108**

By applying the above-mentioned formulas, we get the following:

$$\text{X*.} = \frac{\sum liXi}{\sum li} = \frac{147}{27} = 5.4 \quad \text{Y*.} = \frac{\sum liYi}{\sum li} = \frac{108}{27} = 4$$

which are the coordinates of the new position.

5.7.3 Load Distance

A method similar to the Center of Gravity is the Load Distance method, which is used to measure distance or Euclidean distance or rectilinear distance. According to Figure 5.9, the rectilinear distance measures the distance of two points as a result of successive 90° turns, i.e. it is essentially the sum of the measure of the two perpendicular sides of the right triangle in the figure:

What is the distance between (10, 5) and (40, 30)?

Euclidean distance:

$$d_{AB} = (x_A - x_B)^2 + (y_A - y_B)^2 = (10 - 40)^2 + (5 - 30)^2 = 39,\ 5.$$

Rectilinear distance:

$$d_{AB} = |x_A - x_B| + |y_A - y_B| = |10 - 40| + |5 - 30| = 55.$$

Let's consider n existing units with a geographical location determined by their Cartesian coordinates (x_i, y_i) for the unit i = 1,.., n. We are looking for the location of the new unit in the space (x, y), so that the total cost of transporting the moving quantities between the existing units and the new unit is minimized. Taking the moving quantities between the new unit and the unit i (f_i), and the corresponding distance between the new unit and the existing unit i (d_i), the problem can be formulated mathematically as follows:

Minimize the sum of fi di products	$\sum_{i=1}^{n} f_i d_i$

To solve the problem, the following procedure is followed:

Find the x = x_i' that minimizes the function	$\sum_{i=1}^{n} f_i \lvert x - x_i \rvert$

with tests for all possible x_i', i = 1, 2, …, n

and:

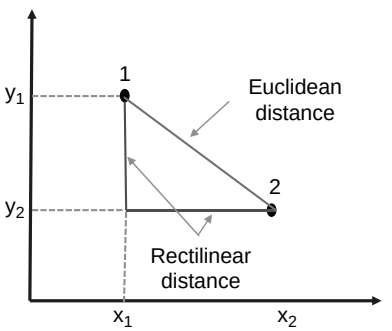

Figure 5.9 Euclidean and rectilinear distance.

Find the $y = y_j'$ that minimizes the function:

$$\sum_{j=1}^{n} f_j \left| y - y_j \right|$$

with tests for all possible y_j, $j = 1, 2, \ldots, n$.

The best solution to the problem is (x_i', y_j').

Suppose, for example, that there are three points of sale (POS) with the following coordinates:

POS – 1: (x1, y1) = (1, 2)
POS – 2: (x2, y2) = (2, 1)
POS – 3: (x3, y3) = (3, 5)

and the corresponding loads: $[f_i] = [1, 15, 5]$; we are looking for the optimal position of the distribution center that will supply these units, taking into account the rectilinear distances.

According to the formulas, the sum of k = products is calculated first for each existing x (x1, x2 and x3) and then for each y (y1, y2 and y3).

y1	$\sum_{j=1}^{n} f_i \lvert y - y_j \rvert$	$= 1 \times 0 + 15 \times 1 + 1 \times 3 = 18$
y2	$\sum_{j=1}^{n} f_i \lvert y - y_j \rvert$	$= 1 \times 1 + 15 \times 0 + 1 \times 4 = 5$
y3	$\sum_{j=1}^{n} f_i \lvert y - y_j \rvert$	$= 3 \times 2 + 15 \times 4 + 1 \times 0 = 63$

x1	$\sum_{i=1}^{n} f_i \lvert x - x_i \rvert$	$= 1 \times 0 + 15 \times 1 + 1 \times 2 = 17$
X2	$\sum_{i=1}^{n} f_i \lvert x - x_i \rvert$	$= 1 \times 1 + 15 \times 0 + 1 \times 1 = 2$
X3	$\sum_{i=1}^{n} f_i \lvert x - x_i \rvert$	$= 1 \times 2 + 15 \times 1 + 1 \times 0 = 17$

The smallest values are found in the coordinates x2 and y2; therefore the coordinates of the distribution center are (2, 1).

5.8 Layout approaches

The spatial design of the warehouse is one of the main factors influencing its overall performance. Proper design contributes to increased efficiency and optimization of the procedures performed within it; it also speeds up the processing time, since it is directly related to their execution times. The spatial study of the warehouse examines the best way to use the available space. It ensures the most efficient use of existing equipment that serves the needs of cargo handling and storage. In short, it is the effort made to maximize the warehouse's resources with the lowest possible operating costs.

A warehouse is also a dynamic environment with constant fluctuations in stock volumes and storage units, so its spatial planning must be based on flexibility and adaptability to possible changes in demand. The warehouse should therefore be able to display the appropriate reflexes to cover a wide variety of different requirements. The person in charge of its spatial planning will be called upon to create models for storage activity which can cover potential differences in the volume of goods and the

type of storage products. The layout of a warehouse seems to affect the distances traveled in it by 60% (Karasek, 2013).

5.8.1 Warehouse layout

The configuration of the warehouse space into its individual parts is designed with the optimal use of resources in mind, e.g. staff, equipment costs and available space (Gu, 2007). The configuration process also includes factors such as the location/installation of the different sections, the configuration of the corridors and the dimensions of the storage spaces.

The relationships among the warehouse activities between the various departments play a very important role in its design. Selecting the most appropriate and efficient placement of the various departments and operational spaces minimizes operating costs, which is represented by the linear equation of the distances covered per procedure and per department. When designing the aisles, their number, length and width as well as the possible configurations of their shape are determined, together with the number of storage blocks and the shelf height. Design layout methods vary from warehouse to warehouse. The most common layout has the narrowest possible corridors, a feature that increases the efficiency of the space at the lowest possible cost; but this also increases the operating costs due to the need for special equipment, as well as increased congestion between employees. Other layout designs such as cross-shaped aisles, the Flying-V and the Fishbone have been shown to provide a reduction of 10–20% in terms of the distance traveled within a warehouse (Karasek, 2013). A schematic representation of the most common layout forms of warehouses is presented below (Figure 5.10).

The degree of usability of the storage locations is a function of their proximity to the receiving/sending stations. The relevant storage locations determine the required distance that a product unit will have to travel from the point of receipt to its storage location, as well as the distance required to collect a unit that will be added to an order that is ready to be executed. The purpose of the warehouse organization/layout is to minimize the time required in the above procedures.

Three types of layouts related to the placement of pick-up and drop-off stations in a warehouse are presented below in Figure 5.11, showing different flows: I, U and L. In Flow U, the receipt of products and the execution of orders are located on the same side of the warehouse; in Flow I, these spaces are in a different location (opposite to each other) in the warehouse; in Flow L, the second (usually the product export part) is located on a vertical side of the warehouse .

In the case of Flow I, receipt and shipment take place across from each other. This flow type results in a clear separation of the receipt and shipment areas, and the need for different supervision of each space. There is certainly more storage space near the main aisle, and thus greater management speed. In Flow U, receipts and shipments are located on the same side of the building. This kind of flow is observed in most warehouses. It has an advantage over the previous one in terms of materials handling speed and distances traveled. Furthermore, cross-docking is facilitated and it is possible to use the ramps for both loading and unloading, depending on the needs at the time.

From the above, we can conclude that flow-through is used when the difference in demand between codes is limited, while Flow U is appropriate where the demand for

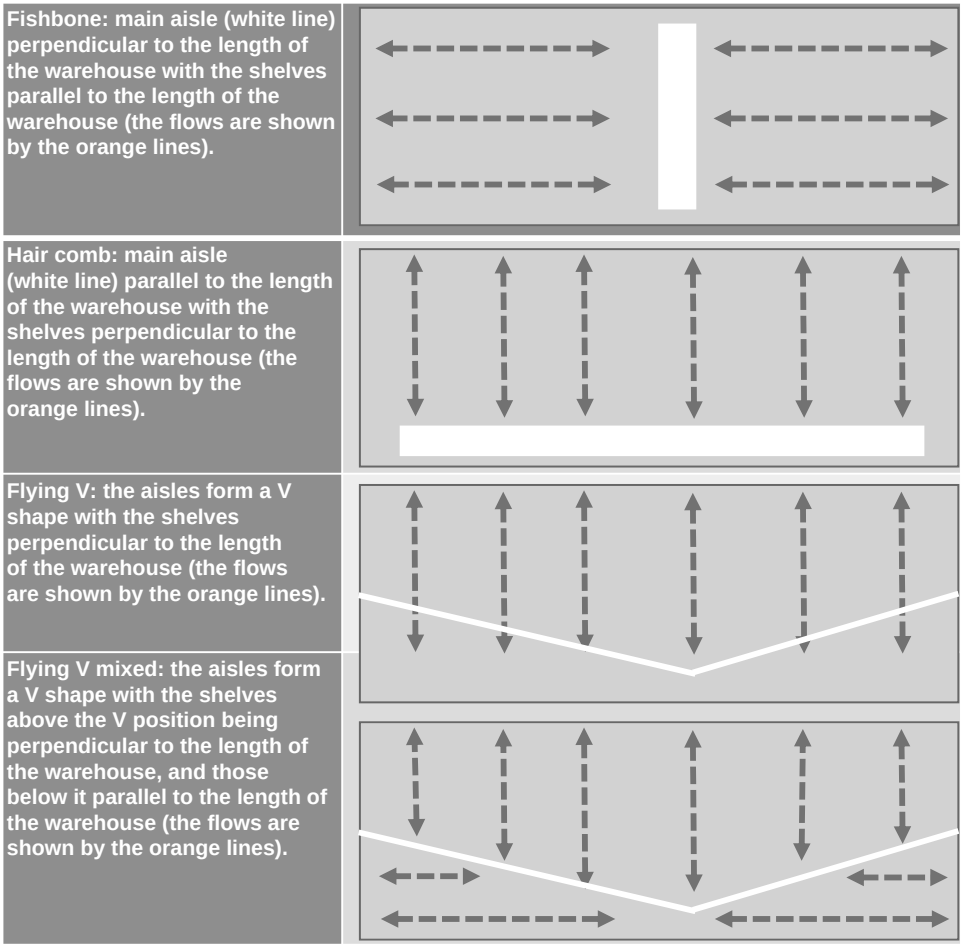

Figure 5.10 Common warehouse layouts.

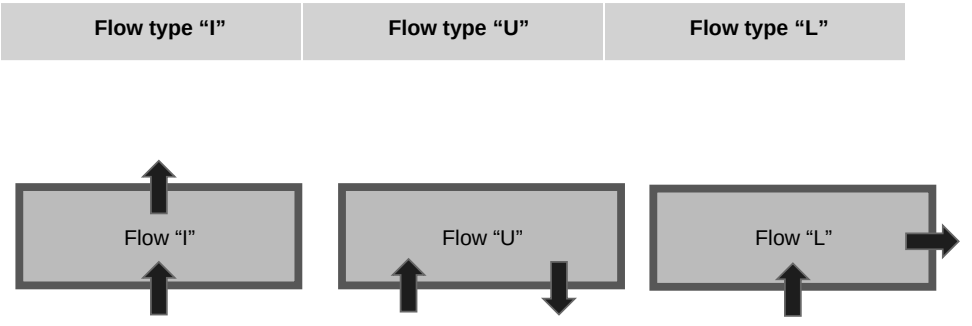

Figure 5.11 Flow types in warehouses.

mixed code arrangements is greater. Regarding receipt and shipment procedures, flow-through allows this to be done simultaneously since operations are performed independently. Greater use made of the loading/unloading stations compensates for the limited possibility of simultaneous receipts and shipments, but it also assumes thoroughly detailed planning in order to maximize the benefits of using the structure. Flow L is expedient when products are imported into the warehouse from its longest side, while exports take place across its width.

Another warehouse design parameter is the corridor width. Optimal space utilization requires the existence of narrow corridors in order to maximize the number of storage spaces. On the other hand, optimizing time management per code requires flexibility and freedom of movement within corridors. Systems that allow freedom of movement in narrow corridors are also accompanied by higher investment requirements in terms of equipment and management systems.

Summarizing the above, the main goal in warehouse configuration is the maximum utilization of available space together with a parallel reduction of travel times during the order collection process.

Physical storage of goods is a fundamental function of storage facilities. The goods remain in this state until they are in demand and are to be delivered to their final recipients. Collection and storage times depend to a large extent on the storage philosophy, the storage systems installed, the kind of products being moved and the tactical and strategic decisions being followed. Setting the storage locations for each product type may follow different storage procedures. Some of these methods are briefly discussed below:

- Random storage: The location of the incoming storage unit is randomly defined among the available locations in the warehouse without any specific criteria. Random positioning leads to high levels of space utilization at the expense of increased transport distance.
- Nearest open storage location: In this method, the picker selects the first available storage location to be detected. In this way, the positions located near the central storage corridor are filled more quickly and more often.
- Reserved storage: Each item to be stored is placed in a fixed position, which is then "blocked". In this method, pickers become familiar with the location of each item, which simplifies and speeds up the collection process. Heavier items are placed in lower shelves and lighter ones in higher storage positions. This practice is common in warehouses where different weights are stored depending on the type.
- Classified storage: A criterion for placing items that follow this particular storage method is the codes' popularity in the warehouse. Items are categorized using Pareto's Law and ABC analysis: the most frequently moving code category comprises 15–20% of the codes in the warehouse, and its contribution can reach 85% of the production volume. Fast-moving items are placed in Class A, the next flow is stored in Class B, and so on. Goods are placed closest to the main storage aisles, in proportion to their flow rate. In this way, Class A codes are more easily accessible to the pickers, followed by Class B codes (and so on). This reduces overall travel times during order collection (de Koster, 2007).