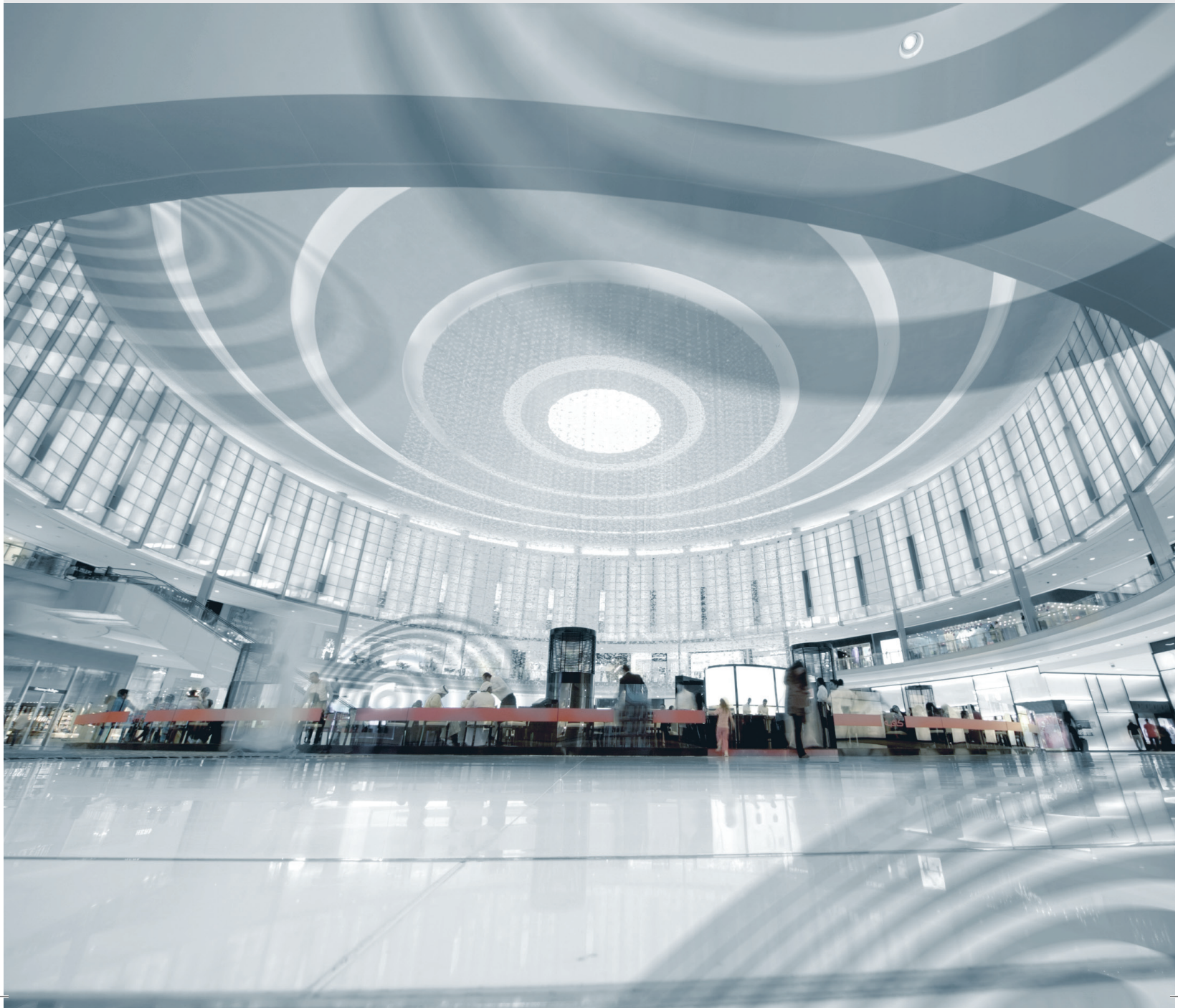


Acoustic design and control in 21st century retail environments

The role of acoustics in helping increase customer dwell times



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Introduction

A vast number of companies operate in retail spaces in high streets, shopping malls, out of town retail parks, mixed-use complexes and airports. While their inventories vary from fashion to furniture to food, retailers usually have one thing in common; they are passionate about making their outlets the stand-out destinations where people love to shop.

So how do retailers create that customer-compelling uniqueness?

Many invest heavily in the physical design, fit-out and refurbishment of their stores. They also need to address the reality that attracting the online-savvy 21st century shopper over the threshold is becoming increasingly complex.

With the continuing rise of online shopping and a shift in customer expectations of what the store experience should be, retailers are finding they need to offer a more multi-sensory experience to shoppers.

While visual aesthetics are usually the priority, acoustics and sound, particularly music, plays a crucial and integral part in the creation of this retail experience.

“Music plays an important role in consumerism, not just the multi-million pound industry it represents in its own right, but the increasing use of it in shops, bars, and restaurants, where it is intended to have beneficial effects on customers and their likelihood to spend. Consumer behaviour does appear to be manipulated and influenced by the presence of music. This is a recognised finding in early research in the area and has become an established “known” in the retail trade.”

Helen Gavin The University of Huddersfield



Store-generated sounds are likely to be unwanted

So retailers turn to the power of acoustics to create their audio logo, reinforce their brand, keep customers in-store longer, influence sales and even motivate shop-floor employees.

It all seems so easy. However, compared to other, usually more visual, aspects of design, far less consideration is given to how this music, or any other store-generated sounds, are likely to be received or heard by customers, as well as their effects on shop staff. And that's where retailers can become unstuck as it's not only music that makes up the sound of the retail experience. Other store-generated sounds are likely to be unwanted and may include refrigerators, ventilation plant and electrical equipment.

“Most retail sound is inappropriate, accidental and even hostile and has a dramatic effect on sales.”

Julian Treasure Sound expert and Chairman of The Sound Agency

This paper will address the need for acoustic control in the design of retail outlets and how a comfortable aural experience might be achieved to help increase customer dwell times.

What is noise?

Acousticians think of noise as unwanted sound. For example the sound of an air conditioning unit is going to be an irritation, rather than enjoyed as part of a shopping experience.



Noise has been defined as unwanted sound

Unwanted or harmful sound. Noise is part of everyday life, but loud noise can permanently damage hearing. Noise can also cause distraction from tasks, making people more inefficient or inattentive.

Joe Cilia Technical Manager, Association of Interior Specialists (AIS)

Noise has been defined as unwanted sound. We are all aware of the noises that surround us in our everyday lives, many of which are a source of nuisance. The effect of low frequency noise (LFN), however, is often not recognised as a nuisance, even though it may have a profound effect on the psychological and physiological well being of some people.

Environmental Protection UK

Where does noise come from?

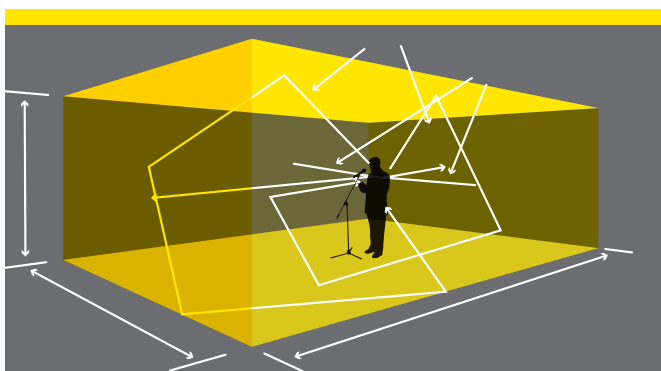
Retail's invisible sonic hum

Here are some more possible causes of unwanted noise in the retail environment:

- Amplified music
- Pumps
- Fans
- Boilers
- Appliances
- Other building services plant

When a space has poor acoustics, this unwanted sound reverberates. This is when sound waves travelling from their source through a space encounter a hard surface such as a wall or ceiling. Part of that sound will be absorbed but part will be reflected back into the space. It's this potential for reflected sound that is a problem. Reflected sound will travel to another surface and be part absorbed, part reflected again and so on. The energy generated from all this reflected sound is reverberation. When reverberation is high in a room, it is difficult to hear speech, when it is low, speech intelligibility is easier.

Even if we don't wish to speak or listen to someone, we're all acquainted with the expression, "I can't even hear myself think" when the noise in a space has become unbearable.



What does high reverberation mean in the retail space?

Alex Krasnic, Acoustics Consultant, explains why the reverberation of noise from building services can be damaging to the retailer's bottom line.

It's entirely possible that a shopper could experience an in-store noise created by an unseen source. That noise could be present in the ceiling space. While it could be a tonal component of the store's overall sound, this specific noise could cause the shopper a headache within 10 minutes of them entering the store. This could mean that the customer leaves the retail space much sooner than the retailer wanted and could impact on that retailer's revenues.¹

Alex Krasnic Director, ASK Acoustics

So it's fair to say that reverberation can be bad for business. Julian Treasure has studied how sound affects people. He identifies four effects: Physiological, Psychological, Cognitive and Behavioural. How these effects might come into play for customer or employee in a retail context are summarised below.

The effects of sound in the retail environment

The subconscious effects of sound	'Bad sound'	'Good sound'
Physiological - Our breathing, heart rate, brainwaves	Feeling uncomfortable, headache, nausea (where the word noise comes from) - fight/flight response	Feeling relaxed
Psychological - Our emotional state	Feeling sad, angry	Feeling happy, in the perfect mood for shopping
Cognitive - Our understanding	We can't listen to two people talking at once - it's confusing, frustrating, annoying	The right sound can enhance our creativity and decision making
Behavioural	Poor interaction with people, anger	Longer dwell time in store, better interaction with people

Now let's take a look at who is most likely to be affected by the sound - good or bad - of the retail experience.

The retail acoustic experience: who it affects

1. The customer

Noise and poor acoustics in the retail environment can be distracting and tiring – and the only thing a distracted, weary customer is going to do is switch off and head for the exit. Not the desired effect. Music, the sounds of other shoppers, the hum of building services equipment, traffic noise, or even noise from external building work can also turn customers off, right at the moment when ideally they'd be focused on making their buying decision. And it could be the very building and materials used to help create an enticing "look" for a store that create the poor acoustics, exacerbating sound reflection and high reverberation.

The current trend for introducing video screens into the in-store audio mix is an added distraction. In addition, customers who have come in store to make a complaint may already be experiencing increased levels of stress and aggression. Noise and poor acoustics are more likely to intensify these feelings than alleviate them, making it harder for staff to resolve the situation to the customer's satisfaction.

2. The employee

It's not just how the customer reacts to sound that is important in running a successful retail store. While their priorities are different, staff are exposed to the good or bad acoustics of the store in which they work for much longer periods than a customer and can have potentially worse reactions.

Staff on the shop floor are the public face of the retail company. They'll have varying duties depending on their level of seniority. However, they may well be required to interact with customers, take payment for purchases, carry out stock control, answer the phone and resolve complaints. Their concentration and efficiency at performing these functions can all be affected by the soundscape of the store they're working in. Working conditions in a shop can also become frenetic at busy shopping times. Elevated noise levels can create stress, stimulate aggression and other anti-social behaviour in individuals. While staff may have all the desirable skills, if poor acoustics hamper their productivity or the level of customer service they provide, it could have a negative impact on the retail business they represent.

Lowering noise levels can help improve customer service delivery. Reducing noise-related stress may also improve employee performance and customer dwell times.

3. Sales

“Retailers are losing up to 30 per cent of their business with people leaving shops faster or just turning around on the door – we all have done it – and leaving the area because the sound in there is so dreadful.”

Research by Julian Treasure argues that inappropriate soundscapes can make people leave shops faster

Architects have an aesthetic preference for choosing hard surfaces such as stone, metal, glass and polished wood. While they may look good and offer the benefit of being easy to clean, they reflect noise back into the room or confined area, creating a high volume, often unbearable, cacophony. And so the retail therapy experience becomes reverberating un-therapy, taking its toll on the customer, on shop floor staff and most importantly for any retailer, on store sales.

“Generally in the retail, leisure and food service environments, harder acoustic surfaces are used and they are acoustically reflective. If this is not treated at the design stage, new build retail outlets often lack the acoustic control that yields favourable acoustic environments.”

These problems could be reduced considerably if acoustic design was incorporated into the initial stages of store design but as Julian Treasure observes: *“Unfortunately, architects and interior designers spend only a tiny fraction of their training learning about sound, and in my experience almost none of them see it as the fascinating and flexible extra material it can be for them.”*⁴

So when retailers lease stores, they'll almost certainly be taking on the challenge of how to create a comfortable acoustic experience.

“The retail tenant doesn't have a great influence on what they move into. They have to deal with what they get,” says Joe Cilia. He highly recommends getting an acoustician on board early and retaining them for the duration of the project.

It's not just about sound, it's about the right sound

Julian Treasure doesn't claim that all sound is bad and research by Ravi Mehta of the College of Business at Illinois suggests that ambient background noise can affect creative cognition among customers, encouraging purchasing behaviour.

In their research article, Mehta and co-authors Rui (Juliet) Zhu of the University of British Columbia and Amar Cheema of the University of Virginia explore how moderate-level ambient noise (about 70 decibels) enhances performance on creative tasks and increases the likelihood of shoppers purchasing innovative products. Conversely, a high level of noise (85 decibels) hurts creativity by reducing information processing. So as noise increases, so does a person's level of distraction.

A moderate level of noise is an important antecedent for creative cognition.³

Ravi Mehta
College of Business, Illinois, USA

Moderate-level ambient noise (about 70 decibels) enhances performance on creative tasks and increases the likelihood of shoppers purchasing innovative products.



As noise increases, so does a person's level of distraction.

Alex Krasnic advises retailers to consider two concepts when shaping the shopping experience: the sound source and the acoustic environment in which the sound is experienced.

Brand sound is likely to be a priority for the retailer. For example, a clothes store may put a lot of effort into building their 'brand playlist' – the types of music they will play in store to help reinforce their brand and create the ambience their target market/audience likes to shop in.

We already know music can have a powerful emotional effect if deployed well. A brand soundtrack can be key to creating the relaxed, positive and memorable experience all retailers want their customers to have.

However, as mentioned earlier, other sources creating unwanted sound must also be identified and treated.

That's why the acoustic environment must be attended to. Ideally retailers would prioritise this to ensure that the brand sound they've worked so hard on is well received by customers. They need to get the acoustics right because if they don't, they may unwittingly be sending their customers away.

Zoning in on different ambiances

Retailers may also want to address the different zones that may exist within their stores where a difference sonic ambience would be appropriate, such as changing rooms, demonstration areas, help desks, toilets and in-store cafés.

A customer wanting to know the finer points of the latest TV technology is going to lose interest if they can't hear the salesman over the noise from another department.

Customers wanting to discuss taking out store credit arrangements won't want their personal details reverberating around the shop – they are seeking speech privacy. A mid-shopping spree cup of tea in a cafeteria will be anything but revitalising if there's little to be experienced other than the clatter of cutlery, the scraping of metal chairs on hard floors and the shouting of other customers trying to be heard.



Customers may lose interest if they can't hear the salesman clearly

Some retailers and shopping mall owners are moving from music towards generative soundscapes. These aural wallpaper soundscapes are played live by computer, algorithmically driven and based on probabilities, so they are ever-changing and organic, just like natural sound. As these soundscapes are designed to be in the background, the acoustics of the space become even more important, as Julian Treasure explains.

In designing soundscapes, we work on a four-tier pyramid: first, get the acoustics right. Second, optimise noise sources. Third, install an appropriate sound system, not the cheapest one. Then and only then do we consider content, derived from the brand values.

Julian Treasure
Sound expert and Chairman of The Sound Agency

Customer dwell time

If a retailer has created a user experience that makes a customer feel relaxed and comfortable in a store, then that customer is likely to stay longer. Dwell time analysis tells us that a customer who stays in a store for 40 minutes is more likely to purchase than someone only staying for 10 minutes.

Improving acoustics can provide a more comfortable environment in which customers want to shop, carry out transactions and dine.

A better acoustic environment will also enable sales and service staff to better engage with customers and provide improved service. Small changes can make a big difference to sales, with studies showing that a dwell time increase of just 1 percent results in a sales increase of 1.3%⁵.



A customer who stays in a store for 40 minutes is more likely to purchase than someone only spending 10 minutes.

Getting acoustics right in retail through sound absorption

So how is a comfortable, controlled acoustic experience achieved? Julian Treasure suggests a starting point for retailers working with acoustic designers.

...the first task is usually to identify and remove inappropriate sound. As well as the current music, this may include hums and buzzes from machinery, street noise, reverberation due to poor acoustics and service noises like shelf-stackers dropping trays or the rattle of service trolleys. Playing music on top of this mess is like putting icing on mud: the result is never going to be a cake.⁴

Julian Treasure Sound expert and Chairman of The Sound Agency

He suggests that if current trends dictate that the floor and walls must be 'live' (as in bright and reflective) then the ceiling could be used to absorb reverberant sound. He advises that absorption panels or acoustic tiles in a suspended ceiling can greatly improve sound.

Alex Krasnic agrees:

"Acoustically absorbent materials are a good way of overcoming more reflective surfaces in the retail space. And the ceiling is a good place to put them."

When possible wall absorber systems can also be specified in store design to help achieve a better acoustic effect.

Such panels and tiles should meet European standards for properties such as sound absorption, fire safety, load bearing capacity and cleanability.

And there's more help available. Led and owned by the Royal Institute of Chartered Surveyors (RICS), Ska Rating is an environmental assessment method, benchmark and standard for non-domestic fit-outs that's led and owned by RICS.

Ska Rating for Retail gives direction and advice on the good practice measures relevant to the retail industry, including noise level standards, which fall into the Wellbeing category of the document.

Ska Rating for Retail is suitable for any fit-out project in existing or new buildings and for one-off projects or multi-store roll out programmes including:

- Food retail
- Non-food retail
- Retail banks
- Restaurants

In the case of retailers with multiple stores, each store must be assessed individually in order to ensure that every outlet is made acoustically sound.

...appropriate, well-designed soundscapes can increase sales in shops by up to 50 per cent in some cases, and between 5 and 30 per cent as a rule.⁴

Julian Treasure Sound expert and Chairman of The Sound Agency

SKA GOOD PRACTICE MEASURES FOR NOISE LEVEL STANDARDS IN RETAIL

The following Ska good practice measures for noise level standards in retail recommend specific actions at the three key stages of a fresh air handling unit (AHU) being installed or replaced or when hard finishes are being applied design, handover and occupancy:

Design Stage – Obtain a report from a qualified acoustician and check against criteria recommended by the British Standards Institute.

Handover Stage – Have sound measurements taken by a qualified acoustician to check if they meet BSI recommendations.

Occupancy Stage – This measure is not assessed. It is achieved by default if was achieved at handover stage.

Conclusions

Noise can be distracting, unpleasant, unhealthy and can have a detrimental effect on sales.

Building services noise and the ever-developing multi-sensory retail experience suggest that in store noise will continue to be a major factor for consideration when designing and fitting out a retail space.

Retailers can work to improve the acoustics on their premises by seeking solutions that absorb reverberation.

Treasure regrets that more isn't been done in this area currently:

“Every store has a huge range of soundscapes to choose from, just as it has a huge range of interior designs to choose from. It's tragic that so few (stores) spend any time at all thinking about which is the best soundscape for their specific room, brand customers and location.”⁴

Julian Treasure Sound expert and Chairman of The Sound Agency

It stands to reason that the most successful retailers will be the ones with stores that customers like to shop in and staff like to work in. And those stores will be the ones that address all areas of the customer and employee experience – including the aural one, ensuring that they employ good acoustic design.

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Special thanks to:

Joe Cillia

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