

Copyright © by Isra Asghar Qureshi 2023

All Rights Reserved

CAN MUSIC AND ARTIFICIAL INTELLIGENCE
INFLUENCE CUSTOMER BEHAVIOR
IN-STORE?

by

ISRA ASGHAR QURESHI

Presented to the Faculty of the Honors College of
The University of Texas at Arlington in Partial Fulfillment
of the Requirements
for the Degree of

HONORS BACHELOR OF SCIENCE IN BUSINESS ANALYTICS

THE UNIVERSITY OF TEXAS AT ARLINGTON

December 2023

ACKNOWLEDGMENTS

This is to recognize the support, love, and care provided to me by my friends, family and loved ones. My curiosity was stemmed in the encouragement my parents showed me every time I wanted to try something new. My siblings have been a tremendous help in this journey as I would not been able to complete this work without their feedback and consistent revision of my work.

Lastly, I am grateful for my mentor Dr. Daniel Martinez, who agreed to work with me on this project, listened to my ever-changing thesis and making recommendations until I had settled on one idea. Without his willingness to mentor me, I would have written and scrapped a dozen projects by now.

April 01, 2023

ABSTRACT

CAN MUSIC AND ARTIFICIAL INTELLIGENCE INFLUENCE CUSTOMER BEHAVIOR IN-STORE?

Isra Asghar Qureshi, B.S. Business Analytics

The University of Texas at Arlington, 2023

Faculty Mentor: Daniel Martinez

Businesses use music to influence consumer engagement and product perceptions. For instance, a retail store in China in 2021 utilized artificial intelligence to manipulate in-store music based on customer facial expressions. This paper reviews the literature on music in retail and discusses how business analytics, such as artificial intelligence, can increase customer satisfaction. The paper focuses on how in-store music and artificial intelligence affect customer behavior. Papers addressing the use of music in retail spaces or artificial intelligence in retail were included. Using Web of Science, I collected 52 papers on in-store music and customer behavior, and 79 papers on artificial intelligence and customer perception. The paper provides a thematic summary of the extant research.

Finally, I present directions for future research in using artificial intelligence in retail settings.

TABLE OF CONTENTS

ACKNOWLEDGMENTS	iii
ABSTRACT.....	iv
Chapter	
1. INTRODUCTION	1
2. METHODOLOGY	3
2.1 Search Strategy	3
2.1.1 Data Collection	4
2.1.2 Data Analysis.....	5
3. LITERATURE REVIEW	6
3.1.1 Music in Atmospherics	6
3.1.2 Music and Customer Behavior.....	8
3.2 Artificial Intelligence and Customer Behavior.....	10
4. DISCUSSION.....	12
4.1 Results.....	12
4.2 Discussion.....	12
4.3 Future Implications	13
5. CONCLUSION.....	14
REFERENCES	15
BIOGRAPHICAL INFORMATION.....	19

CHAPTER 1

INTRODUCTION

Throughout history, music has been used as a tool for both personal and commercial purposes. As a matter of fact, it has been around for centuries and continues to be used today. Music is beneficial on a personal level for meditating, enhancing focus, and changing mood. Music is also used in commercial settings to influence customer behavior, create brand perception, and influence ideas to boost business opportunities.

Researching the factors or elements that impact behavior can help businesses identify the music preferences of their customers and improve the overall shopping experience. Managers may get insight into the most appropriate type of music to play in-store by learning how to set an ideal tempo, pace, and volume to create a better ambiance. With this knowledge, if a manager wishes to improve the customer experience, they can select music that has a calming effect on patrons. This music has a slow tempo which will prolong the stay and encourage more purchases. This is just one example of how music can influence customers and their purchasing decisions. Further research can help create processes or technologies that can provide feedback and analysis of the most popular playlists, artists, etc.

The purpose of this literature review is to examine the impact of music on customer behavior and perception in retail stores. The research question is, can music influence customer behavior and perception in retail stores, with a focus on the use of artificial intelligence and analytics to influence customer behaviors. The goal is to provide insights

into the role of music in retail stores, and to help retail store managers understand how to use music and artificial intelligence to create a positive shopping experience for customers.

CHAPTER 2
METHODOLOGY
2.1 Search Strategy

To collect relevant papers for this study, a search was conducted using the Web of Science and UTA Library Database. The search criteria included keywords such as retail, music, customer behavior, atmospherics, analytics, artificial intelligence, technology, and customer perception. Specifically, papers from journals focusing on customer behavior in retail settings, the use of music for customer satisfaction, and the application outcomes of integrating artificial intelligence in retail to improve customer perception were collected. A total of 128 articles meeting these criteria were retrieved from various academic journals, including Journal of Retailing, Journal of Business Research, Journal of Retailing and Consumer Services, International Journal of Retail, Retail Distribution Management, Psychology of Music, Service Industries Journal, Journal of Fashion Marketing and Management, Journal of Advertising Research, Journal of Social Psychology, Journal of Consumer Marketing, Journal of Retail Marketing, International Journal of Hospitality Management, and Journal of Economic Psychology.

To collect papers for my literature review, I utilized the Web of Science database due to its extensive collection of peer-reviewed articles in public health research, arts and humanities, technology, and social sciences, which relate to the focus of my paper. I adjusted the filter settings to include relevant keywords such as retail, music, customer behavior, atmospherics, analytics, artificial intelligence, technology, and customer

perception, and prioritized the search results by the newest to oldest publications. I only considered peer-reviewed articles to ensure the accuracy and currency of the information used in my review.

The Web of Science also features a useful tool for organizing search results, which allowed me to create folders based on Music/Customer Behavior and Artificial Intelligence/Customer Behavior. These folders helped me to sort articles that met my initial search criteria and enabled me to efficiently review their relevance to my topic.

After obtaining a substantial number of articles, I carefully examined each article and determined their suitability for inclusion in my literature review. I then wrote a summary of each article and compiled them into an Excel workbook, which served as a useful guide for the final paper.

2.1.1 Data Collection

Of the 128 articles collected, 49 articles were related to music, and 79 articles were related to the use of AI and customer perception. I narrowed the selection criteria to exclude articles that were not related to brick-and-mortar retail stores, did not have any discussions about customer behavior, or the use of artificial intelligence in-store to manipulate music to influence customer behavior or perception. These conditions were added to define a scope of themes I wished to integrate in my paper. Themes were evaluation of how music influences customers, if music could impact customers in settings other than retail stores, the significance of music in overall atmospherics, lastly, how artificial intelligence is being used to affect customer behaviors in e-retailing and if such qualities could be transferred over to a physical store. In the end, 26 papers were

selected that satisfied all the specified criteria. The papers were finalized by reviewing the ideas present in the abstract and the results section.

2.1.2 Data Analysis

The studies selected for the review were organized by themes related to music and customer behavior in retail stores. The analysis focused on the impact of music on customer behavior and perception in retail stores, and the role of artificial intelligence and analytics in influencing customer choices using music. The key themes that emerged from the analysis were used to answer the research question.

CHAPTER 3

LITERATURE REVIEW

Businesses use music in various settings, such as retail stores, restaurants, and hotels, to influence customer engagement and product perception. According to the literature, music can enhance customer satisfaction, particularly among utilitarian consumers who prioritize the usefulness or value of a product or service. For instance, Munaro, Martins, and Kato found that music had a greater effect on utilitarian consumers, who buy products or services that can solve problems or accomplish tasks, than on hedonic consumers, who seek pleasure or enjoyment from the product or service (Munaro, Martins, and Kato 2019). Furthermore, Imschloss and Kuehnl demonstrated that music could alter the perception of fabric merchandise. Overall, the research emphasizes that music contributes to the general ambiance of a store and influences customer satisfaction, as evidenced by increased spending, favorable customer surveys, and longer time spent in the store (Imschloss and Kuehnl 2019).

3.1.1 Music in Atmospherics

In both retail and restaurant settings, the ambiance or environment is made up of multiple factors, such as layout, customer service, lighting, aroma, and music, which are referred to as atmospherics (Spence et al. 2014). Marketers were curious about which of these factors has the biggest influence.

An investigation by Angula and Zulu compared these factors to each other and found that layout and employee interactions were more effective in creating a pleasurable in-store customer experience compared to music by itself (Angula and Zulu 2021). Although the feedback they received from customers was positive, other studies may indicate the need for a deeper look into the relationship between atmospherics and customer satisfaction. Spence and his team of researchers agreed that for the multi-sensory atmospherics, all sensory cues should be investigated holistically, as focusing on individual aspects in relation to customers may not provide the whole picture (Spence et al. 2014).

According to the studies above, music is not as influential as store lay-out yet, music can alter the perception of time for customers, as they may think more or less time had passed compared to the actual minutes passed. Additionally, it can affect emotions in three ways, pleasure (state of the emotion, positive/ negative), arousal (“degree of customer activation”), or dominance (level of perceived control by customer) (Michel, Baumann, and Gayer 2017). This effect was confirmed by Yi and Kang’s analysis that background music elicits pleasure while foreground music influences arousal, when tested in a mall (Yi and Kang 2019). A study conducted in five Moroccan ready-to-wear clothes and cosmetics shop found that music affects perception and behavioral intentions by influencing emotions under the right circumstances. Those circumstances are met if music relates to the store’s activity, time of day, location, style, and culture (Sbai, Bahoussa, and Gerard 2022).

As music affects emotions and perception of time, a question arises as to what degree can it influence people. Impulse buying has long been a source of curiosity for many areas of study. Researchers worked in Pakistan to find that both music and availability of time, encourages impulse buying behavior (Husnain et al. 2019). Music’s role in altering

emotions, and perception of time can be considered key factors in impulse buying. Further study by Barros and the others explored this idea in Brazil and Germany. They found that impulse buying was most prominent when background music was playing in collectivist cultures (Brazil) compared to individualistic cultures (Germany) (Barros et al. 2019). Another study was conducted in a non-English speaking country to assess if customers were inclined to make a purchase if music with English lyrics were playing versus music in native language. They found that customers were more likely to make a purchase if music was in English and it fit the store's global image (Toldos, González, and Motyka 2019).

According to researchers Michel, Baumann, and Gayer, atmospherics effect on customers results in customer behavior. There is a positive effect in the relationship between the presence of music and customer's purchase intentions. "... customers were more likely to purchase a particular product/service in the future." (Michel, Baumann, and Gayer, (2017).

3.1.2 Music and Customer Behavior

In places like grocery stores or food industry related businesses, a positive customer behavior is measured in terms of time spent in the store or end-of-day sales. For example, Milliman wanted to observe if playing fast or slow music in a grocery store would alter customer behavior. His two-week observation concluded that people walked at a faster pace if the background music was fast, and customers walked slowly when the background music was slow. Milliman also wanted to measure if walking slow would increase sales, as people would be spending more time in the store and found that the sales on days when slow music was played, were higher than days when no music or fast music was played,

but the definite relation of increased sales to music is not clear, as it may be that people found more promotional items while walking slowly (Milliman 1982).

In a restaurant setting, the preference is to have fast or slow music based on the desired outcome. For example, if a customer needs to leave the restaurant quickly, the establishment may play upbeat or fast music. In addition to other factors, in fine dining, using classical music has been shown to not only prepare people to pay more but to also make them spend more on food (North, Shilcock, and Hargreaves 2003).

Based on the studies cited in the previous chapters, this section discusses the implications of application or practical results. Research shows that music does impact customer's behaviors by affecting their emotions. So, the question arises for the managers, what type of music should they be playing in-store and who should decide it? A study in Stockholm, Sweden proved that employees should not be the ones choosing the music, as it resulted in a 6% decrease in sales. This is because employees have a diverse preference for music and typically chose high-intensity songs that prompted customers to leave the store quickly (Daunfeldt et al. 2021). Employees prefer upbeat songs while customers prefer slow paces, calming music.

This does not mean that high-intensity music should never be played. In retail settings, it's proven that large crowds in stores discourage spending, but customer spending increased when playing high-intensity music. The study highlighted that the increase in shopping basket value resulted from customers buying more products rather than purchasing expensive individual items (Knoeferle, Paus, and Vossen 2017). The high-intensity music can alleviate some of the negative effects of large crowds in a store.

Apart from music, Choi and Kandampully, highlighted that customer behavior in a hotel setting was positively influenced by the social and room design. It also encouraged customers to recommend the hotels to friends and family through word-of-mouth behavior. The guests left satisfied and had fewer suggestions for improvements. This reflects that even if managers are less likely to or do not wish to use music, providing good customer service and having a favorable store layout can help the word-of-mouth relational aspect of customer relations (Choi and Kandampully 2019).

3.2 Artificial Intelligence and Customer Behavior

As e-retailing becomes increasingly prevalent, controlling atmospherics in this context is challenging since most websites can only use visual and audio cues. Therefore, the use of artificial intelligence (AI) has become a valuable tool in influencing customer behavior in online retailing. Hwang and Oh discussed the use of interactive music as a mediator for consumer engagement in digital retail settings. They found that using interactive music has an affective engagement that better persuades customers (Hwang and Oh 2020).

Another study by Bhagat and Chauhan investigated the specific ways that AI positively influences consumers to buy more. The researchers argued that integrating AI into consumer websites makes interactions more user-friendly and customizes product recommendations based on user preferences, thereby improving customer satisfaction (Bhagat, Chauhan, and Bhagat 2022). The basic concept of AI is to learn and make improved predictions. Olan and his team suggested that customer satisfaction can be improved if consumer engagement encourages users to share their experiences about products and services (Olan et al. 2021). Creating a positive feedback loop can help

retailers create better products and promote curiosity in online communities. Roggeveen, Grewal, and Schweiger recommended using both in-store and online resources to establish a better connection between consumers and retailers, with AI enhancing the customer experience through various stages of the shopping journey (Roggeveen, Grewal, and Schweiger 2020).

A practical use of this information is demonstrated in a study conducted in China that used facial recognition software and artificial intelligence to assess customer moods and play music to improve customer satisfaction. The idea was to improve customer satisfaction by changing their moods. The results were positive, as customers reported being in a better mood when leaving the store (Rodgers et al. 2021).

A literature review by Roschk, Loureiro, and Breitsohl, contributed that customers' strong preferences for scent and music in service settings were comparably effective in retail environments. They confirmed that places that have both music and scents yielded a higher pleasure, satisfaction, and behavioral intention rating, compared to environments where such conditions were not met (Roschk, Loureiro, and Breitsohl 2017). Perhaps this is where artificial intelligence paired with simple technology can be used to not only change music but also alter scents and lighting. As artificial intelligence is still a nuanced concept, theoretical applications are at best educated guesses rather than informed decisions.

CHAPTER 4

DISCUSSION

4.1 Results

The literature review found that music can have a significant impact on customer behavior and perception in retail stores. The tempo, volume, and genre of music can influence customers' emotional states, shopping behaviors, and perceptions of the store environment. The review also found that the use of artificial intelligence and analytics can help retailers select music that is more likely to create a positive shopping experience for customers. However, the use of artificial intelligence and analytics is new within these spaces, so it raises concerns about privacy and ethical issues which requires further research.

4.2 Discussion

The overall literature indicates that music and artificial intelligence, combined can help create spaces where customers feel more satisfied and connected to various retailers. Opportunities for growth exist with current artificial intelligence technologies and past knowledge of music. Theoretically, retailers can use existing databases of human emotion and music to create a customized shopping experience for customers based on their current moods. Some literature also referenced the idea of in-store zoning using atmospherics like aroma and music to create special sections based on product offerings. Artificial intelligence can help managers and businesses understand the best music and scent pairings for their audiences based on best time of day and possible customer preferences. Current

limitations exist in application of technology, as training the artificial intelligence on a model that can easily account for and adapt to multiple audiences, settings, and product offerings is difficult. Imagine walking into a store, and in a few seconds the music you were hearing changes, so does the scent and lighting. Once another customer walks in, the atmosphere changes again. Would this be an environment where you'd like to shop? I wouldn't. So, practically speaking, having a generalized playlist is the best recommendation I can make for using artificial intelligence in a retail space. The technology can help remove the guess work from the equation by creating a customized playlist for your store, that suits majority of your demographics.

4.3 Future Implications

The overall industry consensus on music seems to be that as there are several customers and many have individual tastes and preferences for music, it is almost impossible to have a one-size fits all approach. But it seems that depending on the type of product being sold or the kind of retail setup; classical music, calming, instrumental music, and in some cases, pop music has a positive influence on customer perception and opinions. Similarly, using artificial intelligence to not only influence customer behavior but to also learn from feedback can prove an important asset to a business looking to set itself apart from competition. Many papers cited here indicated that as e-retailing is becoming more accessible to people, brick-and-mortar retailers must focus on setting themselves apart by using unique atmospheric combinations.

CHAPTER 5

CONCLUSION

I recommend that retailers already invest so much in customer experiences, using A.I. to enhance the customer experiences through various states both online and offline can prove a beneficial investment. Additionally, utilizing a good customer feedback loop can help with idea generation and product development for improved customer relations. If a retailer is not willing to or is unable to adopt artificial intelligence software, then at the very least, using this research to make informed decisions about music choice will be easier and more cost effective.

REFERENCES

- Angula, Etuhole and Valencia Melissa Zulu (2021), “Tackling the ‘death’ of brick-and-mortar clothing retailers through store atmospherics and customer experience,” *Innovative Marketing*, 17 (3), 157–68.
- Barros, Ludmila Bandeira Lima, Martin de La Martinière Petroll, Cláudio Damacena, and Marc Knoppe (2019), “Store atmosphere and impulse: a cross-cultural study,” *International Journal of Retail and Distribution Management*, 47 (8), 817–35.
- Bhagat, Rohit, Vinay Chauhan, and Pallavi Bhagat (2022), “Investigating the impact of artificial intelligence on consumer’s purchase intention in e-retailing,” *Foresight*.
- Choi, Hyeyoon and Jay Kandampully (2019), “The effect of atmosphere on customer engagement in upscale hotels: An application of S-O-R paradigm,” *International Journal of Hospitality Management*, 77, 40–50.
- Daunfeldt, Sven Olov, Jasmine Moradi, Niklas Rudholm, and Christina Öberg (2021), “Effects of employees’ opportunities to influence in-store music on sales: Evidence from a field experiment,” *Journal of Retailing and Consumer Services*, 59

- Husnain, Mudassir, Bushra Rehman, Fauzia Syed, and Muhammad Waheed Akhtar (2019), “Personal and In-store Factors Influencing Impulse Buying Behavior among Generation Y Consumers of Small Cities,” *Business Perspectives and Research*, 7 (1), 92–107.
- Hwang, Angel Hsing Chi and Jeeyun Oh (2020), “Interacting with background music engages E-Customers more: The impact of interactive music on consumer perception and behavioral intention,” *Journal of Retailing and Consumer Services*, 54.
- Imschloss, Monika and Christina Kuehnl (2019), “Feel the Music! Exploring the Cross-modal Correspondence between Music and Haptic Perceptions of Softness,” *Journal of Retailing*, 95 (4), 158–69.
- Knoeferle, Klemens M., Vilhelm Camillus Paus, and Alexander Vossen (2017), “An Upbeat Crowd: Fast In-store Music Alleviates Negative Effects of High Social Density on Customers’ Spending,” *Journal of Retailing*, 93 (4), 541–49.
- Michel, Anne, Chris Baumann, and Leonie Gayer (2017), “Thank you for the music – or not? The effects of in-store music in service settings,” *Journal of Retailing and Consumer Services*, 36, 21–32.
- Milliman, Ronald E (1982), “Using Background Music to Affect the Behavior of Supermarket Shoppers,” *Source: Journal of Marketing, Summer*.

- Munaro, Ana Cristina, Elaine Martins, and Heitor Takashi Kato (2019), “The effect of consumption motivation on the perception of gift store attributes in jewelry retail stores and its influence on repurchase intention,” *Revista Brasileira de Gestao de Negocios*, 21 (5), 788–812.
- North, Adrian C., Amber Shilcock, and David J. Hargreaves (2003), “The effect of musical style on restaurant customers’ spending,” *Environment and Behavior*, 35 (5), 712–18.
- Olan, Femi, Jana Suklan, Emmanuel Ogiemwonyi Arakpogun, and Andrew Robson (2021), “Advancing Consumer Behavior: The Role of Artificial Intelligence Technologies and Knowledge Sharing,” *IEEE Transactions on Engineering Management*.
- Rodgers, Waymond, Fannie Yeung, Christopher Odindo, and William Y. Degbey (2021), “Artificial intelligence-driven music biometrics influencing customers’ retail buying behavior,” *Journal of Business Research*, 126, 401–14.
- Roggeveen, Anne L., Dhruv Grewal, and Elisa B. Schweiger (2020), “The DAST Framework for Retail Atmospherics: The Impact of In- and Out-of-Store Retail Journey Touchpoints on the Customer Experience,” *Journal of Retailing*, 96 (1), 128–37

- Roschk, Holger, Sandra Maria Correia Loureiro, and Jan Breitsohl (2017),
“Calibrating 30 Years of Experimental Research: A Meta-Analysis of the
Atmospheric Effects of Music, Scent, and Color,” *Journal of Retailing*, 93 (2),
228–40.
- Sbai, Imane, Abdelaziz Bahoussa, and Chandes Gerard (2022), “An Exploration of
the Effect of Background Music in Retail Stores on Moroccan Consumers’
Perceptions and Behaviors,” in *Springer Proceedings in Business and
Economics*, Springer Science and Business Media B.V., 27–50.
- Spence, Charles, Nancy M. Puccinelli, Dhruv Grewal, and Anne L. Roggeveen
(2014), “Store atmospherics: A multisensory perspective,” *Psychology and
Marketing*, 31 (7), 472–88.
- Toldos, M. Paz, Eva M. González, and Scott Motyka (2019), “Exploring
international atmospherics: The impact on shopping behaviors based on the
language of the lyrics of music played in global apparel retailers’ stores,”
International Journal of Retail and Distribution Management, 47 (4), 368–83.
- Yi, Fashu and Jian Kang (2019), “Effect of background and foreground music on
satisfaction, behavior, and emotional responses in public spaces of shopping
malls,” *Applied Acoustics*, 145, 408–19.

BIOGRAPHICAL INFORMATION

Isra Asghar Qureshi is a Business Analytics Major, who is part of the Honors College, and the Goolsby Leadership Academy. She is a scholar eager to learn how things work. In the future, she hopes to continue researching as a Ph.D. candidate one day.