

PLAY IT BACK! A DESIGN STUDY REGARDING CHANGES IN PRE-
RECORDED MUSIC PLAYING EXPERIENCES

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ABSTRACT

PLAY IT BACK! A DESIGN STUDY REGARDING CHANGES IN PRE-RECORDED MUSIC PLAYING EXPERIENCES

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Music has always been a key element for people to connect with themselves and others. For this study, the main focus is to investigate pre-recorded music playing experiences through time with changing technology and design. As technology develops, many habits and behaviours of people change. Listening to music is an experience that has changed throughout the decades, with regards to technological developments and social contexts. From radio and gramophones to mobile phones and online streaming, the means of listening to music has been through many great changes. Various products and interfaces have been used to organize and deliver recorded music, such as Walkman's, CD players, and iPods. In this sense, designers have always been involved in presenting the pre-recorded music playing experience to people. As the needs and expectations of users have evolved, so designers' contributions have also developed, especially in the transition from physical to digital music players. The history of this evolution will be explored in this study, plotting how pre-recorded music playing experiences have changed or remained the same alongside the changes in product design and means of delivering music. A

proposal of design and future music playing experiences will be presented at the end of the thesis.

Keywords: User Experience, User-Product Interaction, Pre-recorded Music Playing



ÖZ

TEKRAR OYNAT! ÖNCEDEN KAYDEDİLMİŞ MÜZİK ÇALMA DENEYİMLERİNDEKİ DEĞİŞİKLİKLERE YÖNELİK BİR TASARIM ÇALIŞMASI

Yüksel, Sezen

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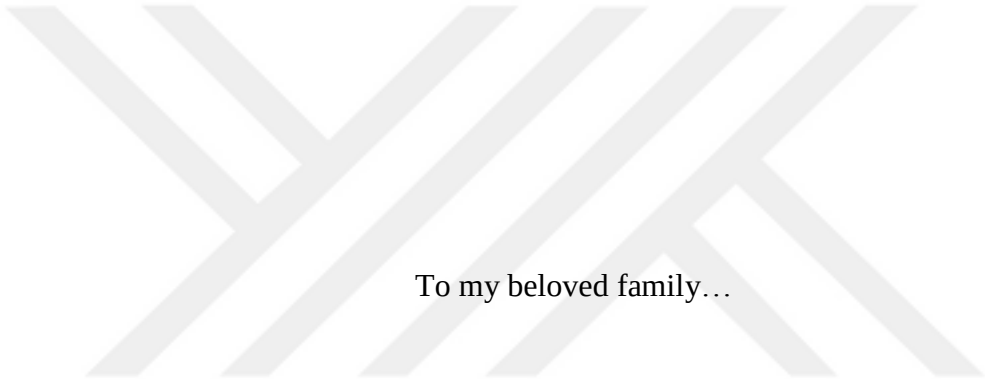
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Müzik insanların kendileriyle ve başkalarıyla bağlantı kurması için her zaman önemli bir unsur olmuştur. Bu çalışmada ana odak, değişen teknoloji ve tasarım ile zaman içinde evrilen önceden kaydedilmiş müzik çalma deneyimlerini araştırmaktır. Teknolojinin gelişimiyle insanların birçok alışkanlığı ve davranışı değişmektedir. Müzik dinlemek, teknolojik gelişmeler ve sosyal bağlamlar açısından yıllar içinde değişen bir deneyimdir. Radyo ve pikaplardan cep telefonlarına ve çevrimiçi yayına kadar, müzik dinleme araçları birçok büyük değişiklik geçirmiştir. Önceden kaydedilmiş müzikleri düzenlemek ve dinlemek için pikap, kaset çalar, CD çalar ve mp3 çalar gibi çeşitli ürünler ve çevrimiçi yayın gibi arayüzler kullanılmıştır. Bu anlamda tasarımcılar önceden kaydedilmiş müzik çalma deneyimini insanlara sunma sürecine dahil olmuşlardır. Kullanıcıların ihtiyaç ve beklentileri geliştikçe, özellikle fiziksel müzik çalardan dijital müzik dinleme platformlarına geçişte tasarımcıların katkıları da değişmiştir. Bu çalışmada, önceden kaydedilmiş müzik çalma deneyimlerinin nasıl değiştiği veya ürün tasarımındaki ve müzik sunma yollarındaki

değişikliklerle birlikte hangi deneyimlerin aynı kaldığı araştırılacaktır. Tezin sonunda gelecekteki müzik çalma deneyimleri için bir tasarım önerisi sunulacaktır.

Anahtar Kelimeler: Kullanıcı Deneyimi, Ürün-Kullanıcı Etkileşimi, Önceden Kaydedilmiş Müzik Çalma





To my beloved family...

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CHAPTER 1

INTRODUCTION

Music can be considered as a notion gathering various practices around itself while involving different actors. As a matter of course, two correlated sides come into existence: those who make music, and those who listen to (or “consume”) music. With this perspective, it is possible to state that the production of music is where the initiation of this correlation occurs. To convey this produced music to others, a manner has to be used which can be considered as either performing live music or recording and then spreading the pre-recorded music. Performing live music can be described as a way to form an “instant” interaction between musician and listener centring on music. However, this interaction would not necessarily be “instant”, and with the need to form an alternative music communication manner, “pre-recorded” music emerged. In order to do so, a medium to “pre-record” the music on to, a product to “play” that medium, and a “user” to use that player/product are required. In this sense, three parties are involved in the interaction: the medium, the player and the user.

With the ceaselessly developing technology, numerous media to pre-record music and various products to play those media have been designed and utilised over the years. Nevertheless, the third party remains the same: the human as the user stays constant, whilst the experience of the personal music-listening practice keeps evolving. The main focus of this study is to explore how that experience has evolved through time, concentrating on the use of different pre-recorded music media and players.

1.1 Scope of the Study

This study focuses on the experiences of users while using the evolving pre-recorded music media and playback products. To construct the exploration, a timeline is formed in accordance with the emerged media, leading to the definition of five major eras. These eras are vinyl, cassette, CD, mp3 and online streaming. Therefore, the research involves the participation of users who have experienced using the media and products of the aforementioned eras to play pre-recorded music.

1.2 Aim of the Study and Objectives

The aim of the research is to investigate the evolution of the personal music-listening experiences from users' perspectives, by analysing different eras of media and – ultimately – to learn about those aspects of the experience that are valued and appreciated, or which need improvement, to help present concepts for future music-listening experiences.

The research objectives following the aim are listed below.

- To analyse the effect of technological developments and digitalization in pre-recorded music playing experiences.
- To assess the change in habits of pre-recorded music playing experiences in relation to the tools (media, players) used.
- To evaluate the user experience (UX) of the tools used for pre-recorded music playing.
- To analyse the contributions of past and present design decisions in pre-recorded music playing experiences.
- To offer concepts for plausible personal music-listening experiences, based on the research outcomes.

1.3 Research Questions

To construct the study, two main research questions were formulated in line with the aim and objectives. Sub questions were also generated, in support of the two main research questions, as stated below.

- How has the experience of pre-recorded music playing evolved through the different eras of media and players?
 - What aspects affect the pre-recorded music playing experience?
 - How has the functional and beyond-functional aspects influenced the pre-recorded music playing experience?
- In what ways can the pre-recorded music playing experience of the user be improved?
 - What aspects should be inherited from the past eras to the present era?
 - How should the inherited aspects be improved and adapted to the existing pre-recorded music playing platforms?

1.4 Structure of the Thesis

This thesis consists of six chapters as listed below.

Chapter 1, *Introduction*, presents a brief introduction to the background of the research. The main focus of the study, the scope, and the aim and objectives are outlined, while the research questions are put forward.

Chapter 2, *Literature Review*, investigates the history of pre-recorded music playing by going through various media and products throughout time and examining their related technologies. Then an inquiry into user experience is presented by exploring user-product interaction and digging into the notion of user experience. Following that, concepts that relate to pre-recorded music playing experience are established by combining the findings of the literature review.

Chapter 3, *Methodology*, introduces the adopted research path for the study, which was defined as two rounds of data collection, data analysis and design proposal. In this chapter, the details of interviews and focus group sessions are presented.

Chapter 4, *Field Study: First Phase*, contains details of a field study built on two rounds of semi-structured interviews with a total of 24 participants. The chapter includes data coding and analysis processes, results, and a first set of design proposals.

Chapter 5, *Field Study: Second Phase*, contains details of a follow-up field study in the form of a focus group session conducted with 6 participants. The chapter includes an analysis of the focus group outcomes, including evaluation of the design proposals.

Chapter 6, *Conclusion*, discusses the findings of the study and leads to conclusions on what was able to be found out. The chapter also expresses the known limitations of the study and gives suggestions for further developments.

CHAPTER 2

LITERATURE REVIEW

The aim of this study is to explore pre-recorded music playing experiences through time, paying attention to changing technology and design. As the scope of the study, listening to music is analysed with a focus on the activity of pre-recorded music playing and, in particular, on the interaction between users and physical/digital music players. “Music playing” is preferred as a term since “listening” to music emphasises just the sonic experience, whilst the focus of this study is much wider to encompass user-product interaction and resulting experiences that go beyond the audible.

With this introduction in mind, the research was planned to benefit from literature in two distinct areas of study. The first was to examine the evolution of music playing media and players. By reviewing the relevant literature, the technological developments, innovative solutions, and milestones could be presented, thus building a foundation for carrying out the field study. In the second part of the literature review, user-product interaction and experience was explored, with a view to establish the formal connections between users and products, namely user experience (UX). Different UX frameworks were studied and are presented later in the chapter. The frameworks were lastly reflected upon to establish necessary terminology and concepts for analysing (and designing for) music-playing experiences.

2.1 The History of Pre-Recorded Music Playing

2.1.1 Introduction

Humanity’s relationship with music, albeit constantly changing, existed since the beginning of time. It has been a way for people to express themselves and to

communicate with each other. According to Montagu (2017), music can be described as “sound that conveys emotion”. While “conveying emotion via sound”, from the musician to the listener, a way of communication is needed. It can be through listening live or listening to pre-recorded music via a medium. By contrast with live music’s long history, recording media are a more recent technology. The media have changed throughout the decades, with regards to technological developments and social contexts.

In this chapter, the prominent media that have been used for listening to music will be explored. Most of the technological developments and products also cover sound recording, dictation, video recording, etc. besides music playing, but the focus of this study is on the pre-recorded music playing experiences. In this exploration, a timeline will be followed in order to track the changes in experience and present the milestones in history of music players. While creating the timeline, radios were excluded intentionally since radios stream music by stations, thus, the storage medium and music selection are lacking. It is the storage media and the music selection which shapes parts of the interaction and users’ music playing experiences.

2.1.2 Formation of the Timeline

As stated in the introduction, a timeline is formed according to the used media/formats in music playing experiences. While constructing the timeline, 2019 sales data from the Recorded Industry Association of America (Perry, 2019) was used. The data of RIAA is used as a representation for general music playing habits. As presented in Figure 2.1, there are 23 formats (using various media) used for music playing experiences in the RIAA’s sales charts covering the time period from 1973 to 2019. However, the timeline created for the study covers the period by starting with the invention of phonograph and ending in 2021.

Following RIAA’s sales chart, a simplified and more compact timeline is created to use in the study. Similar formats which can be used in similar media, having similar

technologies, and providing similar experiences, were collected under one title to present the timeline in a more structured and media-focused way. As shown in Figure 2.2, the timeline consists of five different eras, namely: vinyl, cassette, CD, mp3 and online streaming. A gradient effect is used in Figure 2.2 while showing the eras, with the aim of demonstrating the decrease in the media sales and eventually, the end of that era. More than one medium has been used in certain time periods thus, in practical terms, it is accepted that eras overlap each other.

There can be different ways of classifying music-playing products and forming the eras. For instance, Millard (2015) investigated a timeline based on three different eras defined as “the acoustic era”, “the electrical era” and “the digital era”. Such classification may also be used, but since the focus of the study is the user experience (UX) provided through different products, classification is made with the priority of developed and used formats and products.



U.S. Recorded Music Revenues by Format
1973 to 2019, Format(s): All
Source: RIAA

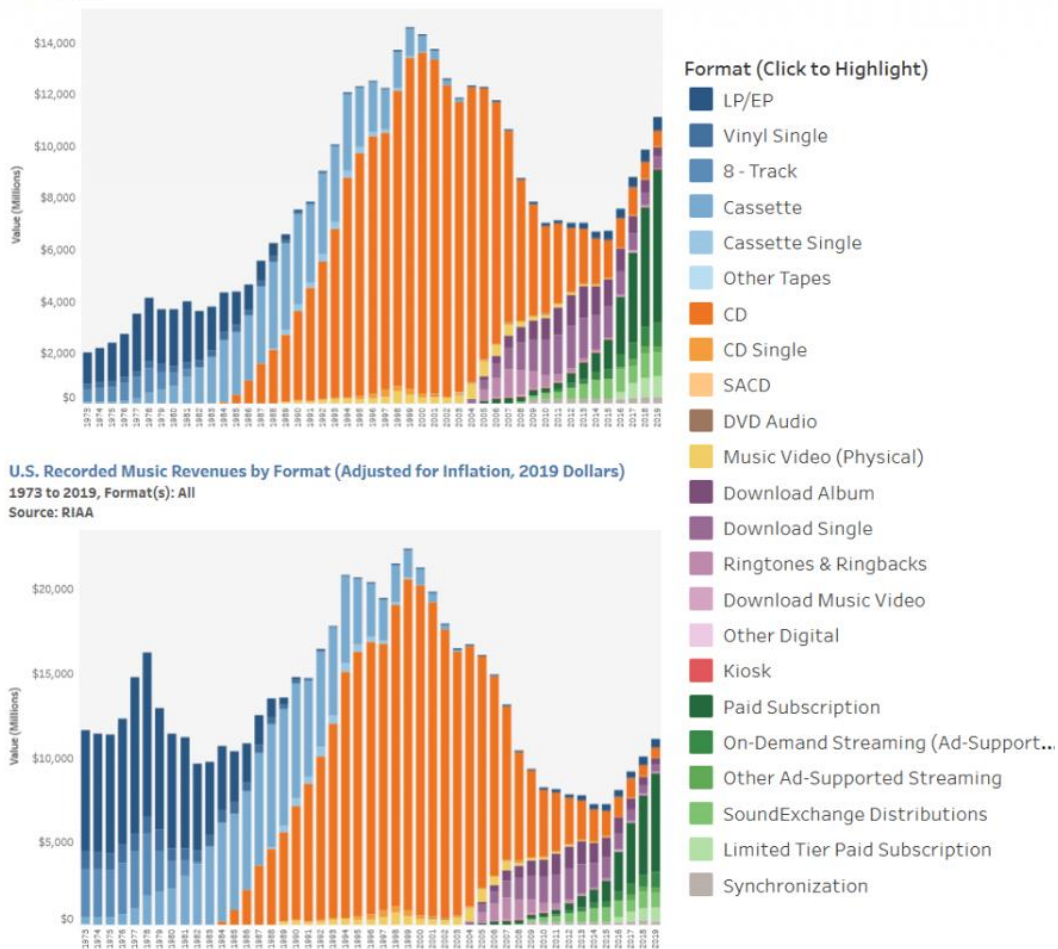


Figure 2.1. Recorded music sales by format share (Perry, 2019)



Figure 2.2. Timeline created for this study

2.1.3 Eras

2.1.3.1 Vinyl Era

The “vinyl era” covers all the disc shaped media used for playback using phonographs and gramophones, including wax cylinders to glass discs, and from shellac to vinyl records. After vinyl stepped in as the default material to be used in these discs, it became synonymous as the everyday name of the medium and the era. As illustrated in Figure 2.2, the era begins in 1877, starts to fade away in 1980s and is considered finished in 1995 (aside from its revival in more recent times). As seen in the figure, it is the longest era with a span of 118 years. Within these 118 years, many technological developments occurred, and even different eras started. The most significant developments throughout that time and after the era will be covered in the following sections.

2.1.3.1.1 Where It All Began: Phonautograph

The starting point of the timeline, which can be considered as the solid foundation of today’s music playing experiences, dates to the 1800s. The phonautograph (Figure 2.3) can be considered the first device to record sound. Édouard-Léon Scott de Martinville, a French inventor, is the creator of the phonautograph in the year 1857. The device represented sound graphically on a rotating cylinder. So, it was able to record sound but unable to play it back (Donald C. Davidson Library, n.d.).

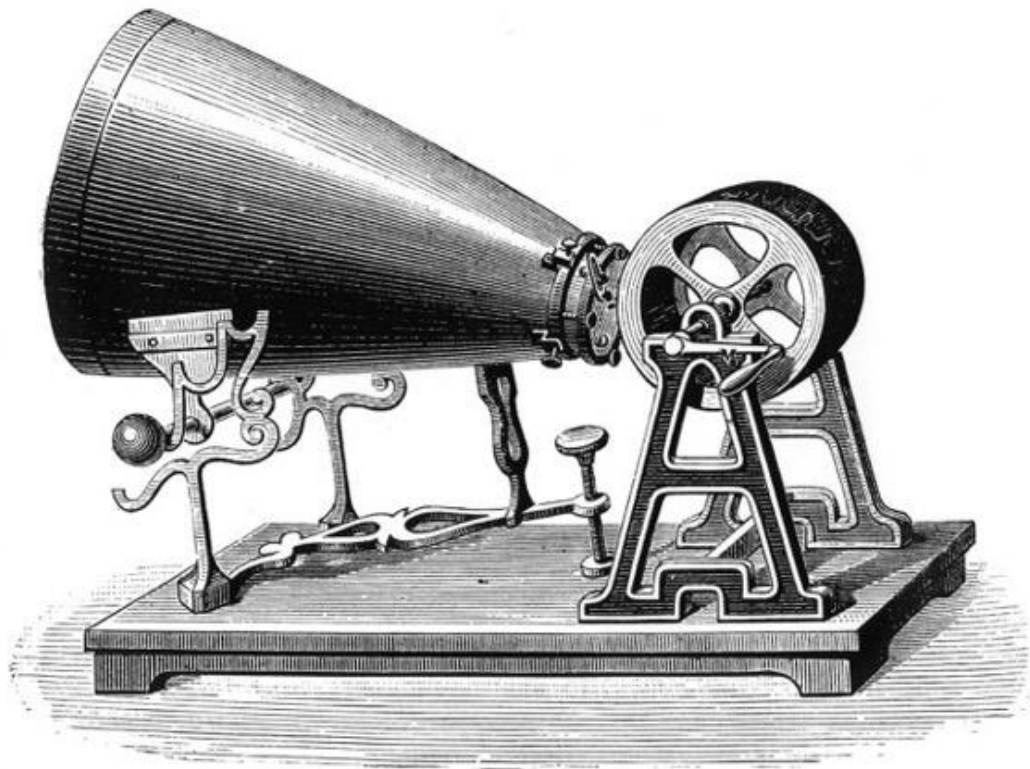


Figure 2.3. Phonautograph (The Library of Congress, n.d.)

2.1.3.1.2 Playing It Back: Phonograph

When it comes to playing back a pre-recorded sound, the phonograph was the first attempt to do so, invented by Thomas Edison in 1877 (Figure 2.4). The first sound that was recorded and played back, was the sentence “Mary had a little lamb.”. The sound was recorded in wave forms to cylinders and then played back by tracing them with the help of a stylus. (Donald C. Davidson Library, n.d.). Edison, himself, was referring to the phonograph with utmost attention among his inventions (Edison, 1878). Both the phonautograph and phonograph paved the way of recording and reproducing music, which can be considered as the essential components of music playing.

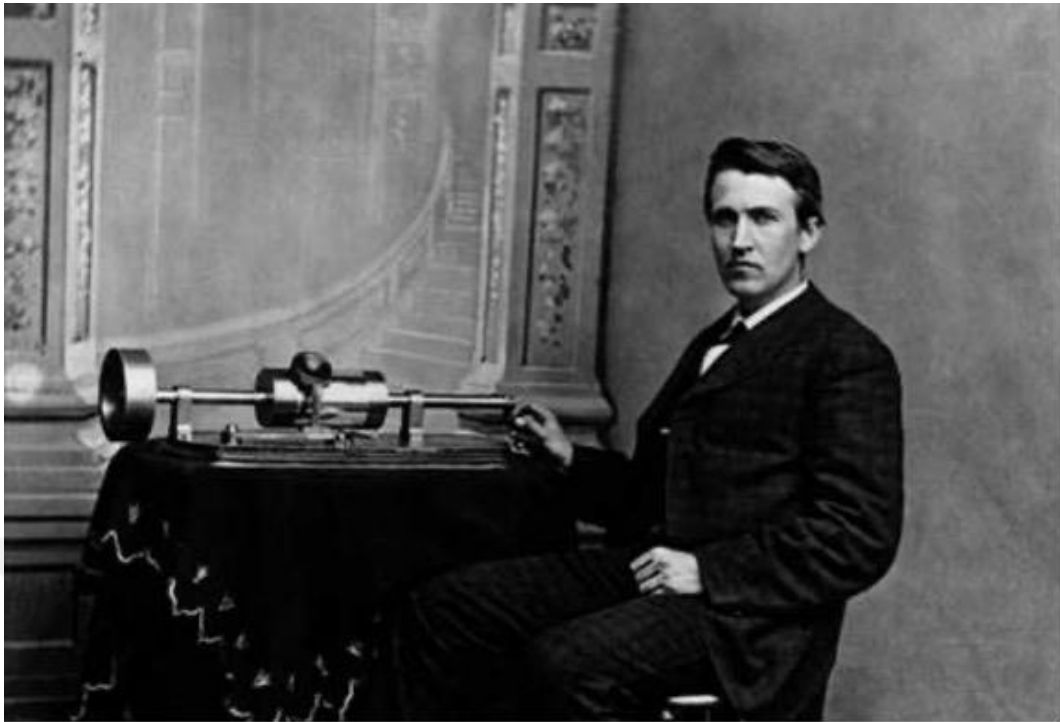


Figure 2.4. Phonograph and Thomas Edison (The Library of Congress, n.d.)

2.1.3.1.3 First Step of Mass Production: Gramophone

Following the path created with the inventions of phonautograph and phonograph, a significant innovation was brought by Emile Berliner, the inventor of gramophone, in 1887 (Figure 2.5). Unlike the phonautograph and phonograph, where recordings are made on cylinders, the gramophone was able to record on flat discs, which can be considered as the first step towards mass production of a music recording medium (The Library of Congress, n.d.). Moreover, the gramophone presented ‘sound quality’ as a major new feature. As McKendrick (1909) illustrates, in addition to pitch and intensity, the gramophone could record the quality of each individual instrument and vocals within an orchestral piece of music. With these developments, the gramophone can be considered as a milestone in history regarding music playing experiences since it opened the way to mass consumption of pre-recorded music.

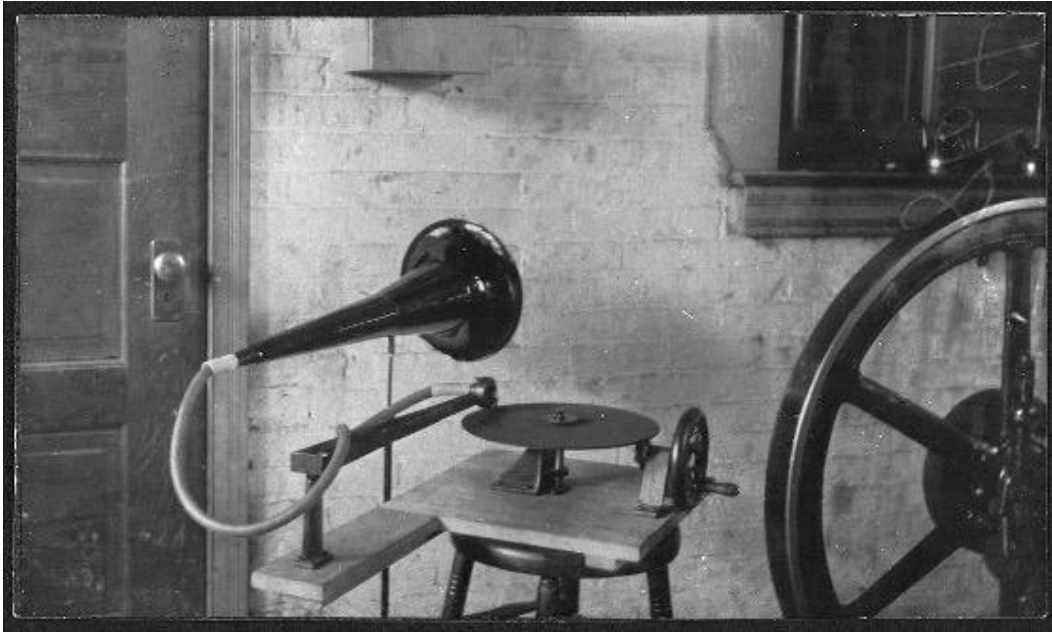


Figure 2.5. One of the first gramophones set next to large mechanical wheel (The Library of Congress, n.d.)

2.1.3.1.4 The First Record Shop: Spillers

In accordance with Bartmanski and Woodward (2018), (vinyl) records can create a connection between people “in real space and time” and record stores can be described as “social spaces where knowledge and feelings are shared”. With these points in mind, visiting a record store can be considered a part of the user experience of music listening. Consequently, the first record store can be considered as a milestone in the mentioned timeline. Spillers Record Shop (Figure 2.6) was the first record shop, established in 1894 and located in Cardiff, Wales (Spillers Records, 2008). The record shop was named after the founder, Henry Spiller. In the store, they sold phonographs, wax phonograph cylinders and shellac phonograph discs.



Figure 2.6. Spillers Records (Spillers Records, n.d.)

2.1.3.1.5 Material Change: Vinyl

With the invention of the gramophone, flat discs stepped in as a major recording medium. Various materials were used in the making and coating processes of these discs, but shellac was the most common material until World War II. During and after the war, the supply of shellac became vastly limited and difficult (Yale University Library, n.d.). A need for new material, to replace shellac in records, was formed. Osborne (2012) states that, in immediate response, record production employed a new material, PVC (polyvinyl chloride), which was first manufactured by The US Union Carbon and Carbide Company. The earliest examples of vinyl discs were produced in the early 1930s, with the aim of recording popular radio shows and re-broadcasting them from smaller radio stations across the USA. Thanks to the material qualities, vinyl discs provided longer play time and less surface noise

compared with wax cylinders and shellac discs. In 1948, Columbia Records introduced the microgroove 33-1/3 rpm long-play vinyl record, which became known as the ‘long play’ (LP) (Audio Engineering Society, 1999).

2.1.3.2 Cassette Era

The second era of the timeline following the “vinyl era” is the “cassette era”. In the same manner as the vinyl era, this title aims to cover different products and media with similar technologies, functions, and features. The era starts in 1965. The usage of cassettes as a music playing medium starts to decrease in the 1990s and completes its lifespan in the early 2000s as shown in Figure 2.2.

2.1.3.2.1 The Starting Point

Before exploring the evolution of cassette players, it is essential to illustrate how the underlying technology started and developed. As the Audio Engineering Society (1999) mentioned in the audio timeline, magnetic recording technology (on steel wire) by using a “Telegraphone” was first patented by Valdemar Poulsen in 1898. Steel wire was replaced by steel tape with the development of the “Blattnerphone” in 1929. Following these innovations, the first tape recorder, “Magnetophon” was presented by the German company AEG at the Berlin Radio Exposition in 1935. As stated by Kusisto (1977), the technology of “Magnetophon” introduced sound recording and reproduction by bonding a magnetic material to a plastic tape. A combination, the Blattnerphone and the Magnetophon formed the roots of reel-to-reel or open reel audio tape recording technology, in which the tape is mounted on a reel (instead of being inside of a cassette or a cartridge, which came later).

2.1.3.2.2 8-track Cartridges

As illustrated by Millard (2015), car radios were common in the automobile industry during the 1950s and 1960s, but there was still a demand from users to decide what

to listen to and to choose their own music while travelling. After different trials, some solutions were developed by the early 1960s, such as 4-track tape cartridges. Later on, in 1964, the Lear Company proposed an idea to Ford Motor Company, which would become the root of the 8-track system. Ford bought the idea and in collaboration with Motorola, the 8-track tape cartridge was developed. As mentioned by Holmes (2013), in 1965, 8-track tape cartridges were introduced to the automobile industry to be used in high-end cars as a stereo music system.

RCA also became involved in this new development and started to produce various pre-recorded choices to use on the tapes, which helped promote the product to people of different musical tastes. The production range widened to encompass home-use products, besides automobiles (Millard, 2015). The usage of 8-track tapes rapidly increased and were widely used, until eventually superseded by the Philips compact cassettes, which became more popular because of their compactness and convenience (Holmes, 2013).

2.1.3.2.3 The Milestone: Compact Cassettes

While magnetic recording technology was developing and new improvements were being introduced, in 1963 Philips Research brought a major innovation to the industry with a new patent in magnetic materials, which can be linked to the birth of the “compact cassette” and, also MRI (magnetic resonance imaging). (Philips, n.d.) The introduction of compact cassettes can be considered as a milestone in the music industry. As mentioned by Philips (n.d.), the first compact cassette audio player turned out to be a major marketing success and a popular product. Stereo compact cassette players, car and portable players came after this innovation. Figure 7 presents the first Philips cassette player/recorder, which can be considered as a milestone in this study’s timeline as well as the music industry. It paved the way for subsequent milestones in the timeline such as the Sony Walkman, which will shortly be explained further.



Figure 2.7. Archived photo of the First Philips Cassette player/recorder (Philips, n.d.)

In 2013, Philips celebrated its fiftieth birthday of the compact cassette with the words: “That’s 50 years of playing, recording, fast forwarding, rewinding and flipping the tape.” (Philips, 2013). These words can be sufficient to evoking the usage scenario for compact cassettes. “Recording” and “playing” were the essential points of the music playing experience, however, “fast forwarding”, “rewinding” and “flipping the tape” can be considered as the unique characteristics of cassette playing experiences that are tied directly to the ways of interacting with the medium.

2.1.3.2.4 A Failed Technology: Elcaset

As stated by Holmes (2013), cassettes continued to be improved in quality after their huge introductory success and in 1976, the famous Japanese firms Panasonic, Sony and Teac developed a new audio format called “elcaset”. This new format came with a smaller tape width and faster run speed but was promoted only by Sony. Unfortunately, this new format turned to be a failure in the markets, due to a significantly higher cost, yet very little improvements for daily users. In addition to that, all around the world, millions of people were already using compact cassette

players, so a huge shift in the audio format would have also required a huge change in the music players of users.

2.1.2.1.1. Personal and Portable: Sony Walkman

One of the most significant developments taking place in the timeline is Sony's revolutionary 'Walkman' product, because of the distinctive features it brought to the music playing experience. Hence, 1979 can be considered as a remarkable year in the timeline with the emergence of the Sony Walkman. As mentioned by Sony (n.d.), Ibuka (co-founder of Sony) brought the idea to Morita (another co-founder of Sony) and presented an early version of the product; Morita gave it a try and was quite impressed by the potential of it. Ibuka described the product as "a stereo cassette player that you can listen to while walking around", so this portable and personal usage of the product was welcomed with big excitement. Sony (n.d.) presented the marketing strategy of the ever first product with young people as the centre of their target user group. Even the release date of the product was determined according to this objective, by considering the possible sales potential before the summer vacation. Throughout the name selection process, target users were still the priority. The popularity of Superman among young people at the time affected the structure of the name formation and the usage area of the product, which is "on the go, while walking". Therefore, the "Walkman" was introduced to the market with its energetic and joyful concept as presented in Figure 2.8. As stated by Sony (n.d.), with its pioneer character and wide popularity, the name of that specific product turned out to become a generic name of "headphone stereo products".



Figure 2.8. First stereo cassette player "Walkman", the TPS-L2 (Sony, n.d.)

2.1.3.3 CD Era

The third era of the timeline coming after the “cassette era” is the “CD (Compact Disc) era”. During this period, several products were developed to embody technological innovations. The considerable distinction of this era from the previous eras, is digitization. In keeping with Holmes (2013), the prominent feature of the CD as a recording medium is the storage method, which uses digital technology rather than the analogue recording and playback technology that had been used up until that point. As illustrated in the timeline (Figure 2), the era subsumes the period from 1982 to today, however, CD sales started to rapidly diminish in early 2010s.

2.1.3.3.1 First Steps of Digitization

Since the first examples of recorders and players, analogue technology relying on acoustic recording methods was employed. In accordance with Millard (2015), the digital era started with the innovation of converting sound waves into electrical waves, and then, digitally encoding the electrical waves as a series of 1s and 0s, rather than copying the waves to cylinders, vinyl records, or magnetic tapes with

analogue or electrical techniques. Several trials were made for different purposes in terms of digital recording such as PCM (pulse-coded modulation) technology used in the development of telephones, microphones, and also, storage media.

As an early example of this technology, the floppy disk was introduced to the market in 1971 by IBM as a data storage medium for computer systems (IBM, n.d.). The floppy disk was not a convenient medium for music considering its limited capacity. As Millard (2015) highlighted, a floppy disk could store around 1.5 million characters of data (1s or 0s) while CDs were able to store more than 650 million.

2.1.3.3.2 A Breakthrough: Compact Disc (CD)

As Philips (n.d.) mentioned, with the development of optical recording technology, a study, focusing on a “digital optical audio disc with error correction code”, was established under the roof of Philips in 1974. Meanwhile, several companies were also conducting projects with a similar focus: indeed, Sony was the first to introduce a digital optical audio disc in 1977, at the Audio Fair. Following this, a 11.5 cm Optical Disk and, a Compact Disc Audio Player were presented by Philips in 1979. As stated by Sony (n.d.), the two leading companies in the industry, Philips and Sony, came together to collaborate with the aim of developing the latter product and to put equal contribution and rewards into the process. As noted by Peek (2010), Philips and Sony succeeded in defining the world standard-to-be format 12 cm Compact Disc in 1980, followed by its introduction to the market in 1982. Peek (2010) mentions that the CD paved the way for subsequent audio, audio-visual and data storage media such as the CD-ROM, CD-R, CD-RW, DVD, and eventually Blu-Ray.

2.1.3.3.3 The First CD Player

As a brand-new recording medium emerged, the industry started to adapt to this technology. As Sony illustrated (n.d.), the world’s earliest CD player system was

developed in 1982 through a collaboration of four major audio companies at the time (Sony, CBS/Sony, Philips and Polygram). The product created a tremendous impact in the industry. In late 1982, Sony made a slight difference in terms of positioning the CD, having it play horizontally instead of vertically. With this new design decision, Sony brought out the model CDP-101 (Figure 2.9), coinciding approximately on the 100th anniversary of the phonograph.



Figure 2.9. The world's first CD player, the CDP-101(Sony, n.d.)

2.1.3.3.4 Following Walkman's Wake: Discman

As reported by Sony (n.d.), two years after the CD's launch, Sony introduced a new model, the D-50 (Figure 2.10), in November 1984. This product was small and portable in comparison with the previous players, and also affordable. Even Sony did not predict its significant popularity. However, thanks to the great sales numbers, Sony decided to develop a new market for portable CD players, and with this new market, CDs began to be sold in larger volumes. After the wide usage, Sony's portable CD players started to be named as "Discman", directly following the naming of the predecessor Walkman. After the high demand that the D-50 brought, Compact Discs became the main consumer audio format within four years. By 1988, annual CD production equalled the highest LP production, reaching 100 million units per year.



Figure 2.10. Portable CD player D-50 (Sony, n.d.)

2.1.3.3.5 Getting Smaller: Mini Discs

As mentioned by Sony (n.d.), with the diminishing popularity of compact cassettes and the growing demand of CDs, the music industry changed its focus to digital audio formats. In many aspects, CDs can be reviewed as a huge success considering the ease and speed of random access and search, as well as the durability of the medium to withstand scratches, dirt and bad handling. Nevertheless, since the early CD format was read-only, users were not able to rewrite onto the medium. With the aim of achieving a re-writing ability and making the medium smaller, Sony developed a new medium launched in 1992 named the “Mini Disc” (MD), which offered recording options that mirrored those on compact cassettes and with better sound quality (not as good as CDs, since the format involved lossy data compression, but nevertheless superior to compact cassette). Compared with CDs, the medium was portable, compact, and less susceptible to knocks and jumping that interrupt the on-the-go music listening experience. As Ishida et al. stated (1993), Mini Discs combined the main features equal to a CD, including a maximum 74 minutes of playback time, but within a much smaller (64 mm diameter) disc protected within a rectangular case. When Sony introduced the Walkman, the concept of ‘portability’ became a great concern and a design consideration for music players. The Discman

followed the path set by the Walkman, whilst the Mini Discs players took the concept even further.

Despite all these innovations, the Mini Disc did not become a global standard as an audio format. In accordance with Millard (2015), the failure of the Mini Disc was caused by the scarcity of pre-recorded MDs in the shops and the high price of MD players. Even though Sony announced 1998 as the “Year of the Mini Disc”, it turned out to be a disappointment. Changing the existing habits and preferences of users is difficult, as understood by this example, especially when an investment in physical music players has already been made (for most people, investing in CDs). Millard (2015) states that SACD (Super Audio Compact Disc) also encountered a similar failure because of the lack of pre-recorded discs and their relative expense, causing inertia to change users’ preferences, in spite of the superior sound quality.

2.1.3.4 Mp3 Era

In fourth place, the “mp3 Era” follows the “CD Era” in the timeline. Throughout the mp3 era, several products were developed, targeting different groups, using different technologies, and having different considerations. The common point of all these products was the newly developed “mp3” standard audio format (computer file) used to digitally encode and play back music. With this standard, the need of a special physical medium to play music disappeared – mp3 files were simply stored in digital memory on generic media such as memory chips or hard drives. Thus, a totally digital music format emerged, which directs this era’s focus towards music players instead of audio formats. The abovementioned time period starts in 1998 with the launch of the ever first mp3 player and continues today. However, in 2016 sales started to decline due in part to the increase in the variety of online streaming platforms and their popularity, and in part to the advanced capabilities of music playback on people’s smart phones, negating the need for specialist ‘mp3 players’.

2.1.3.4.1 Birth of the Mp3 Standard

The initial studies for digital audio encoding, which would eventually result in the mp3 standard, started in 1987, as mentioned by Fraunhofer IIS (n.d.). A group was formed of members from Friedrich-Alexander University Erlangen-Nuremberg and the Fraunhofer Institute for Integrated Circuits IIS in Erlangen. The years of study brought results and the format was proposed in 1993, while the computer file extension name “.mp3” was announced in 1995, which would become a worldwide audio standard and a generic name for a digital audio file.

As stated by Holmes (2013), mp3 refers to MPEG-1 Audio Layer III, and can be defined as a digital music encoding format that results in a very small file size but an acceptably high sound quality. Digital audio files had already been used in the creation of Compact Discs and it was possible to ‘rip’ a CD into high resolution audio files for storage on a computer, typically with the Wave ‘.wav’ extension name. However, these ripped files required large amounts of storage (a one-minute WAV file is approximately 10 megabytes in size). The mp3 format compressed the audio file size to approximately one tenth the size of the originating WAV file. The decrease in file size brought negligible deterioration in sound quality (to most listeners’ ears on consumer level music players) but significant advantages such as easily playing, organizing, and transferring of large numbers of music files, even via e-mail. In accordance with Denegri-Knott and Tadajewski (2010), no later than 1999, “mp3” was the most frequent keyword in Internet searches.

2.1.3.4.2 The First Mp3 Player

The year of 1998 is determined as the starting point of the “mp3 era” in this study because it was the year that the first portable mp3 player was established. Heeding Abel (2008), the Korean company Saehan Information Systems developed and introduced the first portable mp3 player, named MPMan (Figure 2.11), in February 1998. The mp3 player, as a physical product, was made possible through the

combination of the newly developed mp3 standard and the gradually decreasing cost of flash memory to store the files on. Following the MPMan, as stated by Novak, et al. (2006), the Rio PMP300 by Diamond Multimedia was the earliest example of an mp3 player creating a remarkable effect in the U.S. market. In September 1998, just before the Christmas season, the product proved highly successful and surpassed the company's expectations for sales.



Figure 2.11. The first portable mp3 player; MPMan F10 (Historic Tech, n.d.)

2.1.3.4.3 The Game Changer: Apple

Several electronic companies developed different models of mp3 players throughout the years, however, Apple can be considered as the gamechanger in the market. Abel (2008) explains that in 2001, Apple introduced the first iPod (Figure 2.12), despite over fifty companies already competing in a crowded marketplace. The introduction of the iPod caused a major growth in the market. Abel mentions the reason of the success as the solutions Apple brought to the problems of the contemporary mp3 players at the time, regarding product dimensions, data storage, user interface (UI) design and access to legally available songs. One of the greatest innovations Apple made was the coherent usage of the iPod with the music store they developed, iTunes, in 2003. Abel states that another factor of Apple's success was the absence of a competitive atmosphere in the digital audio player market. Sony, the leader of

the portable music player market ever since the introduction of the Walkman, did not behave in an agile way in the mp3 market and instead invested in the Mini Disc player at that time. Meanwhile, similar products were developed by Samsung and Thompson/RCA, without major innovation or support.



Figure 2.12. The first iPod, introduced in 2001 (Apple Inc., 2020)

Apple Inc. (2020) illustrates the developments that have been made on iPods, across different models with different features. As portability became an ever-increasing consideration, the iPods became smaller. Hence, with the concern of portability and product size, Apple established a new model in 2004, the iPod Mini, with different colour options, shown in Figure 2.13.



Figure 2.13. Different colour options of the first generation (2004) iPod Mini (Apple Inc., 2020)

Apple Inc. (2020) presented other developments in the iPod, following the iPod Mini, with the iPod Shuffle (early 2005), Nano (late 2005) and Touch (late 2007), as shown in Figure 2.14. With the Shuffle, Apple aimed to make the product much smaller by removing the display and adding LED lights for feedback. With the Nano, Apple aimed to decrease the size in comparison with the iPod Mini but provide a colour screen. On the latest model iPod, Apple presents a multitouch screen and features including web browsing on Safari, direct access to the iTunes Store and shopping options, etc. Apple not only launched different iPod models throughout the years, but also developed the models and released newer generations by adding features and making general improvements. Hence the name ‘iPod’ became synonymous with a whole family of music players.



Figure 2.14. Left to right: the first generation of Apple iPod Shuffle, Nano and Touch (products not shown to the same scale) (Apple Inc., 2020)

2.1.3.5 Online Streaming Era

The final era illustrated in the study’s timeline is the “online streaming era”. The most distinctive aspect of this era is the absence of a physical product specifically used for music playing. Instead, digital platforms are employed, which can be accessed via a range of digital devices running different operating systems or through web services (e.g., smart phones, laptops, desktop computers – as well as the newest

iPods). Throughout this era, several digital platforms were developed with different strategies and different features. The era covers the period between 2005 and now. However, the foundation of the online streaming platforms was actually laid in 1993 with the Internet Underground Music Archive (IUMA). As mentioned by Moreau (2013), IUMA was an organization which presented a database for independent musicians' songs. Moreau also mentions the eMusic platform, an online platform providing legal use of published music with a subscription, which was introduced in 1998. This platform did not provide a wide range of musicians and songs, since only independent labels ('indies') were included. There have been – and still are – a large number of online platforms for music streaming, however, in this part, just several of the prominent platforms are covered to introduce the chronology and main principles.

2.1.3.5.1 An Important Step: Napster

According to Abel (2008), Napster, which was established in 1999, can be considered as a platform having a significant impact on the development of online music platforms. The distinguishing feature of Napster was the ability to reach and download songs which are obtained from other users for free, while the only requirement was an Internet connection. Other platforms were providing music through their own servers, whereas Napster can be defined as a medium to exchange music. As highlighted by Roberts (2001), no later than mid-2000, more than 3 billion songs had been swapped, which inevitably caused decreases in sales of new music by record labels. In the late 2000s, Napster was shut down for legal reasons.

2.1.3.5.2 Internet Radio: Last.fm

In 2002, an online radio station was introduced to the market with a goal of providing a selection of music to listeners according to their taste by scanning the songs users had already played (Website offers new view of music, 2003). As Haupt (2009)

mentioned, besides presenting songs, Last.fm also allows people to socialize within the website thanks to forums and groups, and users can contact other users who share similar music tastes. This can be considered as the roots of playlist recommendations, which analyse a user's past preferences and propose a subsequent music selection according to the analysis results.

2.1.3.5.3 Reaching Music Videos: YouTube

2005 was a remarkable year for online streaming in terms of both audio and video content, thanks to the launch of YouTube. As mentioned by Burgess and Green (2009), the founders of YouTube (Chad Hurley, Steve Chen and Jawed Karim) were at the time working at PayPal. They created a user-friendly and easy to use website which aimed to be used by anyone without any technological background and to provide accessibility. YouTube (n.d.) explains its main goal as presenting a medium for people to express themselves freely and explore all other people from anywhere. With this aim, now YouTube has reached more than 2 billion “monthly logged-in users” in over 100 countries around the world (YouTube, n.d.). With YouTube, music videos (an enhanced form of music playing) became easy to access at any time; indeed, the platform turned out to be a medium that can be used specifically for listening to music, disregarding the visual content.

2.1.3.5.4 Bridging Users: SoundCloud

Another noteworthy platform in the sector is SoundCloud, created in 2007 and launched in 2008 by Alexander Ljung and Eric Wahlforss, in Berlin, Germany. As stated by SoundCloud (n.d.), it is the biggest platform for music and audio sources, aiming to provide a medium for users to share and explore music. The features setting SoundCloud apart from other platforms is explained as the distinctive functional aspects such as serving as a bridge between artists and listeners. As explained by Ljung (2017), while creating SoundCloud, Ljung and Wahlforss realized the potential to create a medium for musicians to directly share their content

and interact with other users. SoundCloud is still being used by millions of people worldwide.

2.1.3.5.5 Considering Artists' Profit: Bandcamp

In 2007, a remarkable platform and model was developed in the USA called Bandcamp (Bandcamp, n.d.). The platform has a model in which artists can share and sell their own content: digital files of their music, vinyl records, cassettes, CDs, merchandise, etc. and receive 80-85% of the income from those sales. The platform started to make profit with this model in 2012, 5 years after its establishment.

2.1.3.5.6 The Milestone: Spotify

The year of 2008 can be highlighted in this era because of the birth of Spotify. The reason to consider Spotify as a milestone in the era is its huge impact all around the world. Spotify is now the global leader in the market of music streaming, since it is the most used subscription-based platform, with 345 million users, of which 155 million are paid-subscribers (as of December 30, 2020). The goal of Spotify was expressed as embracing people's creative sides by creating a medium for artists to share their content with others and for users to explore the great audio collection of the world. (Spotify, n.d.). The UI of Spotify's mobile application can be seen in Figure 2.15.

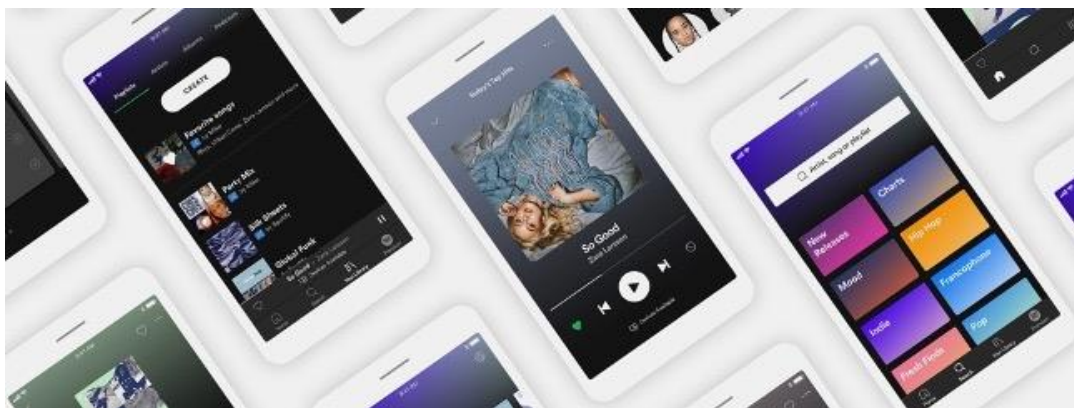


Figure 2.15. Mobile App UI of Spotify (Spotify, 2018)

2.1.3.5.7 High Fidelity: TIDAL

In 2014, a platform with a different concern, named TIDAL, was launched by the Norwegian firm, Aspiro. As mentioned by TIDAL (n.d.), TIDAL (Figure 2.16), can be defined as the first online streaming platform that provides high fidelity music that is manually selected by professional curators, musicians, etc. With innovative, high quality and lossless audio formats, TIDAL became a distinctive platform also targeting audiophiles or listeners demanding an “exclusive experience”.

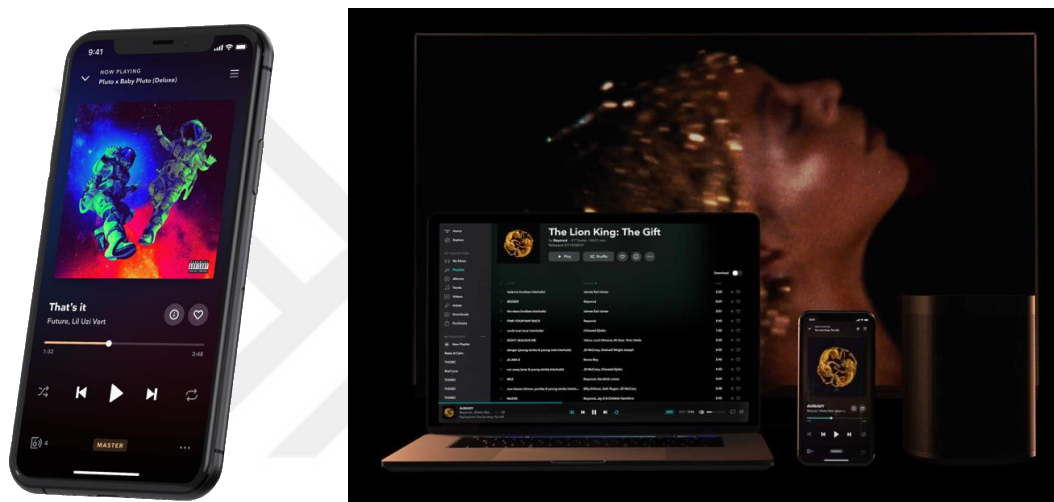


Figure 2.16. UI of TIDAL (Tidal, n.d.)

2.1.3.5.8 Apple's Big Step: Apple Music

After making a big impact in the “mp3 era” by creating the first iPod and iTunes Store, followed by the development of various iPod models and innovative features, the technology company Apple entered the “online streaming era” in 2015 by launching an online music streaming service named “Apple Music”, shown in Figure 2.17. The platform provides the widest range in terms of copyrighted music content from major labels and subtle playlists by curators. These playlists can even be considered as a distinctive feature of Apple Music, since the curation is made by expert hands aiming to address different tastes of different users. (Apple Inc., 2015).



Figure 2.17. Apple Music UI on different devices (Apple Inc., 2020)

2.1.4 Revivals

This literature review has investigated music playing experiences through five eras. However, these eras cannot be considered as the only time periods of a product's usage. Some of the products of earlier eras started to be used in more modern times, often by people who were not born or who did not participate in the original era. In such cases, the playback media and accompanying music players have made a comeback, which for this thesis will be referred to as a “revival”.

2.1.4.1 Vinyl Revival

As illustrated in Figure 2.1, the sales of vinyl records started to increase in 2006, which brought a new era-like period called the “vinyl revival”. Bartmanski and Woodward (2015) state that 2012, the 125th birthday of Berliner's phonograph, was the year when the sales of vinyl records reached a peak not seen since 1993. Regarding the user group, in accordance with Sarpong, Dong and Appiah (2016), vinyl revival addresses music lovers of different age groups and this interest is derived from the paradoxical “retro-technology” phenomenon. Considering the time period, according to Bartmanski and Woodward (2015), the vinyl revival happened at exactly the same time with the dominance of digital technologies and their great influence in the music sector. With this perspective, in a digital world, despite having

digital options, there are some users who intentionally select the old and analogue option for their music listening. Nokelainen and Dedehayir (2012) listed the reasons for this choice as: high sound quality, the nostalgic feeling, difficulty to accept upcoming technologies, availability of desired music, physical interaction, and fragile nature of vinyl records.

2.1.4.2 Cassette Revival

The era following the “vinyl era” is the “cassette era”, hence, as expected, the revival following the “vinyl revival” is the “cassette revival”. As presented by Nielsen Music (2017), by growing 74%, the sales of cassette albums made a great jump in 2016 with 129,000 copies sold in the USA. With this development, 2016 can be considered as the beginning of the “cassette revival”. On the other hand, Demers (2017) states that, the term “revival” refers to a comeback of a practice which was not in use anymore, however in many places worldwide cassettes had never ceased being used, despite their obsolescence in North America or Western Europe. Nevertheless, after years of decline and unpopularity, cassette sales made a rapid increase, which can be considered as one form of “revival”. For example, in March 2020 a French company Mulann, even started a crowdfunding campaign in Kickstarter for production of a portable cassette player (Mulann, 2020).

2.1.5 Future Concepts

As uncovered in this literature review, music players have been constantly evolving and it would be pertinent to state that it will keep evolving in the future. There are many studies in the field focusing on the future of music playing experiences. Both physical and digital options are being developed with different foci and concerns. To exemplify, there are various projects proposing an emotion and mood-based music playing experience in literature (Gupte et al., 2016; Chankuptarat et al., 2019; Arora et al., 2019; Pradeep et al, 2021). In these examples, through facial expressions, user preferences or user feedforwards, platforms detect current emotion/s or mood of the

user and propose a customized music listening experience accordingly. Besides emotions and moods, the ongoing activity of the user is also considered as an aspect for concept solutions. For instance, Kumar et al. (2020) proposes an application that will recommend songs/playlists to users according to their activity, by understanding it through some gathered data such as heart rate. The aim of such a feature is reducing the inconvenience to choose music while doing an activity or making a right selection that will fit the activity.

As well as digital applications, there are various conceptual physical products, mostly focusing on haptic features or commands, such as gestures through wearable technologies. Hashizume et al. (2018) developed a wearable music player, LIVEJACKET, that gives vibrations and sound through speakers located in the jacket. The aim is to support music listening experiences through the use of sensorial input. Although it is not a recent example, Nirjon et al. (2012) developed the 'MusicalHeart' application and earphones. By using sensors, earphones monitor the heart rate and activity of the user and after collecting and processing the data, the MusicalHeart application presents a recommendation as a playlist.

There are various studies focusing on such aspects to build future concepts. Presenting a personal experience to the user can be considered as the mutual target of many studies. While doing so, others aim to decrease the workload of the user through song selection or playlist creation, whilst others seek to increase the user-product interaction by addressing different senses.

2.1.6 Analysis of Key Aspects

After the review of the related literature, some key aspects of music players became apparent that would be important considering the scope and focus of this study. These aspects are: individual use, portability, tangibility of interactions, and cultural impact. Each of these aspects will now be introduced.

2.1.6.1 Individual Use

The first key aspect in the review can be considered as individual use. It is possible to examine this aspect with two different perspectives. The first perspective covers the individual's decision-making processes in the music playing experience. For instance, while using a radio, the individual decision within the control of the user is the station choice; the rest is uncontrollable, the user cannot interfere with the music played at that time, nor access a desired programme at a desired time. With the invention of the phonograph and the developments thereafter, users started to make the selection of "what to listen" and "when to listen". The second point of view covers the individual experience of the practice itself. With the development of headphones, users started to listen to music on their own, creating a totally personal musical space. Sony's Walkman can be considered as one of the most significant examples of that usage. Users were able to listen to music individually, isolate themselves from their surroundings, and – if they desired - get rid of distractions to focus solely on the music.



2.1.6.2 Portability

The second aspect is portability, which created a large impact in the usage of music-playing products in relation to the user group, usage scenario, accessories, etc. Whilst the aspect of individual use refers to the selection of "what to listen" and "when to listen", with portability the factor of "where to listen" can also be a matter of choice. The first example of these aspects again can be considered as Sony's Walkman. The introduction of the portable music-playing practices influenced the music industry dramatically. According to Du Gay et al. (1997), the Sony Walkman created a significant culture referring to both "meanings" and "practices" and, even the name of the product portrays how the product is perceived and used.

2.1.6.3 Tangibility of Interactions

The previous aspects covered “what to listen”, “when to listen” and “where to listen”. With tangibility of interactions, a factor of “how to listen” is introduced. Tangibility of interactions can be explored with two perspectives, referring to the playback medium and the music players associated with that medium. Firstly, media such as vinyl records, cassettes and CDs are physical: they must be handled, placed, and otherwise manipulated to be played. Thus, the media make the music-playing experience centred around tangible interaction. With the development of hardware mp3 players, the need of a handleable recorded music medium disappeared. Secondly, music players such as record players, cassette players, CD players and mp3 players, are specialist hardware that are tied to the playback of certain physical or digital media. Frankly, with the development of online streaming platforms, a specialized physical product for music playback was no longer needed for a large proportion of the population. The capabilities of the hardware mp3 players are nowadays fully incorporated and expanded upon in the smart phones of today: although the iPod is still sold, its existence is as a cut-down version of the iPhone. Likewise, since the streaming platforms are specialized on music playing experiences, they can be used on many different devices such as computers, mobile phones, tablets, etc., as specialist software apps or online services.

2.1.6.4 Cultural Impact

The final aspect to be drawn from the literature review is cultural impact, referring to the formation of practices that accompany the use of a product and which continue to be a part of the ‘world’ of the product (in our case, the music medium, or players). A prominent instance for this may be mixtapes (for compact cassettes), which are directly analogous to playlists in the digital era.

In keeping with Demers (2017), in cases of phonographs and gramophones, users could only experience music in a passive way, according to how it is presented.

However, with the recording facilities of cassette players and the availability of blank tapes, users started to curate their own collections of music, voice recordings, radio recordings, copies, etc. exactly as they desired. The concept of “mixtapes” was born from such practices and can be considered as the root of today’s playlists. Bull (2005) states that after the mp3 format was released and mp3 players were launched, users were able to create and access their own collection of music and create a filtered and refined playlist on their mp3 players which could be changed at any time.

2.1.6.5 Skeuomorphism

According to Merriam-Webster skeuomorph means “an ornament or design representing a utensil or implement”. As stated by Page (2014), digital skeuomorphs are design elements that are mostly used in graphical user interface (GUI) design aiming to represent a real-life object in digital environment. Within the focus of this study, skeuomorphism became a talking point considering digitization from physical music players to digital platforms. Page exemplifies digital skeuomorphs used in music applications or software programs as knobs, buttons, sliders, and switches. All these design elements can be seen on physical music players. GUI designers typically use the same design elements for the same functions, to reach a high level of familiarity amongst new users of an interface.

2.2 Inquiring into User Experience

In the previous section, the history of music playing media and formats was illustrated and the most prominent developments were highlighted. Different features and technologies were introduced by exemplifying the products. All these presented highlights create different experiences. Since the aim of this study is analysing the experience of using these players, experience itself should also be investigated.

In this section, the relationship between user and product will be probed with the help of theoretical principles. To better structure the analysis, initially user-product

interaction will be explored, focusing on how it occurs and what are the key elements of interaction in order to create a more concrete base for user experience (UX). A variety of models and frameworks will be presented to illustrate different perspectives that are brought with different models. These findings will be followed by a reflection on UX, which is the main scope of the study in relation to the design of different music players and their associated media.

2.2.1 A Roundup of User-Product Interaction

According to Hekkert and Schifferstein (2008), product experience can be defined as “people’s subjective experiences that result from interacting with products”. Following this description and before digging into experience, interaction should be explored further since the concepts of experience and interaction are highly related. In accordance with the dictionary of Cambridge (n.d.), interaction means “an occasion when two or more people or things communicate with or react to each other.” As understood by this definition, for interaction to occur, there must be at least two parties in communication – in this study’s case, the user, and the product. To understand interaction better, it is helpful to understand the dynamics of this communication and how it occurs. Identifying the steps and elements of the process can also be considered as a crucial way to explore interaction.

Clarkson (2008) illustrates how different human capabilities are active during interaction, as shown in Figure 2.18. In line with this illustration, the information conveyed during interaction can be considered as the key element that requires our attention and mental processing. There can be a single input while there can also be a combination of different inputs. Considering the scope of the study, this input is provided either by a product to its user, or by the user to his/her product. These bilateral messages are conveyed to create the interaction by passing several stages as presented in the figure. However, this multi-staged process is perceived as an instant action resulting with a reaction.

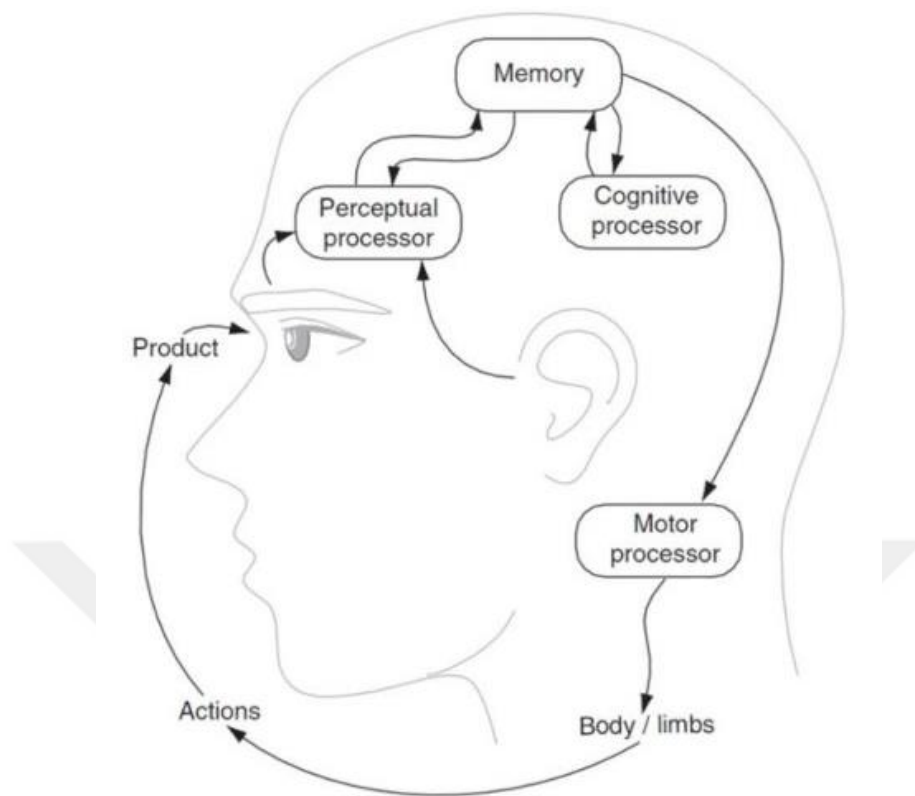


Figure 2.18. Interaction between sensory, cognitive, and motor capabilities (Clarkson, 2008)

As also shown in Figure 2.19, Hekkert and Schifferstein (2008) illustrate human/user and product interaction, which is built on a person's motor, cognitive and sensory skills. Human senses perceive the visual, auditory, tactual-haptic, olfactory, and gustatory properties of a product. The information obtained by the senses are contrasted with previous experiences, through the person's cognitive system and skills. After processing the information, users can act upon the product with the help of motor skills – typically resulting in the product being 'used' in the correct way. Then, a product typically provides some form of feedback to the user and the cycle of perception and cognition continues.

As the figure presents, a product builds interaction through some of its formal properties such as its structure, material, composition, technology, and label. To understand the elements of interaction, the aim of the first section of the literature review was to present, as far as was possible without the benefit of a field study,

these properties introduced and improved throughout time in the case of music players.

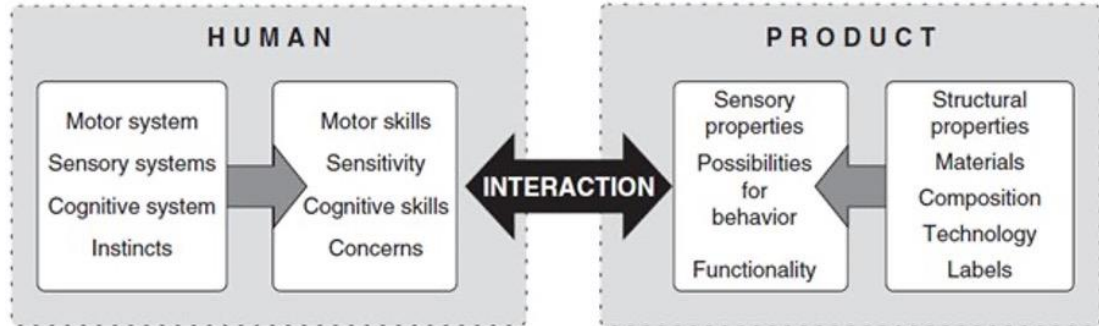


Figure 2.19. Model of human-product interaction (Hekkert & Schifferstein, 2008)

The steps occurring during interaction have been demonstrated by Şener and Pedgley (2019) as shown in Figure 2.20. According to their demonstration, a product deploys sensorial information which is received by the user through “feedback/ feedforward” (F). After receiving, the user goes through a process of “perception and cognition” (PC). Lastly, an “action” (A) by the user completes the cycle as the final step of interaction.

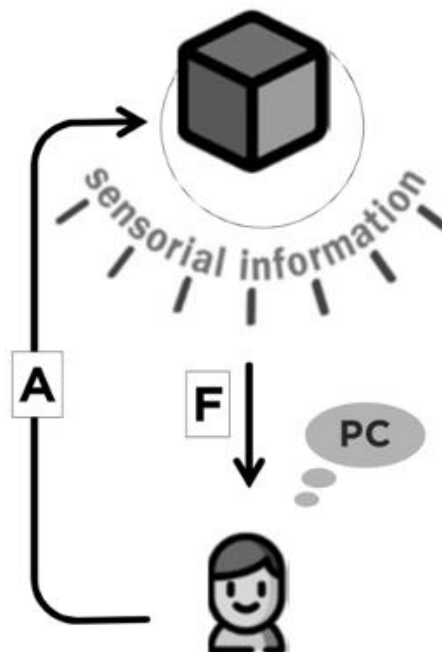


Figure 2.20. An interaction step (Şener & Pedgley, 2019)

Desmet and Hekkert (2007) also propose a framework that illustrates user-product interaction, shown in Figure 2.21, with an experiential emphasis (on the affect and other end results on the user) having engaged in an interaction. In their framework there are three elements in user-product interaction, namely: aesthetic experience, experience of meaning and emotional experience. Firstly, aesthetic experience refers to a product's capacity to please the user's senses with its sensorial properties. Secondly, experience of meaning arises through cognitive processes such as interpretation, memories, and associations. Lastly, emotional experience refers to emotions that may be evoked because of the interaction.

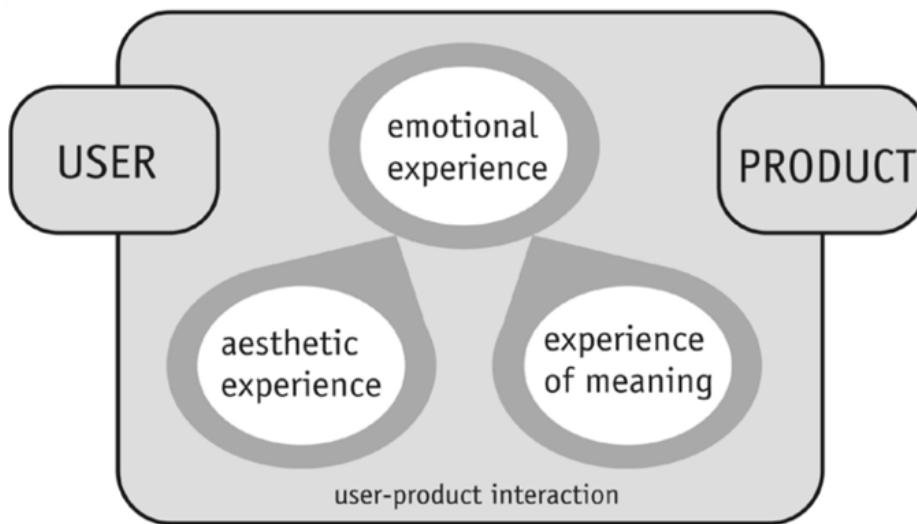


Figure 2.21. Framework of product experience (Desmet & Hekkert, 2007)

In this current research, “The Framework of Product Experience” developed by Desmet and Hekkert (2007) will be adopted to help in systematic assessment of different music players from users’ perspectives. Desmet and Hekkert (2007) illustrate many examples about the three components of user-product interaction and some of them are directly about music players. For instance, an example about experience of meaning is given, in which a user can be delighted by a record player since it reminds of a childhood memory. In another example, while explaining emotional experience, Desmet and Hekkert (2007) present the example of a user’s disappointment because of the limited storage of an MP3 player. Since the aim of

this study investigates such experiences, the model and examples they provide creates a well-matched foundation. The examples show that the framework is suited to providing a wide perspective to investigate users' product evaluation in terms of interaction and experience. For the field study to be presented later in the thesis, all three dimensions of experience will be explored for music players from each era, in order to obtain comparable data and capture relationships.

To strengthen the foundation of the research further, it was considered necessary to better comprehend the relation between user experience (UX) and interaction. Şener and Pedgley (2019) present an orientation framework that explicitly maps this relationship, shown in Figure 2.22. The orientation framework demonstrates various elements that are present before, during or after user-product interaction, in which UX is mentioned within the scope of the user. Since the study aims to explore users' perspectives regarding the usage of music player products, the deployed context is the user context, and the focus of the research is User Experience. Usage cues and technologies, presented within the definition of the product, were to some extent covered in the first part of this literature review. The user context, including the UX, will be the focus of the field study, to be explained later.

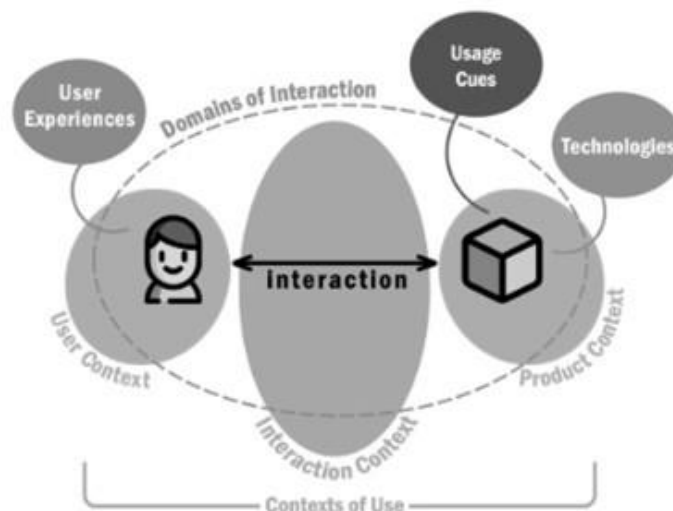


Figure 2.22. Design for interaction orientation framework showing relative arrangement of elements (Şener & Pedgley, 2019)

2.2.2 Digging into User Experience

Forlizzi and Ford (2000) emphasise that a key aspect for designing a successful product is to understand the user. The attempt to understand the user brings one to the term ‘User Experience’ (UX). As a term, UX was introduced in 1993, by Don Norman, who formed his own title at Apple Computer Inc., as “User Experience Architect” (Knemeyer & Svoboda, 2006).

In literature, several definitions of UX can be found. In accordance with Bevan (2009), UX can be described as a subjective term which covers emotions and feelings. According to Knemeyer and Svoboda (2006), user experience can be defined as the “quality of experience a person has when interacting with a specific design”. Hassenzahl’s (2008) definition is that UX is “a momentary, primarily evaluative feeling (good-bad)” during the interaction between the user and product/service. Following this definition, Hassenzahl highlights the shift that UX requires designers to go through, from a focus on products to a focus on humans and their needs and feelings in relation to a product, which is necessarily subjective and individual.

Various UX frameworks are presented in the literature. The “User Experience Honeycomb”, created by Morville (2004), points out the different facets of UX design. As shown in Figure 2.23, there are various facets that form the model: useful, usable, desirable, findable, accessible, and credible – which in turn help to obtain valuable and meaningful experience (at the centre of the figure). Usable means simplicity and ease to use and being able to understand a product/system. Useful refers to fulfilment of users’ needs and wants. Desirable stands for being attractive and easy to translate. Findable means it is easy to find and navigate to information and a resolution. Accessible can be explained as the possibility to provide ease for everyone to use. Finally, credible can be described as trustworthy.

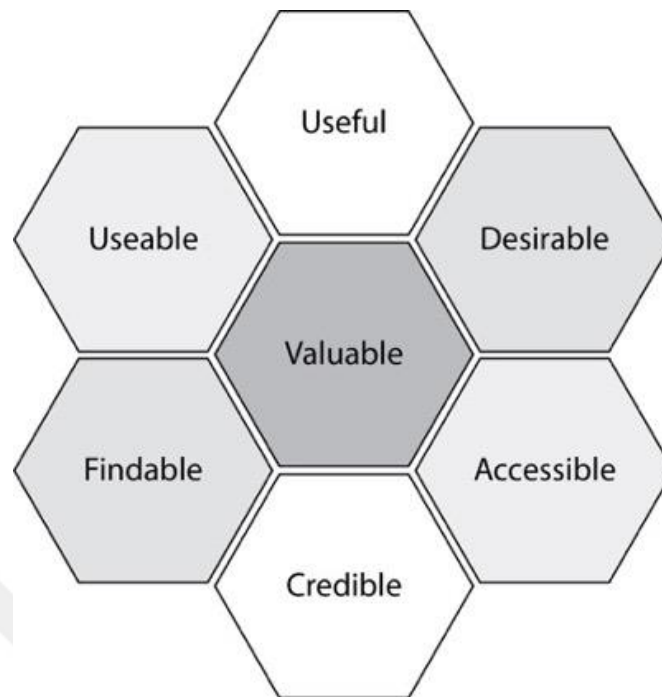


Figure 2.23. Design for interaction orientation framework showing relative arrangement of elements (Şener & Pedgley, 2019)

Hassenzahl (2003) mentions two fundamental types of user needs that underly UX: those that fall into ‘pragmatic needs’ and those that fall into ‘hedonic needs’. Building on these points, another framework presented by Hassenzahl and Tractinsky (2006), points out the different dimensions of UX as shown in Figure 2.24. The first dimension is “beyond the instrumental”, which covers holistic, aesthetic, and hedonic points. The second is “emotion and affect”, which contains subjective, positive sides as well as antecedents and consequences. Lastly, the experiential dimension refers to the qualities of being dynamic, complex, unique, situated and temporally bounded. The intersection of these three facets defines the complexity of UX.

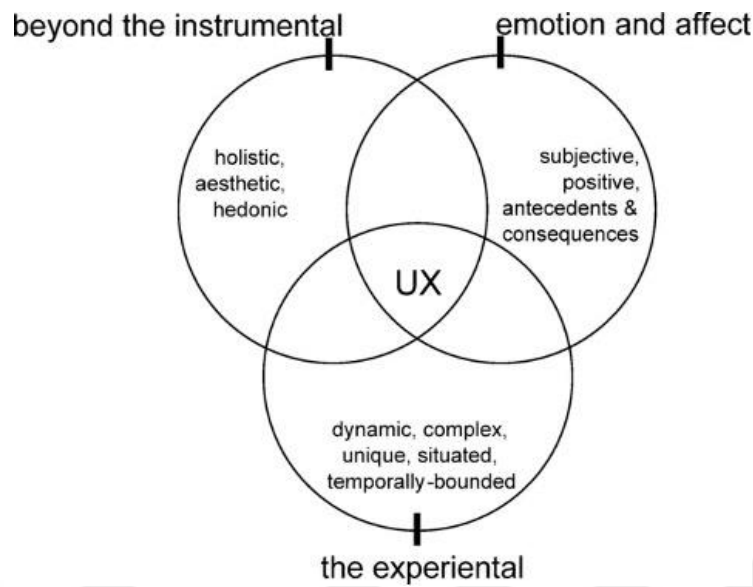


Figure 2.24. The facets of UX (Hassenzahl and Tractinsky, 2006)

Anderson (2011) presents a hierarchical rather than overlapping model of UX, named as the “UX Hierarchy of Needs”, as shown in Figure 2.25. The upper and lower parts of the pyramid illustrate different points. The lower part is focused on the tasks of a product, such as how it operates and its features. So, it is possible to say this part is more objective/quantifiable. Going up the pyramid, the focus shifts to the experiences of people, their activities, and the context in which a product is used and interacted with. The upper part of the pyramid can therefore be considered as more subjective/qualitative. In this current research, the upper part of the pyramid will be the main focus. In other words, in accordance with Hassenzahl (2003), it is the hedonic needs of the user – the gains of pleasure and meaning that come with owning and using a music playing product– that will be explored further through field research.

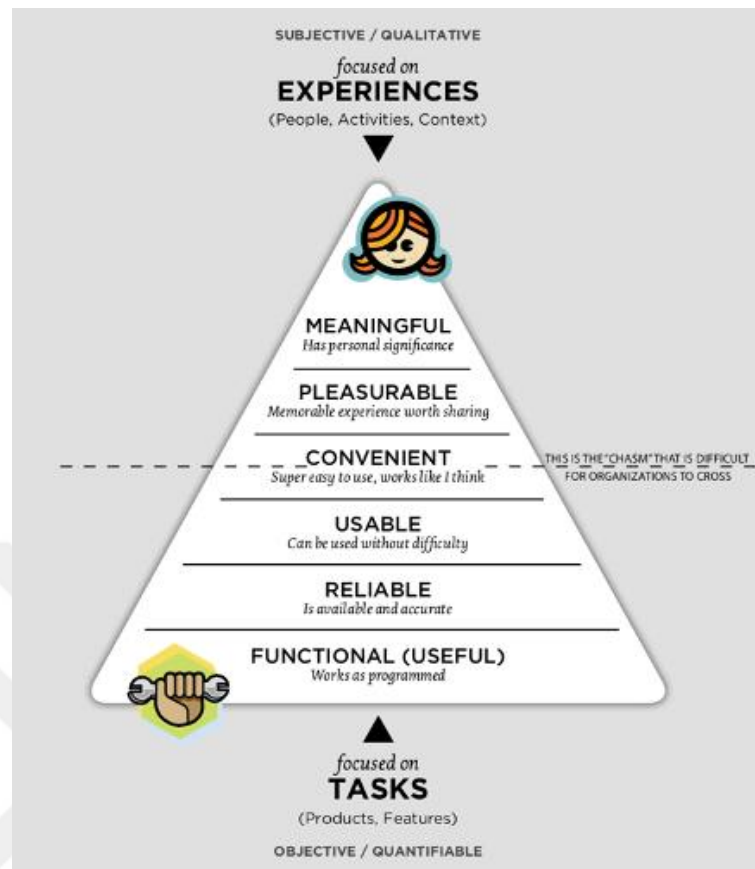


Figure 2.25. UX Hierarchy of Needs (Anderson, 2011)

2.2.3 Closing Remarks

In this second part of the literature review, the relationship between users and products have been explored within the frame of different perspectives presented in the literature. To summarize the common points, it is possible to highlight the *interaction* between users and products. The interaction is evaluated through the conveyed message from product to user or from user to product. There is sensorial information received by the user, as a communication of feedback or feed-forward. All the aforementioned interaction models had potential to be used in this study, however, Desmet and Hekkert's (2007) Framework of Product Experience was evaluated as giving potentially rich insights since it deploys an experiential approach. Since the aim of this study is to explore experiences, this experiential approach will be followed.

In the user experience frameworks, the prominent perspective that ties them together is the range in which different aspects are collected. Anderson's (2011) UX Hierarchy of Needs shows these range with two dimensions; aspects that are focusing on *tasks* and focusing on *experiences*. Following this pyramid, the upper part which addresses on experiences will form the scope of this study as it deploys an experiential viewpoint that is not very distant to Desmet and Hekkert's (2007) framework. Thus, in the field study, *meaningful*, *pleasurable*, and *convenient* aspects of interactions will be investigated, alongside the levels of experience within Desmet and Hekkert's (2007) framework.

2.3 Music Playing as Experience

Music playing experience can be analysed in two different steps. The first step is "listening to music" and the second step is "music player interaction". Within this study, listening to music will be briefly introduced as an experience, but it is the second step that is the main focus. In literature, listening to music is studied in various disciplines including psychology, sociology, cultural studies, physiology, philosophy, computing systems, cognitive sciences, etc. Those studies stay out of this study's context, since their focus is the listening experience that can be considered as the interaction (and reaction) between a person and the aural sensations of the music they listen to. In contrast, the parties that form the focus of this study are the person and the product: how they interact, what kind of experiences occur, and the quality of experiences.

As explained at the beginning of the chapter, music players travelled through a ceaseless evolution as technology has developed. Löwgren & Stolterman (2004) argue an important point whereby technology is said to "shape us" as people: our actions, thoughts, expectations, daily practices, experiences, and so on. Listening to music – and more accurately playing of music on devices and applications – is one such case. Kolko (2007) mentions the growth in complexity of UX that is caused by technology and the need to access the functionality that comes with new

technologies. The change in user experience of music players, in terms of user-product interaction, throughout the eras of different media will be examined within the scope of this study. By doing so, the positive and negative sides of music player experiences will be evaluated, in order to establish those aspects that lead to a high-quality experience from the user's perspective.

2.4 Conclusion

This review of literature has been conducted and presented in two distinct sections covering the history of pre-recorded music playing, followed by approaches to defining and organizing user experiences. The main goal to include the history of pre-recorded music playing in this review has been to explore the technological developments that occurred through time, and which are gathered around the same purpose: to play back recorded music. The most prominent media, players, formats, applications, etc were highlighted in order to create a concrete knowledge base for understanding the historical facts and to design and conduct a relevant field study. Following the literature-based foundations on music players and their related concepts, a review of user-product interaction and user experience was made with the aim of investigating the nature of experience. Several frameworks and models of user experience were presented, and the deployed models were contrasted with the general subject and aims of the present research.

CHAPTER 3

METHODOLOGY

3.1 Introduction

The aim of this study is to explore the changing and evolving pre-recorded music playing experiences of users through time, as stated in the introduction chapter. To investigate the subject further, beyond the literature, a methodology for fieldwork was constructed to follow. This chapter introduces the adopted methodology by explaining each step in detail and correlating the steps with the scope of the study. Accordingly, the way the fieldwork is built up and its process are outlined.

In accordance with Merriam (2009), qualitative research aims to explore the ways individuals elucidate their “experiences”, build their “worlds”, and the “meaning” they attach to these aspects. In this sense, the aim of qualitative research tallies up with the aim of this study, which is exploring pre-recorded music playing “experiences”, the created “worlds” around those experiences, and the “meanings” attached to them. Hence, qualitative research is selected as the appropriate research approach to provide meaningful and useful research data. Hennink, Hutter and Bailey (2010) illustrate the process of qualitative research with four stages that are interconnected. The initial stage is generating a research question for the study (as explained in detail in the introduction chapter of this thesis). It is followed by conducting a literature review which is presented in the related chapter. The third and fourth stages are building up a theoretical structure and creating a suitable field study, which are demonstrated in this chapter. To construct an appropriate field study, findings, that are obtained from the literature review, are used.

Another aim of this study is using the derived data to develop design proposals that can enhance pre-recorded music playing experiences. In accordance with this purpose, a modest form of research through design (RtD) is adopted within the study.

The term RtD was introduced by Frayling (1993), as a research approach aiming to benefit from findings that are obtained through a design process, with the aim of creating different perspectives for relatively complicated and future-oriented matters. In this study, forecasting and/or proposing future experiences can be considered as a major goal. Thus, RtD was highly suited to the research (and will be explained further).

As shown in Figure 3.1, fieldwork data collection consisted of two stages: interviews followed by a focus group. As the first stage, two rounds of semi-structured interviews were conducted with 12 participants, involving 24 participants in total. Combining the findings gathered from the literature review and interviews, a short design project was carried out to propose first-version solutions for new kinds of music playing experiences. Afterwards, the second stage of the data collection process, which is a focus group, was conducted with 6 participants to obtain feedback on the first-version design proposals. Following the feedback, the design proposals were revised through a second round.



Figure 3.1. Overview of the study

Figure 3.1 presents the overview of the study by briefly explaining the aim of each step. In the next sections, the detailed process of each step is demonstrated by showing the sampling, recruitment methods, pilot studies, the fieldwork protocols, ethical considerations, data coding and analysis processes, design proposals and the used tools.

3.2 Data Collection: Interviews

Gray (2009) defines the interview as a useful method to understand people's feelings and attitudes, explore their stories and make reflections on events. Understanding such points can be considered as the main purpose of the field study, so, interviews are selected as the appropriate method to follow. As mentioned by Brinkman (2013), participants and researchers can interact more in semi-structured interviews and this interaction can help to ease the flow of data collection. The reason of this situation is explained as the free nature of the communication, which may bring up various points that can be beneficial for the research. Considering the mentioned qualifications, semi-structured interviews have the potential to provide useful and relevant data for the research.

According to Khalaj and Pedgley (2019), who reviewed several independent studies looking into the concept of data saturation (absence of new data following completion of a certain number of interviews), data is predicted to become 80-90% saturated after twelve interviews are conducted, so long as the sample group is homogeneous and the interview questioning technique is consistent. They call this situation the "n=12 rule" and use it to justify an effective but practical number of participants for interview-based field studies in design. In this current study, the "n=12 rule" was followed. Accordingly, the number of interview participants for each round was determined as twelve. The selection of participants is presented in the following part.

3.2.1 Sampling and Recruitment

Two different sample groups were created for the interviews. In the process of the participant selection, the main criterion was the experience of users with different products shown in the timeline developed in the literature review. For that reason, voluntary sampling as a non-probability sampling method was selected as the appropriate strategy. According to Murairwa (2015), voluntary sampling is a type of

non-probability sampling which is conducted by gathering the potential participants who voluntarily take place in the study and fulfil the requirements that were specified by the researcher. This method was suitable for the study since the willingness of participants was an important factor to encourage the flow of recalling experiences.

In the timeline defined in the literature review chapter there are five eras of music playing: vinyl, cassette, CD, mp3 and online streaming. The first sample was of people who had experienced using products from each of these eras (namely vinyl players, cassette players, CD players, mp3 players and online streaming platforms). The age range of this group was 26 to 32: although they did not personally experience the vinyl era, they were experienced in using vinyl players. To reach this group of people, a Facebook post was sent to the group “100. Yıl Evleri” in which METU students or graduates help each other. The criteria and the meeting conditions were stated, and volunteers contacted with the researcher.

The second participant group was formed of people who had personally experienced the vinyl era and were familiar with using vinyl players. The main focus of the second round of interviews was to explore the experience of the vinyl era, which was known to be lacking in the first round of interviews with its younger generation participants. The age scale of participants for the second round was 40 to 67. In order to recruit participants, an Instagram post was sent by the researcher asking to reach appropriate people, whether they were directly from the researcher’s connections or acquaintances of those direct connections. The criteria and the meeting conditions were mentioned, and a volunteer sample group was formed.

After recruitment, the details of interviews were explained to participants, consent was taken (see Appendix A), and a meeting was organized on an agreed date.

3.2.2 Medium of Interviewing

The fieldwork of this study had to be conducted throughout the global conditions imposed by the COVID-19 pandemic. Due to the constraints the pandemic brought to daily and academic life, conducting face-to-face meetings was not an option for the fieldwork. Thus, a solution had to be brought to this problem which resulted with the organization of online interviews. As an online meeting tool, Zoom was selected from amongst alternatives because of its high-quality sound and video, screen recording and sharing facilities, and its extensive usage amongst participants. Audio and video recordings were taken during the meetings for the purpose of transcription.

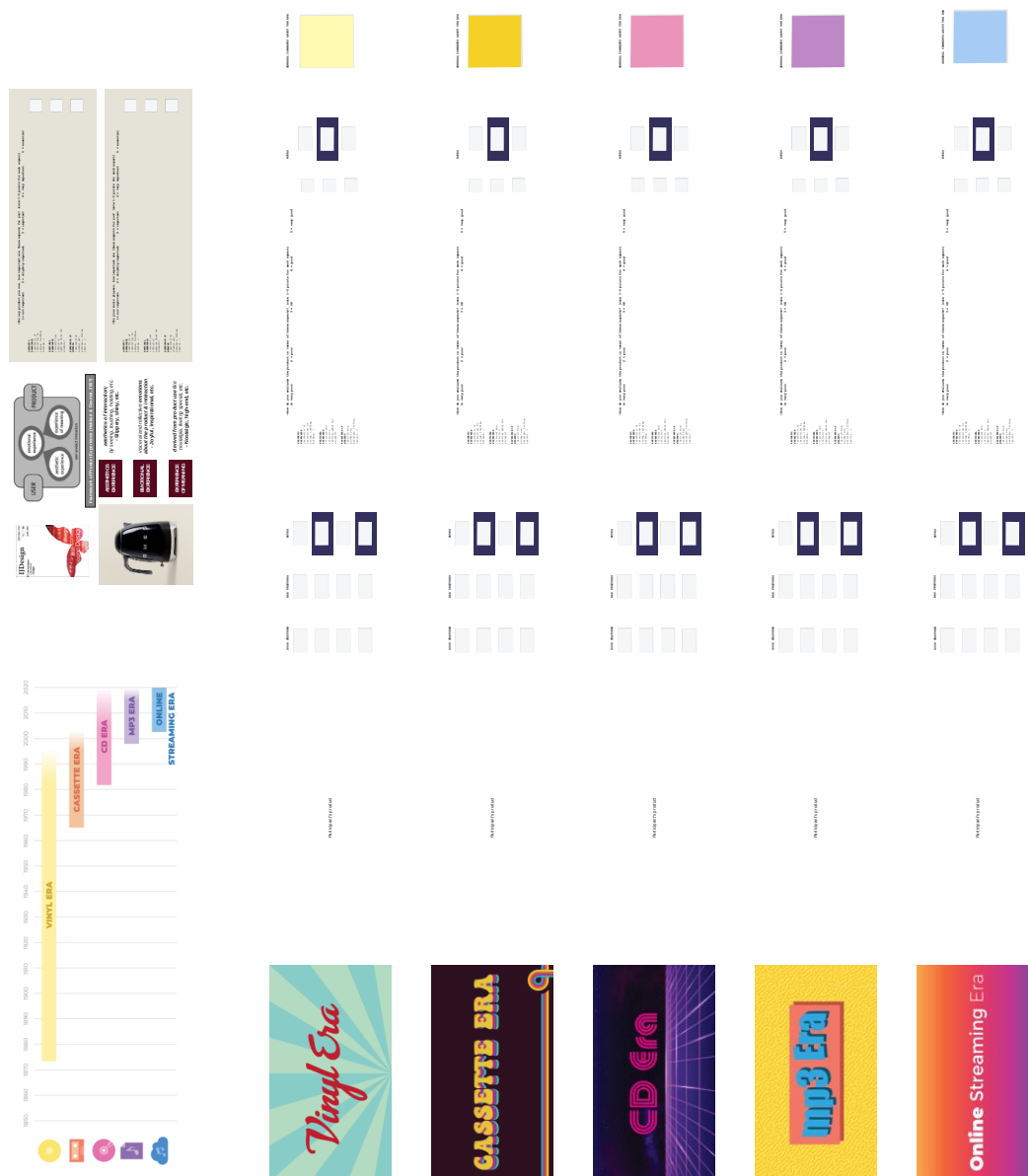
3.2.3 Pilot Study

To test the prepared interview protocol and explore possible improvements, pilot studies with two participants were conducted. With a notice to the researcher's connections, two participants were selected. According to the pilot interviews, some improvements were made. Questions about relevant experiences were added. It was also decided to use participants' own music players and their photos to prompt them about their own experiences and make the interview responses richer. Hence, before the interviews, participants were asked to send photos of their own music players. If they did not have (or could not take) the required photos, the player's brand and model name were requested, so that a suitable photo could be sourced from the Internet.

3.2.4 Interview Protocol

Since semi-structured interviews were the selected data collection method, a protocol was formed with which the interviews could be managed (see Appendix C for Turkish, Appendix D for English version). Online meetings lack physical interaction, which may be considered as a limitation for this study. However, some alternative stimuli were arranged to improve the interviewer-interviewee interaction and to keep

participants engaged. Miro boards were created as shown in Figure 3.2 and 3.3 for each interview to provide a visual map for both the researcher and participants to follow the interview and focus on. As an online digital collaboration tool, Miro allows easy board creation, sharing and saving options and collaborative working opportunities. The timeline, the used analysis framework, an example of the framework, along with evaluation and grading tables were put in the Miro board. Thanks to Miro, notes could be taken on virtual post-its simultaneously as the interviews took place. To create a better interaction and atmosphere, an interview experience like “time travel” was planned. For that purpose, cover visuals of eras were designed to reflect the design language of that specific era. To support this time travel approach, a 5-song playlist was created consisting of songs from each era: Frank Sinatra – Fly Me to the Moon (for vinyl era), A-ha – Take on Me (for cassette era), Blur – Song 2 (for CD era), Gorillaz – Feel Good Inc. (for mp3 era) and Billie Eilish – Bad Guy (for online streaming era) were selected to represent those time periods. The first round of interviews took approximately 60 minutes to complete, while the second round interviews (involving just the vinyl era) took 20-30 minutes.



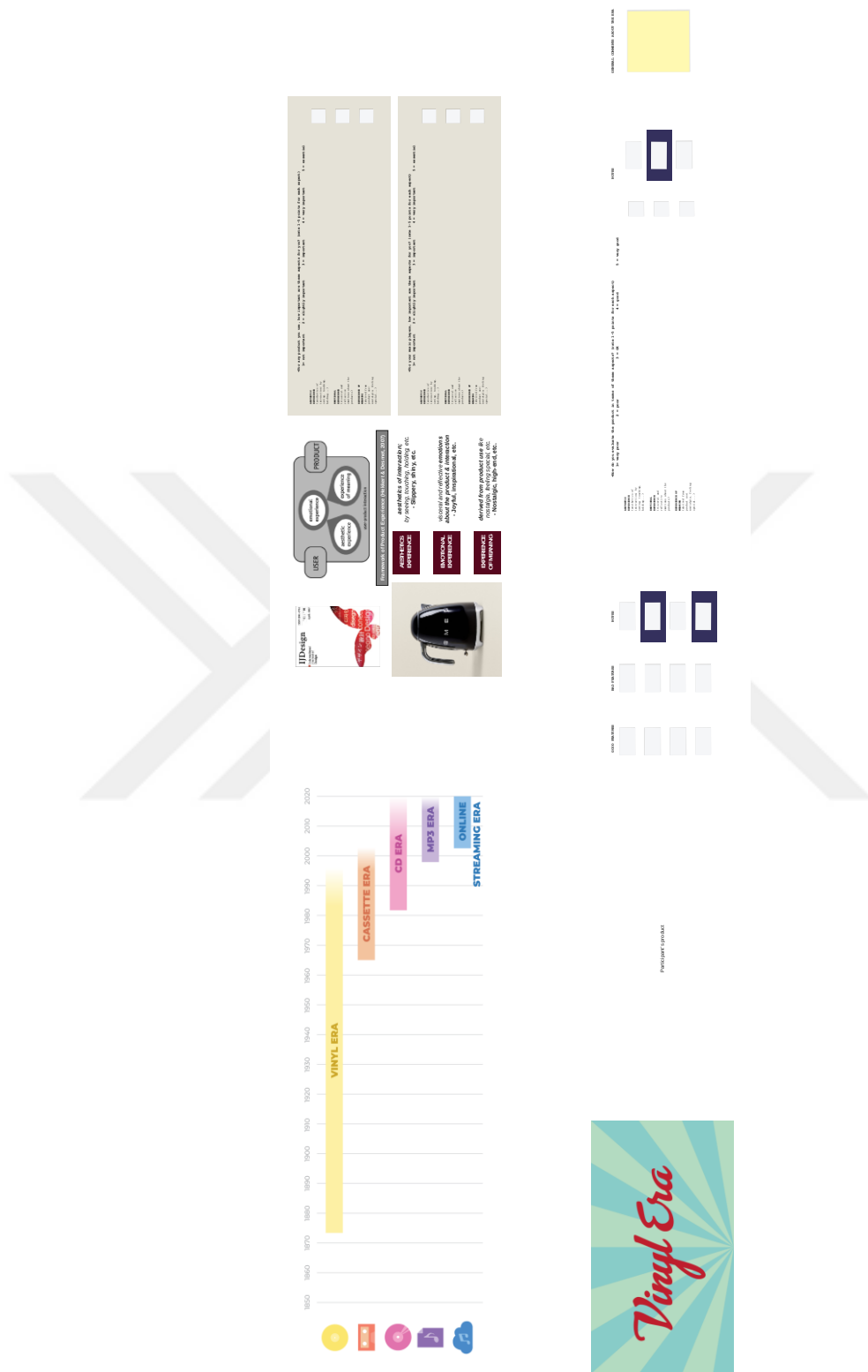


Figure 3.3. Screenshots of Miro board created for the second round of interviews

3.3 Data Analysis: Round 1

To analyse the obtained data, a process of data coding was conducted. AirTable was selected as the tool to form the tables and codes. Firstly, the transcribed data were transferred to AirTable under tabs that were specific to each interview round, as shown in Figure 3.4. Secondly, codes and code details relating to specific extracts from the interview transcripts (the 'raw data') were written to relevant columns. Thirdly and finally, the coded data was sorted by codes and by questions to make connections amongst the raw data (Figure 3.5). The insights and findings gathered from this process will be explained further in the following chapter.

	A N.	P.	Question	Answer	Code	Code Details
1	D.E.	P1	Q1 - Demographic Info	Female, 28 y.o., graduated from METU - Economics, working at a software company.		
2	D.E.	P1	Q2 - Music listening ex...	I'm constantly listening, I always want a sound in the background.	Purpose	Music in the background
3	D.E.	P1	Q2 - Music listening ex...	After getting up in the morning, I immediately play a song from Spotify, such as "coffee music", calm, ukulele style music. So I ...	Habit	Starting day with music
4	D.E.	P1	Q2 - Music listening ex...	I listen a lot while working with my headphones. Other than that, my family laughs at me a lot, but I listen a lot in the shower with my ...	Location/Context	Constantly listening, in the shower, while ...
5	D.E.	P1	Q2 - Music listening ex...	So I always have music there. Just the genre I listen to, changes a lot from day to day, depending on the mood, the environment I am ...	Music Genre	Mood based
6	D.E.	P1	Q3 - Are you listening t...	It depends. When my little cousin, 11 years old, plays the piano. There are some songs that he sends me; "Take a look at this, I wan...	Sharing	When music is shared/recommended by ...
7	D.E.	P1	Q3 - Are you listening t...	Other than that, I listen to music in the morning, just for having it in the background. Sometimes it is like the soundtrack of my life.	Purpose	Music in the background, soundtrack of life
8	D.E.	P1	Q3 - Are you listening t...	Sometimes I don't even know what song I'm listening to, or what the name of the song is, who the artist is.	Artists	Unconscious listening, Spotify notification of ne...
9	D.E.	P1	Q3 - Are you listening t...	But, for example, when a new song comes out in electronic music, the genre I'm interested in, I listen carefully.	Music Genre	By interest, focus increases
10	D.E.	P1	Q4 - Which of the eras...	Actually, I experienced all the products, I was born in 1992, so I have never been in the time that the only medium for music is vinyl but ...	Player Access	Family heritage
11	D.E.	P1	Q4 - Which of the eras...	It was so big I was able to sit on it, on the big black speakers. It was Sony, with a cassette deck in the middle, even a sound recording ...	Player Interaction	Sitting on speakers
	D.F.	P1	Q4 - Which of the eras...	In fact, when my father married my mother, he bought that music...	Habit	Family music interest

Figure 3.4. Screenshot of AirTable data coding table

	Name	P.	Question	Answer	Code	Code Details
code	(Empty)	Count 61				
code	Location/Context	Count 53				
code	Purpose	Count 27	Summary			
code	Habit	Count 17				
code	Music Genre	Count 10				
code	Sharing	Count 18				
code	Artists	Count 3				
code	Player Access	Count 26				
code	Player Interaction	Count 112				
code	Player Usage	Count 47				
	738 records					

Figure 3.5. Screenshot of AirTable sorted data coding

3.4 Design Proposal

The analysis brought insights and findings which were used to generate a design proposal for future music playing experiences. The process and details of the design proposal will be given in the next chapter. However, for Research through Design (RtD) planning, a “launch pad” was created in Miro (Figure 3.6.) based on the “launch pad” board created by Pedgley (2020) during his delivery of the “Current Issues in Industrial Design” course at METU. The board shows the plan of the design process, including the whole methodology.

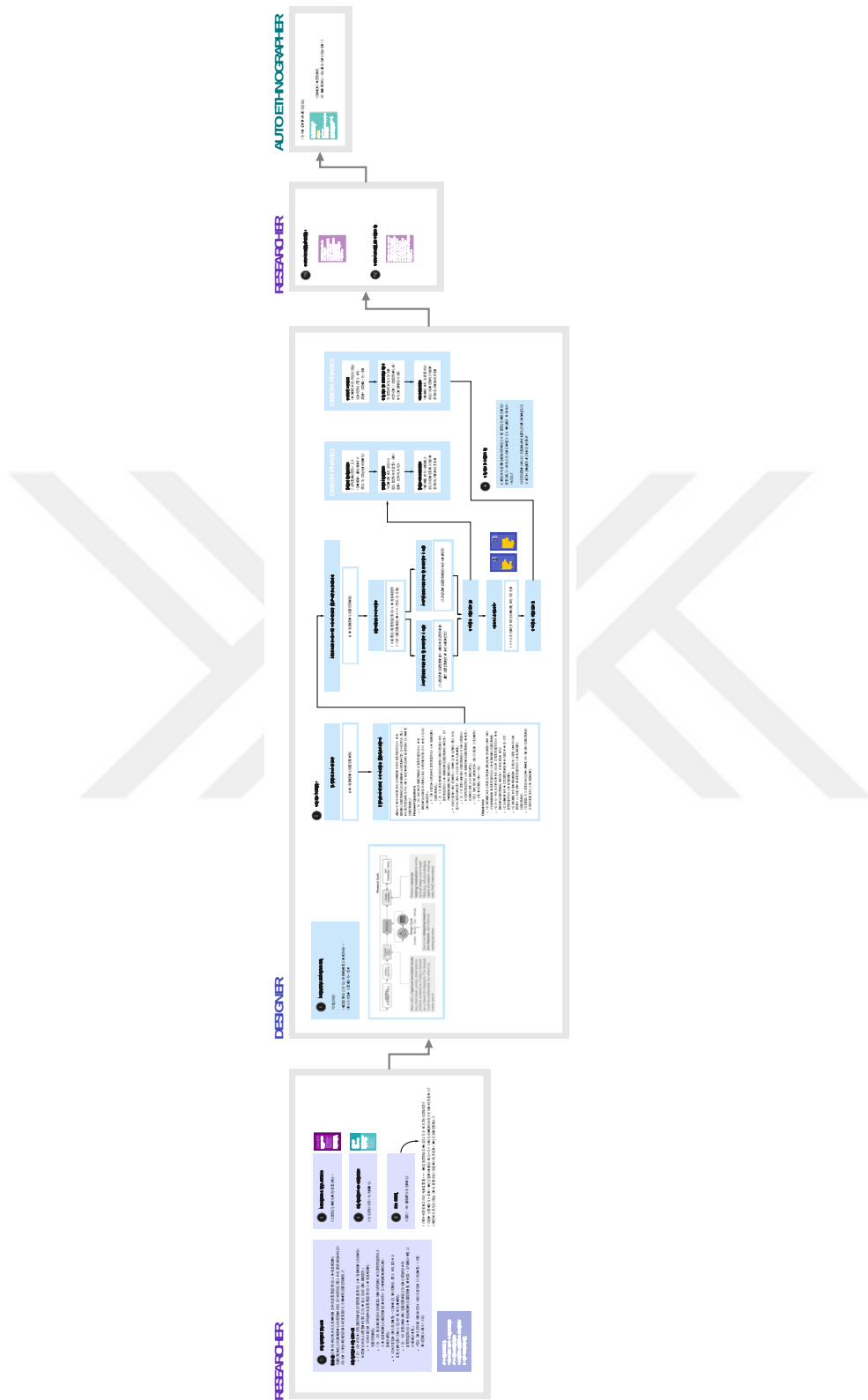


Figure 3.6. RtD “Launch Pad”

3.5 Data Collection: Focus Group

The first phase of the field study was completed with interviews, data analysis and a design proposal. The second phase started with another round of data collection, this time making use of focus group. The reason to choose a different data collection method was the differentiation in the purpose. For the first round, the main goal was to explore people's personal experiences of pre-recorded music playing. That is why interviews were considered as a suitable method for eliciting experiences. However, the second round aimed to evaluate and improve the design proposal that marked the end of the first round. In accordance with Lindlof and Taylor (2002), focus groups create a "chain effect", which can be considered as a series of shared ideas, feelings or experiences, initiated by a participant and followed by others. This kind of a reaction suits with the aim of this phase, since it is a more exploratory phase where individual answers are less important than shared ideas; as Krueger (1998) also states, focus groups are data collection methods which can be conducted during the exploratory phases of research. As Gray (2009) stated, focus groups are used for investigating a specific group of participants' "feelings, attitudes, beliefs, prejudices, reactions and experiences" which are the target aspects of this phase. With this perspective, a generative focus group session was conducted by focusing on the design proposal with a critical approach.

3.5.1 Sampling and Recruitment

For the sample group, industrial design graduates who had experience in UX design were selected, since a generative focus group would be created, and design skills and a critical approach of participants were crucial for the study. As the adopted participant selection method, purposive sampling was chosen. In line with Gray (2009), purposive sampling is a sample forming technique adopted when a specific group of people will be more suitable for the study and have the potential to supply

valuable data. In the current study's case, this was found as a suitable method since there was a set criterion for the target participant group. As stated by Krueger (1994), six to twelve participants are suitable for focus groups. In this study six participants were found appropriate since an online meeting was organized, and the management of six people was considered to be better while deeper data flow is aimed. Six participants were recruited through personal connections of the researcher, who is also an industrial design graduate.

3.5.2 Medium

Since the COVID-19 pandemic situation was still ongoing, arranging a physical meeting was not an option for the focus group session. Thus, along the same line with the interviews, online meetings were conducted for the focus group through Zoom. With the consent of participants (see Appendix B), the session was recorded with the aim of transcription and data analysis. Both audio and video recordings were taken. A focus group guide was prepared to follow during the session (see Appendix E for Turkish, Appendix F for English version)

3.6 Design Improvements

After the conduct of the focus group, an analysis of the gathered data was made. The design proposal created at the end of the first phase of field work was evaluated with a critical point of view according to participants' input. Consequently, potential design improvements and specifications were annotated against the first-round proposal to present future possibilities. The details will be presented in the next chapter.

CHAPTER 4

FIELD STUDY: FIRST PHASE

4.1 Introduction

In this chapter, details of the first phase of the field study will be presented with the gathered outcomes. The first phase of the field study consisted of two rounds of interviews, coding and analysis of the data obtained from the interviews, and the first version of the design proposal for improved pre-recorded music playing experiences.

4.2 First Round of Interviews

As mentioned in the Chapter 3, 12 participants who had experienced all eras (except the vinyl era) and all types of music playing media/players linked to the eras were recruited for the first round of interviews. Semi-structured interviews were conducted while an interview protocol was followed. In total, 34 questions were asked to the participants, which will be discussed in detail.

The questions are presented within groups, since the preparation of the questions was made with this perspective. As an ice-breaking question, demographic information is not included as a part of these groups. To group these questions, seven significant titles were formed. The first was questions about participants' general music listening habits. The following five groups were about the specific products/eras (vinyl, cassette, CD, mp3 and online streaming). The final group continues with related experiences aiming to cover the music stores, album covers, artworks, booklets and music sharing practices. Questions which were formed around the framework for product experience are excluded from these groups and instead are analysed further in the related section.

4.2.1 Demographic Information

With the aim of breaking ice and getting to know participants better, demographic information including age, job, location, and occupation was asked. The demographic data were not collected for the purposes of answering the research questions, therefore, they were not coded. Only age was relevant regarding the experienced eras, but participants were already recruited according to their experience, so no analysis of participant ages was necessary.

4.2.2 Group 1: General Habits of Music Listening

As above mentioned, this first group of questions are about general habits of participants that are related to the activity of listening to music. The scope of the study is about pre-recorded music playing experiences and listening to music is an essential part of it. Thus, music listening experiences and its place in participants' daily life can be considered as an important question as a starting point. Participants gave information about their habits of listening to music, the location, the context in which they listen, and other relevant experiences.

All 12 participants stated that listening to music takes a big place in their daily life and they enjoy listening to music. 5 of 12 participants described themselves as amateur musicians, thus, they can be considered as placed within both the producer and the consumer side of music, related to *music interest*. According to Participant 2 "To be a good instrumentalist, you need to be a good listener," which may be a summary of the interest of a musician to listen to music. This music interest may also root in the interest in a specific *music genre*. For instance, Participant 3 mentioned that "My interest in hip hop music also enlarged my interest in music. This interest even caused me to buy a vinyl player later on, as a representation of hip-hop culture." However, all 12 participants enjoyed including music in their everyday life besides the production side, as a consumer. Either as a background sound or as a focal

activity, or both, listening to music is an important activity of their lives at different times in different locations.

As a part of the practice, the *purpose* of listening to music was asked to participants. All participants stated that they listen to music both with the aim of accompanying another activity and to focus on just the music itself. 3 of 12 participants said that they more often listen to music to accompany another activity in the background, while 2 participants mentioned that they more often listen to music just for the purpose of listening to music. There are some certain cases that increases the focus on music, mentioned by Participant 1 “when a song that comes out in the genre I’m interested in”, by Participant 1 and 4 alike “when music is shared/recommended by other”, or as brought up by Participant 2 such as “when I want to analyse the song with a musician perspective”. Participant 5’s answer may be considered as a brief summary of the general answers, which is “Sometimes you walk to listen to music, sometimes you listen to music while walking. It’s a contextual thing. Sometimes you want to walk somewhere for 20 minutes, you want to be accompanied by music. Sometimes you take the road just to listen to music.”

A general tendency of participants can be considered as listening to music as a daily *habit*. Participant 8 stated that, “I try to listen almost wherever I can, whenever I can. I feel like whatever I’m doing is improving its quality with music.” while Participant 9 said that “I’m constantly listening. I try to listen whenever I can.”. The purpose, location, context, music genre may be changing whereas the practice remains its place in participants’ lives. Participant 1 asserted that, “So I always have music there, in the background... Just the genre I listen to changes from day to day, depending on the mood, the environment I am in,” and described this situation as “the soundtrack of my life” which may give a clue about the importance given to the habit itself.

As for *location*, all participants mentioned that they listen to music at many different places thanks to the portable nature of products they currently use, such as laptops, mobile phones, and tablets. The common locations were noted as home, car, school,

office, gym, and outside (streets, parks, beaches, etc.). The *context* varies from walking to studying, from taking a shower to hanging around with others.

As an aspect of the experience, the *album concept* can be considered as a mentionable point. As said by Participant 3 “I love listening to albums from beginning to end. Listening to an album from beginning to end without interruption is a wonderful experience. So, I can 'absorb' the music produced.”.

To understand the relationship between participants and music/music players better, a brief story of their pre-recorded music playing experiences was requested. As an answer to the question, the details about *player access* of participants were revealed. 4 of 12 participants explained how they accessed their first music players and attained the heritage as it was specifically directed by their parents who were already music enthusiasts.

4.2.3 Group 2: Vinyl

As an introduction to the set of related questions, the first memories of vinyl players were requested from participants. The participants of the first round are those who experienced using vinyl players but did not experience the vinyl era itself. *Player access* is again a point of interest since, for this first round of interviews, the players will have been experienced outside of the era. 4 of 12 participants accessed vinyl players for the first time through their family members, while another 4 gained access through friends. 3 participants obtained a vinyl player through personal interest by making research and buying one. Finally, 1 participant (Participant 9) had a different story to meet with a vinyl player as deciding to buy a unique gift to a friend, starting to look at vintage shops and antique markets to do so, and finding a vinyl player to buy as a gift.

With a more functional point of view, the admirable, good features of vinyl playing were asked to participants. As the most popular answer, *sound quality* is mentioned by 10 of 12 participants who describe it in different terms as “uncompressed sound”,

“music without loss”, “unique sound”, “audio authenticity”, “analogue sound”, “more real music, no virtual feeling”, “distinctive squeaky sound”, “the sizzle in the sound”, “scratchy sound” and “more smooth sound”.

Besides the sound experience, *player interaction* is another aspect encountered at various participants’ answers. 7 participants referred to different ways of interacting as noticeable features of vinyl players. Being a tangible product, being physically present which feels involved, and having tactile and visual interaction and feedback, vinyl players arouse much curiosity. Participants stated it was fun to watch and the mechanical working principles.

Even though the question was about functional features that participants like, some of the answers went beyond functional aspects, which can be classified under *player UX* (User Experience). As mentioned in Chapter 2, in accordance with Desmet and Hekkert’s (2007) framework that is followed in this study, three elements of experience can be observed in user-product interaction as; emotional experience, aesthetic experience and experience of meaning. These elements of the framework will also be engaged while analysing the data related to player UX. The most common answer as a framework element in this question is *player UX (meaning)*, experience of meaning, which was present in the answers of 6 participants. 4 of 12 participants mentioned the “nostalgic feeling” as a good feature while one other participant said that “it brings back good old memories” which can be considered as a similar situation. Participant 3 evaluates vinyl playing as an activity that both artists and listeners add something from themselves in terms of effort. Participant 8 described the experience as “makes you feel special since not everyone owns a vinyl player nowadays”. The other framework element that was revealed in the answers is *player UX (emotion)* with the answer of Participant 7, about the “analog feeling of vinyl players, nothing is digital”.

To explore participants’ thoughts deeper and make a better comparison, aside from good features, downsides of vinyl playing experience were also asked. 9 of 12 participants mentioned similar points related to *player usage* as undesired features

which are “not durable”, “sensitive and fragile”, “requires attention, effort and care”, “demanding product”, “high maintenance” and “difficult and expensive to maintain”. Participant 2 describes the usage experience with these words; “It has this flimsy feeling; I am always on a knife-edge and anxious while using.”. The following drawbacks are about *player interaction* while 3 participants are not happy with the size of the vinyl player, finding them “not portable, too big and difficult to carry” and 1 participant illustrates the product with these words: “manual, you need to change records to continue listening” as a frustrating feature. As a side correlated with *player access*, 2 participants found vinyl players “expensive and difficult to access”.

The other essential part of the vinyl playing experience besides players is the medium itself which is vinyl records in this case. With this focus, *medium usage* was a common point of participants’ answers as a drawback of the experience. 4 participants indicated their dissatisfaction about the difficulty of medium usage by describing vinyl records as “sensitive”, “can get scratched” and “exposure to heat and deterioration”. As a matter of *medium interaction*, 1 participant stated, “It is hard to keep & protect records.” When it comes to *medium access*, 2 participants found records “difficult and expensive to find”.

4.2.4 Group 3: Cassette

After vinyl, experiences about cassettes were investigated with the same procedure. To start with, first memories with cassettes were requested from participants. By means of the age range of participants, they were born into the cassette era. In terms of *player access*, 8 of 12 participants first met with cassettes and cassette players at their home thanks to their family members. 2 participants are still using cassettes as a hobby by buying from antique shops like using vinyl today.

As portability was introduced by cassettes, *location and context* became a point of interest in the interviews. 4 of 12 participants did not own a portable cassette player:

one participant experienced cassettes only at home, one used cassette only in car stereos, and the other two participants used cassettes both at home and in the car. For the remaining 8 participants, they experienced using cassettes at many different locations and contexts since they owned portable products. Another mentionable point is the entrance of headphones to participants' life, which opened-up product usage in the public environment. The gathered answers for location are home, car, bus, school, dormitory, gym, outside, whereas contexts vary including studying, travelling, walking, having a picnic, doing exercises, drawing stuff, relaxing, focusing on music. However, Participant 1 stated that "My parents did not let me take it to school, they were worried if I would break it at school or something." which shows the value ascribed to the product that may define the usage location and context.

To explore the experience further, good functional features were asked about. The most common answer was related to *player interaction* and being "portable" and "easy to carry", as mentioned by 6 participants. 2 participants remarked on the "tangibility", "tactile feeling" and "physical interaction" provided by product use of cassette players. To exemplify these sides, Participant 3 specified the practices of "wrapping the tape with pen", "sticking tape with nail polish" and pressing buttons. As part of *player usage*, Participant 12 stated the "long battery life" as a satisfaction although opposite answers will be presented below. When it comes to *player access*, Participant 11 specified "low price" as an upside of the product.

The medium used in cassette players, the compact cassette, is also an essential component of the experience. First of all, *medium usage* was a point encountered in answers of 2 participants indicating "being able to record over cassettes" and "being able to record from different channels" as liked features. Pertaining to *medium interaction*, 1 participant said that cassettes are "compact and easy to store" especially compared with vinyl. With a perspective of *medium access*, 1 participant found cassettes "easy to buy and collect".

Although the question was about functional features, again, answers related to aspects beyond functionality were given. Related to *player UX (meaning)*, 2 participants stated their liked features. One of them was “the underground feeling cassettes give, feeling free” whereas the other was “personal experience it provides”. There are also some relevant experiences convened around cassette playing that are highlighted as good features. The first one to mention is *practices*, stated by 2 participants which is “looking at visual content and text on album covers and booklets”. Another mentioned relevant experience is *sharing*, stated by 2 participants as a good feature. Participant 6 described this as “Preparing cassettes for a person or taste requires effort. I can’t feel the same thing when creating a Spotify playlist.” while Participant 11 expressed the activity: “Mixtapes created the concept of sharing music among people.” However, these aspects will be explored further in the related questions and answers.

Good features were listed by participants as above, but on the contrary bad and undesired functional features were also requested from participants’ experiences. The most encountered functional aspect is *player interaction*, which can be seen in 7 participants’ answers. 6 of 12 participants remarked “the difficulty to change/skip/switch songs and rewind”. Participant 9 explained it like “I had to learn where my favorite songs are exactly on tape so I could directly go there by wrapping the tape manually.” As still a related aspect to player interaction, Participant 6 mentioned “biting the battery to repair when it is not working” which can be considered as an interesting interaction with the product yet may be showing the importance given to continue the activity. Following player interaction, there are features causing dissatisfaction related to *player usage* mentioned by 4 participants with different respects as “being a time-consuming product”, “using a lot of battery”, “running out of battery” and “being an easily broken product”.

Participants touched upon several features of cassette as a medium. Firstly, 5 participants made comments about aspects related to *medium usage* by outlining cassettes as “fragile”, “easily broken down”, “rapidly deteriorated”, “unstable to

heat”, “having easily entangled tapes”, "and “when damaged cannot be repaired, became garbage”. *Medium interaction* is another point mentioned by 1 participant regarding the “hard to store nature of cassettes due to bulkiness”.

4.2.5 Group 4: CD

The era following the cassette era is the CD era, thus, the next set of questions is about CD playing experiences. In the same way with the previous groups of questions, participants’ first memories with CDs were asked. *Player access* to CD players is similar to cassette players in the case of 8 participants, who accessed their players through their family or as a gift from a family member. In terms of *player usage*, distinctly from cassette players’ case where people quit using cassettes after getting a CD player, 6 participants mentioned that they keep using CDs even after they stopped using CD players with the aim of downloading songs to their computers and uploading to their mp3 players. 1 participant 5 stated that “I have been trying to extend my CD collection since 2012 because I have a dream of building an off the grid lifestyle in the countryside and Internet is not a part of this.”. So, CDs can be considered as the last medium not reliant on the Internet.

Location and *context* are again points of interest since CDs provide portability just like cassettes. 10 of 12 participants described their usage location and context as everywhere in every possible condition whereas 2 participants used CDs only at home since they don’t have a portable CD player.

Along the same line with vinyl and cassettes, participants were asked about good features of CD players. The most encountered answers were related to *player interaction*. 6 participants commented about CD players as “portable”, “allowing personal use”, “accessible”, “easy to maintain”, and “easy to skip songs, fast forward”. 1 participant mentioned CD players “useful since it is a product doing what it is supposed to do” as a feature about *player usage*.

As an essential component of the experience, positive comments about CDs as a medium were requested. The most popular answers are linked to *medium interaction*. 6 participants broached their positive comments about CDs as “being both digital and analogue since music is digital while covers and booklets are analogue”, “taking small space” and “providing the ability to prepare CDs from a computer which gives a good variety of music”. As a part of *medium usage*, 3 participants highlighted their satisfaction about CDs’ “large storage capacity”. In relation to *medium UX*, 1 participant stated that “Some special CDs were released for collections which makes you feel special.” while another participant found “the prints on CDs showing track lists and album cover” successful.

Besides these features, 4 participants were satisfied with the *sound quality* CDs offer and stated that “They provide a standardized and good sound quality which does not get affected by the quality of the product you use.” Another mentionable and liked feature is the chance of *sharing*, where 2 participants found CDs “easy to share music with others”.

Along with the upsides, the downsides of CD playing experiences were asked about to participants. Associated with *player interaction*, 3 participants said that portable CD players were so large that they could not be carried in a pocket, whereas portable cassette players could fit into a pocket or be attached to belt. Concerning *player interaction*, 3 participants found CD players “not durable” while 2 participants stated that CD players have “low battery life”. 1 participant remarked a downside with these words: “Some players don’t read non-original CDs which is a big disappointment.”.

Following players, the drawbacks of CDs as a medium were also investigated. The most common answer which was given by 8 of 12 participants is about *medium interaction* and described as “being open to external factors and getting easily scratched” which makes CDs unusable. As a matter of *medium interaction*, Participant 8 found CDs “difficult to store, requiring a special bag or case”.

4.2.6 Group 5: Mp3

After the completion of the CD era came the mp3 era. Therefore, mp3 related questions were asked next to the interviewees. As a response to the question about their first memories with mp3 playing, 7 participants referred to their high school years as the first time of owning an mp3 player and the major usage period. 2 participants indicated that they are still using their mp3 players in their daily lives.

Concerning *location* and *context*, different from previous products, all 12 participants described their usage area as “everywhere at every possible condition” due to the small size of the product and absence of a physical medium storing the music itself.

To start with the question about positive features, *player interaction* was the most common theme amongst answers. “Portability” was an answer given by 6 of 12 participants as an upside of mp3 players. “Navigating among and skipping songs” was an answer provided by 2 participants while “connecting to and charging from computer” was also highlighted by 2 participants. “Personal use” and “accessibility” were answers given by 2 different participants. As a component of the product, the screen was highlighted by Participant 1 with these words: “The screen was a significant improvement for me since it showed everything I needed to see like songs, lists, battery, etc.”. Regarding *player usage*, 3 participants mentioned their satisfaction about “large storage capacity”. 3 participants remarked another positive feature as “easily charging and not needing a battery”. Additionally, 1 participant found mp3 players “durable”.

Respecting *sound quality*, Participant 4 described the experience with these words: “Even though the sound quality may be lower than CDs, it didn’t make a significant difference in terms of listening experience.”. Another mentioned part refers to *sharing* as “easy to share, send to others via using Bluetooth, infrared or over the internet platforms”.

Thereafter, downsides were also asked to investigate the experience further. The most encountered answers were about *player usage*. As opposed to some participants' answers with good features, 3 participants stated that cheap mp3 players have "low storage capacity", 3 participants described mp3 players as "not durable products" while 1 participant commented about "the requirement of a computer to charge" as a negative side.

4.2.7 Group 6: Online Streaming

The final era of the timeline is online streaming. Following the interview guide, the first question was about the first memories of using an online streaming platform regarding *player access*. All 12 participants stated that they started using an online streaming platform with YouTube, without subscription. After that, different platforms were used like Fizzy, Last.fm, SoundCloud, Spotify, YouTube Music, etc. 4 participants said that they were a bit prejudiced against platforms with subscriptions, since YouTube was already free, and you could download songs from the internet. However, after using the free versions, they were convinced and willing to use the subscription-based versions. All participants are still using online streaming platforms.

Since a physical music player is no longer required in this era, instead participants can use their phones, computers, tablets, etc. to play music, *location* and context nearly lost their boundaries. All participants said that they use these platforms "everywhere at every possible condition".

According to the interview guide, positive features of online streaming platforms were asked. *Player interaction* is the most common aspect since it is seen in answers given by 11 of 12 participants. "Accessibility" can be considered as the most popular feature among participants which is highlighted by 8 participants while 1 participant said, "I think it is the last point that can be reached in terms of accessibility." "Song and playlist suggestion" and "discovering new music easily" were other liked aspects

mentioned by 8 participants. 4 participants remarked their satisfaction about “having a huge database so presenting a good variety of music”. 3 participants found the “integration of platform with different online platforms like social media tools” and “integration of platform while among different devices” features successful. “Not taking space while using the internet” and “using without the internet when songs are downloaded” were other features liked by 2 participants and described by Participant 6 as “I am able to store what I want and not store what I don’t want, it is freedom!”. Another aspect following the above-mentioned ones is “customization” which was mentioned by 2 participants since it is possible to “create playlists, name them, add cover photo, add/remove songs”.

Beyond the functional aspects, features related to *player UX (meaning)* were given as answers. 2 participants specified suggestions and analysis as features that are “knowing you well and making you feel special”. 1 participant stated, “immediate access to a newly released song is very valuable” while 1 participant is happy with “the personal space it provides, it is like a secret world for me that I don’t want to share the password with anyone.”

From *artists’ side*, 2 participants found it “easy to share your own music and reach people”. Ease of *sharing* songs, artists and playlists is also a feature remarked by 1 participant. Another mentioned positive side is the *sound quality* offered which may vary from one platform to another.

Following the upsides of online streaming platforms, downsides were also asked to the participants. Related to *player interaction*, “ad-based system” was found as a drawback by 4 participants. 4 participants commented about the suggestions as “distracting and tiring” while one of them described this situation as “I am exposed to a lot of unnecessary things and sometimes I can’t reach the things I want.”. Another participant stated that “The personalization seems increased however, I think it is reduced; we pay less attention to our choices.”. 1 participant presented dissatisfaction about the “problems occurring in terms of optimization encountered especially in desktop use”. In addition to that 1 participant was unhappy about “the

total loss of physical interaction”. Regarding *player UX (meaning)*, 4 participants mentioned that “it forces you to just consume without giving credits to artists and imposes music without your control”.

As a habitual aspect of earlier eras of pre-recorded music playing, buying and listening to music as albums was a part of participants’ lives. 2 participants said that the *album concept* gets lost in the online streaming era, where we should observe a consistent texture in terms of the track order, instruments used, sound, etc. The participant added “Albums create a consistent musical experience in itself, just like watching an uninterrupted movie. When you jump between the same artist’s states from 1990 to 2010, it spoils the experience. I think the playlist suggestions also cause a disjointed listening experience.”. When it comes to the *artist’s side*, 2 participants highlighted that “it is difficult to earn a remarkable income just from these platforms”. Moreover, 1 participant mentioned that access to *artists* may be a problem since some artists or their labels do not have profiles due to agreements at some platforms. So even though there is a huge database, it is not possible to access some desired artists.

4.2.8 Group 7: Relevant Experiences

After asking the questions related to music players and media, relevant experiences surrounding the music playing activities were also inquired. These relevant experiences were “visiting and shopping at music stores”, “existing covers and booklets of albums”, and “sharing music with others”. After all, under the current circumstances, the “changing habits during pandemic” was asked.

To start with, visiting and shopping at music stores is considered as a key element of the whole pre-recorded music playing experience. The most common gatherings from this perspective were the spatial experience that stores offer and the human interaction that occurs there. 9 participants defined *spatial experience* as an important practice in their lives. Music stores refer to any shop selling music media

and products, including music stores, book shops, vintage shops, antique markets and even music sections at gas station markets. The “visual experience music stores provide”, “the general exciting atmosphere of stores” and “the chance to meet with only music there” were the key parts that participants mentioned. Participant 3 defined the importance of music stores with these words: “When I go abroad, I map the locations of the record stores in the city, and when I visit each of them, I also tour the city. I build my trips on this.”. 6 participants highlighted another important point, *human interaction* occurring in stores. The prominent human interaction is with the sellers and participants found “getting suggestions from the seller” and “talking about newly released albums” exciting. Besides the seller, 2 participants mentioned “meeting with new people who share a similar interest” as a positive side of human interaction offered in music stores.

Following music stores, another key relevant experience is the album covers and booklets in the cases of vinyl, cassette and CD. This experience is examined under the point of *practices* since looking, analysing, and collecting them is a practice itself apart from listening to music. All 12 participants evaluated covers and booklets as things they give importance to. “Reading the lyrics while listening to songs”, “enjoying covers visually and using them as decor objects like hanging on walls”, “getting information about people who contributed to the album, the recording studio, used devices and instruments”, “reading the special notes by artist about the album if there is any”, and “being inspired from the artworks”. It is stated that music and artwork complement each other while covers make people memorize the album and the artist and are even used as themes of concerts. Participant 3 explained the importance of booklets with these words: “There was this album which has a great cover artwork. I looked at the artist, which triggered me to do research about the artist and other artworks made by that artist. Then, I saw another album cover made by that artist which belongs to a band I didn’t know. I listened to that band, and I loved their music. It is very nice for me to establish such organic links.

Sharing music with others is another key aspect relevant to the experience. 10 participants stated that they give big importance to sharing music with family and friends starting from preparation of mix tapes, CDs, sending mp3 files to each other via Bluetooth or through the internet, and now sharing song or playlist links via social media platforms. 1 participant remarks sharing music with these words: “I love to share music and being shared. I actually construct my social circle around music, so mutual sharing is an essential part of my life.” Another participant touched upon a point related to sharing like “It creates a musical culture. A song can be spread among people and create an underground culture. It can be passed from phone to phone through many people.”

Lastly, the changing listening habits with the pandemic was asked to participants. 5 participants’ habits of pre-recorded music playing habits did not change. One of them stated that only the preferred music genre changed due to more melancholic psychology. 3 participants started to listen to music more since they have more free time. However, 4 participants stated that the amount of music they listen to has diminished due to the increasing workload they have.

4.2.9 Framework Grading

The study adopts the framework of product experience created by Hesmet and Dekkert (2007). To evaluate music playing products, during the interview participants were asked to grade their experiences on a scale of 1 to 5, and to add personal comments. As a reminder, the experiences within the framework are defined as: aesthetic experience, emotional experience, and experience of meaning.

Table 4.1 shows the overview of the framework grading in the cases of ‘any product used’, music players (in general), vinyl players, cassette players, CD players, mp3 players and online streaming platforms. Grades refer to the descriptions as 1 (not important), 2 (slightly important), 3 (important), 4 (very important) and 5 (essential).

The point here was to gather information about participants opinions for each experience and for each product.

Table 4.1 Grading based on product experience framework (first round of interviews)

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	AVERAGE	
For any product														
Aesthetic Experience	4	4	4	4	3	5	4	3	3	3	3	4	3,67	
Emotional Experience	2	3	3	2	2	3	3	4	4	3	3	4	3,00	
Experience of Meaning	4	5	5	3	3	5	5	5	5	4	5	5	4,50	
For music players														
Aesthetic Experience	4	4	4	3	2	5	5	4	3	4	4	5	3,92	
Emotional Experience	2	3	4	2	3	2	5	2	4	3	3	5	3,17	
Experience of Meaning	4	5	5	3	4	4	3	5	5	5	5	5	4,42	
1.For vinyl players														
Aesthetic Experience	2	2	5	4	4	5	5	5	2	3	5	4	3,83	
Emotional Experience	4	4	5	2	4	5	5	5	5	3	4	5	4,25	
Experience of Meaning	5	2	5	4	5	5	5	4	4	4	5	5	4,42	
2.For cassette players													4,17	AV. (1)
Aesthetic Experience	4	2	4	2	2	5	3	2	2,5	2	2	3	2,79	
Emotional Experience	4	4	4	3	3	3	5	2	5	2	2	4	3,42	
Experience of Meaning	5	1	5	4	5	4	5	4	5	2	3	5	4,00	
3.For CD players													3,40	AV. (2)
Aesthetic Experience	4	4	3	2	2	2	4	1	2	3	4	2	2,75	
Emotional Experience	4	3	3	2	3	2	5	2	4	2	2	2,5	2,88	
Experience of Meaning	4	4	5	2	2	3	5	3	4	2	4	2,5	3,38	
4.For mp3 players													3	AV. (3)
Aesthetic Experience	5	4	2	5	3	4	5	4	4	4	2	5	3,92	
Emotional Experience	5	4	3	3	3	2	5	4	4	3	2	5	3,58	
Experience of Meaning	5	4	4	3	4	4	5	4	4	3	5	4,5	4,13	
5.For online streaming													3,88	AV. (4)
Aesthetic Experience	4	4	5	2	3	4	5	4	2,5	5	4	5	3,96	
Emotional Experience	5	3	2	4	2	3	5	5	3	4	4	3,5	3,63	
Experience of Meaning	5	3	5	4	2	3	5	5	3	3	4	2,5	3,71	
													3,76	AV. (5)

First of all, participants were asked to grade the importance they gave to listed experiences in the case of “any product they use”. Experience of meaning is observed as the most important, with a mean (average) grade of 4,50. The only participant not giving the highest grade to experience of meaning was Participant 4 who stated that “Aesthetic value creates connection, but experience of meaning is not that important. Memory is in our minds; we do not need to build a connection in terms of that with a product.” Aesthetic experience follows experience of meaning with a mean grade of 3,67. Only 2 participants found emotional experience more important than aesthetic experience. According to these participants, aesthetic appeal is only important at the first sight, before function and other experiences step forth. The other 10 participants stated that aesthetic experience comes to the forefront rather than emotions. Emotional experience gathered an average grade of 3,00 which can be considered as a neutral evaluation.

Next, the importance given to experiences in the case of music players were graded by participants. In the same line, experience of meaning is determined as the most important experience, while emotional is the least important. Only Participants 6 and 7 found experience of meaning less important than aesthetic experience by stating that aesthetic interaction complements music players more since music is also a practice addressing to the senses. The average grade of experience of meaning is 4,42 while aesthetic experience’s average is 3,97. Emotional experience follows them with a grade of 3,17. In both cases, the grading of any product and music players, experience of meaning is placed in between very important and essential, aesthetic experience is close to very important and emotional experience is around important.

After the evaluation of any product used and music players in general, participants were asked to grade and comment about how successful they found the levels of experience in each era. The grading scale was: 1 (very poor), 2 (poor), 3 (OK), 4 (good) and 5 (very good). To give an overview era by era, the vinyl era can be the starting point. As illustrated in Table 4.1 experience of meaning has the highest

average grade of 4,42, located in between good and very good. The experience was defined as “nostalgic”, “valuable”, and “hard to find so making you feel special”. Emotional experience was graded as 4,25 placing it above good and below very good. Using vinyl and vinyl players was described as a “trustworthy” and “exciting” experience by participants. Aesthetic experience followed with a grade of 3,83, between OK and good. As the weakest experience graded, it was evaluated as offering “flimsy feeling” and “weak material experience”. However, Participant 4 mentioned that “Watching a vinyl record spinning in the player provides a strong visual interaction. It is like watching a fireplace.”

After vinyl, cassettes can be analysed further. Experience of meaning obtained the highest grade which is 4,00 and can be defined precisely as good. “Personal use”, “underground feeling” and “being like a childhood friend” were the mentioned aspects related to attributed meaning. Emotional experience followed, with a grade of 3,42, being in between OK and good. Participants found the cassette playing an “enjoyable”, “exciting” experience whereas they defined cassettes and cassette players as “incomplete” products. The lowest grade of the cassette era belongs to aesthetic experience, with a grade of 2,79, which is in between poor and OK. The common comments about cassettes and cassette players were “bulky” and “ugly”.

When it comes to CDs, the experience of meaning holds the highest grade at 3,38, settled in between OK and good. Being “digital”, “technological”, and providing “customization thanks to easy CD preparation” are the most mentioned aspects. After that, emotional experience comes with a grade of 2,88, located above poor and below OK. The comments are about being “exciting” but also being “waste, fast consumed”. The lowest grade belongs to aesthetic experience of CDs, with 2,75, which is again in between poor and OK. “Simple” and “basic” were the encountered comments relevant to aesthetic experience.

The mp3 era follows the CD era, having a highest grade of 4,13, above good, in the experience of meaning. “Making lists and putting effort on it”, “customizing the stored content” and “having it around yourself as a friend anytime, anywhere” were

the listed comments. Aesthetic experience is in the middle with a grade of 3,92, between OK and good. The common comment was “Expensive products are aesthetically satisfying while cheaper ones are ugly.”. Emotional experience holds the lowest grade of 3,58, located right between OK and good. It is said that “Mp3 players were so involved in our lives, they were not arousing big emotions.”.

Finally, the online streaming era can be evaluated. Aesthetic experience was found the most successful side with a grade of 3,96, locating in almost good. The offered User Interface was found aesthetically appealing by participants. Experience of meaning comes next with a grade of 3,71, placing in between OK and good. Some participants found suggestion features as an indicator like “knowing users and being a part of their life” while some remarked as “stalking users”. 1 participant stated that “I just see it as a computer program, no need to assign any meaning.”. Lastly, emotional experience holds a grade of 3,63, being above OK and below good. The gathered insights can be summarized by these words of a participant: “Easy accessibility creates expectation, absence causes disappointment”.

As highlighted in Table 4.1 vinyl playing has the highest grades in both emotional experience and experience of meaning while online streaming is graded as the most successful with regards to aesthetic experience. The lowest grades given by participants in each experience belong to playing pre-recorded music on CDs.

Table 4.2 Hierarchical levels of experience for different music players, based on mean grades

	Higher to lower
Aesthetic Experience	Online streaming > Mp3 players > Vinyl players > Cassette players > CD players
Emotional Experience	Vinyl players > Online streaming > Mp3 players > Cassette players > CD players
Experience of Meaning	Vinyl players > Mp3 players > Cassette players > Online streaming > CD players
Overall Grades	Vinyl players > Mp3 players > Online streaming > Cassette players > CD players

Table 4.2 shows the list of different experiences, with the various music players presented in rank order based on their grading by participants. The overall (mean) grades across all experience levels were also calculated and the rank order is also shown. Altogether, vinyl music playing is graded as the most successful/notable experience whereas CD music playing is the lowest graded experience.

4.3 Second Round of Interviews

As illustrated in Chapter 3, the interview phase of the field study consisted of two rounds conducted with different participants. The first round of interviews was outlined in the previous section, while this section will cover the second round. For consistency, semi-structured interviews were conducted with the same interview protocol but excluded the questions about cassette, CD, mp3 and online streaming eras.

Using a similar analysis method to the first round of interviews, questions will be analysed as groups. As an introduction, demographic information is gathered from participants, then, the interview protocol continues with questions about general music listening habits, experiences of the vinyl era and relevant related experiences.

4.3.1 Demographic Information

To break the ice and get to know participants, demographic questions were asked. These questions covered age, job, location, and occupation of participants. The obtained information was not related with the scope of the study, so there was no need to analyse the data. However, the major difference between two interview rounds is the age range of participants, since the second round interviewees had experienced the vinyl era while first round interviewees had not.

4.3.2 Group 1: General Music Listening Habits

To prelude to the main topic, participants' general habits related to music listening were investigated. Unlike the first round interviewees, who had a great interest and passion in music, only 6 of 12 second round interviewees stated that music takes a great and irreplaceable place in their life. Other participants' answers were as "I enjoy listening to music but do not spend so much time listening to," and "I only listen to music for around an hour a day." 5 participants described their general habits around the *location* and *context* they play back music. They mentioned that they listen to music at home while relaxing and enjoy listening to music in the car. 5 other participants explained their *habits* with different perspectives like "around 1 hour a day", " $\frac{1}{3}$ of my life" or "when I feel tired and want to get relaxed".

4 participants defined their *music interest* rooting to their young years exemplified as "being an amateur DJ", "spending time with father around music" or "a special hobby I focused on." Habits can be considered as things changing through time and with developing technologies. Participant 15 touched upon a different point in case of the usage of players which have changed through time from being physical products to transforming into digital platforms by saying "I also care about the material experience and physical interaction of the product I use. That's why I could not adapt very well in the transition to digital, the "tangible" part of the experience seems to have disappeared, and that is an important part of the experience of using a product."

Another inquiry was about the *purpose* of listening to music. 3 participants stated that they listen to music just for listening, while 3 participants listen to music to accompany another activity. The other 6 participants have a habit of listening to music with both purposes; just for listening to music with focus and, also for accompanying another activity they are doing in the meantime.

4.3.3 Group 2: Vinyl

The medium of scope for the second round was just vinyl, which was the only focus of the questions. As a starting point, the first memories with vinyl were asked from participants. 10 of 12 participants went back to that time and outlined their *player access*. The way they first accessed vinyl players varied from “having at family house”, “seeing at a relative/neighbour’s house” to “making your own vinyl player”. The participant making a vinyl player described the process as: “I had a small room outside of the house that I used as a workshop. I was stacking records on top of each other, using mechanisms that play them, making electronic circuits, etc. there. I was also gathering with my friends and listening to loud music in that room.”. 2 participants referred to *player interaction* rather than referring to player access. They described the first seen product with details while one of the participants portrayed the player as a small bag/suitcase like product. According to the description, when the cover of the bag was opened, the vinyl player was coming out and the cover was put away and used as a speaker. This kind of a unique design of that product sticks in the mind of the participant. When the time period of *player usage* is the focus, the different answers can be highlighted: from the 1960’s to the late 1980’s.

Following the interview protocol, participants were asked to evaluate vinyl as a medium and vinyl player with good and bad features. To start with, good features were asked with the most popular answer being *sound quality*, given by 11 of 12 participants. The comments about the sound quality were like this: “non-digitized and unprocessed sound”, “natural and organic sound”, “hearing all instruments”, and “honesty since some in digital audio files, analogue sound that we do not hear are cut off, it is actually theft. Even if I don’t hear them, they should be there. I know every sound is there on the vinyl records.”.

The positive features mentioned were frequently related to *player interaction*. 5 participants highlighted interactions like “tangible interaction such as pressing/turning buttons”, “physical interaction path as removing the needle, placing

the vinyl, putting the needle back”, and “visual interaction as watching the vinyl record spinning”. Another point they mentioned is “the chance to listen to desired music from desired artists as many times as I want”. As an aspect of *player UX (meaning)*, “having a collection value” and “using it like a ritual with several steps” were mentioned experiences by 2 participants.

The complementary part of the experience, vinyl, is also a point of interest as a medium. First of all, *medium interaction* is an evaluated aspect in the interview as an upside of vinyl playing experience mentioned by 4 participants. “The scratching movement while performing as a DJ”, “buying a record, opening the envelope, reading the content like a book, looking at visual design”, “physical interaction and material experience both vinyl, and the envelope offer” were the common comments. *Medium UX* is another popular point being touched upon. 3 participants found vinyl “an incredible fetish item for collectors”, “having collection value” and “owning something that no longer exists in the market and have the original version of the song”. Participant 16 who owns a record store stated that “I have some customers who buy vinyl and don’t even play them. They just keep it at their home; they enjoy owning it.”. It can be shown as an example of the high value attributed to vinyl in terms of experience of meaning.

Player usage was the most common aspect gathering different answers under. 9 participants presented their comments about negative usage aspects such as “being delicate, requiring attention to use and protection”, “sensitivity of the needle”, “regularly needing detailed clean-up”, and “being sensitive to external factors”. Following usage, comments relevant to *player interaction* were taken from 2 participants, such as “difficult to carry” and “primitive features”.

Next, as a popular case, 9 participants provided their remarks related to *medium usage*. “Requiring wipe of the dust off the vinyl”, “getting scratched quickly”, “being exposed to sunlight and heat”, and “taking up big space” were the most mentioned negative features. According to 2 participants, “short duration of vinyl due to low storage capacity” was an issue concerning *medium interaction*. 2 other participants

highlighted their unliked feature about *medium access* which is “being expensive and difficult to find”.

4.3.4 Group 3: Relevant Experiences

After the inquiries about listening to music and vinyl experience, questions about relevant experiences ensued. The first investigated point was the experiences of participants regarding music stores. 7 participants highlighted the offered *spatial experience* in music stores. “Being around hundreds of options” and “listening to newly released songs” are considered as the points that make them spend time in stores with excitement. Participants mentioned that, even when they cannot or will not buy anything, being there is enough to have fun. Another common comment was about *human interaction* occurring in stores. “Getting opinion and information from an expert”, “meeting people like you who share similar tastes” and “going there as a way to spend time with your family and friends” were the gathered comments. As a part of *medium access*, 4 participants stated that “Either you have something in your mind, and you search for it, or you find something you want to buy there by looking up the options.” and 1 participant added “The first enthusiasm is to go home and listen to the album you just bought. It is a big excitement.”.

The next thing asked to participants was the experience provided by covers, artworks and booklets. Under the theme of *practices*, 12 participants described their experiences with these words: “Albums were complemented not only by the music but also by their covers.”, “You learn something about artists, their life, emotions and people who contributed to the album through covers.”, “The story of the album becomes even stronger with the cover and booklet.”, “It is an object of visual collection both when buying in store and keeping at home.”, “It is an area where artists have the chance to express themselves besides music.”. 1 participant said that “Covers are so important to me that I bought many vinyl, just for the cover. On the shelf I store my vinyl, I order them alphabetically so I can reach things I want easily.” 1 participant expressed the importance of the tangibility of the covers by saying “I

think this was the biggest loss that started with the mp3 era. People listen to one single song or a couple of songs, but they don't taste the full album experience. Albums were presenting a story to listeners that you need to follow.”

As a supporting part of the experience, *sharing* was another point highlighted by participants. 8 participants stated that “giving as a gift” and “exchanging albums” were something they give importance to. Lastly, the *pandemic effect* on participants’ music listening habits were asked. 7 participants’ amount of music listening increased since they had more time, while 5 participants stated that nothing changed due to the pandemic.

4.3.5 Framework Grading

Table 4.3 Grading based on product experience framework (second round of interviews)

	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	AVERAGE
For any product													
Aesthetic Experience	5	5	5	3	4,5	4	2	1	3	5	3	4	3,71
Emotional Experience	5	5	5	4	3	2	3	1	3	3	4	4	3,50
Experience of Meaning	5	5	5	5	5	4	2	2	3	4	5	5	4,17
For music players													
Aesthetic Experience	5	5	5	2	4,5	4	3	5	5	4	3	4	4,13
Emotional Experience	5	5	5	3	3	4	5	3	5	3	4	4	4,08
Experience of Meaning	5	5	5	5	5	5	4	3	5	4	5	5	4,67
For vinyl players													
Aesthetic Experience	5	5	5	4	4,5	4	5	5	5	4,5	3	5	4,58
Emotional Experience	5	5	5	5	4	3	5	5	5	3	5	5	4,58
Experience of Meaning	5	5	5	4	5	5	5	5	5	3,5	5	5	4,79

Table 4.3 presents an overview of the framework grading that was given by participants in the case of any product they use, music players, and finally vinyl players. In the first two cases, grades address definitions as: 1 (not important), 2 (slightly important), 3 (important), 4 (very important) and 5 (essential). For any product participants use, experience of meaning is observed as the most important

aspect with a grade of 4,17 which is in between very important and essential. Only for Participant 22 was experience of meaning not the most prominent experience, being graded lower than aesthetic experience. Aesthetic experience follows meaning with a mean grade of 3,71 placing it above important and closer to very important. Only participants 16, 19 and 23 found aesthetic experience less important than emotional experience. Emotional experience collected a mean grade of 3,50, which is in the middle of important and very important.

The same question was asked in the case of music players, where experience of meaning turned out to be the most important with a grade of 4,67 referring to the interval of very important and essential. Except Participant 20 who thinks aesthetic experience is the most prominent, all participants found experience of meaning the most important aspect. Aesthetic experience comes afterwards, with a grade of 4,13 as above very important. Participants 16, 17 and 23 expressed that emotional experience is more important than aesthetic experience. Lastly, emotional experience is graded the lowest on average, with 4,08, close to aesthetic experience. Participants stated that emotions provided by music are more important than emotions provided by the player itself.

As the final grading case, participants were asked to evaluate vinyl playing in terms of success in achieving the three levels of experience. The grading scale describes points as 1 (very poor), 2 (poor), 3 (OK), 4 (good) and 5 (very good). Experience of meaning is found as the most successful aspect for vinyl music playing, with a grade of 4,79 which is close to very good on the scale. Only Participant 22 found vinyl playing's aesthetic experience more successful than the experience of meaning. Participant 20 expressed it as "When you are making a collection it becomes more important and you build a connection with it. It becomes like a valuable part of your life.". Aesthetic experience and emotional experience were graded the same, at 4,58, which is in between good and very good. Participant 17 stated that "Since it is not a portable product and stays at home, it is like furniture and aesthetically important to display at home.". For emotional experience participants defined vinyl playing as a

very exciting and joyful experience while a bit demanding since it requires effort to take care of both the vinyl record and the vinyl player.

4.4 Design Proposal

The last step of the first phase of the field study was the creation of a design proposal in response to the interview findings. The interviews provided a wide range of data that had the potential to guide the design process. With that aim, the data is coded and analysed to present key insights for use as design considerations.

4.4.1 Key Insights to Guide Design

The first phase of the field study provides codes which can be used as a guideline in the design process. For the exploration of personal music-listening experience, a question set with a wide perspective were asked to the participants and patterns were followed in the answers. As a conclusion of this phase, the prominent codes gathered from the answers which can be used as a guideline to follow are listed as Figure 4.1.

PLAYER RELATED CODES	MEDIUM RELATED CODES	OTHER RELEVANT CODES
- Player interaction - Player UX (aesthetic, emotion and meaning) - Player usage - Player access	- Medium interaction - Medium UX (aesthetic, emotion and meaning) - Medium usage - Medium access	- Location/context - Purpose - Habit - Practices - Human interaction - Spatial experience - Sharing - Sound quality - Music interest - Music genre - Album concept

Figure 4.1. Codes for the design phase

First of all, *player interaction*, as the most encountered code, can be attended to during the design process. The physical interaction provided by tangible players and mediums is the most mentioned advantage in the interviews. Each player and medium offer a different interaction to users. Watching the vinyl spinning, putting the needle on it, wrapping the tape of the cassette to move among songs and placing the CD on the player can be considered as the major offered interactions. They are associated with a “ritual you follow” which can be a design consideration with a question of “How might different player interactions be adapted to current digital pre-recorded music playing experience like a ritual?”. The generated solution for that inquiry will be presented in a following section.

Next, the experience occurring in music stores as *human interaction* is found potentially useful in the design phase. Getting to know people sharing similar tastes, taking suggestions from the seller or the expert and being notified about newly released music and upcoming events are the prominent experiences liked by participants. Taking them into account, “How might we enhance human interaction regarding pre-recorded music playing experiences on digital platforms?” can be expressed as the second question for design interpretation.

Finally, examining *cover and artwork* were noted as one of the most successful practices of participants relevant to music listening. The presented written and visual content was remarked as a complementary element of music which gives birth to the last question: “How might we enrich the place of cover and artwork integrated in pre-recorded music playing experiences on digital platforms?”.

4.4.2 Design Outcome: Features

The first phase of the field study concluded with the design outcomes, which were generated according to key insights gathered from the interviews. For each key insight, design features were conceived that can be presented through a mobile application interface. Instead of a physical product design, mobile application is

selected for the design phase. The reason of this choice is applications' being the major platform on which music is played nowadays and the design outcomes were developed to be adapted directly to current popular platforms.

4.4.2.1 Feature 1: Player Interaction

As the most frequently mentioned aspect of music playing experiences, player interaction was the first design consideration. As the music players before online streaming platforms offered different experiences to users, such as visual and tactile interaction in a tangible sense, the design proposal aimed to address the lack of those qualities in a digital environment. During the interviews, 1 participant assimilated vinyl playing experience to a “ritual”, which requires several steps to follow. The design consideration was initiated with this question: “How might different player interactions be adapted to current digital pre-recorded music playing experience like a ritual?”.

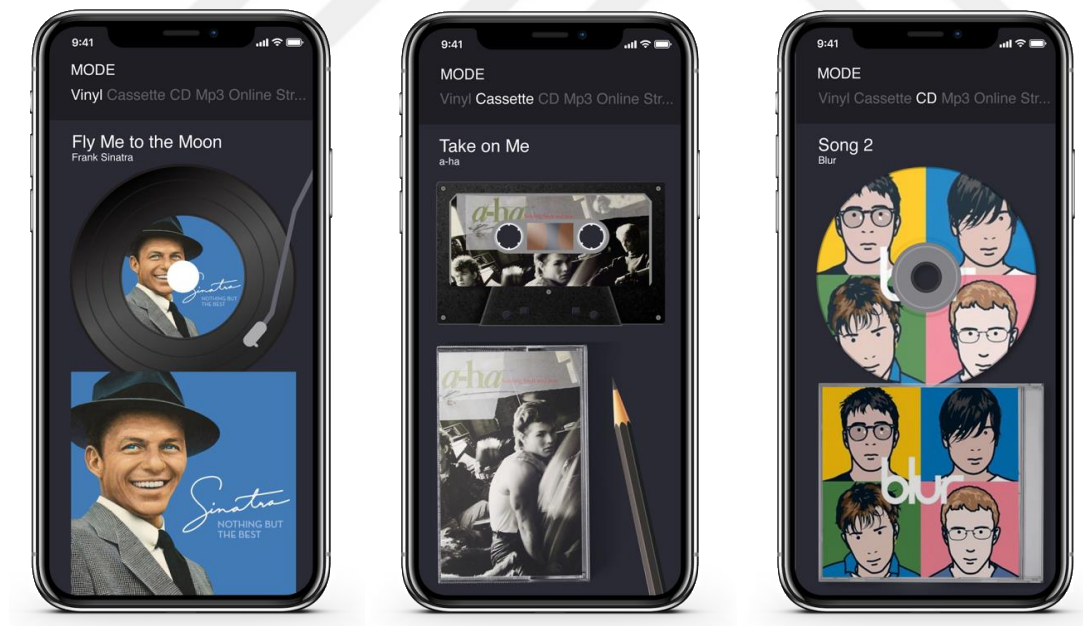


Figure 4.2. Illustration of design feature 1 in the modes of vinyl, cassette, and CD

In the case of a vinyl player, the term ritual covers taking the vinyl off the envelope, wiping the vinyl's dust off, placing vinyl to the vinyl player and finally placing the needle on it. To adapt this interaction to current digital music players and online streaming platforms, a design feature is generated as illustrated in Figure 4.2, in which users can analogously take the vinyl off the envelope by swiping up in the touch screen, place the vinyl to its spot and then, put the needle on the vinyl. To pause music, users need to remove the needle from the vinyl; to change songs, the needle should be relocated and to exit the album, vinyl should be taken off and placed in the envelope. Users can turn the envelope to see the written and visual content. In the cassette mode, there is also a similar ritual in which users take the cassette of the case, place it in the spot, wrap the tape with the pencil to change songs, remove the cassette and put it inside the case to exit the album. Inside the case there is a booklet showing the information about the album like who contributed, the studio that the album was recorded in, and the designer making the artwork, etc. As with cassette mode, CD mode offers an experience where users need to take the CD out of its case, place it in the spot and look at the booklet inside the case.

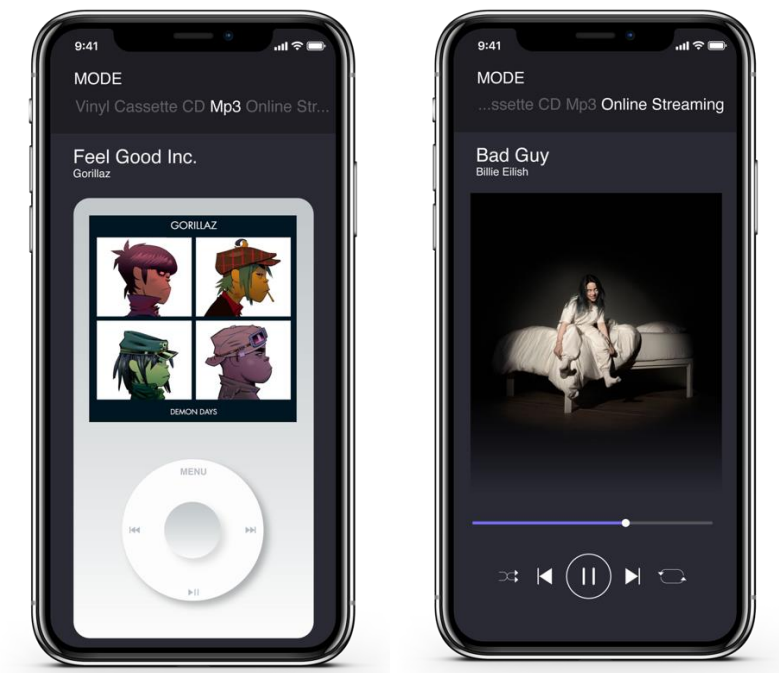


Figure 4.3 Illustration of design feature 1 in the modes of mp3 and online streaming

As shown in Figure 4.3, mp3 mode includes a touch wheel analogous to that found on physical iPods, where users can fast-forward, rewind, play, pause and stop the song. There is also a “menu” button where users can navigate in the application itself which will be in the specialized screen of the mp3 player and have a UI created accordingly. Finally in the online streaming mode, users can use the buttons below the album cover to play, pause, go to the previous or next song, shuffle songs and repeat the song. The default mode of the application is online streaming mode, however, users can change it according to their mood and preference at any time.

4.4.2.2 Feature 2: Music Store Experience

The second design feature aims to address the question: “How might we enhance human interaction regarding pre-recorded music playing experiences on digital platforms?”. In the application, there is a virtual music store that you go in, where you are welcomed by the store owner who is a voice assistant greeting you as presented in Figure 4.4. There are four main facets here referring to different aspects. The main goal is to enhance human interaction since participants stated that the human interaction in music stores was fun, where you can meet people with similar tastes or spend quality time with your friends or family.

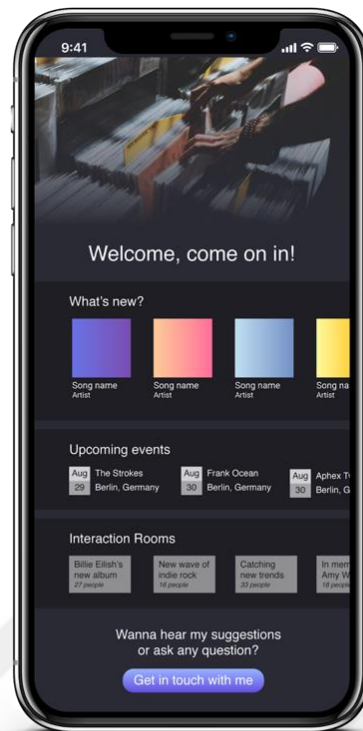


Figure 4.4. Illustration of design feature 2

The first facet covers suggestions covering newly released albums or songs. These suggestions will be made by your friends in the app while you can also suggest to other people. The second facet aims to present upcoming events that are close to you. In this case, friends can send event invitations and/or tickets to each other. The third face is interaction rooms, where people can talk about certain subjects such as “Billie Eilish’s new album” or “In the memory of Amy Winehouse”. Users do not need to be friends to talk in the interaction rooms, where they can also socialize and meet with new people sharing similar tastes or interests. Users can also create their own interaction with a subject that they decided to find people to talk with on that specific topic. These interaction rooms are suggested by the application through user preferences while users can also search interaction rooms with a certain topic. The fourth and last facet addresses to the human interaction that occurs between the customer and seller in physical music stores. Participants mentioned that the suggestions and information provided by the seller was a valuable experience for them. With this in mind, through the app users can get in touch with the voice

assistant who can take on the role of the store seller, making suggestions and giving information to the user.

4.4.2.3 Feature 3: Cover and Artwork Experience

The final feature is focused on the cover and artwork experience, which was observed as a very important experience mentioned by participants. The question asked to generate the design solution was, “How might we enrich the place of cover and artwork integrated in pre-recorded music playing experiences on digital platforms?”.



Figure 4.5. Illustration of design feature 3

In this feature, artists create different cover artworks addressing different users or different times. Figure 4.5 illustrated the third design feature showing three examples of use. The example on the left shows the default artwork while the one in the middle is prepared for people who are more in a calm mood at that time, understood by the songs they lately listened to. The example on the right is specially prepared for Pride Month and will be presented in June.

In order to provide an experience equivalent to looking through the booklets of albums, two note sections were created. The first one includes artists' notes that are desired to be shared with users. The second note section is about the contributors who are a part of the album and should get credit. Contributors also have profiles on the application, so, for example, a user can check the graphic designer of the album cover, go to the artist's profile, and check other work done by that artist (and therefore the links to the music making use of that artwork). One participant defined this situation as "organic links", so design feature 3 aimed to enhance the music playing experience by harnessing the capability of instant database searching by digital applications.



CHAPTER 5

FIELD STUDY: SECOND PHASE

In this chapter, details of the second phase of the field study are presented. The second phase of the field study consisted of a focus group session, analysis of the gathered data, improvements to the design features first introduced in the previous chapter.

5.1 Introduction

As the first phase of the field study is concluded with design solutions, the second phase aims to collect user insights about them and result in design improvements through a generative session. As Chapter 3 explained in detail, a focus group was conducted with 6 participants who were industrial design graduates with experience in UX Design. The participants were also music listeners in their daily life, so they brought the perspectives of both a user and a designer into the focus group.

5.2 Focus Group Session



Figure 5.1. A screenshot of Miro board used in the focus group session

As illustrated in Figure 5.1 the generated design features were presented to participants within a Miro board. Then, the participants formed into teams of 2 (3 teams in total). An evaluation process was conducted, whereby in their teams, participants discussed and evaluated the design features. After the evaluation, a discussion was conducted together where each team presented their evaluation

results. Following this discussion, a generative session was held where teams generated design solutions according to the evaluation results and through a quick brainstorm. Lastly, teams presented their generated design ideas.

5.2.1 Evaluation

5.2.1.1 Design Feature 1

Firstly, the evaluation outcomes of Design Feature 1 will be discussed, which is about adapting different player interactions to current digital pre-recorded music playing experiences in a form of a ritual. The aim of the evaluation part is to explore participants' personal reflections about the feature and their prominent criteria. Team 1 found these adapted interactions successful where users can experience specific products. However, they stated that the target user group of vinyl mode may not be the same as the target group of mp3 mode. Therefore, their expectations and needs will also be different. They mentioned the importance of differentiating “transition” and “tribute” while adapting the physical interactions. In addition to that, ease of use may not be the priority, whereas users consider faulty features to be a part of the experience. The size of the screen was mentioned as a drawback, since vinyl as a medium is much larger than the phone screen and it may not reflect the vinyl experience well. For mp3 mode, the design of the interface was a point where they commented that buttons should be more like physical buttons with a sense of skeuomorphism.

Team 2 found the idea of adapting player interaction as an exciting ritual. They described the developed design solution as “simulating a physical experience” and found it as a “nice feeling”. Listening to a 50's song from vinyl mode and 80's song from cassette mode was evaluated as a complementing experience. For cassettes, they stated that pencil was not the only option to wrap the tape since one participant was wrapping by finger. For CD mode, the spinning effect was found successful, which will provide a visual interaction. In the case of mp3 mode, “having an interface

in the interface where the screen of mp3 player is used in the screen of mobile phone” was a point the team touched upon which may be solved in a different way.

Team 3 presented a different perspective by raising these questions: “Are we adapting these experiences because of nostalgia longing? Or is it because these experiences are very good experiences? Is the transfer of nostalgia sustainable in terms of usage?”. They gave the example of wrapping the tape of a cassette with a pencil which may actually be an undesired experience and it may not be feasible to adapt this feature. They commented on the design solution as: “Having these experiences at this level of simplicity seems to work, but if they are portrayed in a more detailed and realistic way, it may be difficult to deal with for users and may not add much.”. Another comment made by Team 3 was about the effort put by the user, stated with these words: “It makes sense to use these interactions if we are already making an action. For instance, it makes sense to place the needle when we want to play the song where we need to make something. Other interactions may result as “uncanny valley” if they are unnecessary.”

5.2.1.2 Design Feature 2

The next design solution evaluated by the participants was Design Feature 2, which aims to enhance human interaction regarding pre-recorded music playing experiences on digital platforms. Team 1 commented about this feature as a good experience presenting a good variety of interactions. However, some physical experiences provided by music stores are missing. Such as walking around different rayons, checking vinyl, cassette, and CD while songs are being played in the background.

Team 2 touched upon a point by stating “Design Feature 1 includes a simulation of physical interactions whereas this feature misses this. More tangible experiences could have been simulated.”. Upcoming events and interaction rooms were found successful while the chance to miss the interested interaction room was mentioned

as a drawback. Meeting with new people who have similar interests and music taste was evaluated as an exciting solution since people may not have that kind of common interests with the people who already know.

Team 3 evaluated Design Feature 2 as a successful feature set. They found prioritizing human advice intervention instead of letting the algorithm do the work as a good contribution. They stated as an upside of the feature that “If the community I am instantly involved in uses this platform, buying them a concert ticket as a gift or making plans to go together reduces many communication steps.” Nevertheless, they mentioned that the current Design Feature 2 may be simplified since it is like a “pool of features” now and can turn into a separate application just with these features.

5.2.1.3 Design Feature 3

The last design solution evaluated by the teams was Design Feature 3, which addresses enrichment of cover and artwork integrated in pre-recorded music playing experiences on digital platforms. Team 1 evaluated the artists’ notes feature which can be redescribed as input presented by artists, to be a very strong side since it fills in a more humane side that digital platforms miss. They defined this feature as “a space for artists to express themselves and reflect on their work” by including complementary information and content apart from the music itself. They mentioned that changing covers is not an experience we have in physical media, however they found it as a successful design contribution.

Team 2 remarked on the contributors feature as a good experience to know about different people participating in the music-making process and also on the changing covers feature, where users face different alternatives at different times.

Finally, Team 3 described Design Feature 3 as a very successful feature that can even be used in Spotify now. The fact that presenting and acknowledging the creators of other media is both interesting and ethical and can be defined as “democratization of

creation”. According to them, while listening to an album rather than playlists, this kind of information may offer a complementary experience. As they stated, there is potential in terms of marketing in the changing covers feature where covers are the things that visually market the album.

5.2.2 Generation

5.2.2.1 Design Feature 1

After the evaluation stage, a generation session was held in the focus group. To start with, the solutions brought about from Design Feature 1 will be discussed. As stated by Team 1, this design feature may be specialized according to different usage scenarios since needs and expectations of each user group may vary. A vinyl enthusiast may want a different experience than an mp3 enthusiast. Another mentioned point was to include tactile feedback since it is a part of the physical interaction of player usage and may lack in digital experiences. Suggestions presented according to each era were generated, such as initiating the vinyl mode when a song released in the 1960’s will be played.

Team 2 presented a specific design generation regarding CD mode, which uses the spinning of the CD as a design potential and putting different visual content there that can be watched while the virtual CD is spinning. Another point they focused on was the vinyl envelope and cassette/CD cases shown in the feature. They highlighted the potential of putting the real booklets there, so users can take them out and read or look at the content.

In accordance with Team 3, the strong side of physical products is the tactile experience that is missing in Design Feature 1. Tactility may be adopted by mimicking the physical interactions and integrated to the feature.

5.2.2.2 Design Feature 2

The second solution to generate ideas around was Design Feature 2. To start with, Team 1 outlined a feature where the real store experience is reflected more strongly. For that, there can be music in the background or covers can be exhibited as vinyl, cassettes, or CDs, so users can check them in the shelves to find what they search for. Another idea they presented was “preview listening” so users will not have to listen to the whole song to see if it will interest them. The team presented an idea about upcoming events feature which is collecting tickets and exhibiting them on the user’s profile. Lastly, they stated that having suggestions and chatting with a real person would suit the spirit of music more than speaking with a voice assistant.

Similarly, Team 2 also touched upon the point of simulating the store experience better in the platform by having rayons, instruments, and people just like in physical stores. For the upcoming events feature, the use of location was suggested where the platform shows you the events near you. In the case of interaction rooms, conversations are suggested to be saved, transcribed and/or highlighted so people who could not join can follow up.

Team 3 presented their design solutions about the features. The first generated solution is showing playlists prepared by people but not algorithm. Another one is using different types of media like audio, text or visual, in the interaction rooms. Another idea generated by Team 3 was having different stores which have their own boards and users can follow according to preferences. These stores can also sell physical vinyl, cassette, and CD through this platform.

5.2.2.3 Design Feature 3

The last design solution of the idea generation session was Design Feature 3. Team 1 generated many solutions for artists’ notes and contributors features such as: putting the link of the original song if the song used a sample, reflecting the whole process until it becomes a song, mentioning the songs and people who inspired the

artist, having suggestions of artists like “You can listen to this song after mine”, and using different types of media as input like image, video or text.

Team 2 suggested that people can design covers for released albums and share with the artist, so some selected works can also be used as a cover by crediting the artist. This may also support unknown artists. Another thing they added was, presenting the story of how the song came into existence as a caption since users may not understand everything on their own.

Finally, Team 3 presented a similar idea about covers where listeners can design covers to be exhibited and this can serve as a bridge between the listener and the musician. Another point they remarked on was providing the song's story since it provides you to build a different connection with the song. According to the team, the album cover may be selected addressing users’ general taste according to data gathered by algorithm.

5.3 Key Insights to Guide Design Improvements

From the gathered data, key insights were obtained to guide the design process of further developments to the design features introduced in the previous chapter. Firstly, Design Feature 1 may focus on tactile interactions that may enrich the whole experience, since physical music players provide tangible interactions, and this feature aims to adapt these experiences. For Design Feature 2, the idea of collecting event tickets and exhibiting them on a profile is found appropriate for the scope of the study since it also provides a point to build human interaction and collect memories. The solution of saving conversations occurring in interaction rooms was also found relevant to the aim of the feature. In Design Feature 3, generated solutions such as presenting the song’s story, the whole making process, song to listen to next as a suggestion, including different kinds of media and people making artworks just as listeners, were ideas having potential for design improvements.

CHAPTER 6

CONCLUSION

As presented in the thesis, pre-recorded music playing is a different experience than listening to music itself. However, these two practices are connected to each other. In this study, examining the experience of using a physical or digital product to play and listen to pre-recorded music is the main scope. People's changing habits, practices, and experiences were the main exploration point of the study, aiming to answer research questions by taking a strong focus on different music playing 'eras'.

To reach the aim of answering research questions, firstly, a literature review was conducted (see Chapter 2) and constructed in two distinct areas. The first part of the review covers the evolution of music playing media and players with the aim of exploring technological, contextual, cultural, and innovative developments. The second part of the review addresses user-product interaction and experience in order to understand the relationship and connection between user and product. Literature review resulted with findings which built the foundation of the field study.

Following literature review, a field study was designed with a structured methodology (see Chapter 3). The field study is formed of two different phases with different aims. The first phase of the field study which covers interviews, data analysis and design proposals (see Chapter 4) aims to explore participants' experiences at different eras through physical and digital products and propose a new music-playing experience addressing key findings of analysed data. The second phase of the field study covering focus group, data analysis and design improvements (see Chapter 5) aims to collect user insights about the generated design proposals and explore potential improvements for them.

This chapter aims to revisit the research questions to present answers, key findings gathered from the study, overall limitations faced throughout the study and lastly, potential further developments.

6.1 Revisiting the Research Questions

Benefitting from the different stages of the research journey, the main aim was to answer research questions that could not be answered only by literature review findings. The insights gathered from the field study are presented in a concise form below.

How has the experience of pre-recorded music playing evolved through the different eras of media and players?

In the literature review the evolution of music players and media throughout time was presented. Nevertheless, the evolution occurred in the experience of the user with a “beyond functional” perspective, which was a major aspect of the field study. The first phase of the field study aimed to explore these changes regarding the experiences. Technological developments not only effect the functional side of the products but also create a social impact and change the user experience.

What aspects affect the pre-recorded music playing experience?

As the data coding stage aimed to gather these aspects as codes, player interaction was found the most prominent. Player UX (aesthetic, emotion and meaning), player usage, player access, medium interaction, medium UX, medium usage, medium access, location/context, purpose, habit, practices, human interaction, spatial experience, sharing, sound quality, music interest, music genre, and album concept were the other codes generated to characterize the field study data.

How has the functional and beyond functional aspects influenced the pre-recorded music playing experience?

In the study, it is observed that functional aspects are found to be more important to participants, since the major response was that the experiences listed in the framework are secondary for them whereas function is primary. Nevertheless, functional aspects also effect the beyond functional experiences of users due to interaction.

In what ways can the pre-recorded music playing experience of the user be improved?

The design features presented at the end of the first phase of the field study address the opportunities to improve pre-recorded music playing experiences of the user. With that aim, many aspects were deduced, however only three of them were prioritised as design considerations: player interaction, human interaction, and the experience of covers and artworks. Enriching these interactions is found to have a complementary potential for the whole music playing experience.

What aspects should be inherited from the past eras to the present era?

The past experiences hold various potential to inherit to the present and future, mostly related to physical, visual, and tactile interaction. To emphasize these interactions on digital platforms, various features may be generated, using on-screen solutions, and potentially using supporting accessories.

How should the inherited aspects be improved and adapted to the existing pre-recorded music playing platforms?

The key point to consider while improving and adapting inherited aspects to the existing pre-recorded music playing platform and potentially future solution should be the characteristic of that aspect. The designer should answer these questions. Does this aspect make usage difficult? If yes, will users still want to use it? Does it answer users' needs and expectations? Can it satisfy users with successful experiences? To adapt inherited aspects, a methodology should be constructed according to the answers given to these questions. True benefits or pleasures to users may need to be

balanced against a feeling of nostalgia or reminiscing on ‘how music players used to be’.

6.2 Key Insights of the Study

The codes gathered through the field study can be considered as potential inspirations and guides for designers. These codes can be examined in four different groups which are functional aspects, beyond functional aspects, aspects affecting the experience and music-related aspects.

Functional aspects mostly cover the product related experiences. In terms of codes, they are listed as *player usage*, *player access*, *medium usage*, *medium access*, and *sound quality*. These aspects are also related with the experience of user; however, the scope of the study is about the beyond functional experiences and hence, functional aspects are not the focus to guide the design process.

Beyond functional aspects which are *player interaction*, *player UX*, *medium interaction* and *medium UX* can be considered as the main scope of the study. Each of them provides potential to be used as a guide in the design process, however, *player interaction* as the most frequent code was decided to be adapted. Interviews brought up the popular opinion of the appreciation of physical interaction while playing pre-recorded music. As understood by acquired data, even it is not a must need to physically interact with the product, it enriches the experience of user. Interaction occurs through tangible players and mediums found to be appreciated by participants and can be turned into a physical ritual which strengthens the bond between the user and the product. This can be considered as future research topic to explore more which has great design potentials as well.

Aspects affecting the experience includes the codes of *location/context*, *purpose*, *habit*, *practices*, *human interaction*, *spatial experience*, and *sharing*. These aspects are not directly related to the pre-recorded music playing experience but have a great effect in the whole experience as explored from the field study insights. These

aspects promise a wide range of exploration points to be used in the design process. Human interaction and practices were considered as great inspirational and meaningful insights which can enrich the users' pre-recorded music playing experience. However, other codes can be adapted as guides for further research and design studies.

The final group of aspects are music related which includes *music interest*, *music genre*, and *album concept*. Each of them is gathered around the focus of music which is directly related to the experience but out of the scope of this study. However, as side guides, they were considered to be used in the design process and found to be potentially useful for further studies in and out of the scope of user experience.

6.3 Limitations of the Study

The first limitation to mention is related to participant selection for the first phase of the field study. As mentioned in the methodology chapter, Khalaj and Pedgley's (2019) n=12 participant selection strategy was adapted. Having 12 participants for each era was the first intention of the study, however it means 60 participants for in-depth interviews which was facing the problem of time limitation. To solve this problem, participants having experience with multiple eras were recruited and 24 participants were selected. Interviewing by era would more strongly reveal the time-bounded experiences of participants since their responses related to only one era would be more meaningful. The eras and experiences should have been evaluated without comparison since the developing technology and emerging experiences changed the way people perceive a product. To exemplify, Walkman was considered as an icon for portable music players, however, in comparison with today's technology it may not be perceived portable. Through the study, an insight is gathered which is the difference between experiencing a music player and experiencing a music player whilst living through its era. Both cultural and contextual settings change which also cause difference in users' perspective of experience.

The research reported in this thesis coincided with the global issue of the COVID-19 pandemic. At the beginning of the study, it was aimed to conduct the field study in person via physical meetings. However, arranging a physical meeting was not an option under the pandemic conditions. This situation made the use of online meetings compulsory. The main aim was to explore people's experiences about certain types of music playing products and gain personal thoughts and feelings. Therefore, online meetings caused concerns about disrupting the natural environment and humane atmosphere of physical meetings. The personal experience of participants was attempted to be gathered, even though online meetings can seemingly put up a wall between the participant and the researcher. This wall may result with a deficient communication. However, the field study was designed with the aim of minimising these problems. To overcome the possible problem of deficient communication, a sincere atmosphere is tried to be created and ice-breaker questions were asked. As questions follow the timeline starting from the vinyl era, ending up with the online streaming era, a time travel effect was aimed to be formed during the interviews. Music reflecting the related eras are played in the background and graphic design language of related time periods were used in the Miro board. These can be considered as the brought solutions to make online meetings more sincere and humane.

Another limitation for the design features generated within the field study is the limited time of the researcher and the research focus of the study. With these constraints, the presented solutions were relatively rough and suggestive rather than well developed, as well as separate from each other and not an integrated solution. Nevertheless, reaching a finalized integrated solution was never the goal of the research.

To reflect on the adapted Framework of Product Experience by Desmet and Hekkert (2007), the first phase field study includes a grading of the framework which was decided not to be used in the design phase. The design proposals aimed to address more general UX goals instead of concentrating on experiential components as

aesthetics, emotion and meaning separately. The research-focused nature of the study caused a general and suggestive design proposals, however, the potential of focusing on each component can lead further research. In addition to that, framework grading done by participants was not found as an effective way to reflect their experiences since participants were not familiar with these design terms and quantitative data did not provide as meaningful insights as qualitative data in the scope of this study which aims to explore the different experiences people have.

6.4 Further Developments

The research has been an attempt to explore different potentials of pre-recorded music playing experiences through time, as well as to explore the different products related to different music-playing eras. The results have been partially projected to digital platforms of the future, through the design activity included within the thesis research. However, the study focused on the personal pre-recorded music playing experience and did not deal with the pre-recorded music playing experiences as groups or in a public environment. For developing the study further, this different perspective can be explored, which may provide many design potentials.

Another suggestion for further developing the study is arranging physical meetings for interviews and focus group sessions with the aim of obtaining deeper insights. The mentioned music players may be brought to the sessions and experienced by participants during the session. This physicality may prompt deeper evaluation of interaction aesthetics for each of the recorded music media and players.

Due to limited time and the research-intensive nature of the study, the generated design features were presented as images of a potential new UI (User Interface). However, presenting a working prototype would inevitably gather more detailed insights from participants on the successfulness of the design features. Under the circumstances, participants for example needed to imagine some interactions like

placing the needle on the vinyl. Ideally, such interactions need to be ‘lived’ and evaluated in a way that is as close as possible to the intended end experience.

For the design process, a more detailed calendar can be formed, so that focus can be made on the design outcome and present a more developed design proposal. The three design directions that were reached through the research (and their related proposals) are considered sufficient as early-stage design activity, but they do suggest much more development is possible. For example, the presented solutions may form a platform in themselves instead of being realized as features on an existing music-playing platform. For that, a more detailed and deeper design solution should be generated by researching about different perspectives and addressing various expectations and needs.

The study resulted with research insights and possible design features/solutions that address those insights and make improvements to the pre-recorded music listening experiences. In order to pave the way for future developments, a design guideline may be created for designers to use in their own design process. As time was limited, the researcher highlighted the most prominent insights and responded to them as design solutions. Nevertheless, there are many other aspects with great design potentials that can be used to generate various enhancements to digital music players that reinterpret the ‘best’ music playing experiences of the previous eras.

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APPENDIX A

Informed Consent Form: Interview

INFORMED CONSENT FORM (INTERVIEW)

This study is conducted by Middle East Technical University Industrial Design Department Graduate Studies student Sezen Yüksel for MSc thesis. This form intends to inform you about this study and ask for your consent.

Aim of the Study

The aim of the study is to explore the evolving music playing experiences with different products and platforms across different eras. Both positive and negative sides of the experiences will be explored, and a future design solution will be proposed.

Voluntary Participation

If you accept to participate the study, you will be expected to participate an interview. This session may take between 60-75 minutes. Your participation in this study is voluntary, as you can refuse to take part at any time without giving a reason. Please do not hesitate to ask any question at any time.

Information to be Collected

During the interview, you will be expected to explain your music playing experiences with different products and platforms across different eras. You will be asked to bring photos of your music players. The interview session will be recorded as in video and audio formats. Before recording starts and after recording ends, you will be notified.

Your Consent

The researcher and the researcher's supervisor may watch the recordings of your interviews for the research aims. No-one else will see the records. A thesis will be published containing your contributions. The data used in this thesis will remain anonymous, meaning that you will not be identifiable, and your comments and actions will be confidential in this research.

We would like to thank you in advance for your participation in this study. For further information about the study, you can contact;

Sezen Yüksel

Phone: +90 537 877 77 08

E-Mail: sezen.yuksel@metu.edu.tr

I am participating in this study totally on my own will and am aware that I can quit participating at any time I want. I give my consent for the use of the information I provide for scientific purposes. (Please return this form to the data collector after you have filled it in and signed it).

Name Surname

Date

Signature

...../...../.....

APPENDIX B

Informed Consent Form: Focus Group

INFORMED CONSENT FORM (FOCUS GROUP)

This study is conducted by Middle East Technical University Industrial Design Department Graduate Studies student Sezen Yüksel for MSc thesis. This form intends to inform you about this study and ask for your consent.

Aim of the Study

The aim of the study is to explore the evolving music playing experiences with different products and platforms across different eras. Both positive and negative sides of the experiences will be explored, and a future design solution will be proposed.

Voluntary Participation

If you accept to participate the study, you will be expected to participate a focus group session. This session may take between 60-75 minutes. Your participation in this study is voluntary, as you can refuse to take part at any time without giving a reason. Please do not hesitate to ask any question at any time.

Information to be Collected

During the focus group session, you will be asked to use the proposed design solution. You will be asked to give feedbacks about the design solution. The focus group will be recorded as in video and audio formats. Before recording starts and after recording ends, you will be notified.

Your Consent

The researcher and the researcher's supervisor may watch the recordings of your interviews for the research aims. No-one else will see the records. A thesis will be published containing your contributions. The data used in this thesis will remain anonymous, meaning that you will not be identifiable, and your comments and actions will be confidential in this research.

We would like to thank you in advance for your participation in this study. For further information about the study, you can contact;

Sezen Yüksel

Phone: +90 537 877 77 08

E-Mail: sezen.yuksel@metu.edu.tr

I am participating in this study totally on my own will and am aware that I can quit participating at any time I want. I give my consent for the use of the information I provide for scientific purposes. (Please return this form to the data collector after you have filled it in and signed it).

Name Surname

Date

Signature

...../...../.....

APPENDIX C

Interview Protocol (Turkish)

RÖPORTAJ YÖNERGESİ

1. Giriş ve Sözlü Rıza

Öncelikle bu çalışmaya katılmayı kabul ettiğiniz için çok teşekkür ederim. Bu görüşmelerin amacı yıllar içinde, farklı ürünlerle değişen müzik deneyimlerinizi anlamaya çalışmak. Bu bağlamda, görüşmede sorulacak olan soruların doğru ya da yanlış cevabı yoktur. Sizin bu çalışmaya katılımınız tamamen gönüllülük esaslı olup, herhangi bir zamanda sebep göstermeksizin görüşmeden ayrılabilirsiniz. Görülme ses ve video kaydına alınacaktır. Herhangi bir aşamada sorunuz olursa, lütfen sormaktan çekinmeyin.

Şimdi kayda başlayabilir miyim?

2. Isınma

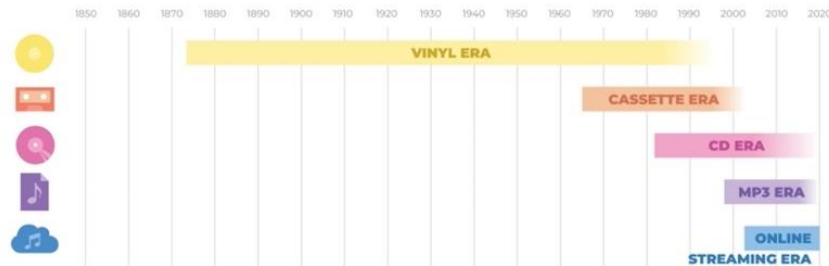
Başlamadan önce biraz kendimi tanıtmak istiyorum. Ben Sezen Yüksel, ODTÜ Endüstriyel Tasarım bölümü lisans mezunu ve şu anda da yüksek lisans öğrencisiyim. Aynı bölümde araştırma görevlisi olarak çalışıyorum. Şu an yüksek lisansımın tez aşamasındayım, hazıranda tezimi teslim etmeyi planlıyorum. Sizi de biraz tanımak isterim. Yaşınız, bölümünüz, işiniz, vs.

3. Bağlam

- Günlük hayatınızda ne sıklıkla müzik dinliyorsunuz?
- Müzik dinlediğiniz ortamlar ve durumlar nelerdir?
- Hangi amaçla müzik dinliyorsunuz? (Sadece müzik dinlemek için/ başka bir aktiviteye eşlik etmesi için)
- Başka bir aktiviteye eşlik etmesi içinse, bunlar hangi aktiviteler?

4. Dönemlere giriş

- Hangi dönemleri deneyimlediniz?
- Bu dönemlerden hangisinde kendinizi daha uzman hissediyorsunuz?



5. Müzik çalarlar

- Hangi ürün/platformları kullandınız?
- Şu an hangi ürün/platformları kullanıyorsunuz?

İlerleyen dakikalarda hepsini daha detaylı konuşacağız.

6. Framework'e giriş



• **Estetik Deneyim** (etkileşimin estetiği; görsel, işitsel, dokunsal, vs.)

- Kaygan, parlak, vs.

• **Duygusal Deneyim** (ürün hakkında içgüdüsel ve yansıttığı duygular)

- Keyifli ilham verici, vs.

• **Anlamsal Deneyim** (ürün kullanımı kaynaklı oluşan nostalji, özel hissettirme gibi anlamlar)

- Nostalgik, lüks, vs.

7. Puanlama

Kullandığınız herhangi bir üründe bu boyutlar sizin için ne kadar önemli?

(1= önemli değil, 2 = az önemli 3 = önemli 4 = çok önemli 5 = şart)

• Estetik Deneyim	1	2	3	4	5
• Duygusal Deneyim	1	2	3	4	5
• Anlamsal Deneyim	1	2	3	4	5

Müzik dinleme ürün/platformları açısından bu boyutlar ne kadar önemli?

(1= önemli değil, 2 = az önemli 3 = önemli 4 = çok önemli 5 = şart)

• Estetik Deneyim	1	2	3	4	5
• Duygusal Deneyim	1	2	3	4	5
• Anlamsal Deneyim	1	2	3	4	5

8. Dönemler

a. PLAK DÖNEMİ (müzik girer)



- Geçmişe dönelim. İlk plak çaldığınız zaman.
- Plak çalmayla ilgili aklınıza gelen ilk anıyı anlatabilir misiniz?
 - Ne zaman aldınız?
 - Neden alıp kullanmaya başladınız?
 - Kaç yıl kullandınız? Hala kullanıyor musunuz?
 - Hangi bağlamlarda kullandınız? (Örneğin: araba, duş, ev, vs.)
 - Sevdığınız ve sevmediğiniz nasıl deneyimleriniz var?
 - Neden kullanmayı bıraktınız?
- İyi ve kötü bulduğunuz özelliklerini söyleyebilir misiniz?
- Bu ürünü biraz önce konuştuğumuz boyutlar açısından nasıl değerlendirirsiniz?
(1-5 arası puanlayın; 1= çok zayıf, 2 = zayıf 3 = orta 4 = iyi 5 = çok iyi)

• Estetik Deneyim	1	2	3	4	5
• Duygusal Deneyim	1	2	3	4	5
• Anlamsal Deneyim	1	2	3	4	5
- Deneyimlerinizden genel olarak bahseder misiniz?

b. KASET DÖNEMİ (müzik girer)



- Geçmişe dönelim. İlk kaset çaldığınız zaman.
- Kaset çalmayla ilgili aklınıza gelen ilk anıyı anlatabilir misiniz?
 - Ne zaman aldınız?
 - Neden alıp kullanmaya başladınız?
 - Kaç yıl kullandınız? Hala kullanıyor musunuz?
 - Hangi bağlamlarda kullandınız? (Örneğin: araba, duş, ev, vs.)
 - Sevdiğiniz ve sevmediğiniz nasıl deneyimleriniz var?
 - Neden kullanmayı bıraktınız?
- İyi ve kötü bulduğunuz özelliklerini söyleyebilir misiniz?
- Bu ürünü biraz önce konuştuğumuz boyutlar açısından nasıl değerlendirirsiniz?
(1-5 arası puanlayın; 1= çok zayıf, 2 = zayıf 3 = orta 4 = iyi 5 = çok iyi)

• Estetik Deneyim	1	2	3	4	5
• Duygusal Deneyim	1	2	3	4	5
• Anlamsal Deneyim	1	2	3	4	5
- Deneyimlerinizden genel olarak bahseder misiniz?

c. CD Dönemi (müzik girer)



- Geçmişe dönelim. İlk CD çaldığınız zaman.
- CD çalmayla ilgili aklınıza gelen ilk anıyı anlatabilir misiniz?
 - Ne zaman aldınız?
 - Neden alıp kullanmaya başladınız?
 - Kaç yıl kullandınız? Hala kullanıyor musunuz?
 - Hangi bağlamlarda kullandınız? (Örneğin: araba, duş, ev, vs.)
 - Sevdiğiniz ve sevmediğiniz nasıl deneyimleriniz var?
 - Neden kullanmayı bıraktınız?
- İyi ve kötü bulduğunuz özelliklerini söyleyebilir misiniz?
- Bu ürünü biraz önce konuştuğumuz boyutlar açısından nasıl değerlendirirsiniz?
(1-5 arası puanlayın; 1= çok zayıf, 2 = zayıf 3 = orta 4 = iyi 5 = çok iyi)

• Estetik Deneyim	1	2	3	4	5
• Duygusal Deneyim	1	2	3	4	5
• Anlamsal Deneyim	1	2	3	4	5
- Deneyimlerinizden genel olarak bahseder misiniz?

d. Mp3 Dönemi (müzik girer)



- Geçmişe dönelim. İlk mp3 çaldığınız zaman.
- Mp3 çalmayla ilgili aklınıza gelen ilk anıyı anlatabilir misiniz?
 - Ne zaman aldınız?
 - Neden alıp kullanmaya başladınız?
 - Kaç yıl kullandınız? Hala kullanıyor musunuz?
 - Hangi bağlamlarda kullandınız? (Örneğin: araba, duş, ev, vs.)
 - Sevdiğiniz ve sevmediğiniz nasıl deneyimleriniz var?
 - Neden kullanmayı bıraktınız?
- İyi ve kötü bulduğunuz özelliklerini söyleyebilir misiniz?
- Bu ürünü biraz önce konuştuğumuz boyutlar açısından nasıl değerlendirirsiniz?
(1-5 arası puanlayın; 1= çok zayıf, 2 = zayıf 3 = orta 4 = iyi 5 = çok iyi)

• Estetik Deneyim	1	2	3	4	5
• Duygusal Deneyim	1	2	3	4	5
• Anlamsal Deneyim	1	2	3	4	5
- Deneyimlerinizden genel olarak bahseder misiniz?

e. Çevrimiçi platformlar dönemi (müzik girer)

Online Streaming Era

- Geçmişe dönelim. İlk çevrimiçi platformdan müzik çaldığınız zaman.
- Çevrimiçi platformdan müzik çalmayla ilgili aklınıza gelen ilk anıyı anlatabilir misiniz?
 - Ne zaman aldınız?
 - Neden alıp kullanmaya başladınız?
 - Kaç yıl kullandınız? Hala kullanıyor musunuz?
 - Hangi bağlamlarda kullandınız? (Örneğin: araba, duş, ev, vs.)
 - Sevdiğiniz ve sevmediğiniz nasıl deneyimleriniz var?
 - Neden kullanmayı bıraktınız?
- İyi ve kötü bulduğunuz özelliklerini söyleyebilir misiniz?
- Bu ürünü biraz önce konuştuğumuz boyutlar açısından nasıl değerlendirirsiniz?
(1-5 arası puanlayın; 1= çok zayıf, 2 = zayıf 3 = orta 4 = iyi 5 = çok iyi)

• Estetik Deneyim	1	2	3	4	5
• Duygusal Deneyim	1	2	3	4	5
• Anlamsal Deneyim	1	2	3	4	5
- Deneyimlerinizden genel olarak bahseder misiniz?

9. İlgili deneyimlerin keşfi

- Plak/kaset/CD' lerinizi nereden alıyordunuz? Mp3'lerinizi nasıl ediniyordunuz?
- Müzik mağazalarına giderken nasıl hissediyordunuz? Nasıl deneyimler yaşıyordunuz?
- Aile/arkadaşlarınızla plak/kaset/CD/mp3 dosyası değişimi yapıyor muydunuz? Bu nasıl bir deneyimdi?
- Albüm kapakları hakkında ne düşünüyorsunuz?
- Albüm kitapçıkları hakkında ne düşünüyorsunuz?
- Geri-dönüşler
 - Tekrar moda olduktan sonra plak/pikap kullanmaya başlama sebebiniz neydi?
 - Şimdilerde kasetler tekrar moda oluyor, kullanmayı düşünür müsünüz?
 - CD/mp3 modası geri gelirse, kullanmayı düşünür müsünüz?
- Pandemi müzik dinleme alışkanlıklarınızı değiştirdi mi? Değiştirdiyse nasıl?

APPENDIX D

Interview Protocol (English)

INTERVIEW GUIDE

1. Introduction & Verbal Consent

Thank you for agreeing to participate in this interview. The aim of this interview is to explore your music playing experiences through time and different products which means there is no right and wrong answers to any of the questions. Your participation in this study is voluntary, as you can refuse to take part at any time without giving a reason. The interview session will be recorded as in video and audio formats. Please do not hesitate to ask any question at any time.

May I start recording now?

2. Warming Up

Before we begin, I would like to introduce myself. I am Sezen, a MSc student at METU, in the department of Industrial Design... It would be nice if you could tell me about yourself. Demographic questions may be asked to break the ice.

3. Context

- How often do you listen to music in your daily life?
- What are the places and contexts that you like to listen to music?
- With which intention do you listen to music? (Just for pleasure / to accompany another activity) Why?
- If to accompany another activity, which activities are they?

4. Introducing the Eras

- Which eras have you experienced?
- Which era did/do you feel more expert about the products you used?



5. Music Players

- Which product(s)/platform(s) have you used?
- Which product(s)/platform(s) do you currently use?

We will talk about them one by one, through the eras.

6. Introducing the aspects of UX



- **Aesthetic Experience** (aesthetics of interaction; by seeing, touching, holding, etc.)
 - Slippery, shiny, etc.
 - **Emotional Experience** (visceral and reflective emotions about the products)
 - Joyful, inspirational, etc.
 - **Experience of Meaning** (derived from product use like nostalgia, feeling special, etc.)
 - Nostalgic, high-end, etc.
- (SMEG kettle as a product example to clarify the aspects.)*

7. Rating the aspects of UX

For any product you use, how important are these aspects for you?

(1= no importance, 2 = slightly important 3 = important 4 = very important 5 = essential)

- | | | | | | |
|-------------------------|---|---|---|---|---|
| • Aesthetic Experience | 1 | 2 | 3 | 4 | 5 |
| • Emotional Experience | 1 | 2 | 3 | 4 | 5 |
| • Experience of Meaning | 1 | 2 | 3 | 4 | 5 |

For your music players, how important are these aspects for you?

(1= no importance, 2 = slightly important 3 = important 4 = very important 5 = essential)

- | | | | | | |
|-------------------------|---|---|---|---|---|
| • Aesthetic Experience | 1 | 2 | 3 | 4 | 5 |
| • Emotional Experience | 1 | 2 | 3 | 4 | 5 |
| • Experience of Meaning | 1 | 2 | 3 | 4 | 5 |

8. The Eras

a. RECORD ERA (the music starts)



- Go back in time. The first moment you play a record. Think about your favourite record player.
- Can you tell me a memory that comes to your mind about records?
 - When did you buy it (or acquire it)?
 - Why did you decide to buy/acquire it & use it?
 - For how many years did you use it? Are you still using it?
 - In which context(s) did you use it? (e.g.: in the car, while having a shower)
 - What do you like & dislike about it, why?
 - (If relevant), why did you stop using it?
- Can you write down good and bad features of the product? (Miro board)
- How do you evaluate the product in terms of these aspects? Why?
(rate 1-5 points for each aspect; 1= very poor, 2 = poor 3 = OK 4 = good 5 = very good)

• Aesthetic Experience	1	2	3	4	5
• Emotional Experience	1	2	3	4	5
• Experience of Meaning	1	2	3	4	5
- Tell me about your experience about these products.

b. CASSETTE ERA (the music changes)



- **Go back in time. The first moment you play a cassette. Think about your favourite cassette player.**
- **Can you tell me a memory that comes to your mind about cassettes?**
 - When did you buy it (or acquire it)?
 - Why did you decide to buy/acquire it & use it?
 - For how many years did you use it? Are you still using it?
 - In which context(s) did you use it? (e.g.: in the car, while having a shower)
 - What do you like & dislike about it, why?
 - (If relevant), why did you stop using it?
- **Can you write down good and bad features of the product? (Miro board)**
- **How do you evaluate the product in terms of these aspects? Why?**

(rate 1-5 points for each aspect; 1= very poor, 2 = poor 3 = OK 4 = good 5 = very good)

• Aesthetic Experience	1	2	3	4	5
• Emotional Experience	1	2	3	4	5
• Experience of Meaning	1	2	3	4	5
- **Tell me about your experience about these products.**

c. CD ERA (the music changes)



- **Go back in time. The first moment you play a CD. Think about your favourite CD player.**
- **Can you tell me a memory that comes to your mind about CD's?**
 - When did you buy it (or acquire it)?
 - Why did you decide to buy/acquire it & use it?
 - For how many years did you use it? Are you still using it?
 - In which context(s) did you use it? (e.g.: in the car, while having a shower)
 - What do you like & dislike about it, why?
 - (If relevant), why did you stop using it?
- **Can you write down good and bad features of the product? (Miro board)**
- **How do you evaluate the product in terms of these aspects? Why?**

(rate 1-5 points for each aspect; 1= very poor, 2 = poor 3 = OK 4 = good 5 = very good)

▪ Aesthetic Experience	1	2	3	4	5
▪ Emotional Experience	1	2	3	4	5
▪ Experience of Meaning	1	2	3	4	5
- **Tell me about your experience about these products.**

d. Mp3 Era (the music changes)



- **Go back in time. The first moment you play a mp3. Think about your favourite mp3 player.**
- **Can you tell me a memory that comes to your mind about mp3's?**
 - When did you buy it (or acquire it)?
 - Why did you decide to buy/acquire it & use it?
 - For how many years did you use it? Are you still using it?
 - In which context(s) did you use it? (e.g.: in the car, while having a shower)
 - What do you like & dislike about it, why?
 - (If relevant), why did you stop using it?
- **Can you write down good and bad features of the product? (Miro board)**
- **How do you evaluate the product in terms of these aspects? Why?**

(rate 1-5 points for each aspect; 1= very poor, 2 = poor 3 = OK 4 = good 5 = very good)

• Aesthetic Experience	1	2	3	4	5
• Emotional Experience	1	2	3	4	5
• Experience of Meaning	1	2	3	4	5
- **Tell me about your experience about these products.**

e. Online Streaming Era (the music changes)

Online Streaming Era

- **Go back in time. The first moment you play a song through online streaming. Think about your favourite online streaming platform.**
- **Can you tell me a memory that comes to your mind about online streaming?**
 - When did you buy it (or acquire it)?
 - Why did you decide to buy/acquire it & use it?
 - For how many years did you use it? Are you still using it?
 - In which context(s) did you use it? (e.g.: in the car, while having a shower)
 - What do you like & dislike about it, why?
 - (If relevant), why did you stop using it?
- **Can you write down good and bad features of the product? (Miro board)**
- **How do you evaluate the platform in terms of these aspects? Why?**

(rate 1-5 points for each aspect; 1= very poor, 2 = poor 3 = OK 4 = good 5 = very good)

• Aesthetic Experience	1	2	3	4	5
• Emotional Experience	1	2	3	4	5
• Experience of Meaning	1	2	3	4	5
- **Tell me about your experience about these products.**

9. Exploration of relevant experiences

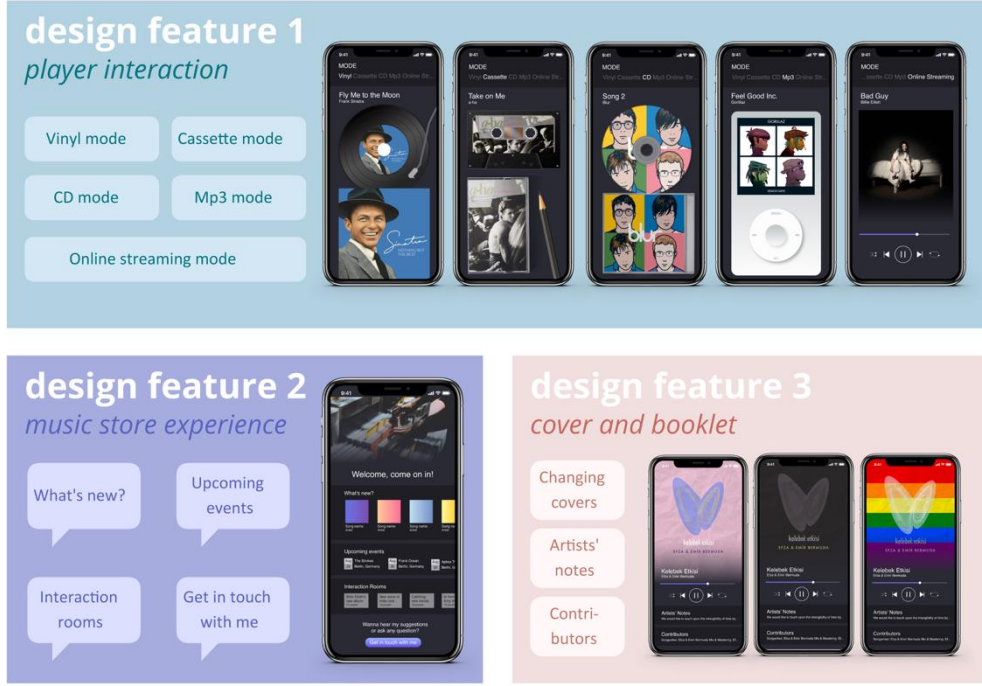
- How were/are you buying/getting your records, cassettes, CDs, mp3 files?
- (If relevant) How did you feel while visiting a music (record, cassette or CD) store?
- (If relevant) How did you feel while exchanging records, cassettes, CDs, mp3 files with your friends, family, etc.?
- How did/do you feel about the cover of the albums?
- How did/do you feel about the booklets of the albums?
- The Revivals
 - What was the reason of starting to use/buy vinyl records after the revival?
 - Nowadays there is a cassette revival, will you consider starting to use them?
 - If there is a CD/mp3 revival, will you consider using them?
- Did Covid-19 pandemic effect/change your music playing experiences?

APPENDIX E

Focus Group Protocol (Turkish)

ODAK GRUBU YÖNERGESİ

1. Çalışmanın amacının ve tasarım çıktılarının detaylı anlatımı



2. Grupların oluşturulması

3. Gruplardan tasarımları Miro panosunu kullanarak değerlendirmeleri beklenir.

20 dakika

team 1

team 2

team 3



4. Grupların değerlendirmelerinin tartışılması

15 dakika

5. Gruplardan yapılan değerlendirmelere ve tartışmalara göre, Miro panosunu kullanarak tasarım çözümleri geliştirmeleri beklenir.

25 dakika



6. Grupların geliştirdikleri çözümlerin tartışılması

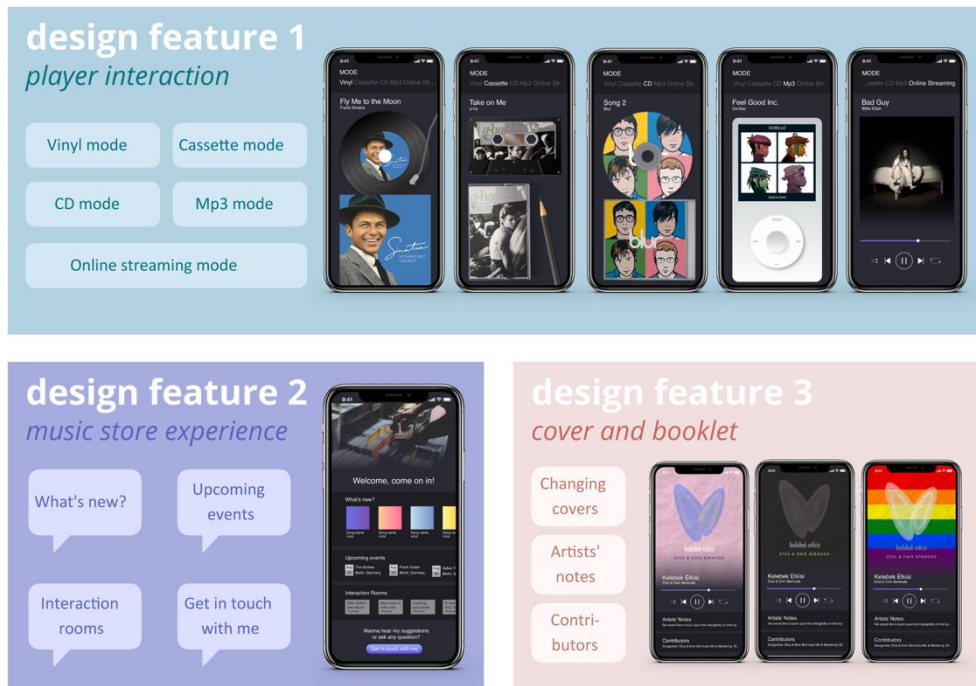
15 dakika

APPENDIX F

Focus Group Protocol (English)

FOCUS GROUP GUIDE

1. Detailed explanation of the focus of the study and design features



2. Formation of groups

3. Groups are expected to evaluate design features through a Miro board

20 minutes

team 1



team 2



team 3



4. Discussion of teams' evaluation outcomes

15 minutes

5. Groups are expected to generate design solutions according to the evaluations and discussion through a Miro board

25 minutes



6. Discussion of teams' generation outcomes

15 minutes