Berklee College of Music

Development of a Music Studio Booking Platform

tempo: **The Booking Interface**

Submitted in Partial Fulfillment of the Degree of

Master of Music in Music Production, Technology and Innovation

Supervisor: Pablo Munguía

by Sharon Onyango-Obbo

Valencia Campus, Spain

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Abstract

The Culminating Experience (CE) documented in this report concerns the development of a music studio booking platform for the East African market. The service, called *tempo*, seeks to connect musicians with existing studio resources. The project draws from the on-demand model that steers away from asset proprietorship. Consequently, *tempo*'s platform saves potential customers from having to purchase the expensive hardware and related resources that they may need to invest in their craft. Within the confines of the CE, the most important decision made was to design *tempo* as a website and build a prototype of the booking interface to run on web browsers. As the first of its kind in East Africa, *tempo* seeks to advance the nexus of music, technology and innovation in the region. The project was advised by Pablo Munguía, Music Production, Technology & Innovation Programme Director, Berklee College of Music, Valencia.

Keywords: studio booking, website, East Africa.

1. Introduction

Uber Technologies Inc., the renowned American ride-share company, might not have happened without Bond—James Bond. Uber CEO Garett Camp's life changed upon discovery of a seemingly trivial yet powerful concept in the 2008 Bond film *Casino Royale*. In the midst of a wild Bahamian chase, the titular English spy is trailing his adversary, when he glances down at his phone and sees a graphical icon of his rival's car moving on a map.[1] This amazed Camp because he frequently contemplated the idea of an on-demand car service that passengers could track via a map on their phones.

Unlike like the movie scene that inspired Uber, "one of the most fascinating companies to emerge over the past decade"[2], *tempo*'s inspiration was not drawn from fast-paced street races, but from the exploration of the connectivity of studio bookers with corresponding resources. The platform offers filtration, whereby a booker can specify their needs based on relevant criteria.

With advances in home studio technology, many question the future of large, professional studios. Ellis Sorkin, Founder of Studio Referral Service Inc., is of the view that "big artists don't want to work in someone's bedroom or garage. Home studios have gotten better to the degree that they're going to." *tempo*'s ingenuity lies on the foundational basis that studio booking in East Africa will be more effective once key players in the musical ecosystem know where to access a curated, professional selection of studio offerings in their vicinity.

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[1] Brad Stone, "Uber: the App That Changed How the World Hails a Taxi," The Guardian, Guardian News and Media, January 29, 2017, https://www.theguardian.com/technology/2017/jan/29/uber-app-changed-how-world-hails-a-taxi-brad-stone.

[2] Dan Blystone, "The Story of Uber," Investopedia, December 4, 2019, https://www.investopedia.com/articles/personal-finance/111015/story-uber.asp.

2. Review of the State of the Art

2.1. On-demand Applications

On-demand applications (apps) are digital platforms that allow users to request a service, which an individual contractor can supply in exchange for a fee. On-demand apps range from the remote hailing of taxis, like Uber, to shopping. Several elements constitute the core essence of an on-demand app, namely mobility; users can place requests on the go. The business model of on-demand apps relies on multiple independent contractors offering their services or products. In the case of *tempo*, studios would fulfil this role.

Another common function of on-demand apps is straightforward payment. Online payments are made at the time of placing the order and these apps save users' payment information to enable quick checkouts thereafter. Cash on delivery is also accepted for orders placed using some on-demand apps, though taking into consideration the exclusivity of certain studios, this might not be an option for *tempo*.[3] Customer experience is also rateable on on-demand platforms. After completed transactions, users of certain apps have the option to rate the delivery or service. One of the on-demand platforms researched for a comparative study with *tempo* is called Studiotime. Further research has been conducted on two other on-demand studio booking services covered in Appendix A.

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[3] "On Demand Delivery Service App Development: A Guide to Make On Demand App Like Rappi," Spaceotechnologies, October 25, 2019, https://www.spaceotechnologies.com/on-demand-app-like-rappi-development-guide/.

2.1.1. Studiotime

      Studiotime is an online platform that facilitates the rental of music studios. Boasting a selection of studios in over 35 countries, Studiotime's offering ranges from home studios to some of the world's most exclusive spaces. Studiotime was started by Yoroomie. Labeled as the "Airbnb for music studios", Studiotime listed over 700 recording studios following their launch in 2015.[4]
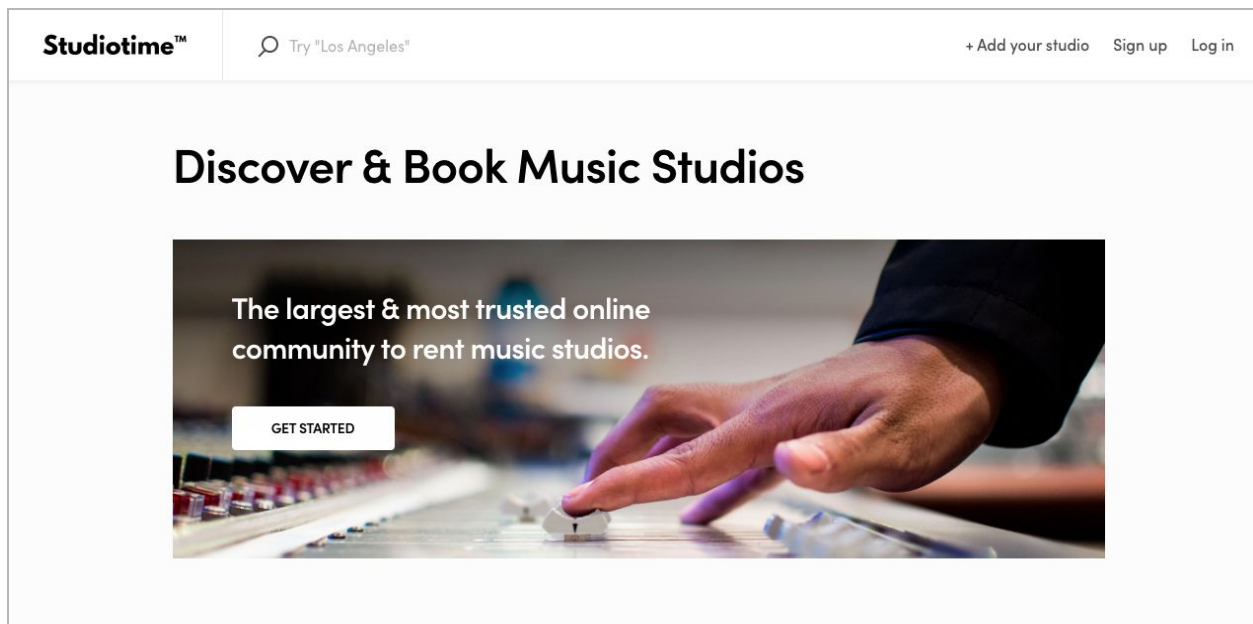
Figure 1: Screenshot of Studiotime's website homepage.[5]

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[4] Studiotime, "About Us," Studiotime, accessed December 20, 2019, https://www.studiotime.io/about.

[5] Studiotime, "Home," Studiotime, accessed December 20, 2019, https://www.studiotime.io/.
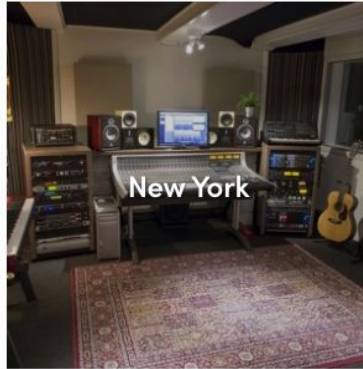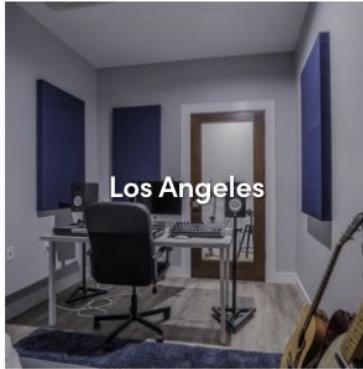
Figure 2: Screenshot of Studiotime's featured studio locations on the website.[6]
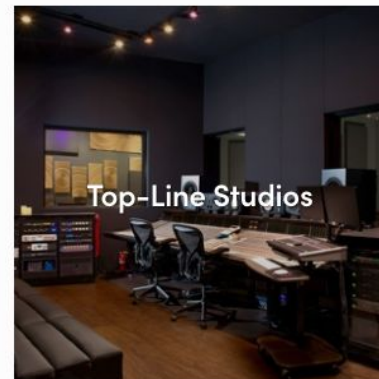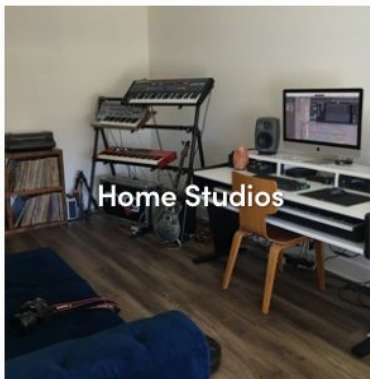
Figure 3: Screenshot of Studiotime's featured studio types on the website.[7]

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[6] Studiotime, "Home."

[7] Studiotime, "Home."

2.3. Recording Industry in East Africa

Prior to commercial record companies, anthropologists and musicologists had recorded traditional African music before World War I. Notwithstanding, by the late 1920s in East Africa, record companies such as Pathe and Zonophone[8] were releasing African music, sung in Kiswahili, Luganda and Somali. For instance, in 1939, Zonophone and Her Majesty's Voice (HMV) sold over 200,000 records, of which 80,000 were in East African languages.[9]

Figure 4: A Kenyan brass band in the early 1900s. Photograph from Afro 7.

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[8] In addition to Pathe and Zonophone, HMV, Odeon and Columbia were also recording and releasing local African music by the late 1920s.

[9] Bamuturaki Musingizi, "Uganda's recording industry stuck in a groove 80 years on," The East African, December 28, 2009, https://www.theeastafrican.co.ke/magazine/434746-831100-fenr2r/index.html.

2.3.1 Kenya

Independent record labels started emerging in Kenya after World War II. Estimates show that there were more than 40 independent record labels in East Africa by the late 1950s.[10] As of May 2020, Kenya is home to a plethora of labels and studios; the most renowned is Supersonic Africa. Coke Studio Africa is a non-competitive music collaboration show produced by The Coca-Cola Company and filmed at Supersonic, which celebrates the diversity of African music.[11]

Supersonic features an Audient ASP8024 console, with its owner, Matthew Peevers, stating "the routing system helps make this an incredibly flexible desk."[12] In addition to Supersonic, studios such as Ketebul specialise in local sounds, Janeson Recordings tailors its services for the masses and the newly-launched AMP Studios caters to audio-visual production. All are professional, prospective clients for *tempo*.

2.3.2 Uganda

Ugandan recorded music took off in 1929, with Odeon, a British label, and by the 1950s there were several labels operating in the country, recording a variety of traditional music such as The Young Baganda Singers' Party and Kibirige and Budo Party.
As of May 2020, there are several music production studios in Uganda's capital, Kampala, including Audio 1 Records owned by established producer, Paddy Kayiwa.

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[10] Bill Odidi, "History of Kenyan Recording Industry," Music in Africa and Aipate, July 26, 2018, https://aipate.com/2017/03/14/history-of-kenyan-recording-industry/.

[11] Multi award-winning Afropop band Sauti Sol and Afrobeats artist Wizkid are some of the artists who have recorded at the studio due to its state-of-the-art audio equipment.

[12] Anne Liversidge, "Coke Music TV Show's Host Studio Upgrades to Audient," Audient, October 24, 2017, https://audient.com/2017/10/30/supersonicafrica-8024/.

The studio focuses on Afrobeat, Zouk and R&B, and is located in Makindye, a hilly neighbourhood offering scenic landscapes from which artists can draw inspiration. Power Records is also located in Makindye and is revered as the go-to destination for the production of club-oriented singles.[13]

Uganda also hosts the Nyege Nyege festival, which takes place every September on the banks of the River Nile in Jinja. The festival has established itself as one of the presiding hubs for African music enthusiasts to celebrate and connect. Given this yearly inflow of tourists and musicians from all over the world, *tempo* stands to benefit from this surge of creatives who stay in the country even after the four-day fete, to collaborate with networks made during the festival.

Figure 5: Performance at Nyege Nyege festival in 2019. Photograph by Awuor Onyango.

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[13] Beth Achitsa and James Propa, "The Recording and Video Industries In Uganda," Music In Africa, July 28, 2015, https://www.musicinafrica.net/magazine/recording-and-video-industries-uganda.

2.3.3 Tanzania

The recording industry in Tanzania began with the introduction of the first radio station, *Sauti ya Dar es Salaam* (Voice of Dar es Salaam), in 1951. The demand for local programming increased the need to record as much Tanzanian music as possible. One of the earliest private studios in Tanzania was Habari Maalum: a recording studio established in Arusha, near the Kenyan border, in 1974. A huge leap forward came with the establishment of three eight-track studios by the Roman Catholic Salesian Society of Don Bosco in the 1990s. Using the Tascam Portastudio 488 MKII 8-Track Analog Tape Cassette Recorder, the studio recorded hundreds of musicians, such as Magoma Moto, Maquis du Zaire, Tabora Jazz and others.[14] In 2020, recording outfits such as Wanene Entertainment Ltd., Waiz Empire Records Studio and Noizmekah Production Studios comprise a professional pool of studios for *tempo* to liaise with.

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[14] Beth Achitsa and John Kitime, "The Recording Industry in Tanzania," Music In Africa, July 27, 2015, https://www.musicinafrica.net/magazine/recording-industry-tanzania.

3. Description

3.1. Overview

    tempo is an entirely web-based studio booking platform, the first of its kind in the East-African music technology market. The term draws from the Latin word "tempus", meaning time. *tempo* seeks to optimise the amount of time it takes to connect musical agents with existing studio resources. The project draws from the on-demand, lease model that companies such as Studiotime employ. This model relieves the necessity of capital purchase musical agents usually have to invest in their craft, such as microphones, monitors and more.[15]

3.2. Technology

    The initial premise of the CE was to build an app. After consultations with the developer, Michael Simiyu, the decision was made to design a website first for operation on web browsers. In the field of app development, it is commonplace to build a preliminary website, prior to committing to an operating system (OS)[16], on which fully-fledged apps are constructed. The two main systems are Android and iOS, and they are programmed differently. As such, if *tempo* was immediately built for either Android and iOS, a situation may arise where an irreversible commitment to a system has been made. Indeed, a prototype could have been built for both Android and iOS compatibility, however, this would involve market research to understand which system is used by the primary target audience.[17]

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[15] Much like Uber, take a company such as Airbnb, an online lodging marketplace, that does not physically own the properties they host.

[16] An OS is the language that computers communicate in.

[17] "IOS vs Android Apps: Which Should You Build Your Mobile App on First," BuildFire, accessed May 15, 2020, https://buildfire.com/ios-android-which-to-develop-on-first/.

Essentially, this is business development. It is important to note that this project has not been captured in a business plan nor pitch, yet, but is limited to the development of the booking interface alone. The author justified this decision with the intention of taking on a manageable, bite-sized task to submit as the CE deliverable. Should business development opportunities exist post-graduation, the full functionality of the platform—including the studio owner interface—shall then be considered.

4. Innovative Aspects

On-demand services similar to *tempo* already exist, but none cater to the sub-Saharan market—East Africa, including Studiotime. Take Kenya, for example; as of December 2019, an estimated 87% of the country's population uses the Internet. Since the turn of the millenium, Internet growth in Kenya has increased by 23,335% (growth rates in Uganda and Tanzania are 46,155% and 20,024%, respectively).[18] Evidently, Internet penetration in the region is on the rise. Given these dynamics, the innovative aspect of *tempo* lies within the provision of a studio booking platform that capitalises on the interplay between Internet accessibility for prospective users and market novelty.

In April 2020, Loon, Google's Internet air-balloon service, dispatched a fleet of balloons to Kenya after previous successful launches in Puerto Rico. The Loon service seeks to use its 4G/ LTE[19] Internet solution to connect under-served communities in Kenya.

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[18] "Africa Internet Users, 2020 Population and Facebook Statistics," Internet World Stats, accessed May 15, 2020, https://www.internetworldstats.com/stats1.htm.

[19] In telecommunications, Long-Term Evolution (LTE) is a standard for wireless broadband communication for mobile devices and data terminals.

Initial coverage areas have already been identified, starting with Nairobi, Nyeri, Nanyuki and more, and into Kisii. These balloons joined the eight balloons that were already active in the country. *tempo* stands to benefit from network integrations such as Loon, due to increased Internet access facilitating the use of the web-based platform.[20]

Even more consequentially, Facebook is building a 37,000-kilometer-long underwater cable around Africa, in an effort to bring more of the continent's 1.3 billion inhabitants online. Facebook, the 2Africa project's lead, claims that the cable will be "nearly equal to the circumference of the Earth." The subsea cable will interconnect 23 countries in Africa, the Middle East and Europe. A primary goal of 2Africa, Facebook shares, is to bring increased connectivity to Africa, which in the long-run can support the operability of and user access to *tempo* by reducing the current barriers to Internet access in the region.[21]
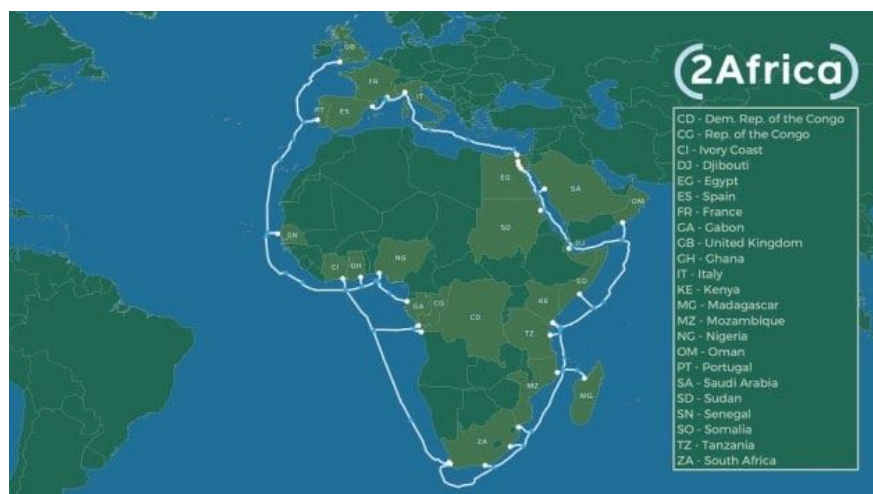

Figure 6: Illustration of 2Africa Internet cable route.

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[20] Chebet Birir, "Google's project Loon and Telkom Kenya 4G project sends more balloons to Kenya," The Standard, April 22, 2020,
https://www.standardmedia.co.ke/business/article/2001368831/google-s-loon-dispatches-more-balloons-to-kenya.

[21] Ryan Browne, "Facebook is building a huge undersea cable around Africa to boost internet access in the continent," CNBC, June 2, 2020,
https://www.cnbc.com/2020/05/14/facebook-building-undersea-cable-in-africa-to-boost-internet-access.html.

5. New Skills Acquired

5.1. Leadership

The development of *tempo*'s booking interface required expertise and experience within the field of website construction. Michael Simiyu is a Kenyan software developer with vast knowledge in the fields of prototype design, product launch and system maintenance. At the beginning of this journey, the author had to decide between contracting a professional to code the prototype, or embarking on a journey of self-pedagogy. Given the CE timelines, the author chose to take on the leadership role and supervise Simiyu to optimise efficiency, productivity and quality. Managerial dexterity resulted as a fundamental non-technical skill over the course of the project.

5.2. Project Management

In line with leadership, another crucial skill necessary for the development of *tempo* was project management. Given that only the booking interface was being designed, scope-creep was avoided to ensure the deliverable remained cohesive and as proposed. The author believes that project management will bring clarity and accountability to the project should *tempo* progress into the business development phase, by structuring daily tasks to fit within broader strategic frameworks.[22]

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[22] Ben Aston, "Why Is Project Management Important?" The Digital Program Manager, May 18, 2017, https://www.google.co.uk/amp/s/thedigitalprojectmanager.com/why-is-project-management-important/amp/.

5.3 Qualitative Research

Another skill acquired during the development of *tempo* was the ability to carry out qualitative research. This refers to research that is exploratory and anecdotal, with less numerical dominance. A sample of faculty and staff at the Berklee College of Music, Valencia was studied to extrapolate *tempo*'s prospective user demographic. The benefit of using qualitative approaches to gather insight about the features to include in *tempo* was that the author did not start with a hypothesis that needed to be supported. Rather, it led to an open-ended approach that was adapted and changed as necessary, thus enhancing the quality of the data and insight.[23]

Studio Type (filter 1)
- Recording studio

Live Room(s) (filter 2)
- 1
- 2
- More

Console Design (filter 3)
- Analog
- Digital
- Hybrid
- Software
- None

Input Channels (filter 4)
- 16
- 24
- More

Mic Preamp (filter 5)
- Console

Mic Type (filter 6)
- Dynamic
- Small diaphragm condenser
- Large diaphragm condenser

- Tube
- Ribbon
- For vocals
- For drum set up

Backline (filter 7)
- Piano
- Guitar
- Guitar amps
- Drum set
- Percussion
- Guitar amps

Engineer (filter 8)
- Yes
- No

Assistant (filter 9)
- Yes
- No

Lounge (filter 10)
- Yes
- No

studio pops up once selected, user led to booking portal

Calendar (coded accordingly...)
- Green (fully available)
- Yellow (partially available)
- Red (lock out)

Payment
*To be decided, to include the usual plus M-Pesa

Figure 7: Screenshot of filters and insight gathered from research participants.

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[23] Deborah Talbot, "The Importance of Qualitative Research and the Problem of Mass Data Gathering," LinkedIn, July 14, 2015, https://www.linkedin.com/pulse/importance-qualitative-research-problem-mass-data-gathering-talbot.

6. Expected and Unanticipated Challenges

6.1. Remote Management

      The most expected challenge during the development of *tempo* was managing the project remotely. Michael Simiyu is based in Nairobi, Kenya, while the author was located in Valencia, Spain. Though video calls were made possible through services such as Google Hangouts shown in Figure 8, a lack of personal connection definitely impacted the relay of certain instructions. This was rectified by supplementing correspondence through email, but there were often breakdowns in communicative efficiency and effectiveness. Fortunately, the time zone difference at the inception of the project was two hours, which the author felt gave room to liaise and coordinate meeting schedules accordingly.

Figure 8: Screenshot of a Google Hangouts call with Michael Simiyu on January 31st, 2020.

6.2. Learning Curve

Another challenge was the author's knowledge gap regarding website development prior to the project's kick-off. When deciding on a CE to embark upon, the author sought to venture into a topic with the potential to revolutionise the East African music industry. As a native of the region, the author had made several observations concerning the elitist and socio-economic divisions affecting studio accessibility and availability. In accepting the challenge and honing transferable skills, the author commenced *tempo,* drawing from prior academic training in the fields of Economics, Computing and Project Management. Therefore, the lack of familiarity with the fundamentals of website development was mitigated by reference to pre-existing knowledge and self-teaching. All resources used are included in the bibliography.

6.3. Project Scope

Unforeseen at the beginning of the journey was the sheer mass and complexity of building a studio booking platform from scratch. Initially, *tempo* was to consist of both the booking and studio owner interfaces. Upon realisation of the expansive load in attempting to design, build and implement a fully-partite website given the geographical strain on the team, the deliverable was scaled down to only the studio booker interface.

7. Future Ramifications

Work on the *tempo* project needed to be completed within the academic year. As the CE deliverable is only one aspect of a larger service, the author is looking to further her leadership and managerial expertise by growing the team. Specialisation and mentorship would be crucial in ensuring the development, pitching and growth of *tempo*. Communication with innovation hubs in Kenya and Uganda is ongoing to explore the prospects of scaling the project outside of academia and into functional business. As of April 22nd, 2020, correspondence with Jim Maloba, Business Development Manager at @iLabAfrica Research and Innovation Centre in Nairobi is underway.

Established in 2011, @iLabAfrica is an ICT innovation and business development hub based at Strathmore University, one of Kenya's most prestigious universities. Standard Chartered Bank and Strathmore University have partnered to create the Standard Chartered Women in Tech Incubator, a programme that supports female-led entrepreneurial teams by providing them with training, mentorship and seed funding.[24] Furthermore, partnership with a business incubator such as @iLabAfrica will be a source of guidance regarding how best to recruit studios to *tempo*.

Studios were not contacted about this project due to the fear of idea appropriation and the reluctance to pitch a professional product within the bounds of academic restriction. Nonetheless, the author has built relationships with a few studio owners, such as Nick Loder of AMP Studios in Nairobi, to lay the foundation ahead of the moment to officially pitch *tempo*.

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[24] "@iLabAfrica - Women In Tech Incubator," iLabAfrica, accessed May 15, 2020, http://www.ilabafrica.ac.ke/index.php/women-in-tech-incubator/.

8. Conclusion

tempo is the manifestation of the author's career goal to shape Africa's socio-economic landscape using music production, technology and innovation as agents of development. While similar on-demand platforms such as Studiotime exist, none yet has been designed for the East African consumer. With the East African music ecosystem having access to a curated database of professional offerings, the author's hope is that studio booking will be more accessible and efficient. *tempo*'s booking interface offers solutions that can facilitate users' search for a studio, with further filtration allowing for a more refined selection such as the types of microphones, recording rooms available and more.

Aspects such as remote team management and communication presented challenges to the project. Fortunately, skills such as leadership strengthened and counterbalanced this, making additional obstacles such as project scope manageable. The pursuit of business development lies in *tempo*'s future, with prospective mentorship from innovation hubs such as @iLabAfrica regarding how best to professionally approach and pitch to established studios in East Africa, such as Supersonic in Kenya.

Throughout the academic year, the author received many questions as to why the production of an EP or engineering portfolio was not pursued as a CE project. Perhaps this would have been a more artistic venture. In retrospect, both the creative and mechanistic skills acquired in the Music Production, Technology and Innovation Master's programme complement the author's duality. Seemingly unrelated techniques such as public speaking and audio engineering mirror the author's musical and scientific capabilities, and this is the same duality that will allow *tempo* to capture the East African music industry.

Appendix A: Continued Review of the State of the Art

A.1. Covibes

Covibes is a web-based platform that pairs music studios with record producers, facilitating their bookings whilst enabling artists to find and collaborate with them. The startup was launched in 2019 in the Nigerian market, and was founded by Kayode Daniel, Stephen Nderitu and Victor Yunusa.[25]
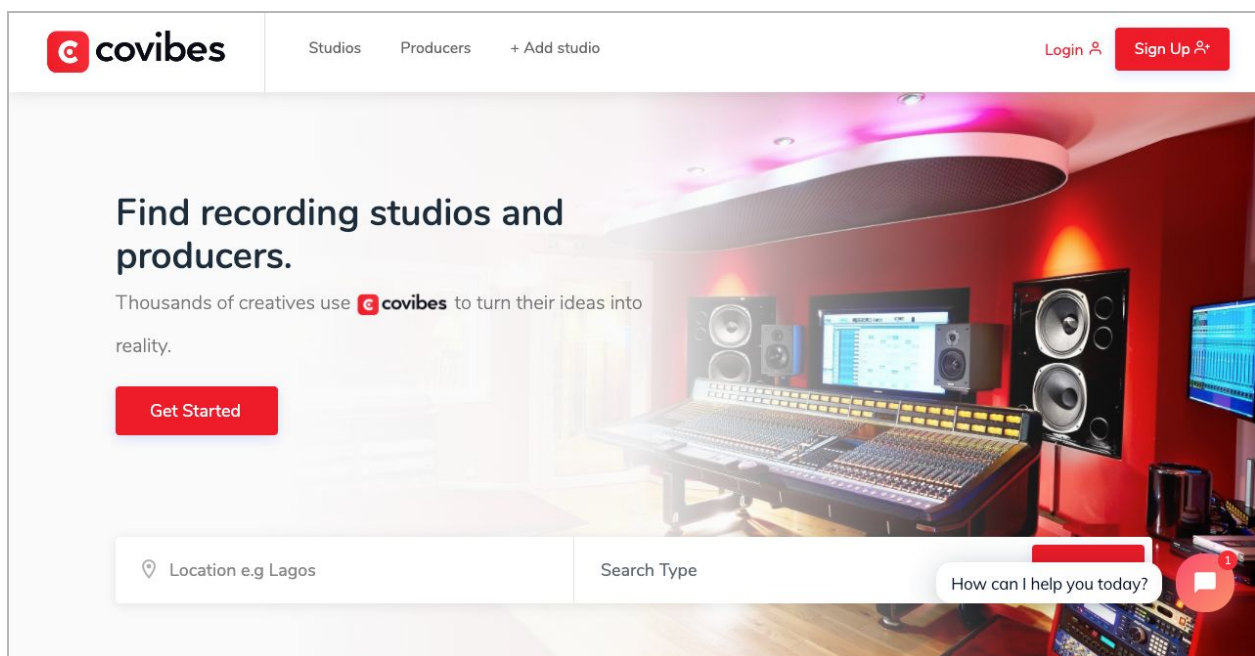

Figure 9: Covibes website homepage.

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[25] Daniel Mpala, "Here are the 11 startups that MEST invested a total of $1.1m in," Ventureburn, accessed July 6, 2020, https://ventureburn.com/2019/08/mest-investments-2019-cohort-founders/.

The differentiating factor between *tempo* and Covibes is the intended target audience. *tempo* encapsulates musical agents as a whole, ranging from session musicians and record producers to audio engineers and more. Covibes' stated primary audience is record producers, with the unique selling proposition that in addition to connecting them with verified music studios, consultation regarding licensing and publishing on streaming platforms is also provided without extra cost.[26] Figure 10 details the key services that Covibes proffers.
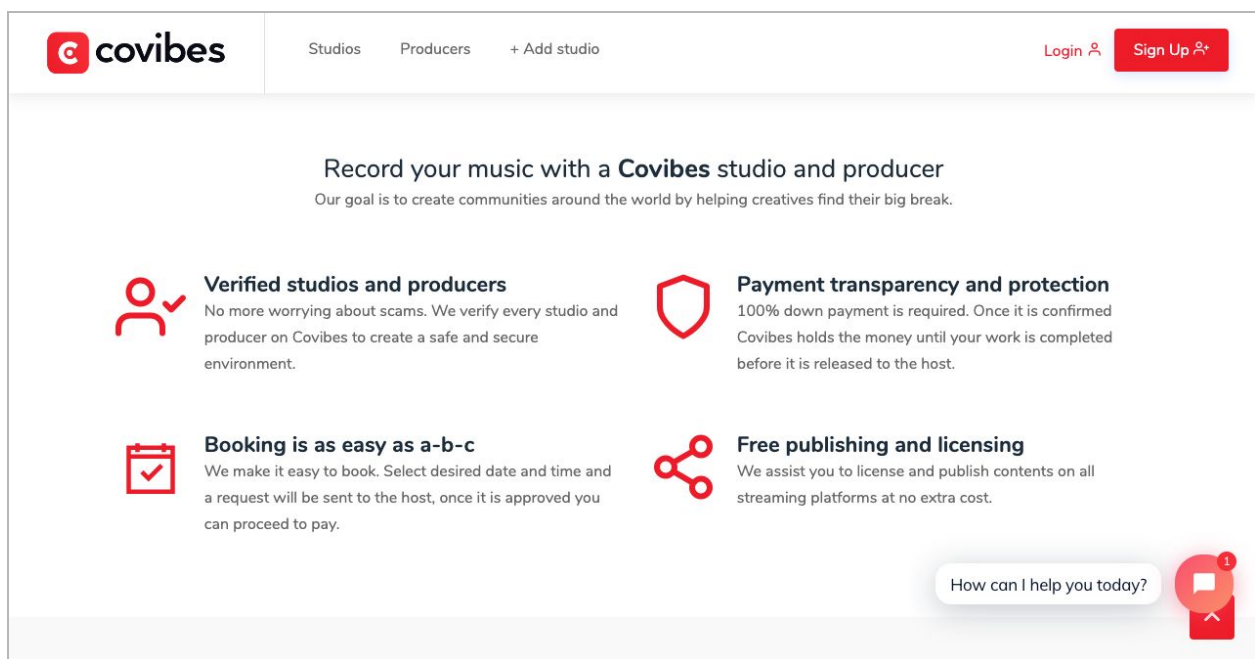
Figure 10: Covibes' unique selling propositions on the website homepage.

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[26] Covibes, accessed July 6, 2020, https://www.covibes.co/.

A.2. Music Traveler

        Music Traveler is a rapidly growing studio and rehearsal marketplace. Music Traveler centralises studios and rehearsal spaces for musicians. Their ethos is one of reducing the barriers that hinder the interaction of musical agents. It was founded in 2017 by Aleksey Igudesman and Julia Rhee.[27]
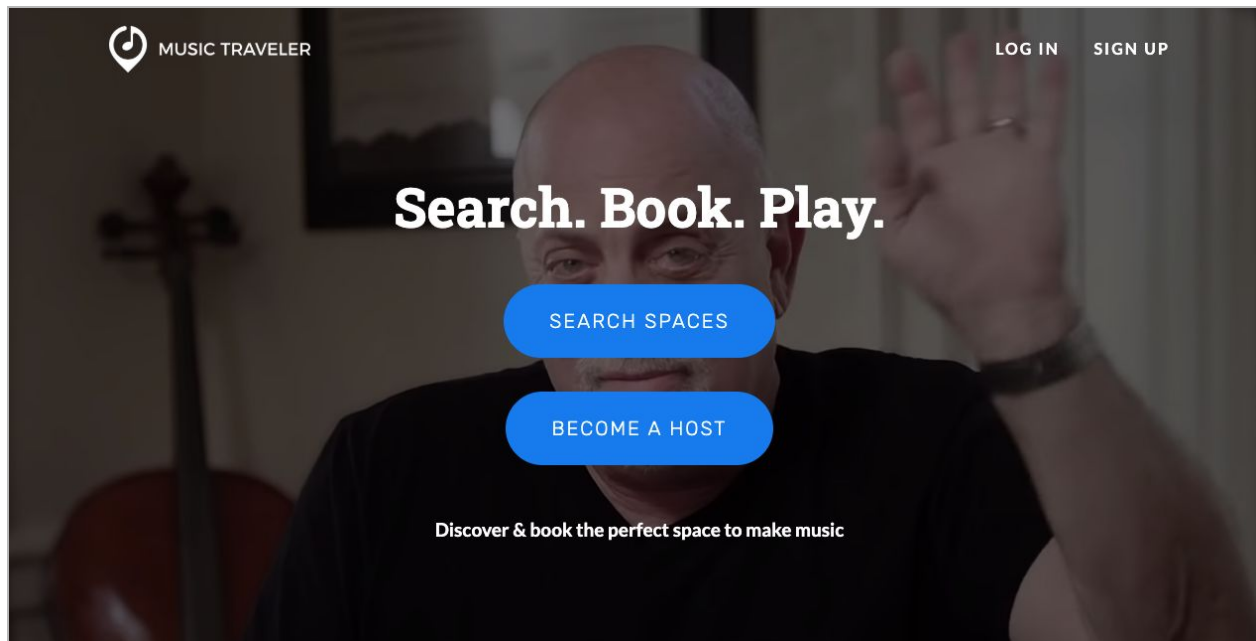

Figure 11: Music Traveler website homepage.[28]

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[27] "Music Traveler," Crunchbase, accessed December 20, 2019, https://www.crunchbase.com/organization/music-traveler-2.

[28] "Discover and Book the Perfect Music Space," Music Traveler, accessed December 20, 2019, https://musictraveler.com/.
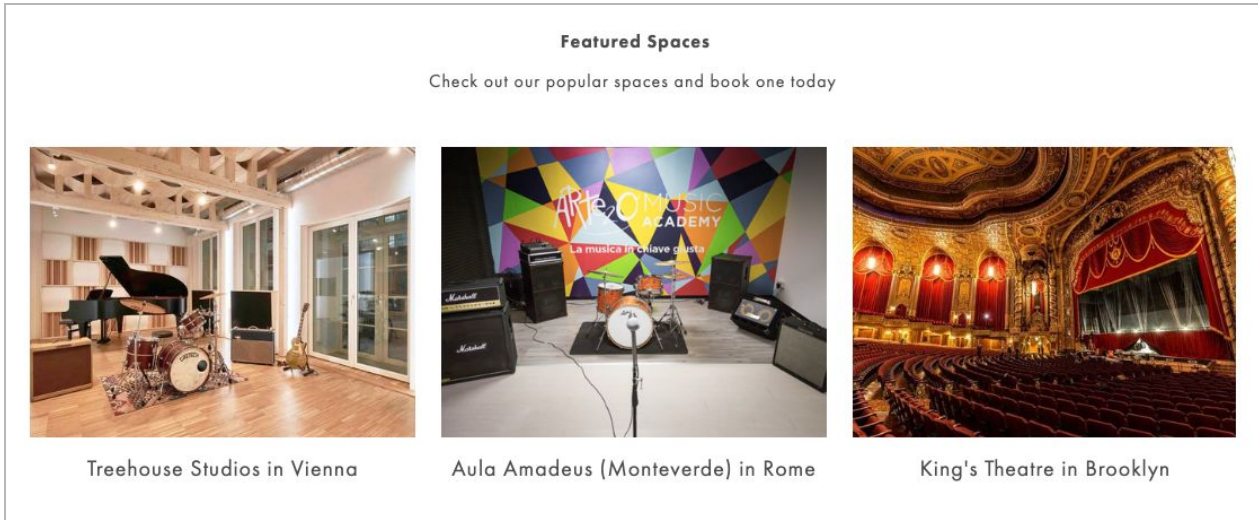
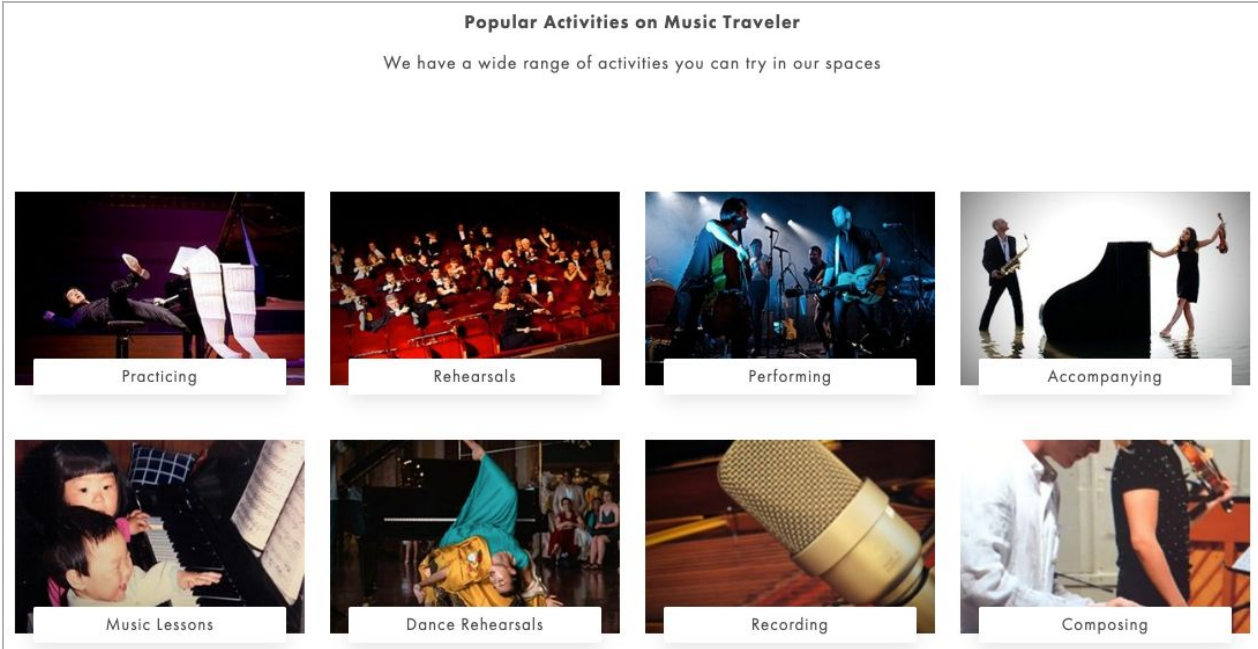Figure 12: Music Traveler's featured spaces on their website.[29]

Figure 13: Popular booking requests on the Music Traveler website.[30]

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[29] "Music Traveler."

[30] "Music Traveler."

A.3. Ellis Sorkin

Close to four decades ago, recording engineer Ellis Sorkin stumbled upon a music industry lacuna: a system was needed to refer artists to studios commensurate with their needs. Thereby, Studio Referral Service (SRS) was born. Sorkin's database comprises over 700 facilities worldwide. "The knowledge of the studios is all about my knowledge as an engineer: what people need and what's good gear to have," Sorkin shares. By looking at a studio's equipment list, Sorkin determines whether it is adequate for the respective client's needs. "Nirvana, for example, was pretty straight-ahead. We knew that they wanted a vintage Neve; they wanted a big room. Sound City was the logical choice and the vibe was right. We also look at budgets, of course. Recently U2 wanted something exceptionally private. I put them into Paul Allen's place in Beverly Hills. It's extremely private and high end."[31]

In comparison to SRS, Sorkin's role essentially encapsulates and mirrors the functionality of *tempo*'s platform. That being said, the author questions the digital operability of SRS, in spite of its word-of-mouth tradition. The website lacks the user interactivity *tempo* offers as illustrated in Figure 14, with some dormant pages shown in Figure 15.

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[31] Rob Putnam, "Ellis Sorkin - Connecting Artists with the Right Studio - Music Connection," Music Connection Magazine, February 5, 2019, https://www.musicconnection.com/ellis-sorkin/.

Figures 14: The SRS website homepage.[32]

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[32] Studio Referral Service, accessed December 20, 2019, http://studioreferral.com/.
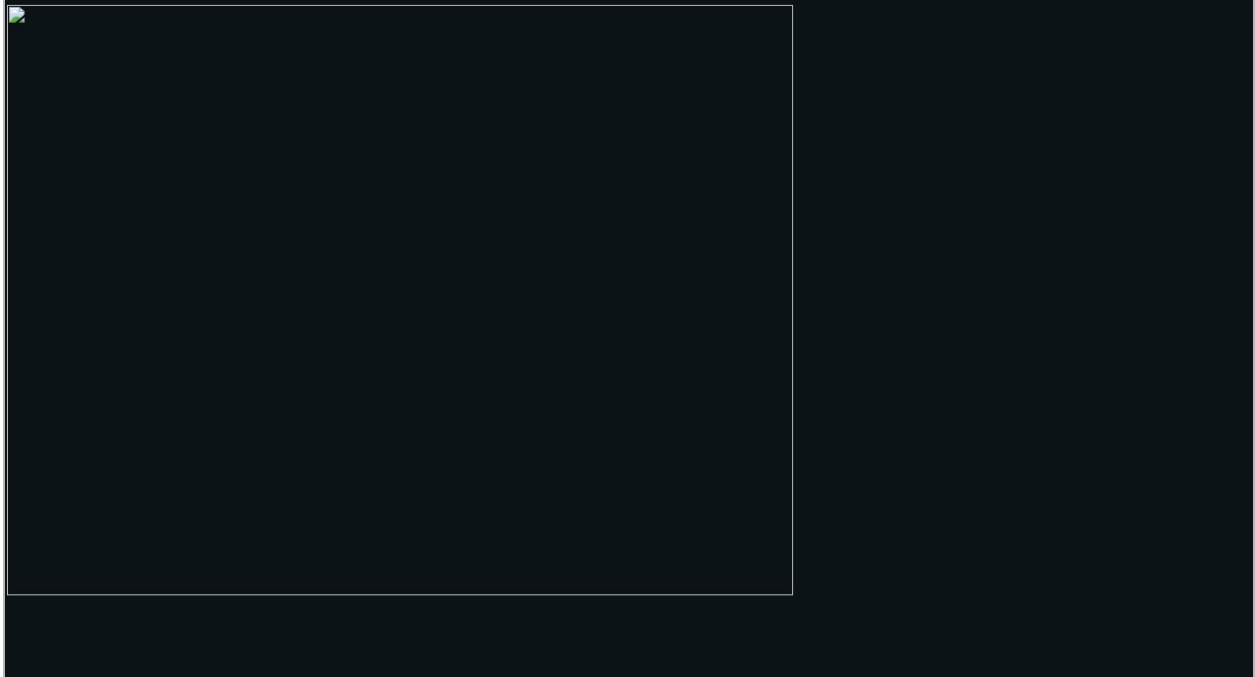
Figure 15: A blank hyperlink found on the SRS website.[33]

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[33] Studio Referral Service, accessed December 20, 2019, http://studioreferral.com/recording-studios.html.

Appendix B: How *tempo* Works - Step-by-Step

Figure 16: Screenshot of *tempo* website showing step 1 of booking a studio.

Figure 17: Screenshot of *tempo* website showing step 2 of booking a studio.

Figure 18: Screenshot of *tempo* website showing step 3 of booking a studio.

Figure 19: Screenshot of *tempo* website showing step 4 of booking a studio.

Figure 20: Screenshot of *tempo* website showing step 5 of booking a studio.

Figure 21: Screenshot of *tempo* website showing step 6 of booking a studio.

Figure 22: Screenshot of *tempo* website showing step 7 of booking a studio.
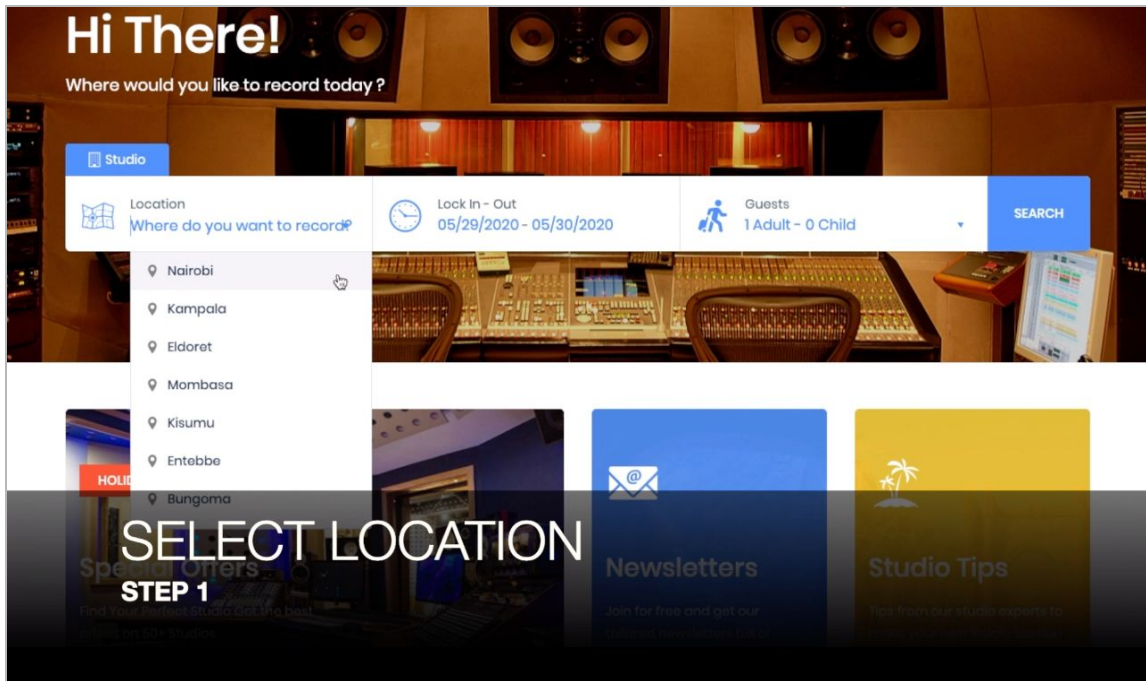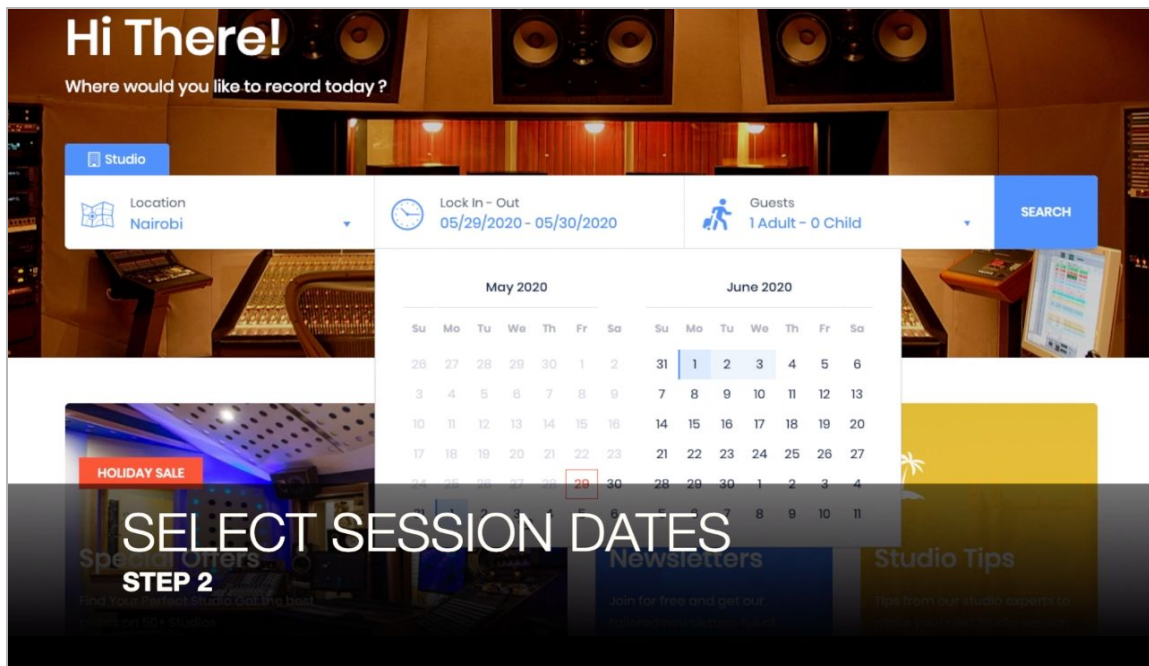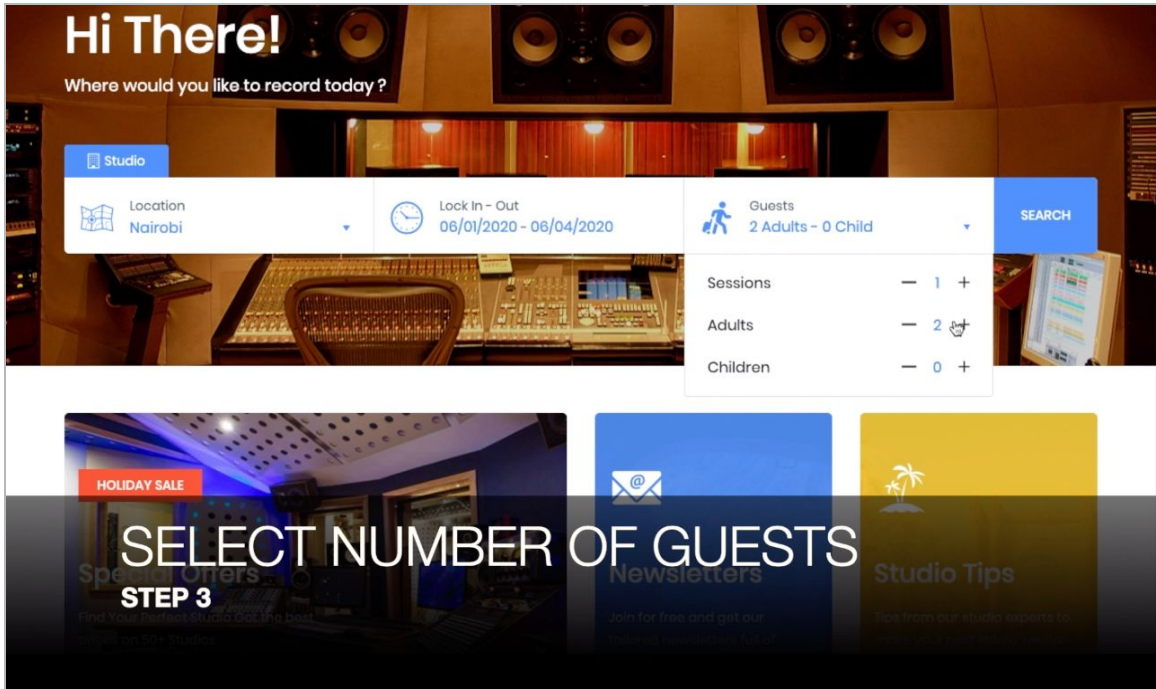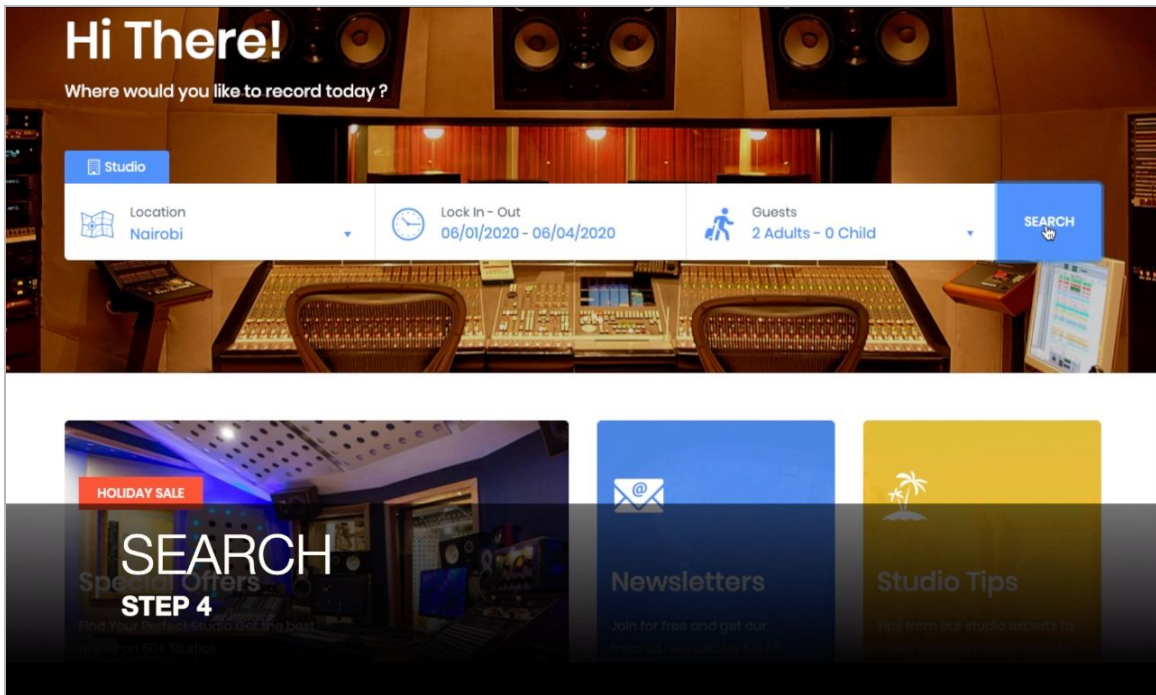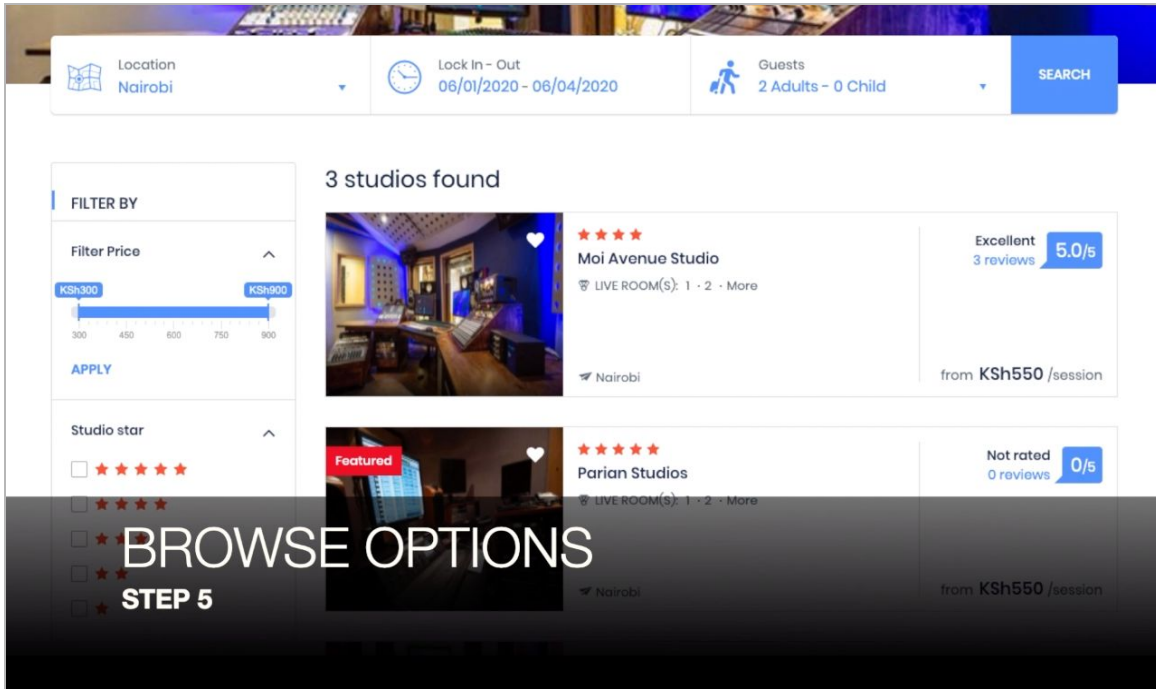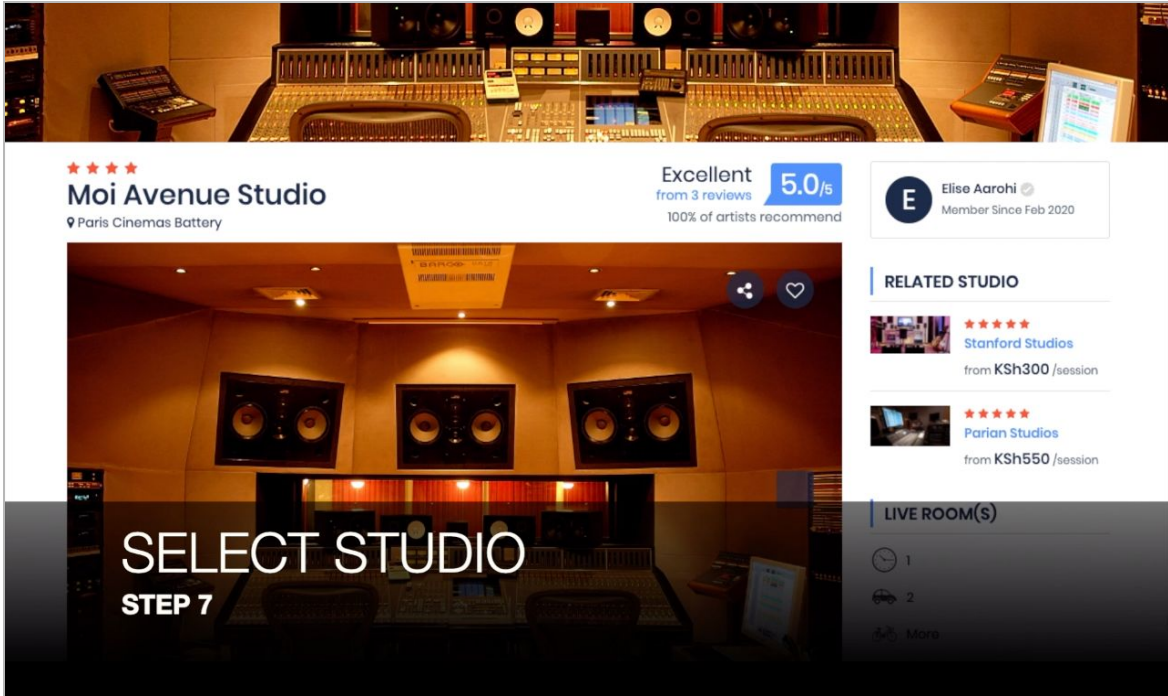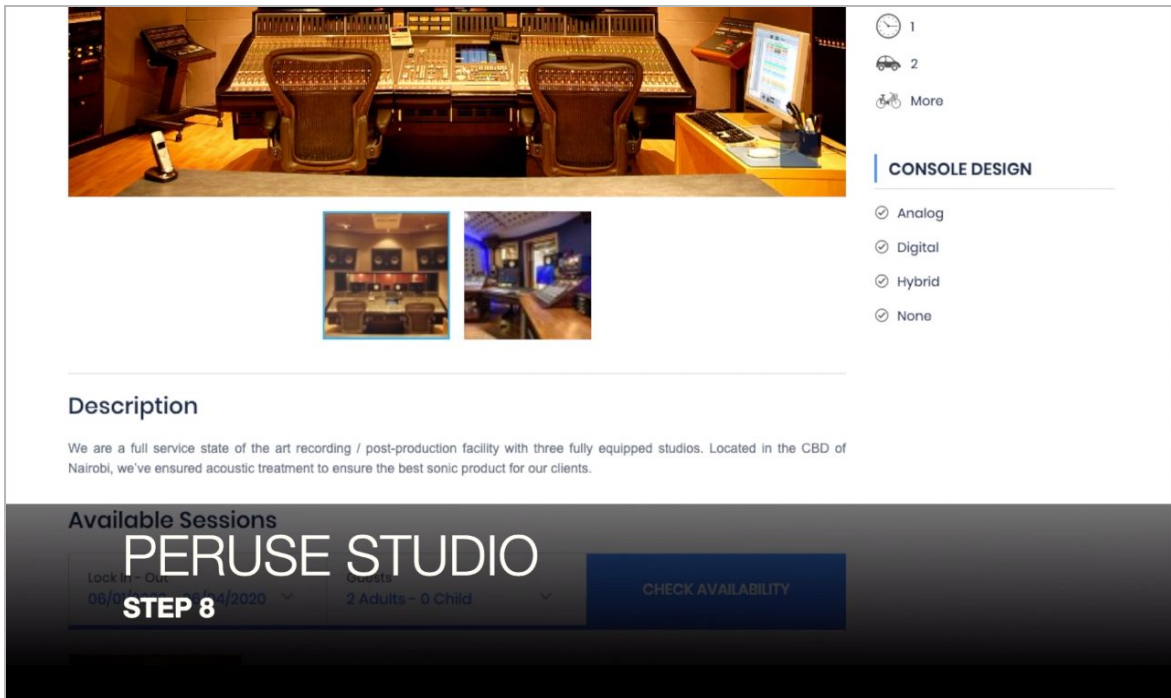

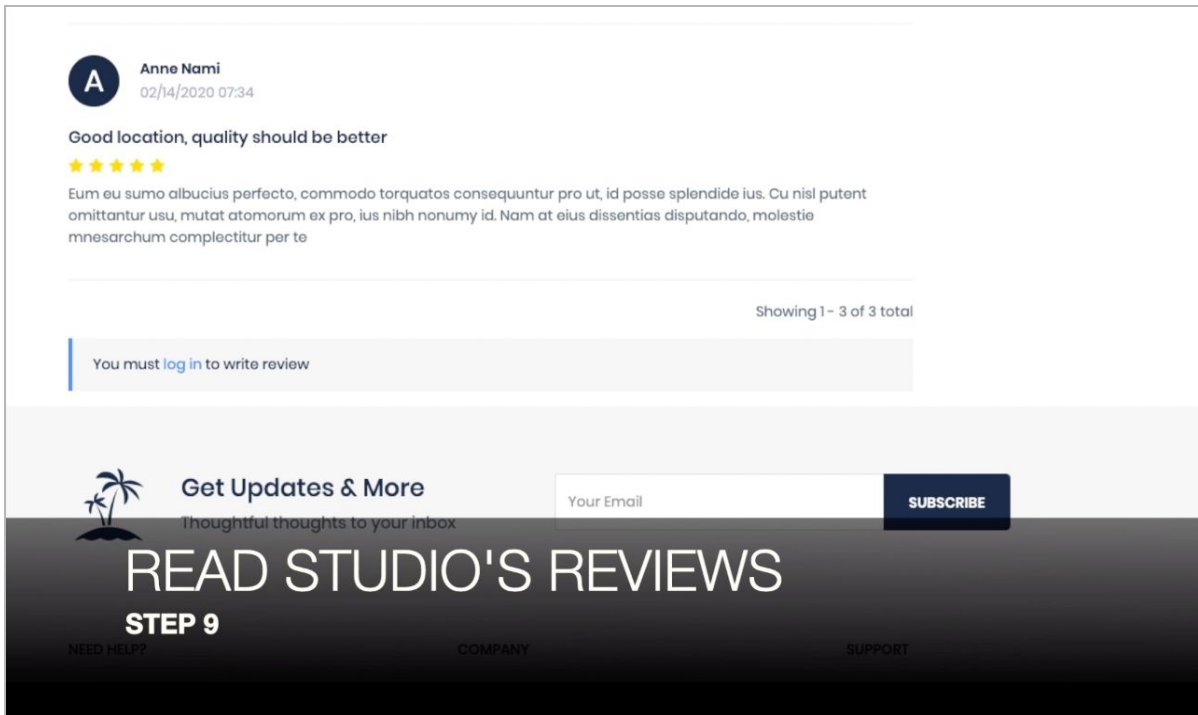Figure 23: Screenshot of *tempo* website showing step 8 of booking a studio.

Figure 24: Screenshot of *tempo* website showing step 9 of booking a studio.
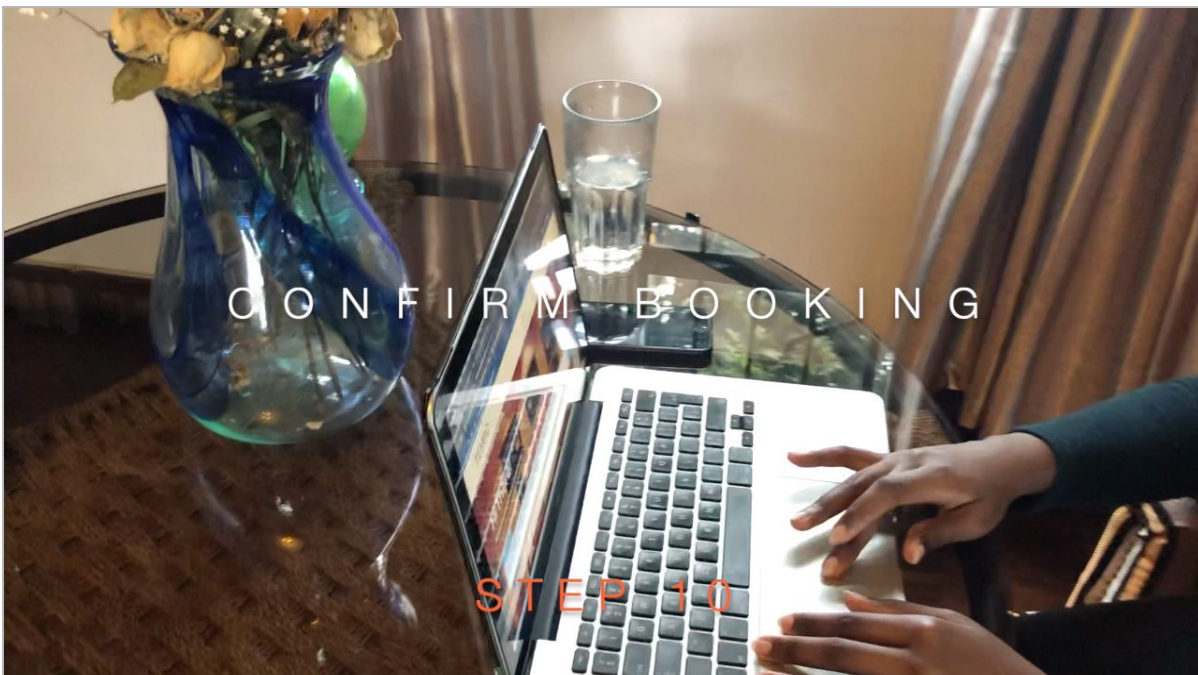

Figure 25: Screenshot of *tempo* website showing step 10, confirmation, of booking a studio.

Appendix C: Consultants' Queries and Comments

Table 1. Consultants' Queries and Comments

Consultant	Consultant Query	Author's Response
Patricia Onyango & Tsun-Ju Lin	How does the design of *tempo* need to be different in order to fit musician's needs in East Africa?	*tempo*'s geo-navigation function is anchored by metropolitan areas, which reflects and accommodates the location of creative hubs in the region.
Charles Onyango-Obbo	What data supports that there is a need for something like *tempo* in East Africa, beyond the fact that it is not there. What music market trends or data support the concept?	One of the main recommendations in response to complaints from industry professionals[34] is the ease of doing business. *tempo* provides a curated offering of studio facilities supported by key data points to fulfil the needs users in the region.
Tsun-Ju Lin	Why *tempo* (lower case), but not *TEMPO* or *Tempo*? Usually, the creator wants to highlight their product by using capital letter(s). This makes me feel that you write in lowercase on purpose.	*tempo* is stylised in lowercase not only due to aesthetic preference. The homogeneity of casing symbolises and is analogous to the equity *tempo* seeks to provide to its users.
Catalina Millan Scheiding	What type of support would you need if *tempo* does not get accepted into the Standard Chartered Women in Tech Incubator?	The mentorship and training provided by the Standard Chartered Women in Tech Incubator is necessary in directing the steps the author should take to ensure professional and legitimate entry into the market. Other innovation hubs offer such guidance, including iHub, a trailblazer of its kind in Nairobi, Kenya.

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[34] HEVA Fund Limited, "Creative Industries Ease of Doing Business Report 1 - Music (2018)," Issuu, December 18, 2018, https://issuu.com/hevafund/docs/heva_ci_edb_report_01_music.

Appendix D: Project Timeline

Table 2. Activities and Time

Activity	Activity Description	Duration (Weeks)	Corresponding Dates (DD/MM/YY)
Task 1: Project Development			
1.1	Topic settlement & research	3	09/09/19 - 30/09/19
1.2	Project charter	2	30/09/2019 - 14/10/19
1.3	Project aims & objectives	1	14/10/19 - 21/10/19
1.4	Project management plan covering: cost, scope, time, quality, communication, risk, resources and project schedule using a work breakdown structure and Gantt chart	4.5	21/10/19 - 22/11/19
1.5	Scheduled recess for supervisor review	4	22/11/19 - 16/12/19
Task 2: State of the Art Research			
2.1	Medium-scale research using mainly qualitative methods	4	20/01/2020 - 17/02/2020
2.2	Research methods' accuracy and reliability evaluation	1	17/02/2020 - 24/02/2020
2.3	Critical project management process evaluation	2	24/02/2020 - 09/03/2020
2.4	Scheduled recess for personal review	2	09/03/2020 - 23/03/2020

Table 2. Activities and Time (continued)

Activity	Activity Description	Duration (Weeks)	Corresponding Dates (DD/MM/YY)
Task 3: Booking Interface			
3.1	Prototype building	8.3	23/03/2020 - 20/05/2020
3.2	Beta testing	1	20/05/2020 - 19/06/2020
3.3	Publication of *tempo* website	0.3	19/06/2020 - 21/06/2020
3.4	Final CE defence presentation	-	23/06/2020
3.5	Archival submission of deliverables	2.1	23/06/2020 - 08/07/2020

Appendix E: Budget

ITEM	UNITS	DEVELOPMENT	BUILD	TEST	SAFETY NET	TOTAL BUDGET
HARDWARE						
LAPTOP	1	$2,781	$0	$0	$278	
HARD DRIVES	2	$198	$0	$0	$20	
SOFTWARE						
2LOGIC STUDIOS'	1	$121	$0	$0	$12	
TASKS						
PROJECT MANAGEMENT	1	$860	$860	$800	$172	
DATABASE	1	$0	$2,097	$0	$210	
GEOLOCATION	1	$0	$3,041	$0	$304	
CUSTOMER USER INTERFACE	1	$0	$1,176	$0	$118	
STUDIO USER INTERFACE	1	$0	$1,100	$0	$110	
3RD PARTY API INTEGRATION	1	$0	$3,735	$0	$374	
REPORTING	1	$0	$1,850	$0	$185	
CONTENT MANAGEMENT SYSTEM	1	$0	$1,150	$0	$115	
USER ADMINISTRATION	1	$0	$765	$0	$77	
PERSONNEL & FEES						
SHARON ONYANGO-OBBO (PROJECT LEADER)	1	$0	$0	$0	$0	
MICHAEL SIMIYU (DEVELOPER)	1	$0	$0	$0	$0	
LOCATION						
2LOGIC STUDIOS' OFFICE RENTAL	6	$700	$1,320	$100	$202	
TOTAL		**$4,659**	**$17,094**	**$900**	**$2,175**	**$24,828**

Figure 26: Screenshot of Google Sheets document detailing *tempo*'s budget.

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