

Gender Disparities in Zimbabwe's Audio Engineering Industry

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Abstract

Globally, women are under-represented in some trades, including the music industry. In many parts of the world, women are beginning to move into the audio engineering field although they are still very few. This situation ought to be addressed given the aim to attain gender parity in communities. The paper discusses the causes of gender disparities in Zimbabwe's audio engineering industry and proposes ways of redressing the situation. Data in this qualitative research was gathered through participant observation, document analysis and semi-structured interviews. Interviews were carried out with both male and female audio engineers and singers. The study revealed that abuse, disrespect, exploitation, fear, disinterest, inability, lack of expertise, lack of role models, and oppression are some of the factors that inhibit women's participation in audio engineering. Using the Unified Theory of Acceptance and Use of Technology, we advocate for women to contribute to the achievement of gender inclusivity by actively partaking in audio engineering roles, enhancing their expertise and experiences as well as developing positive attitudes towards traditionally male-dominated trades such as audio engineering. We argue that background, exposure, preferences and abilities of women are all factors that affect their career choices in audio engineering. The research recommends that females forego the cultural limitations that inhibit them from pursuing audio engineering roles.

Keywords: Audio engineering, Culture, Disparities, Gender, Technology acceptance

1 Introduction

There are fewer women than men in engineering roles the world over, and this includes the sound engineering profession. Audio engineering is a vital aspect of the music industry and females ought to participate in this field to achieve parity in line with Sustainable Development Goal number five. Women constitute five percent of audio engineers (Farrugia, 2012). The ratio of students studying sound production is one female to ten males, and education programmes could help evade the usual studio apprenticeships and informal male networks (Farrugia, 2012). These statistics show gender disparities in audio engineering roles. The male/female ratio in audio engineering is not much different from that in other technical and engineering professions such as industrial engineering and computer science, and this disparity appears to be universal. The unequal representation is attributed to several reasons that include women's abilities, ambitions, and attitudes. This global trend also characterises the audio engineering industry in Zimbabwe.

Against this background, women audio engineers in Zimbabwe find themselves plying their trade in a society where the social commentary is sometimes characterised by patriarchal attitudes. The theoretical lens through which we analyse gender disparities in sound engineering is the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2016). We particularly zero in on its four key constructs, namely performance expectancy, effort expectancy, social influence, and facilitating conditions to explain women's involvement in audio engineering. We examine the degree to which women believe that interest and involvement in the sound engineering profession will help them to excel in this job, the degree of ease they associate with the job, how the perceptions of significant others impact their involvement, and the extent to which they trust an organisation's technical infrastructure and equipment to support their ease of partaking in sound engineering.

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The thrust of this paper is to uncover what keeps females from participating in audio engineering roles. It appears that the responsibility is not entirely on females' incapacities and disinterest, as there are other factors behind their low participation in music production. We advance the position that there are both intrinsic and external reasons for incapability and lack of interest and this study set out to reveal them. This approach postulates human psychology as a mediator between external factors such as economic constraints and cultural values and the ultimate effect, which is the underrepresentation of women in sound engineering. The objective of the study was to determine what causes gender disparities in audio engineering roles in Zimbabwe. Knowing the causes can help to strategise and promote gender balance in the mixing and mastering of music.

This qualitative study was carried out in cities of Harare, Bulawayo and Gweru in Zimbabwe, which were selected because of their convenience in terms of accessibility to the researchers. The qualitative paradigm allowed for in-depth understanding of life experiences with reference to social and cultural depositions (Muzari et al., 2022). The target population for this research consisted of audio engineers and recording artists in Zimbabwe. The accessible population that formed our study sample comprised all audio engineers and recording artists from these three metropolitan provinces. From this population, we purposively did homogeneous sampling (Thomas, 2022) of six music producers (three males and three females) and four recording artists (two males and two females). To find out the views that the music industry has on gender disparities in the mixing and mastering of music in Zimbabwe, we involved male and female audio engineers and recording artists. The snowball sampling technique where currently enrolled research participants help recruit future subjects for a study was employed as well (Simkus, 2022). Female audio engineers are difficult to find because of their rarity; hence other participants assisted in identifying them. Interviews, participant observation, and document analysis were used to collect data. Thematic and narrative analysis was used to analyse the data.

The study identified the challenges that are associated with gender imbalances in the mixing and mastering of music. Knowledge of these challenges is required to develop any strategies that can be adopted to encourage gender balance in the field. The first part of the paper discusses global gender disparities in the sound engineering profession. The second section zeroes in on the situation in Africa, and in Zimbabwe. The paper goes on to present the views of research participants on the gender imbalance in Zimbabwe's audio engineering industry, embedded with the discussion of findings. The conclusion points to our argument that more and more females ought to embrace technology so as to be able to populate the music industry in technical roles.

2 Global gender inequalities in audio engineering

Davies (2022) examined the disparities experienced in audio engineering, citing the fewer numbers of women who pursue the field and gain credit for it. Women make up less than five percent of sound engineers in the United Kingdom (Farrugia, 2012). There is a struggle for women to be taken seriously, amidst the experience of unwavering sexual advances and degrading comments. The audio engineering industry is characteristically male-dominated and scholars have investigated gender imbalances in the music industry in general (Farrugia, 2012), and gender disparities in the production and performance of music (Davies, 2022; Farrugia & Swiss, 2008; Mathew et al., 2016). The lack of visibility women receive in the industry does little to encourage them to pursue music technology (Wolfe, 2019). There is need for female engineers to surround themselves with positive people and inspiring mentors. Stereotyping leads to lack of role models and demotivates women who desire to take up roles in audio engineering. Lack of female artists to inspire others is one of the hindrances to the growth of the music business. Technology acceptance means everything women see must convince them that the sound space is meant for them. It takes self-drive and determination to push through and be successful. There is a need to rise up and occupy male-dominated fields in order to promote gender balance.

Hopkins and Berkers (2019) explore the complex intersections of gender, music, education, and technology. Male domination in the music technology classroom and the field was the major finding of this study. These authors conclude that males self-select into this specialty and the disparities observed are not caused by

some structural features or discrimination in the music industry. The causes have to be established at a much earlier stage of the career path, even before the student decides to enrol in a study program of music technology. In addition to self-selection into the study program, sex-specific attrition rates need to be considered when students find that this is not the right occupation for them or students fail their exams. Hopkins' (2019) research mainly focuses on music technology education and does not delve into the audio engineering field. Farrugia and Swiss (2008) explore the challenges faced by females as they pursue audio engineering roles. Their findings revealed that sexual harassment and objectification were the main drivers of inequalities found in audio engineering as women felt unsafe and degraded. They advocate for an equal playing field and appeal to the music industry to make opportunities available for females who want to pursue audio engineering roles.

Degrading comments that are given by fellow producers, artists, and fans demotivate women who are into audio engineering roles. Women are known for being easily offended. This stereotype seems to be quite accurate because world-wide, the most consistent sex difference on personality tests such as the various Big Five inventories is a higher female score on neuroticism (Dalton & Ghosal, 2018). This means a stronger experience of negative emotions: fear, depression, and importantly "angry hostility". High neuroticism combined with a female-typical attention to people rather than to things or data is the reason why women often feel offended in situations where men would see no reason for being offended at all. Other explanations such as dogmas taught in school, or traditional culture, or fashion are other links between stereotypes and reality.

Negative comments cause females to lack confidence, thereby keeping them out of the audio engineering space. This is how high neuroticism can lead to vulnerability (Dalton & Ghosal, 2018). Only the bold women will pursue engineering amidst all forms of negative comments. Bold and dominant women have high testosterone and show signs of confidence (Dalton & Ghosal, 2018; Grant & France, 2001). The use of gendered terminology, for example, the XLR cable is referred to as the male and female resembling the superiority of men in the industry. People's attitudes, perspectives, and beliefs shape gender roles in the audio engineering field. Most people think a sound engineer in a recording studio or behind the sound desk at a live performance is a man (Mayhew, 2017). Audio engineering is assumed to be a male activity; hence few females occupy these spaces. Whether this is because nobody wants to hire them or they themselves have internalized this stereotype to the extent of not pursuing this career has to be established. Women are more likely found in the composition and performance of music whilst men engineer it. According to Davies (2022), patriarchy in audio engineering continues to undermine the achievement of gender equity. The presence of girls and women in audio engineering can promote gender parity both locally and globally. Their scarcity points to them being exempted from this socioeconomic slot, and it affects their livelihood. Sexual abuse is common in the audio engineering field. Failure by the victim to comply to sexual demands could lead to other forms of abuse such as physical abuse. Pell (2021) describes her experiences in this field and explains how one production manager told her that she would never make it unless she opens her legs. It is disheartening that some females give in to such demands, allowing themselves to be sexually abused. A lady can be promised a job in return for sexual relations in record labels (Hill, 2021) by a manager who can access the connections. Baah et al (2022) state that "almost half of all musicians in the UK say they have experienced sexual harassment at work and citing the culture of the industry, only one in five of them felt that they were able to report it." Such situations may give the man the power to forcefully initiate sexual relations with her. Some females might give in because of the desperation caused by joblessness.

Physical abuse is another pandemic that women face in the audio engineering industry. Husbands may feel jealous of their wives especially when they work till late hours or when they interact with male clients. This can result in gender based violence (GBV) where the husband suspects the wife of extramarital affairs with clients and fellow music producers. Females are forced to abandon their passion for audio engineering in an attempt to safeguard their marriage. Single ladies who are in relationships also suffer the same abuse from their boyfriends. GBV can prevent the achievement of gender parity in the audio industry. Females are disrespected in this field because of the belief that they are invading a male-dominated industry. Patriarchy favours male superiority and female inferiority (Mayhew, 2017).

Although there are far fewer women than men in this field, there are a few who have managed to make

progress but their efforts have not been rewarded. Mathew et al. (2016) highlight the contributions of women in the audio engineering industry amidst the challenges they face. They argue that the success and contributions of women in this field have expanded greatly although the gender gap is still wide. Gaston-Bird's (2019) book chronicles careers of women who have been present in audio-related fields and music technology programs. Fogel (2019) cites how Oberlin University has made strides in improving gender diversity in the music technology field on campus. Female tutors were hired, which boosted the confidence of most female students. Concert sound which does live sound for campus events employs more women, which creates a greater appreciation of females in this field. In the United States of America, there is an organisation called SoundGirls which runs Sound Camps in various places in order to encourage girls and introduce them to potential careers in audio. Females therefore need space and resources that will enable them to operate in the field of audio engineering, through the implementation of gender balances in all aspects of life.

Kuhn and Wolter's (2020) research proved that there is a "people versus things" difference between men's and women's interests. Women in general prefer occupations where they interact with people, while men prefer occupations where they interact with things. In the music industry, for the performers there is interaction of sorts with the audience, and of course between members of a band. Audio technicians interact more with microphones, loudspeakers and recording equipment than with people. Therefore, there is an expectation that performing is a female as well as a male thing, whereas sound technology is male-dominated. Jones et al., (2021: 591) say "gaps in vocational interests stem, in part, from race-based variations in the perceptions of accessible jobs depending on one's racial group." This is particularly applicable to the career choices of women in Zimbabwe, where very few take the engineering route.

3 Sound engineering gender imbalances in Africa

In Africa, some laws are gender discriminatory as they are made in favour of males. In countries such as Tanzania, South Africa, and Nigeria women are scarce in all areas of music. Ibekwe (2018) reports gender disparities in music production and performance in Nigeria. Patriarchy makes it difficult for women to pursue professional music careers as they may be considered promiscuous and uncultured. Females disassociate themselves from any activity that is carried out outside the confines of the home for fear of being labelled. They perform music during their leisure hours only as they are considered custodians of folksongs. As most African women do, they spend most of their time nursing their children as well as carrying out household chores while men go out in a bid to fend for the family. Scholars have researched gender inequality in the African music industry. Bakare (2022) posits that women are equally creative as men but still face marginalization in the creative sector. According to Bambalele (2022), in South Africa, the major outcry for women in music is that they are treated as sex objects, physically abused, exploited, underpaid as well as discriminated against based on gender.

In Africa, women are well represented in the performance of music because it seems as if women's role in this industry is entertaining through singing and dancing and nothing else. Some families disown their boys and girls who pursue roles in the music industry hence background has a great impact on one's career choices in this field. Bakare (2022) argues that whilst most Africans who are in the music business are making a living in the global market (though a marginal one in many cases), women who are part of the ecosystem are severely underrepresented. An observation she made in the Nigerian music charts revealed that women's songs that were played on-air were those of self-producers and that on "African Heat", Spotify never played a song produced by a female. This indicates the level of marginalisation of women in music distribution channels as they are also masculinised and reserved mainly for males.

Patriarchy has been cited as the main cause of gender inequality in the Zimbabwean music industry. Katiji and Muranda (2023) say females in Zimbabwe are treated as not equal to their male counterparts hence their difficulties in getting involved in the music industry. Females were viewed as belonging to the house to look after the family. However, some females in the music industry had survived stereotyping due to support from their spouses and family members. Patriarchy is a system in a society where the power to govern in all spheres is given to men whilst women are excluded.

However, we note that music technology is not so much about power and governing, but about interest in technology. Mutekwe et al (2011) urge the “need for all stakeholders involved to help girls by deconstructing the gender role stereotypes or perceptions of roles society considers appropriate for girls and boys”. Males and females must learn the same curriculum so that females get an opportunity to take up technological courses. Women make up 51 percent of the population of Zimbabwe and therefore have the capacity to attain parity in the music industry (Vengesai, 2019). If women begin to occupy audio engineering roles they act as role models and take up mentoring positions for those females who would want to pursue the same field. There is need for a change of mindset amongst males and females concerning gender roles in audio engineering. Females also have a role to play in dealing with these gender disparities by supporting each other in trying to have role models in the field. UNESCO pioneered a project which focused on women’s empowerment and gender issues in Zimbabwe (Breire, 2020). These researchers concentrated on gender disparities in the Zimbabwe music industry, and this current study compliments them by focusing on gender disparities in the country’s audio engineering profession.

4 Obstacles faced by female audio engineers in Zimbabwe

Firstly, respondents reported lack of expertise and experience as hindrances to gender balance in audio engineering. The male respondents were of the view that females lack expertise and they are not experienced enough to carry out roles in audio engineering. Male singer Tedious Gandanhamo (personal communication, 23 December 2022) said, “maybe it is because they have not done much to compete with their male counterparts in order to be recognised, works should speak for themselves.” Addington Dzingirayi (personal communication, 18 October 2022), a male audio engineer, said:

I was formally trained and did a lot of workshops. In one of my classes, there were 4 females out of 31 classmates. I dropped out because I felt I was not benefiting as I was above the curriculum being offered. Later on, I did one on one training at home with tutors whom I hired.

Donald Masunungure, a male singer (personal communication, 16 December 2022) suggested the need for workshops and awareness campaigns towards equalising opportunities in audio engineering to all Zimbabweans. Females do not possess the same audio engineering qualifications as their male counterparts. From the above data, the male engineer cites that he was trained in various platforms. He cites that he dropped one program because he felt that he was more knowledgeable in the area of study hence the curriculum was too shallow for him. Contrary to that, females explain their excitement after receiving their first training. The maximum training programmes the females have completed are two, hence males are more experienced than women on average. There is need for females to seek the necessary skills and experience for them to survive in the field of audio engineering. Most females are not able to play musical instruments which are a pre-requisite for one to be successful in music production.

Brighton Chirumbwana (personal communication, 7 December 2022) believes that audio engineering is difficult because artists are tough, hence they need someone strict who will be able to handle them. “If you see a lady who can stay in the field of sound engineering, it shows how bold and tough they are”, he says. Roselyn Dube, a female trainee audio engineer (personal communication, 12 December 2022) concurs with the above statement as she explains:

Some artists do not get satisfied with their final products and they complain. There is a certain artist who came drunk and he started complaining whilst in the recording process before the song was mixed and mastered. In the studio, you find different types of people so you have to develop social skills so that you can handle the different characters you meet.

Sound engineers who possess the requisite skills can confidently handle such artists. Bridging the knowledge and experience gap will empower women audio engineers to excel in their job. Females should train and gain skills in audio engineering. The extent to which women perform in audio engineering because of prior

learning and experiences with the technology (Venkatesh et al., 2016) has been found to be a significant predictor of behavioural intention and technology use.

The classroom environments were reported to be accommodative hence females should enrol to learn. Novuyo Dube, a female singer and trained audio engineer (personal communication, 07 December 2022), described her classroom experiences as fun and educative. She highlighted that the tutors treated everyone the same regardless of their gender. She says: "I had fun in class as I gained so much skill and I learnt a lot from the boys as well". Nomazulu Malandu, a female music technology university graduate (personal communication, 13 October 2022), agreed that the classroom experience was accommodative as the students were all treated the same regardless of their gender.

The second obstacle that was reported has to do with sound engineering equipment. Dzingirayi (2022), said: "When you begin this profession, you start by lifting equipment, and ladies do not want that because most of the equipment is heavy." This shows how manufacturers of audio equipment inadvertently masculinise the field. Dube (2022) explained that she has not been practicing audio engineering although she had studied it because she has not acquired enough equipment. Hence, she is currently into performance. Malandu (2022) mentioned that she managed to start practicing because she immediately purchased her equipment and she did not have to wait for someone to employ her. Chirumbwana (2022) mentioned a certain female audio engineer (name withheld) who is no longer practicing but was very passionate about her profession. The reason for her quitting is unknown. He says: "One thing that I know is that once ladies dedicate themselves to something, they put their effort hence there is no limit. Ladies must pursue audio engineering.

Dube (2022) explained how her studies were affected by the covid 19 pandemic where they had to work from home and she did not have the necessary equipment for her to continue practicing her craft. She highlights that "... Covid 19 disturbed us because engineering is something that needs practice so we were at home and there was no equipment for us to use so that we practice." Therefore, many females fail to develop their skill because of lack of equipment. The degree to which a woman believes that the technical infrastructure is able to support her use of the sound system is key to their success in the audio engineering role. It is important to have access to reliable resources; technical infrastructure, knowledge, training, and support, which can impact women's willingness to venture into audio engineering (Venkatesh et al., 2016). The extent to which women believe that using audio engineering gadgets will help them excel in job performance (Venkatesh et al., 2016) is a key driver towards achievement.

The third reported hindrance is abuse. Dube (2022) said: "Personally I have never encountered cases of sexual harassment but I have heard of women who complain of being sexually abused by males in the industry." Dzingirayi (2022) clarified the dangers that female audio engineers are exposed to. He explains how these roles involve lots of travelling as well as working till late hours. He states, "females are vulnerable to abuse as they travel with males. At times you will be given one room to share as the band and engineers which mostly will be males, which then exposes the female that will be on board." He reiterates: "In Zimbabwe, it is difficult to operate. If you are a male engineer, it is easy to tour with female artists, but if you are a lady touring with male artists it is very hard. That is why it is difficult for a lady in Zimbabwe to be an audio engineer." Dube (2022) explains that "when some artists would find me alone in the studio, they would tell me that they love me. They always had a mind of initiating sexual relations at work which made it very difficult for me." Gloria Chikepe, a female live sound engineer (personal communication, 25 October 2022) described how certain females were not comfortable being around a man. She states that she was never sexually harassed in any form. She says: "If you entertain men like you are of them; they will not try to make any sexual advances on you." In her relations with her male counterparts, she was confident to contribute whenever there was a need and she never faced any negative treatment.

We observed that some men in the music industry abuse their power and inappropriately initiate sexual relations with female musicians and audio engineers. They usually take advantage of young and upcoming women because they will be seeking fame and success. Managers, record label owners, and producers can forcefully initiate a relationship in exchange for favours such as employment opportunities or free services. The culprit can abuse women specifically because their leading positions make it challenging for women to turn them down or expose them. Out of fear that their career can come to an end, females usually give in to the abuse. Females tend to choose situations that will benefit them although at times these men never

fulfil their promises. A woman may embrace forced sexual relations not because she wants to but due to a desire to enter the male-dominated audio engineering field.

Verbal abuse is also a common problem. We observed males who pass negative remarks to aspiring women audio engineers. Females take offence at their efforts not being recognised. We also observed some family members and educational mentors in Zimbabwe also give remarks which demoralise girls who would want to pursue audio engineering roles. Some parents and teachers pass negative comments which discourage their girl child from choosing the career they desire. Such remarks cause females to lack confidence and shun audio engineering roles. Losing confidence is another real-world expression of high neuroticism (Dalton & Ghosal, 2018). Pre-conceived ideas about women's inabilities contribute greatly to how society views females who pursue engineering roles. There is a need for a change in the way females in the audio engineering field are addressed.

Fourthly, respondents indicated disrespect as another challenge. We observed that females are disrespected and undermined in the field of audio engineering. Some men believe that women are less knowledgeable when it comes to music technology. According to Shona cultural beliefs, women are not permitted to speak out and challenge their husbands in public lest they are considered disrespectful. In an effort to remain submissive to their husbands, some women will endure all forms of disrespect. Dube (2022) describes how she was belittled by a fellow musician who was supposed to do a collaboration with her. She states, "He made me feel like they know everything and I don't, they have a better voice and I don't and they can produce better and I cannot. The project had to die. I prefer being alone in the studio as it feels safer, nobody undermines you or judges you". This shows the significance of social influence when women engage audio engineering technology (Venkatesh et al., 2016).

Disrespect is also revealed by the degrading comments which are received from males. Chikepe (2022) narrated an incident whereby the fans of her artist did not approve of a female engineer. She recalls a male sighing to the artist that "... *waakutora vakadzi kuisa muband, ah! Zvakuzodakwa manje*" (you are now taking females and putting in the band, ah it will be a disaster now). Although the male later on apologised, Chikepe says that she was offended. Dzingirayi (2022) is of the same view as he says: "Male artists do not expect to find lady engineers, they prefer males".

The outcry is the same in the Zimbabwe music industry where female gospel artist Fungisai Zvakavapano says a woman has to be "three or more times better than their male counterparts to enjoy half the attention and appreciation the male counterpart gets, whether it is from the audience or the corporate world (Kabaya, 2019). If this remains so, females might remain underrepresented in the music industry.

Stereotypes were reported as the fifth obstacle. Masunungure (2022) said "women have an inferiority complex as they think that audio engineering is not their job but for males". The singer Masunungure (2022) commented: "Since there are not many female producers, there is no inspiration." As female role models in audio engineering begin to increase, a rise in the number of women pursuing the field becomes evident. Some women who have managed to enter this area have since quit because of the scarcity of their gender. Gandanhamo (2022), said: "One thing for sure, once a female produced project is excellent and marketed well, another female producer will be inspired and encouraged to join and they will also be recognised by all stakeholders in the industry." There is need for females to take part in audio engineering for others to emulate. This will reduce women's fear. Malandu (2022) described her classroom experiences. She comments: "it is quite funny because on the first day people would ask about the program that I had enrolled in. They got shocked to learn that I enrolled for music technology. That is where I see the stereotyping of this discipline." Malandu added that she was very happy to find other ladies in the technology class although they were few. Gandanhamo (2022) said:

Women are not willing to take it up as it is a male-dominated field. The few that could be courageous to take it up are discouraged and face many challenges like being labelled and criticised thus end up being overshadowed or drop out.

Gandanhamo (2022) also expressed that "maybe they have not done so much to out-compete the male counterparts to be recognised, works should speak for them." Studies about stereotype accuracy in audio engineering are needed. The above evidence reveals that women in this industry are facing prejudice because

of their gender, which then has a negative impact on their participation. The absence of women from audio engineering roles affects those who aspire to enter the field. Mathew et al. (2016:4) indicate that “most women tend to look for instructors or female professionals who are aware of the differential experiences of women and men.” In various cultures, children learn by observing what their role models do, hence a lack of females in audio engineering might discourage girls who would want to study music technology. We observed that some females who are greatly talented in technology fail to pursue the field because they presume it is a male domain due to the invisibility of women. In Zimbabwean schools and tertiary institutions, most females shun technological courses because fewer women are interested in music technology than they are in other technical and engineering occupations.

Women have roles of child-rearing and doing household chores whilst men have ample time to pursue their gifts and talents. Women’s pursuit of music production despite the patriarchy that characterises the industry suggests that positive attitudes can challenge the existing stereotypes. There is a shift from collectivism to individualism in modern societies. Among many other things it implies a move away from behaviours that are generally viewed (and correctly recognized) as gender-typical to the development of individual preferences, with some women developing male-typical preferences. There is a slippery slope where women are coaxed into male-typical roles and behaviours because these are considered more prestigious than female-typical roles and behaviours. This is not necessarily good for those women who are not naturally inclined to act male. It would simply invert the demand for feminine roles and behaviours that is typical for traditional societies. It would mean rewarding high-testosterone rather than low-testosterone women.

The music industry is made up of men and women and both sexes can swap gender roles as the need arises. God created people with the same type of ears, hence all can engineer sound. Prejudice or discrimination based on sex or gender makes it very difficult for a woman to penetrate audio engineering. The studio environment itself is populated mainly by males, and with mainly males at the top of the hierarchy. Coupled with the heavy equipment and intricate software used, this makes it a male territory. Female audio engineers whom we interviewed narrated their experiences of working in the field where their cultural backgrounds determine how gender roles are distributed in their families. The reason why females struggle is because of the characteristics they acquired socially from the family. The patriarchal society instils feminine qualities of gentleness and submission on women which then affects them when they are carrying out their audio engineering duties as they struggle to handle difficult male clients, especially those who cause trouble. Women ought to be tough and learn how to handle people in the studio. Artists can take advantage of females they find in the studio and end up discouraging them from taking part in this male-dominated role.

The sixth reported obstacle is fear. Dzingirayi (2022) said: “Women fear the unknown because they think this job is for men.” Masunungure (2022) said: “The job involves lots of work so females think they are not able to handle it.” Dube (2022) stated:

I am a producer but I haven't taken it seriously. In my class, there were 10 girls and only one of us was serious about engineering. We have made men feel like they are the bosses in sound engineering. We lack interest and motivation and feel we cannot compete with them.

Malandu (2022) said: “I think there are few females because women may just feel diffident and inadequate.” Nomazulu speaks of how she operates her own studio and is currently producing her own music. Gandanhamo (2022) said: “Women face many challenges like being labelled and criticised thus ending up being overshadowed and even dropping out.” Criticism instils fear in women who wish to pursue audio engineering roles. Gandanhamo (2022) says, “There are no limitations to entry, it is open for all so if they are afraid to take it up, it is nobody’s fault.” Dube (2022) said women ought to get out of the comfort zone and face their fears and start producing music. A change of mindset by females on their career parts can mitigate the gender disparity that exists in audio engineering roles.

We observed that females fear taking up roles in audio engineering, resonating well with personality psychologists’ finding of average to high female neuroticism (Dalton & Ghosal, 2018). Primary agents of socialisation play a crucial role in removing fear and developing interest in music technology in the girl child. Parents ought to support the endeavours of their children so that they pursue the careers that they most desire. The family acts as the first agent of socialisation where children are groomed before they are

exposed to the world. Family support for the girl child can be through providing financial and emotional support, as well as protection from abuse. Teachers also impact the career choices of learners. The church should also play a role by encouraging girls and women to partake in sound engineering. Audio engineering should be a free domain to those who wish to pursue it regardless of their gender. These social circles that also include teachers, co-workers, elders, friends, and peers should positively influence women's intention to use sound engineering technologies (Venkatesh et al., 2016).

Lack of interest in audio engineering roles was reported by respondents as the seventh hindrance. Clive Mukundu (personal communication, 8 October 2022) argues that females are not oppressed but only lack interest and dedication in audio engineering. He explains:

There is a lady I have been encouraging for a very long time to pursue engineering because I saw a talent in her but she is still not pursuing it. I even offered her to train keyboard but to no avail. The husband is also a musician and he supports her musical career.

Mukundu (2022) also believes that the pressures of motherhood may affect married women as they have to breastfeed and take care of their children. Dzingirayi (2022) described how women lack interest in these audio engineering roles. He says: "I created a WhatsApp group called Sound on a Sound to promote lady engineers and we were 400 in that group which had only 4 ladies." Dzingirayi (2022) says, "I have a male mentor whom I imitate and who inspires me to work." Females therefore need mentors of the same gender to guide and inspire them without being judged. Dzingirayi indicated that he is part of Audio Engineers Society of Zimbabwe, a group of audio engineers which aims at improving Zimbabwe's Sound. It was founded by a female. However, out of 12 committee members there are only 2 females. Women cannot be promoted if they are not in this society. Females are therefore encouraged to take interest and participate in the male-dominated audio engineering industry. Gandanhamo (2022) says: "The females are the ones to take up the challenge and prove their ability. It is all about them believing in themselves."

These responses show that females are not interested in participating in audio engineering roles. To a certain extent, this opinion is true. However, there are reasons behind this lack of interest. As alluded to by Mukundu (2022), traditional gender roles affect women because these give them no room to practice their career prospects. University admission statistics reveal that fewer women than men enrol in music technology or audio production programs (Mathew et al., 2016). This suggests a pre-existing lack of interest. Teenagers might feel motivated when they see womenfolk working so confidently in technology hence women should be given the platform to practice audio engineering so that they become role models for others to emulate.

Females lack interest in audio engineering roles and Music Technology studies hence they are outnumbered by males in university programmes where we work. In music performances, for instance, women usually sing and dance whilst men play instruments and manage live sound. Perhaps this is because women are better than men at singing and dancing. Gender balance is achievable if strategies are used in order to promote parity in the audio engineering industry in Zimbabwe. Whether equal numbers of males and females in the profession are desirable, whether equal representation is always a good thing, and the benefits and demerits of gender balance are beyond the scope of this study. Women's degree of eagerness to adopt cutting-edge sound engineering gadgets, coupled with their belief in their own capacity to learn and excel (Venkatesh et al., 2016) in the sound engineering profession is very critical.

Given the obstacles highlighted by the respondents, the Zimbabwe music industry ought to make deliberate efforts to try and deal with the gender disparities in the field. Females so inclined should be given the platform to practice audio technology. While this is desirable, it will not lead to equal representation if most women are turned off by anything technological. Without spaces to learn the trade and technical skill of music production, women cannot have access to the audio engineering industry. Exposure to technology has an influence on girls who would want to be involved in audio engineering roles. Initiatives such as Spotify and SoundGirls play a big role in promoting female audio engineers. The Zimbabwean music industry can adopt several strategies in an effort to promote the presence of women who are scarce in audio engineering roles. A positive attitude and development of interest in sound engineering are the starting point for women. Women are invisible yet they can also play an important part in the audio engineering industry in Zimbabwe.

The local music industry could adopt the same principle and deliberately target females to take up audio engineering occupations so as to promote gender parity in the field. Organisations specifically designed for female audio engineers could be established to offer training to those with interest in the field as females ought to be exposed to audio technology. Such organisations could be established in Zimbabwe where females are given the platforms to manipulate audio technology without facing any form of prejudice. Initiatives have been carried out in Zimbabwe to try and encourage girls to engage in audio engineering. Female audio engineers are currently being trained in colleges and universities in Zimbabwe with a view to bridge the gender disparities in the creative industry. However, these initiatives are still very few. To produce the desired results, training and promotions should be ongoing until a change is realised.

5 Conclusion

The paper has revealed lack of knowledge, stereotyping, abuse, patriarchy, lack of interest, lack of equipment, fear, and disrespect as factors leading to gender disparities in Zimbabwe's audio engineering industry. Women continue to be scarce in audio engineering roles in Zimbabwe although efforts have been made to promote them. Marginalisation, prejudice and misogyny continue to be widespread in the audio engineering industry of Zimbabwe. There is a need to find ways of promoting gender balance by addressing the needs of the females. Women play an important part in enhancing the audio engineering industry of Zimbabwe. Gender balance in this field is vital as it aids the development of the Zimbabwean music industry. The data collected proves that females are scarce in audio engineering roles. The reasons include abuse, disinterest, lack of recognition, expert knowledge, skills and experience, and the prevalence of fear. Women lack confidence and motivation to take up roles such audio engineering which are considered masculine.

Patriarchy is a traditional system that gives men power over women in some aspects of life in Zimbabwe. Women are taught to submit to men as they are considered inferior to men. It is very difficult for women audio engineers to succeed in such a patriarchal society as they might not be allowed to occupy the space. When females fail to find role models, they are not inspired to enter the field. It is therefore important for females to be awakened to how they find themselves with limited opportunities to pursue their interests and ambitions in audio engineering roles in a patriarchal system. We conclude that the audio engineering industry is a space where women can use their presence to challenge patriarchal structures, express their artistry, and promote social justice.

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