

# JOURNAL OF AFRICAN ARTS & CULTURE

## CHARACTERISING LEATHER OFFCUTS AS CREATIVE MATERIALS FOR SUSTAINABLE AFRICAN VISUAL ART

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**CITATION:** Arthur, A. K. & Owusu, K.F. (2026). Characterising leather offcuts as creative materials for sustainable African visual art. *Journal of African Arts and Culture*, 9(2), 358-376.

### Abstract

*Leather offcuts generated by footwear production are often discarded despite their potential value for sustainable artistic practice. This study characterises leather offcuts collected from footwear production hubs in Kumasi and Tamale, Ghana, to examine their suitability for African visual art. Adopting a qualitative interpretivist approach, 22.6 kg of leather offcuts were analysed through systematic observation using five material characteristics: quality, size, shape, type, and colour. The findings reveal that leather offcuts exhibit considerable diversity across the two production centres. Kumasi offcuts were predominantly medium-sized, mineral-tanned or synthetic, displayed greater colour variation, and generally had fewer defects. In contrast, Tamale offcuts were mostly small, vegetable-tanned, exhibited limited colour diversity, and showed more pronounced natural defects. Across both locations, irregular shapes and small fragments dominated, providing opportunities for mosaics, assemblage, relief sculpture, appliqué, patchwork, and other material-driven artistic practices. The study demonstrates that systematic material characterisation can transform leather offcuts from perceived waste into identifiable creative resources that support circular economy principles within African visual art. The study contributes to sustainable art practice and provides an evidence-based framework for artists, designers, educators and creative industries seeking to maximise the value of reclaimed leather materials.*

**Keywords:** *leather offcuts, material characterisation, African visual art, sustainable art, circular economy*

## 1. Introduction

Skins and leather continue to play an important role in the artistic, cultural and creative traditions of African societies (Arhin Jnr et al., 2024). Arthur (2018), for example, highlighted different ways in which skins and leather are used by Ghanaian chiefs for ceremonial, body and household items that reflect cultural identity and craftsmanship. Similarly, other studies have shown how skins and leather are used in costumes in contemporary dance (Dennis, 2024) and for bata drumming performances in kola nut divination (Osunniyi, 2025). Although these examples demonstrate how different artifacts obtained from artistic processes in leatherwork contribute to culture, Amali and Badeji (2025) suggest that the opposite could also be true, at least in the case of traditional Nigerian theatre. Irrespective of the direction of the relationship, it could be argued that leather as a material is an indispensable resource for African culture. Thus, in a fast-changing society where natural resources are becoming scarce, there is a need to reimagine waste as valuable creative resource. This notion of using waste as resource is not new; and in the leather and leather goods industry, researchers (Arthur, 2021; Arthur, 2025; Koparan & Harmankaya, 2024; Özdemir, 2023) have started to explore different use cases for by-products of leather good production processes like offcuts and buffing dust. Nevertheless, creative reuse in Ghana continues to be limited with most of these materials disposed in landfills as waste (Arthur, 2026).

Ashton (2018) as well as Chen and Chen (2020) have emphasised the influence of leather offcut characteristics in determining creative reuse. Specifically, they stress the need to be intentional in creating artifact designs that align with the characteristics of leather offcuts and enable optimal reuse with ease. While existing leather offcuts from producers in selected footwear production hubs in Ghana have been confirmed to possess physical properties that make them suitable for reuse (Arthur, 2026), there is limited understanding of their detailed characteristics and their suitability for different artistic applications in African visual art. Without such knowledge, artists, designers, and craft practitioners must rely largely on experience and experimentation when selecting and utilising these materials. Again, although previous studies have demonstrated the potential for reusing leather offcuts, little is known about the physical characteristics that determine their suitability for different forms of African visual art. Consequently, artists continue to rely on intuition rather than evidence when selecting reclaimed leather materials. In this light, this study addresses the following questions: 1. What are the dominant physical characteristics of leather offcuts generated in Ghanaian footwear production? 2. How do these characteristics differ across production centres? and 3. How can these characteristics support creative applications in African visual art? This study contributes to sustainability scholarship by introducing a material characterisation framework that connects physical properties of reclaimed leather with creative decision-making in African visual art. The study further provides one of the first comparative analyses of leather offcuts from Ghanaian footwear production hubs.

## 2. Review of Related Literature

Leather offcuts can be characterised in different ways. Existing studies on leather characterisation have predominantly focused on chemical, mechanical and industrial performance properties, reflecting the needs of manufacturing and product engineering. Comparatively little attention has been given to the physical characteristics that influence artistic reuse, particularly within African visual art contexts. Consequently, knowledge concerning the creative implications of leather offcut characteristics remains fragmented. Ozgunay et al. (2007), for example, has given exposure on chemical and mechanical

properties; rather than physical properties. According to Asubonteng (2010) and Adu-Asabre, (2011), leather offcut quality mostly depends on the number of defects arising from ante mortem and post mortem activities in leather processing. These defects could include marks, wrinkles, flay cuts, and scratches that affect the aesthetic appearance of leather. Adu-Asabre (2011) explains that quality leather is one that shows signs adequate tannin use, is free of fungi attack, and is bright, smooth, spotless, thick, and big.

Leather offcut shapes are derived from the patterns used in designing the different part of the footwear – uppers, lining, insole, heel, and sole (Choklat, 2012). Whereas footwear patterns showcased by Choklat (2012) indicate a potential for more irregularly shaped polygons and a few semi-circular and rectangular-shaped offcuts, footwear patterns for cushion trainers presented by Promjun et al. (2012) suggested a possibility of higher quantities of curved and semi-curved offcut shapes. These suggest variation in leather offcut shape depending on the type of footwear produced with shapes generally ranging from circles, ellipses, triangles, and irregularly shaped polygons from observing 3D patterns of designed uppers in a study by Di Roma (2017).

Vincent et al. (2019) found three different sizes of thermoplastic composites in footwear manufacturing; namely, small, medium, and large. Each of these size categories varied in width and length as follows: small offcuts had width  $\leq 60\text{mm}$  and length  $\leq 150\text{mm}$ ; medium offcuts had width  $> 60\text{mm}$  but  $\leq 160\text{mm}$  and length  $> 150\text{mm}$  but  $\leq 420\text{mm}$ ; large offcuts had width  $> 160\text{mm}$  but  $\leq 260\text{mm}$  and length  $> 420\text{mm}$  but  $\leq 760\text{mm}$ . Despite this, Di Roma (2017) indicates that small leather offcuts usually dominate and can sometimes be centimetre-sized. According to Choklat (2012), offcut size can depend on the skill of the manufacturer as inexperienced producers may struggle to maximise leather value for some patterns leading to larger offcut sizes.

Leather offcut type is obtained from the characteristic of leather (Adom, 2015) on the basis of source, tanning method, animal type or finishing technique. Classification by source involves a choice between two opposing options natural i.e. derived from animals or synthetic i.e. derived from polymers. Leather categorisation by tanning also implies choosing between vegetable tanned i.e. obtained from plant-based tannings or mineral tanned i.e. obtained from mineral tannins and water-soluble salts such as chromium, aldehyde, iron, titanium, aluminium, and zirconium as a tanning agent. Sorting by animal type and finishing technique produces multiple leather types. While examples of leather types based on animal type includes cattle, calf, goat, sheep, buffalo, deer, pig, frog, alligator, ostrich, and lizard (Adom, 2015), leather types determined by the finishing technique could consist of aniline, pigmented, and patent leather (Zengin et al., 2017). Aniline leather is dyed and has no coating to maintain its natural look; pigmented leather is coated with a protective topcoat that gives it an opaque look; and patent leather has a glossy and shiny feel.

Leather offcut colour is primarily influenced by leather product colour and this is driven by clients' colour preferences. Goguen (2012) discovered that best-selling colours for shoes made by manufacturers like Nike and Puma included black, brown, red, blue, black, silver, grey, and white. Soni (2014) also found that black, brown, burgundy, and dark tan featured prominently as preferred footwear colours for formal occasions; but black and brown were most popular because they aligned better with almost any other colour. Results from the study by Ackay et al. (2012) showed differences in colour choices for teenagers based on gender. While black and white was popular for male teenagers, red dominated as preferred colour for female teenagers. Further, Sakar (2010) identified that children were attracted to a variety of colours when selecting footwear. Deng et al. (2010) observed that some footwear manufacturers combined different colours in footwear design; and respondents in their study choose different

shades of the same colour rather than contrasting colours. Inferring from the above, it appears that leather offcuts could offer multiple colour options. Collectively, these studies demonstrate considerable variation in leather offcut characteristics; however, they provide limited insight into how these characteristics influence artistic applications.

### **3. Methodology**

This study adopted a qualitative data analysis approach in line with requirements for interpretivist research philosophy (Creswell & Creswell, 2022). The unit of analysis was leather offcuts generated by 37 footwear producers in two footwear production hubs in Ghana; namely, Kumasi (20 footwear producers) and Tamale (17 footwear producers). These footwear producers were identified through snowball and purposive sampling techniques because there was no comprehensive sampling frame and to ensure the inclusion of producers manufacturing different footwear types. Leather offcuts were collected from the participating footwear producers over two production cycles in each study location to capture variations associated with different footwear designs and production activities.

Offcut sampling focused on the pile of leather offcuts earlier collected and was guided by the principle of data saturation (Saunders et al., 2018). Thus, offcut selection for analysis continued until additional offcuts yielded no new observable characteristics relating to size, shape, colour, leather type and quality. Sampling was then discontinued, and the collected material weighed. The final samples comprised 13 kg of leather offcuts from Kumasi and 9.6 kg from Tamale. Sample size was reported by weight rather than number of pieces because individual offcuts varied considerably in size and geometry, making simple counts less meaningful. Weight also reflects common practice in material recovery and waste characterisation studies, facilitating comparison with related research.

Data collection was guided by an observation checklist. According to researchers (Schmuck, 1997; Kawulich, 2005; Hair et al., 2011), observation as a data collection tool is appropriate in qualitative studies. The observation checklist was developed from categories identified in the literature on leather waste characterisation and material classification. Although the instrument was not formally validated, grounding the checklist in established literature enhanced its content relevance. A studio assistant independently verified the categorisation of the offcuts to improve the credibility of the observations. Given that the study employed predetermined descriptive categories rather than interpretive coding, formal intercoder reliability was not conducted.

Each offcut was examined individually and its physical characteristics were systematically recorded. This process transformed the physical material into a textual dataset for subsequent analysis (see Table 1). The observation records were then analysed following the qualitative procedures of Miles et al. (2020). Observations were first reduced into the predefined material categories, then displayed to facilitate comparison within and between the Kumasi and Tamale samples. Finally, patterns, similarities and differences were interpreted to identify the dominant material characteristics of the leather offcuts and their implications for creative applications.

**Table 1: Except from Observation Records**

| Sample No.                                                                                                       | Size   | Notes                                                                                        | Shape     | Notes                                                                          | Colour       | Notes                                      | Type             | Quality    | Notes                                                                                         |
|------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------|--------------|--------------------------------------------|------------------|------------|-----------------------------------------------------------------------------------------------|
| 1 – 80                                                                                                           | Small  |                                                                                              | Irregular | triangles, long rectangle, ellipse                                             | Reddish wine |                                            | Vegetable tanned | Multiple   | No defects - 52, hard - 4, holes - 9, peels - 15, wrinkled edges - 5                          |
| 81 – 123                                                                                                         | Small  |                                                                                              | Irregular |                                                                                | Reddish wine | About 15 appear dyed with patches of black | Vegetable tanned | Multiple   | No defects - 34, holes - 5, wrinkled edges - 5                                                |
| 124 – 155                                                                                                        | Small  | Tiny strips of 1 to 5mm width with small triangles                                           | Irregular | rectangular strip, small triangles                                             | Reddish wine |                                            | Vegetable tanned | No defects |                                                                                               |
| 156 - 159                                                                                                        | Small  | 1 long strip with small triangles                                                            | Irregular | rectangular strip, small triangles                                             | Reddish wine |                                            | Vegetable tanned | Multiple   | Stains - 2, no defects - 2                                                                    |
| 160 - 177                                                                                                        | Medium | trapezium - 100 by 120 by 90, long strip - length of 540mm and with of between 15mm and 40mm | Irregular | rectangular, trapezium                                                         | Reddish wine |                                            | Vegetable tanned | Multiple   | nig holes - 4, very smal holes - 4, no defects - 2, scratches - 2, wrinkled edges/creases - 8 |
| 178 - 183                                                                                                        | Small  |                                                                                              | Irregular | 3 triangular in nature                                                         | Dark Purple  |                                            | Vegetable tanned | Multiple   | Holes - 2, no defects - 16                                                                    |
| 184 - 185                                                                                                        | Small  | triangle - 55 by 180mm                                                                       | Both      | 1 regular - triangle, 1 irregular L shape with zig zag edges                   | Pale Black   | appears dyed with patches of reddish brown | Vegetable tanned | No defects |                                                                                               |
| 186 - 203                                                                                                        | Medium | lower limit of medium                                                                        | Irregular | 1 long strip, different shapes triangular, trapezium and rectangular in nature | Pale Black   | appears dyed with patches of reddish brown | Vegetable tanned | Multiple   | holes - 6, wrinkled edges - 3, peels - 3, stains - 12                                         |
| 204 - 241                                                                                                        | Small  | 3 tiny strips, 4 long strips                                                                 | Irregular |                                                                                | Light Khaki  |                                            | Vegetable tanned | Multiple   | hard - 2, holes - 3, stains - all 38, wrinkled edges and creases - 20                         |
| <div> <div>▶</div> <div>Characterization - Kumasi</div> <div>Characterization - Tamale</div> <div>+</div> </div> |        |                                                                                              |           |                                                                                |              |                                            |                  |            |                                                                                               |

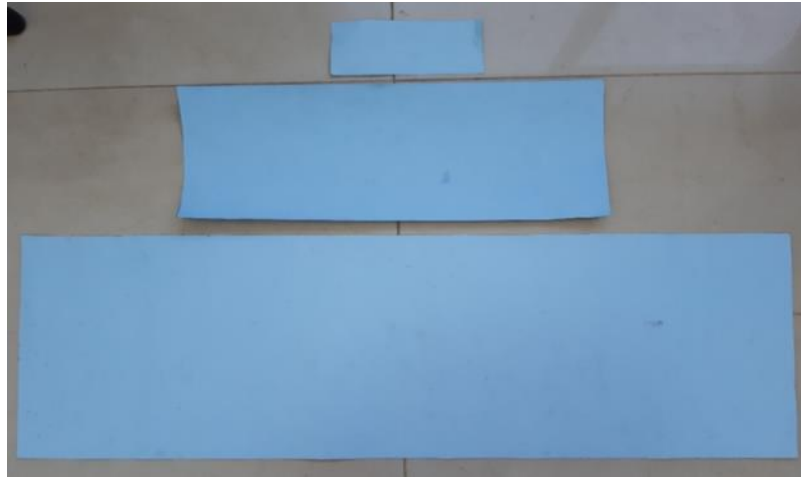
Below are specific procedures followed by the researcher in collecting data on each of the characteristic features.

### ***Grain surface quality of Leather Offcuts***

A review of the literature in section 2.3.1 above indicated that for any sheet of leather, the presence of cuts, scratches, holes, wrinkles, peeling, and stains constitute defects that decreased the value of leather. Therefore, the data collection process for understanding grain surface quality involved an examination of each leather offcut sampled, using a magnifying glass to identify defects. Defects identified for each offcut sampled were then recorded on the observation checklist.

### ***Size of Leather Offcuts***

Size of LO was assessed using a scale of small, medium, and large (where small offcuts had width and length less than or equal to 60mm and 150mm respectively; medium offcuts had widths of between 60mm and 160mm and lengths of between 150mm and 420mm, and large offcuts had widths of between 160mm and 260mm with lengths of between 420mm and 760mm). Using these scales and dimensions as a guide, the researcher created leather templates that indicated what small, medium, and large offcuts could look like (see Figure 5). Thus, data collection for size was done as each sampled offcut was visually compared with the templates and observations recorded on the checklist.



*Figure 1: Templates Used for Estimating the Size of LOs*

### ***Shape, type, and colour of LO***

Data collection on the shape, type, and colour of leather offcuts, involved a visual examination of each offcut sampled to identify their shapes, types, and colour. Observations were then recorded on the observation checklist for each of the offcuts sampled.

## **4. Results**

### **4.1 Characteristics of LOs in the Kumasi Metropolis**

#### **4.1.1 Quality of Leather Offcuts**

Two thirds of the leather offcuts in the sample were free of defects. Defects identified on the remaining one-third of leather offcuts were mainly stains. Stains included white, black, grey, or brown (see Figure 2) spots caused by hardened glue, paint spills, pen and pencil marks or dirt. In some cases, stains were very tiny and not visible without a magnifying glass. Discolouration of leather offcuts, especially at the edges and traces of fingerprint marks were also observed. Other defects including cuts, holes, scratches of different sizes, peels, creases, and fold marks were also discovered on the surface of some of the LOs (see Figure 2).



*Figure 2: Minor defects observed on leather offcuts sampled in Kumasi*

#### 4.1.2 Shape of Leather Offcuts

Most of the leather offcuts (98%) sampled were irregularly shaped (see Figure 3). However, most of them had a rectangular or trapezoidal perimeter outline. In some cases, these offcuts came in a U, V, L, zigzagged or arrow-shaped form (see Figure 4). There was also a dominance of tiny triangles connected through thin rectangular-like strips. Some of the offcuts were found to easily separate into several regularly shaped pieces of different sizes. In one example, observations showed that it was possible to easily cut out one large-sized rectangle and another long rectangular strip from one of the samples. Another sample offcut showed the potential to contribute one large-sized rectangle and three small rectangles. A third leather offcut also exhibited the potential to give one large-sized trapezium and several small irregular pieces. Within the few regular-shaped offcuts identified, rectangles dominated, followed by triangles, trapeziums, semicircles, squares, and ellipses in descending order (see Figure 5). A handful of the leather offcuts sampled were discarded patterns featuring footlike and heart-shaped designs while some leather offcuts had metal buckles attached and was circular (see Figure 6). One of the offcuts looked like an opened-up discarded boot that was rectangular with curved and straight edges on different sides.



*Figure 3: Irregular-shaped leather offcuts observed in Kumasi sample*



*Figure 4: Examples of Uniquely-shaped LOs Sampled in Kumasi*



*Figure 5: Regular-shaped leather offcuts observed in Kumasi sample*



*Figure 6: Discarded Patterns observed among leather offcuts in Kumasi sample*

#### **4.1.3 Size of Leather Offcuts**

Most of the leather offcuts sampled fell within the mid to upper limit of the medium-sized category (see Figure 7). A few unique samples exceeded the upper limit of the medium range on one side but fell short on the other side. For example, in one sample, the length of the leather offcut went beyond the upper limit of the medium-size category, but some portions of the width were smaller than the maximum expected. In another case, the width of the leather offcut fell below the upper limit dimension for medium-size categorisation but the length of the offcut far exceeded the maximum length dimension (see Figure 8). In these cases, the surface area was used for the size classification.



*Figure 7: Examples of Medium-sized LOs Sampled in Kumasi*



*Figure 8: Examples of LOs that Exceeded the Upper Limit in Kumasi*

Small-sized LOs came second in terms of quantity. However, most of these fell within the lower limit of the range. In some cases, leather offcuts came as small strips ranging from 5mm to 30mm wide and connected to small triangles (see Figure 9). For some other offcuts in the small category, the size was even smaller with strips and triangles falling within 1mm and 10mm in width or height. Although most of the offcuts in the small category were in the form of strips connected to small triangles, there were stand-alone pieces. These pieces were also generally in the lower-limit range.



*Figure 9: Examples of Small-sized LOs Sampled in Kumasi*

Large leather offcuts were the least represented in the sample. However, they fell within the upper limit of the large range with a few going well beyond. For example, one sample had a length of 858mm and a width of 223mm while another sample possessed a length of 740mm

and a width of 630mm. Some large offcuts comprised very long strips and very narrow widths joined together in a net-like form (see Figure 10). These exceptions were placed in the large category based on their surface area.



*Figure 10: Examples of LOs in a netlike form Found in the Sampled LOs in Kumasi*

Most of the regular-shaped leather offcuts fell within the medium. Some of the rectangles identified had dimensions of 230mm by 135mm, 280mm by 70mm, 370mm by 50mm, 125mm by 230mm, 105mm by 180mm, 260mm by 95mm and 250mm by 85mm recorded for length and breadth respectively in each case. For one triangle, dimensions of 190mm by 100mm for base and height respectively were observed. In another square sample, dimensions of 150mm by 150mm for length and breadth was recorded.

#### **4.2 Types of Leather Offcuts**

No vegetable tanned leather offcut was found in the sample collected in Kumasi. Offcuts examined for the metropolis were either mineral tanned or synthetic with the latter only slightly more in terms of weight than the former. A third of the leather offcuts in the synthetic category were tiny strips in the small category. Classification of offcut type based on finishing revealed a dominance (more than half of the sample) of pigmented leather. This was followed by leather offcuts with a patent finish. There were also leather offcuts with aniline and semi-aniline features in the sample. A few of the offcuts examined had additional characteristics like textures and glitters (see Figure 11). Textures observed included perforated and embossed designs that displayed an adinkra symbol, had a woven look, or was scaly. In one such case, the textures mimicked the skin of a tilapia fish while another sample looked like ostrich leather. A third leather offcut appeared strong and tough with a rubbery feel that made it look like buffalo leather. Another sample had hair with features of rabbit leather. A few of the LOs observed were fabric-like, exhibiting characteristics of suede leather.



*Figure 11: Examples of LOs with Different Textures Sampled in Kumasi*

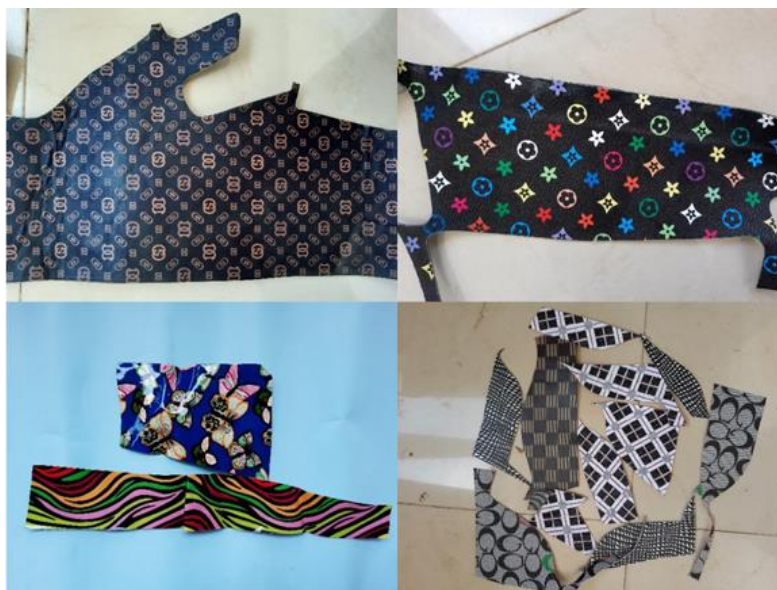
#### 4.2.1 Colour of Leather Offcuts

Results showed that LOs came either in a single, dual, or multiple colour scheme. Within the single colour category, brown dominated constituting about half of the total offcuts sampled. There were over fifteen (15) shades of brown in the sample (see Figure 12). Shades found included coffee brown, chocolate brown, light brown, deep brown, and medium brown, among others. Black was the next popular single colour making up one-fourth of the offcuts sampled. Other single LO colours identified in the sample included gold, red, ash, khaki, white, grey, silver, cream, purple, orange, blue, pink, green, and yellow in different shades.



*Figure 12: Examples of LOs in Different Shades of Brown Sampled in Kumasi*

Dual-colour combinations of gold and cream, gold and black, black and brown, and black and off-white were easily noticeable in the sample (see Figure 13). In one example, the offcut had a white background and brown was used as stripes intermittently. In another example, the background colour of the offcut featured different shades of brown but these were arranged in a way that gave the offcut a chequered look. The chequered feature was also observed in a multi coloured leather offcut where white, black, and brown were combined. Other multi-coloured offcuts showing a background colour of black with drawings in ash and blue, or ash and green were also visible in the sample. For a few of the samples, the multi-colour feature only came to life when the offcuts were turned in different directions. When turned at a specific angle, one of the offcuts looked pinkish but changed colour to blue when tilted differently. For another, a first look showed a silver colour which quickly changed into a rainbow colour when turned at different angles.



*Figure 13: Examples of LOs with Dual Colour Designs Sampled in the Kumasi*

## 4.3 Characteristics of LOs in the Tamale Metropolis

### 4.3.1 Quality of Leather Offcuts

Findings from the examination of leather offcuts in the Tamale metropolis indicated that a little above half of the samples were free of defects. For offcuts that had quality issues, wrinkled edges, and holes, featured as the dominant defects (see Figure 14). Holes observed ranged from big to small and looked like defects arising from ante-mortem and post-mortem injuries. There were cases of hardened offcuts in the sample. Cuts, peels, scratches, and minor stains were also observed on some of the leather offcuts sampled. Stains included white and black spots on different parts of the offcut surface and discolouration with some of the pieces looking pale.



*Figure 14: Examples of LOs with Defects Sampled in Tamale*

### 4.3.2 Shape of Leather Offcuts

Almost all the leather offcuts sampled in the Tamale metropolis were irregularly shaped (see Figure 15). The few regular shaped pieces identified were triangles and trapeziums. Most of the irregular shaped offcuts had rectangular and triangular perimeter outlines. Elliptical and trapezoidal-shaped perimeter outlines were also observed but only in a few cases. Further, a few of the leather offcuts were shaped in the form of a U or V with curved and zigzagged edges.



*Figure 15: Examples of Shapes of LOs Sampled in Tamale*

### 4.3.3 Size of LOs

Findings from the analysis indicated that about 80% of the leather offcuts sampled fell within the small category, having dimensions of less than or equal to 60mm for width and 150mm for length (see Figure 16). The remaining offcuts fit in the medium-sized category with no large pieces identified. Small offcuts were usually strips ranging from 1mm to 50mm in width. Most

of the regularly shaped samples were small triangles with dimensions ranging from 55mm to 90mm for base and 140mm to 180mm for height.



*Figure 16: Examples of Small-sized LOs Sampled in Tamale*

Medium-sized leather offcuts generally fell within the lower limit of the dimensions for that category (see Figure 17). In some of the samples, leather offcuts had rectangular perimeter outlines with lengths and widths of 100mm by 170mm, 85mm by 170mm, and 170mm by 220mm. In another example, the researcher spotted an offcut with a trapezoidal perimeter outline with dimensions of 100mm by 120mm by 90mm for length one, length two and height, respectively. It was discovered in another example that although the LO fit within the medium category, one side was excessively long and went beyond the upper limit of the medium category with the other side being smaller. In this sample, dimensions of 540mm for length were recorded against the width of 15mm on one side and 40mm on another side.



*Figure 17: Examples of Medium-sized LOs Sampled in Tamale*

#### 4.4 Type of LOs

Results from the study showed that all the offcuts sampled in the Tamale region were vegetable tanned. Leather offcuts featured smooth surfaces with hairs removed and limited use of textures

or designs. Only one offcut was found to have hair on the surface (see Figure 18). Further, all the LOs sampled had very basic finishing with less sophisticated finishing treatment conducted to enhance their look and obscure imperfections.



*Figure 18: LO Sampled in Tamale with Hair*

#### **4.4 Colour of LOs**

Findings from the examination of leather offcuts indicated a dominance of single coloured LOs in the sample with a few dual-coloured and no multi- coloured offcuts (see Figure 19). Within the single colour category, reddish wine featured as the predominant colour for about 80% of the sample. Brown was the next popular colour with two different variants observed: namely, reddish-brown and coffee brown. Other colours found in the sample were light Khaki, pale black, dark purple, and black in descending order. Overall, most of the offcuts were in their natural colour. However, some of the single coloured offcuts identified were dyed. In a few samples, leather offcuts that had a reddish wine colour had patches of black in them. In other examples, offcuts with a pale black background colour had patches of reddish-brown in them.



*Figure 19: Colour Variation of LOs Sampled in Tamale*

## 5. Discussion

### 5.1 Cross-case analysis

Table 2 summarises similarities and differences in leather offcut characteristics in the two study areas. Findings indicated only slight differences in the shape and size of leather offcuts obtained in Kumasi in comparison to Tamale. In contrast, quality, type and colour of offcuts varied significantly based on location. This may be due to differences in the footwear types produced in the two footwear production hubs. The greater colour diversity observed in Kumasi is likely attributable to the extensive use of synthetic and pigmented leathers, which permit broader colour customisation than vegetable-tanned materials. In the light of this, leather offcuts in Kumasi offered more colour variety in comparison to offcuts obtained from Tamale. This may be due to the dominance of synthetic leather, which offers more colour variety, in the Kumasi sample. This difference may arise from the fact that leather is naturally limited in colour.

**Table 2: Comparison of Kumasi and Tamale**

| Characteristic | Kumasi              | Tamale            |
|----------------|---------------------|-------------------|
| Quality        | Mostly defect-free  | More defects      |
| Shape          | Irregular           | Irregular         |
| Size           | Medium dominant     | Small dominant    |
| Type           | Synthetic & mineral | Vegetable         |
| Colour         | High diversity      | Limited diversity |

### 5.2 Discussion in relation to findings from literature

The defects observed in both cases like holes, cuts, peels, scratches, discolouration, wrinkled edges and creases align with leather quality issues raised in the literature (Asubonteng, 2010; Adu-Asabre, 2011). This is interesting because although arguments in the literature associate these defects with vegetable tanned leather, they were also observed in the Kumasi case where mineral tanned and synthetic leather dominated. In contrast, the quality problem of stains from dirt, hardened glue, and pen and pencil marks which featured prominently in the findings from the study, did not appear in the literature. On the topic of shape, findings highlighted parallels with findings from the literature on the irregular-shaped nature of leather offcuts. However, the literature qualified irregular-shaped offcuts as polygons (Choklat, 2012), although observations from this study found that curved and zigzagged edges rather than straight lines. When perimeter outlines were used to determine shape, rectangular shaped leather offcuts dominated in both Kumasi and Tamale cases. These outcomes contrast findings from Promjun et al. (2012) which emphasised circular, elliptical, or triangular shaped offcuts rather than squares and rectangles.

There was evidence of very small centimeter sized LOs in the Kumasi and Tamale samples in line with arguments by Di Roma (2012), Choklat (2012) and Vincent et al. (2019). However, medium sized leather offcuts dominated in the Kumasi case. Regarding leather type, three of the finishing techniques - aniline, pigmented, and patent mentioned by Zengin et al. (2017) was observed. Concerning colour, the study observed similarities in the literature (Ackay, 2012; Goguen, 2012; Soni, 2014). Nevertheless, brown dominated in contrast to black and red which Ackay (2012) considers the most popular colour for male and female teenagers respectively. Colours like gold, purple, orange, pink, green, yellow, reddish wine and khaki which were identified in the study, did not feature in the literature. The observation of dual and multi coloured leather offcuts in this study supports arguments by Deng et al. (2010) on colour

choices in footwear production. Additionally, colour combinations such as black and white, gold and cream, and ash and blue represented use of contrast rather than different shades of leather offcuts to make their footwear visually appealing (Deng et al., 2010).

### **5.3 Leather Offcut Characteristics as an enabler for African Visual Art**

Findings from the characterisation suggest that leather offcuts possess qualities that naturally align with the artistic philosophy of African art. Traditional African art prioritises abstraction over realism (Ògúnjìmí et al., 2024). Thus, the predominance of small, irregularly shaped pieces observed in both Kumasi and Tamale can support visual abstraction by making it easier for traditional African artists to reorganise forms to communicate spiritual beliefs, social identity, or communal values. This opens up possibilities for producing abstract wall compositions, symbolic reliefs, leather mosaics, contemporary interpretations of traditional symbols, totemic forms and narrative panels where meaning emerges through composition rather than realism. In this vein, the irregularity of the material becomes an expressive medium that enables practitioners to retain traces of the former use of leather offcuts within the artwork itself.

The predominance of earth tones, particularly different shades of brown reflect colours already familiar within many African artistic traditions because they derive from natural materials (El wer, 2024). These may readily support representations associated with ancestry, the earth, endurance and craftsmanship. Where brighter colours occur, they create opportunities for integrating symbolic meanings associated with prosperity, sacrifice, or royalty. The greater colour diversity identified in Kumasi therefore presents opportunities for highly expressive compositions, whereas the relatively more consistent colour profile in Tamale may better support works requiring restrained visual harmony. Beyond direct application in leather artworks, the arrangement of coloured offcuts could inspire the development of repeat motifs for textile design, printed fabrics, ceramic decoration and graphic pattern development.

The finding that most of the leather offcuts were generally small suggests that size could constitute an advantage for additive rather than subtractive making. Small fragments are easily layered, stitched, braided, compressed, moulded or bonded to produce complex three-dimensional surfaces. Therefore, the predominance of small pieces creates opportunities for modular sculpture, leather relief work, mask embellishment, assemblage and experimental sculptural forms all of which are key elements of African visual art. Extremely small fragments that might otherwise be discarded can be shredded and combined with adhesives or natural binders to produce leather papier-mâché, moulded sculptural masses or composite carving materials. Strip-like and net-like leather offcuts generated during footwear production may similarly be braided or woven into sculptural frameworks, baskets or other leather constructions.

One recurring characteristic across both production centres is the considerable variation in size, colour, leather type and quality. From an industrial perspective, such variability complicates standardisation. Within African craft traditions, however, creative practice has historically been characterised by ingenuity, adaptation and the transformation of locally available materials into culturally meaningful objects. The diversity identified in this study therefore supports an important principle of indigenous making: allowing available materials to shape creative outcomes. Instead of seeking uniformity, practitioners may intentionally match different categories of leather offcuts to different creative purposes. Larger, higher-quality pieces remain suitable for functional leather products. Medium-sized pieces lend themselves to appliqué, marquetry and patchwork techniques. Smaller fragments naturally support mosaics

which could be leveraged for symbolic compositions. Defective pieces may contribute expressive texture within mixed-media works, while the smallest remnants can undergo secondary transformation into leather pulp, or composite boards. Such cascading utilisation ensures that every category of material contributes to artistic production, extending both material life and creative value.

## 6. Conclusion

This study has shown that leather offcuts generated by local producers in the studied footwear production hubs are more than residual waste; they can be considered unique creative resources whose material characteristics closely align with several defining principles of African visual art. Rather than limiting creativity, these characteristics encourage artists to work with the inherent qualities of the material, allowing fragmentation, variation and assembly to become sources of aesthetic and cultural meaning. To this end, the study extends the conversation beyond waste management to material-informed artistic practice. The cross-case analysis further suggests that different production hubs may offer distinct creative opportunities, encouraging practitioners to consider regional material characteristics when sourcing leather offcuts. Perhaps the most significant implication of the study lies in demonstrating that understanding the material characteristics of reclaimed leather enables more intentional creative decision-making. Characterisation transforms leather offcuts from anonymous waste into identifiable material categories possessing distinct artistic possibilities.

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