



ANALYSIS OF DESIGN CONCEPTS: A COMPARATIVE STUDY OF PRE- AND POST- 2000 PRINTED FABRICS OF TEXTILE PRINTING COMPANIES IN GHANA

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ABSTRACT

Purpose: The paper aims to analyze and compare the design concepts in printed fabrics between the pre- and post-2000 periods in Ghana. By examining the changes in design trends, techniques, and motifs, the study also aims to identify the factors that have influenced the evolution of printed fabric designs over time.

Methods: This research adopts a concurrent embedded mixed method design, combining qualitative and quantitative methods. Primary data is collected through interviews with textile designers, manufacturers, and industry experts. A comprehensive analysis of printed fabric samples from pre- and post-2000 periods is conducted. The data collected is then analyzed using thematic analysis and statistical techniques.

Findings: This research provides insights into the changes in design concepts in the printed fabric industry in Ghana. The study reveals shifts in design trends, such as the adoption of digital printing techniques, the incorporation of contemporary motifs, and the influence of global fashion trends.

Research Limitation/Implications: The study's limitations include small sample size, limited representation of Ghana's textile printing industry's diverse design concepts, and insufficient exploration of production processes or market dynamics.

Practical Implication: Research highlights design changes in Ghanaian textiles, enabling designers to create innovative, marketable printed fabrics and manufacturers to adapt production processes.

Social Implication: The textile printing industry in Ghana significantly impacts cultural identity and economic development.

Originality/Value: This research adds value to the existing literature on the textile printing industry by comprehensively analysing the design concepts in printed fabrics in Ghana.

Keywords: *Design Concepts. Design Trends. Motifs. Techniques. Printed Fabrics.*

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1. INTRODUCTION

The historical context of Ghana's textile printing industry and the evolution of design concepts have been extensively explored in the existing literature (Adu-Gyamfi, 2018; Nketia, 1997). Traditional techniques, such as adinkra and kente weaving, played a vital role in shaping the design concepts of printed fabrics (Tetteh, 2012). The introduction of modern printing methods, including screen printing and digital printing, has significantly influenced industry design concepts and production processes (Adu-Gyamfi, 2018; Oduro-Kwarteng, 2017). Moreover, globalization has had an impact, incorporating diverse design influences and global market demands (Adu-Gyamfi, 2018).

Ghana's textile industry's design concepts convey cultural, social, and political messages through vibrant colours, intricate patterns, and symbolic imagery (Tetteh, 2012). These design concepts contribute to tourism, support local craftsmanship, and contribute to the country's economy (Nketia, 1997). However, there are research gaps in terms of specific design concepts used in printed fabrics before and after 2000, as well as the implications of technology and globalization on cultural authenticity and sustainability.

The impact of design concepts on consumer preference for printed fabrics in Ghana remains understudied, as Mintson (2020) affirmed. Previous studies have highlighted the significance of digital printing technology in creating complex designs (Mintson 2020; Rahman, 2021). Additionally, the cultural relevance of designs to Ghanaians has been identified as an important factor (Mintson, 2020), and the adoption of digital printing technology has revolutionized the production of printed fabrics (Rahman, 2021).

This study aims to examine the major design concepts of printed fabrics in the textile printing industry in Ghana before and after 2000 and evaluate consumer reception of these designs, addressing gaps in the existing literature.

2. SEMIOTICS THEORY

Semiotics Theory, which focuses on studying signs and symbols and their interpretation, is highly relevant to textile design. It explores how visual elements such as colours, patterns, and motifs convey meaning and communicate messages to viewers. The theory also considers design concepts' cultural, social, and historical significance and their influence on perception and interpretation.

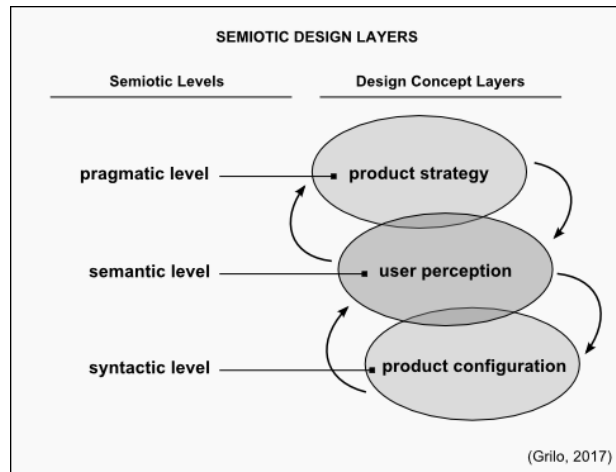


Figure 1. Semiotic Design Layers
Source: Grilo (2017)

In relation to the study of product design concepts, a semiotic model consisting of three levels has been proposed, as shown in Figure 1 (Morris (1938) cited by Grilo (2017)). The pragmatic level corresponds to the product strategy, while the semantic level encompasses the meanings attributed to the product by users and stakeholders. The syntactic level explains the structure of the product, including its components, technologies used, and functional interactions. This level pertains to the form (syntax) of the product and reveals that business strategies and user needs primarily define product design before considering aesthetics and tangible elements. The interaction between these three semiotic levels results in the artefact's visuality and quality of use. The combination of these levels is considered the product concept, balanced through iteration cycles between the layers.

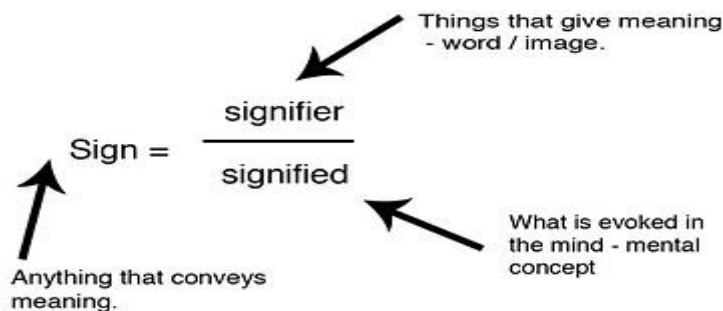


Figure 2. Theory of Semiotics Ferdinand de Saussure
Source: Chandler, (2022).



Applying semiotics to product design has provided invaluable tools for analyzing design concepts in printed fabrics. The study focuses on the relationship between identity, metaphors, and visibility in artefacts. Semiotics encompasses the study of signs in everyday life, including traffic signs, symbols, pictures, and material culture like buildings, furniture, and products (Chandler, 2022). At the core of semiotics is the concept of the sign, consisting of the signified (representing the concept or meaning) and the signifier (representing the physical form). A deeper understanding of design concepts and their communication can be achieved by considering the materiality of the signifier, particularly in the context of printed textiles, such as colours, patterns, and motifs. This research aims to conduct a comparative study of design concepts of pre- and post-2000 printed fabrics of textile printing companies in Ghana, shedding light on their significance and implications.

3. METHODOLOGY

The concurrent embedded mixed method design allowed for a comprehensive analysis by integrating the qualitative and quantitative data (Creswell & Plano Clark 2018). The qualitative data provided a contextual understanding of design concepts, while the quantitative data offered broader insights into the industry and market trends as shown in Figure 3. Combining both methods strengthens the research findings and provides a more holistic understanding of the study.

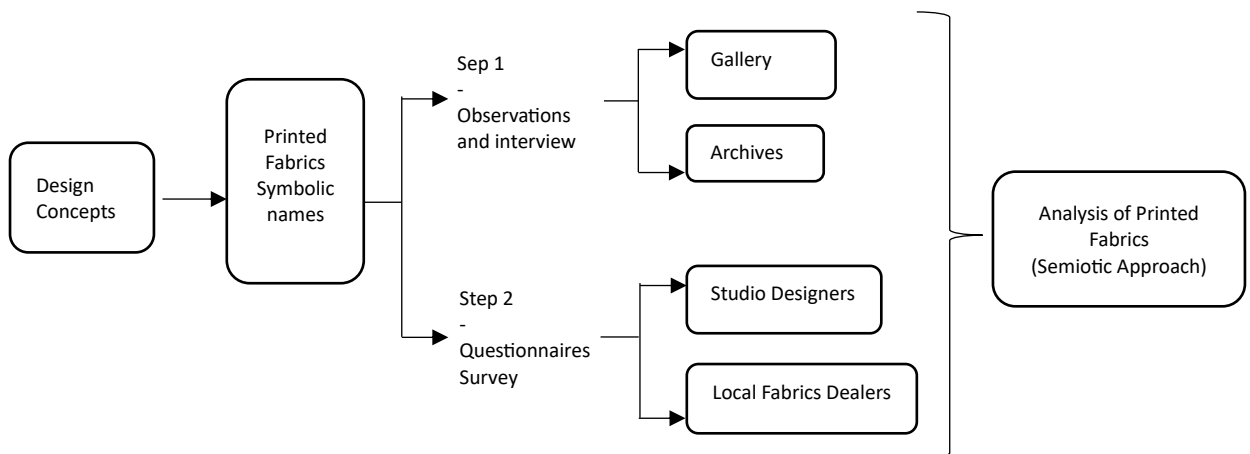


Figure 3. The research design diagram on the analysis of design concepts in printed fabrics



Primary data for this research involved interviews and surveys. Interviews were conducted with textile designers, artisans, and industry experts to gather insights into the design concepts used in pre- and post-2000 printed fabrics. Surveys were administered to textile printing companies, designers, and consumers to collect quantitative data on design preferences, technological advancements, and market trends. A purposive sampling technique was employed to select participants with expertise and experience in the textile printing industry. The sample included textile designers, artisans, industry professionals, and consumers from various regions of Ghana. The collected data was analyzed through qualitative and quantitative methods. Qualitative data from interviews were transcribed, coded, and analyzed using thematic analysis to identify recurring patterns and themes in the design concepts of printed fabrics. Quantitative data from surveys were analyzed using statistical software to identify trends, preferences, and changes in design concepts over time. The research conducted a comparative analysis of design concepts used in printed fabrics before and after 2000. The analysis focused on factors such as colour, pattern, and imagery, examining how these elements had been utilized to convey cultural, social, and political messages. Additionally, the comparative analysis considered the influence of technology and globalization on design concepts.

4. RESULTS AND DISCUSSION

The study emphasizes the importance of understanding signs in interpreting the design concepts of printed fabrics. Each design carries its unique significance and represents the intended wearer. Observing and analyzing fabric designs can uncover the signs and symbols used to create meaningful objects and subjects. Conventionally, fabric motifs serve as symbols, derived from natural inspirations such as flowers, leaves, and geometric patterns. These motifs function as signifiers, conveying information to observers. The workflow presented in the study provides a process for identifying and analyzing signs in fabric design.

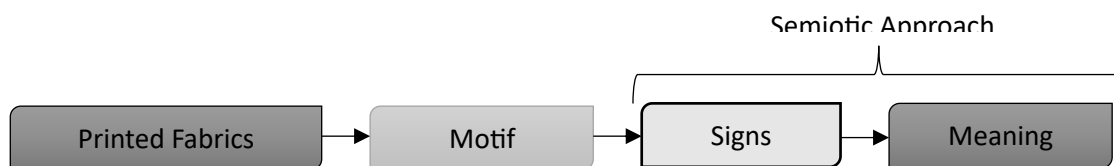
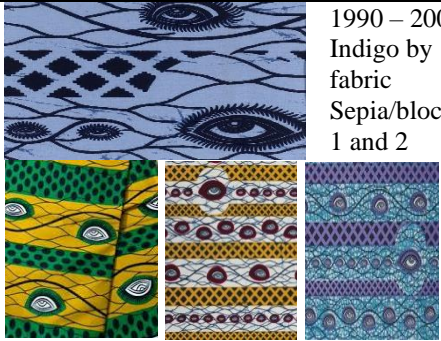



Figure 4. Analysis of design concepts in printed fabrics



Figure 4 depicts the analysis process to identify the changes in the design concepts such as colour, motifs and textures that will decide relevant signs. Lastly, the meanings or implications in the printed fabric sign motifs or symbols can be interpreted according to their symbolic name.



Table 1. Design concepts used in pre- and post-2000 printed fabrics.

Printed Fabrics		Description		
1990 – 2000 Indigo by fabric Sepia/block 1 and 2		2000 – 2020 Wild colour combination Duplication of motif and textures Modification/adaptation/ mix variations		
Akan: Aniwa Ga: Nyongmɔ wɔko/higmei Fabric 1		Motif	Sign	Meaning
 <p>1990 – 2000 Indigo by fabric Sepia/block 1 and 2</p> <p>2001 – 2020 Design is manipulated with</p> <ul style="list-style-type: none"> • varying textures and colour scheme • original motif design is maintained • the trends are observed with the printing style; and wax prints 		The motif depicts an opened eye	Human Eye	The cloth was named ‘God is not asleep’ because God never sleeps, as known from a religious point of view. A closed eye signifies one is asleep. The Ga society thinks that God never sleeps and therefore has eyes that are perpetually opened like the one in the cloth.
Akan: Gramafon Apaawa Ga: Gramophone Plete Fabric 2		Motif	Sign	Meaning
 <p>1990 – 2000 Indigo by fabric Sepia/block 1 and 2</p> <p>2001 – 2020 Design is manipulated with</p> <ul style="list-style-type: none"> • Colour variations • Adoption of combination of textures • Motif sizes vary depending on the market value 		The motif depicts gramophone plate	Artificial Object musical object	The cloth is called gramafon apaawa ‘gramophone plete’ because the motif (signifier) is round and flat, just like the gramophone plate used to record and play music in the past.
Akan: Aweniepa nkasa Ga: mayo baa				



	<p>1990 – 2000 Indigo by fabric Sepia/ block 1 and 2</p>	<p>Plants (Mango leaves)</p>	<p>Plant (Leaves)</p>	<p>The naming is based on the leaves motif which is the signifier. The leaves of a mango tree are the design in the cloth. Ahwenepa. Nkasa means ‘good waist beads do not make noise’. This is a common proverb among Ghanaians which implies you should let your deeds or character speak.</p>
<p>2001 – 2020 Design is manipulated with</p> <ul style="list-style-type: none"> • Printing style with wild colour scheme • Backgrounds are without textures, but the printing style effect 				
<p>Akan: Asobayere Ga: Shito</p>				
	<p>1990 – 2000 Indigo by fabric Sepia/ block 1 and 2</p>	<p>Plants (Pepper Leaves)</p>	<p>Plant (Leaves)</p>	<p>The name comes from the motif which is the signifier. The design looks like the leaves of pepper. It is used for general purposes, including outdooring and naming ceremonies, marriages, festivals and grand occasions. There are small and big patterns.</p>
<p>2001 – 2020 Design is manipulated with</p> <ul style="list-style-type: none"> • Focused on wax printing style • The motif design is leaves with slight variations • Adoption of different shapes and sizes of texture 				

Source: Field Research, 2022

The study examines changes and evolutions in design concepts of printed fabrics in the textile printing industry in Ghana, considering factors such as cultural, economic, technological, and socio-political influences. Various factors contribute to the variability in product lines and design concepts, including cultural influences, market demand, fashion trends, availability of new printing technologies, raw materials, government policies, and industry competition. The selected textile printing industry in Ghana witnessed a shift in design concepts from 1990-2000 to 2000-2020. In the earlier period, designs featured nature-inspired motifs, bold colours, and cultural symbolism, showcasing the country's rich heritage. Traditional hand-drawn and hand-printed techniques using natural dyes were prevalent. In the later period, there was a focus on incorporating contemporary elements and adopting digital printing technology,



resulting in more precise and intricate designs. This led to a wider range of styles, including abstract shapes, and catered to global market demands. While the industry embraced modern designs, traditional motifs remained significant, reflecting Ghana's cultural heritage and artistic traditions.

Qualitative analysis conducted revealed several drivers of trend in the design concept of printed fabric designs for the textile printing industry in Ghana were identified. These drivers include but are not limited to colour, pattern, texture, and cultural influences. The study results provide valuable insights into the components such as origin, diffusion, and evolution that shape the trends in the design concept of printed fabrics in Ghana.

4.1. Identification of Design Concepts and Trends

The study investigated the identification of design concepts and trends, which are essential in guiding product creation. A design concept is the central idea behind a product, which is communicated through sketches, pictures, and a written description. This serves as a reference point for both designers and developers during the design process to ensure that the final product aligns with the initial idea and provides value to its target audience. The study reviewed relevant literature and employed five measurement indicators to analyze the design concepts. The study utilized the scale developed by Koomson (2017) to determine the level of agreement or disagreement among the various indicators. A mean score of 2.9 and below indicated disagreement, while a score of 3.0 and above indicated agreement. Table 2 presents the results of the analysis of the design concepts.

Table 2. Design Concepts

Concepts	Mean	Std. Deviation	Rank
Design style	3.92	1.32	1
Customer preference	3.87	1.25	2
Religion	3.70	1.12	3
Culture	3.61	1.02	4
Economic	3.48	1.22	5

Source: Field Research, 2022

According to the results presented in Table 2, the most popular design concepts among the respondents were Design style, Customer preference, and religion, with mean scores of 3.92, 3.87, and 3.70, respectively. It is worth noting that some of the respondents believed that culture and economics also played a significant role in identifying design concepts, with mean scores of 3.61 and 3.48, respectively.



These findings agree with Shavitt and Barnes (2020) that designers and marketers should consider the impact of various cultural and social factors on design concepts, particularly those related to design style, customer preference, and religion. By doing so, they can better meet the needs and expectations of their target audience, leading to greater customer satisfaction and improved business outcomes.

4.2. The Factors that Influence the Textile Printing Industry’s Choice of “A Design Concept”

The study aimed to discover the essential factors influencing Ghanaian cloth print design ideas. In order to do this, the researcher looked over pertinent literature and chose 18 measuring indicators to assess the variables influencing a firm's selection of design concepts. The study used the Koomson (2017) scale, where a mean score of 2.9 or below indicates disagreement and a mean score of 3.0 or above indicates agreement, to assess the degree of agreement with each indication. Table 3 presents the findings and shows the design motifs that tend to impact fabric printing.



Table 3. The Factors that Influence the Textile Printing Industry's Choice of a Design Concept

Variables	Mean	Std. Dev.	Rank
Design Inspiration			
Inspiration based on the purpose	4.81	0.485	1
Designs are drawn/derived from nature	4.57	0.797	2
Colours play a major role	4.16	0.777	3
Existing designs give fantastic concepts	4.14	0.853	4
Designs are drawn/derived from artificial objects	3.41	0.861	5
Design Demand			
Cultural elements influence the designs of the fabric prints	4.71	0.638	1
Market turnover on supplies influences production and design type	4.58	0.659	2
Environmental issues influence design concepts	4.13	0.596	3
Social events influence design concepts	3.73	0.790	4
Production is based on societal or cultural systems	3.66	0.767	5
Fashion Prediction			
Prints are made with gender consideration	4.87	0.410	1
Women and their figure shapes influence design in prints	4.77	0.460	2
Fashion forecasters influence the colour schemes of fabric prints	4.77	0.552	3
Trends of old-fashionable prints	4.22	0.617	4
Fashion designers enjoy bigger motif repeats	4.02	0.612	5

Market Levels

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Affordability and economic level of consumers influence designs	4.73	0.535	1
Price range influences design concept	4.49	0.723	2
The demand of some cultural groups' limits design production	4.39	0.688	3

Source: Field Research, 2022

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Table 3 presents the factors that influence a firm's choice of a design concept. From the results, eighteen (18) factors were identified as factors that influenced a firm's choice of a design concept and were classified into four groups: Design Inspiration, Design Demand, Fashion Prediction and Market Levels. Bettaieb and Attiah (2022) supported the finding and indicated that design inspiration affects clients' choices of design firms, it also presupposes an awareness on the part of the designer of new possibilities for creative production. Concerning Design Inspiration, four variables were identified and these included, Inspiration based on the purpose; Designs drawn/derived from nature; Colours play a major role; Colours play a major role; and Existing designs giving awesome concepts recorded mean scores of 4.81, 4.57, 4.16, 4.14 and 3.41 respectively.

For Design Demand, five variables were identified as forming part of this group and these included Cultural elements influence the designs of the fabric prints; Market turnover on supplies influences production and design type; Environmental issues influence design concepts; Social events influence design concepts and production is based on societal or cultural systems recorded mean scores of 4.71, 4.58, 4.13, 3.73 and 3.66 respectively.

The other group Fashion Prediction had five variables that comprise prints are made with gender consideration; Women and their figure shapes influence design in prints; Fashion forecasters influence the colour schemes of fabric prints; Fashion forecasters influence the colour schemes of fabric prints; Trends of old-fashionable prints; and bigger motif repeats are enjoyed by fashion designers also had mean scores 4.87, 4.77, 4.22 and 4.02 respectively. For Market Levels, three variables were identified: affordability and economic level of consumers influencing designs; Price range influencing design concept, and the demand of some cultural groups limiting design production. It recorded various mean scores of 4.73, 4.49, and 4.39, respectively.

The factors influencing the choice of design concept in the textile printing industry revealed variables grouped into three categories: Design Inspiration, Design Demand, and Fashion Prediction. According to the results, inspiration based on purpose is the most important factor for design inspiration, while cultural elements are the most significant for design demand. For fashion prediction, prints made with gender consideration are the most important, and consumers' affordability and economic level have the most significant impact on market levels.



Table 4. The Factors That Often Determine the Production Line

Design Production	Mean	Std. Deviation	Rank
Brands	3.92	0.788	1
Themes	3.92	1.419	2
Symbolic names	3.80	1.586	3
Patterns	3.54	0.686	4
Colour	3.49	0.634	5
Motif	3.21	0.601	6
Sales records	3.14	0.933	7

Source: Field Research, 2022

Table 4 represents the factors that often determine the production line. The result shows seven (7) factors that determine the production line of the Ghanaian textile printing industry and these are brands, themes, symbolic names, patterns, colour, motifs and sales records all had mean scores of 3.92, 3.80, 3.54, 3.49, 3.21 and 3.14 respectively. According to Kwame (2023), seven factors determine the Ghanaian textile printing industry's production line: brands, themes, symbolic names, patterns, colour, motifs, and sales records. These findings are consistent with the research of Okawa (2022), who emphasized the importance of a symbolic brand name in determining the production line for middle-class consumers, and Tordzro (2021), who demonstrated the significance of market merchants in labelling and designing fabrics.

4.3 Factors that often determine the production line of trendy designs

Recent research has also shown that the use of motifs and colours plays an important role in the textile printing industry in Ghana. According to Ankora (2022), using traditional motifs and vibrant colours in textile designs is not only aesthetically pleasing but also a way of preserving cultural heritage. Consumers are attracted to fabrics that reflect their cultural identity, and textile printing firms in Ghana have capitalized on this trend by incorporating traditional motifs and colours into their designs. Moreover, sales also play a crucial role in determining the production line of the Ghanaian textile printing industry. A study by Ishaq, Ahmad, Arshad, and Khan (2020) revealed that consumer demand influences the production and design of fabrics in the industry. The textile printing firms in Ghana are constantly monitoring consumer preferences and trends in order to stay competitive and relevant in the market. This has led to the development of a wide range of textile products that cater to different consumer tastes and preferences, ensuring the continued growth and sustainability of the industry.

Therefore, the Ghanaian textile printing industry's production line is influenced by various factors, including brands, themes, symbolic names, patterns, colours, motifs, and sales. Textile printing



firms in Ghana have recognized the importance of traditional motifs and colours and the societal and cultural uses of textiles in creating designs that resonate with consumers. In addition, sales play a crucial role in shaping the industry's production line, as firms respond to changing consumer demand by developing new and innovative textile products.

5. CONCLUSION

Comparing designs from before and after 2000 reveals the evolution of the design idea for fabric print designs in Ghana's textile printing sector. Western fashion trends, the demands of the global market, and the availability of digital printing technology all impacted the transition towards more contemporary and diversified patterns. Although modern components like abstract forms and patterns have been included to appeal to a wider client base, traditional themes and symbols still play a significant role in the company's culture. Digital printing technology made it possible to print intricate designs more quickly and accurately, which increased the diversity and adaptability of cloth prints.

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