The Role of Textile Print Design Management in Enhancing the Competitive Advantage of Home Textiles

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ARTICLE INFO	ABSTRACT
	Design management for textile printing is a strategic tool that elevates the added value of home textiles. It helps achieve sustainable competitive advantage through innovation, quality, and quick adaptation to market trends while maintaining a strong brand identity. The management solutions many designers and leaders rely on are no longer as effective as they were. Previously proven management techniques are being questioned, highlighting the need for a new approach that's intelligent and flexible-one that places innovation at the heart of every step toward achieving a competitive advantage in design. This research emphasises the pivotal role of textile printing design management in enhancing the competitive advantage of home textiles. It connects artistic creativity, market trends, and production capabilities. The research problem is: How can home textile print design be used to enhance the competitive advantage of home furnishings to keep pace with local and global markets? The research aims to Focus on the importance of design as a managerial process and its role in achieving a competitive advantage for home textiles. Enhance innovation and knowledge for print design in line with local and global market trends. The main hypothesis of the research is that there's a positive, reciprocal relationship between modern design techniques (a systematic approach, creative methods) and the expected aesthetics of the final product, which contributes to marketing the product and giving it a competitive advantage. The research follows an applied methodology by creating innovative designs for printing home textile and virtually applying them using computer software.

1. Theoretical framework

1.1. Introduction

In the current era, with the accelerating pace of development in all fields, various forces and influences (technological, organisational, and competitive) are intertwining in all industries. These industries are constantly seeking continuous and sustainable development to maintain their products' highly competitive ability in local and global markets. This is due to competitors, modern technologies, and even changes in social practices, which increase the importance of products' competitive advantages. Consumers are faced with a vast number of available options, which highlights the importance of the ability to innovate correctly and sustainably. This innovation represents the key and decisive factor for the success of companies and designers in achieving a competitive advantage through design as an added value to the product [1].

1.2. Research Problem

Despite the significant technological advancement in the field of textile printing, many home furnishings companies suffer from a weak competitive position in local and global markets. This is due to their failure to strategically utilise print design management in a way that aligns with market demands and consumer trends. This deficiency leads to a lack of innovation in designs and a lack of distinction in visual identity, which reduces export opportunities and increases market share.

Design management is no longer merely an executive tool; it has become a strategic driver that supports the achievement of a competitive advantage for organisations. Therefore, the research problem is centred on: How can the competitive advantage of home furnishings be enhanced by innovating printed textile designs that keep pace with local and global markets?

1.3. Research Importance

It adds an academic framework linking design management and competitive advantage in the home furnishings sector.

The research contributes to enhancing the competitive advantages of local products by increasing the innovative level of design to open new foreign markets in line with fashion trends. It provides practical recommendations for

designers and manufacturers of home furnishings on how to utilize print design management to increase market distinctiveness.

1.4. Research Objectives
To achieve a competitive advantage for home furnishings through design management. To enhance innovation and knowledge for print design in accordance with local and global market trends.

1.5. Research Hypotheses
The researcher assumes:

A positive relationship exists between the innovativeness of textile print design and the added value of the final product.

There is a positive and reciprocal relationship between modern design techniques (a systematic approach and creative methods) and the expected aesthetics of the final product's form, which contributes to marketing the product and giving it competitive advantages.

There is a positive relationship between innovation in print designs and the increasing attractiveness of products to consumers.

The integration between design and production reduces costs and improves the quality of the final product.

1.6. Research Scope
Temporal scope: Summer/Spring 2025 fashion trends for printed home furnishings.

Spatial scope: Design units in industrial enterprises operating in the field of printed home furnishings within the Arab Republic of Egypt.

Thematic scope:

A study of competitive advantage and its achievement for printed home furnishings (sheets).

Using elements and colours consistent with global trends to create contemporary designs suitable for printing home textile fabrics.

Utilizing computer software to design and apply the designs.

1.7. Research Methodology
Experimental (Applied) Methodology: This involves the innovative aspect of designing printed home textile fabrics and virtually applying them using computer software to employ the designs so they can be viewed in an integrated manner.

2. Research Terms
2.1. Home Textile:
A diverse collection of fabrics and materials used for covering and decorating furniture and beds inside homes. These fabrics vary in terms of materials, designs, colors, and textures [2].

2.2. Textile Design
Textile design is a multidisciplinary process, typically including market and technology research, concept design, development of a prototype, final product design and testing, and post-production and implementation stages. This process inherently involves transforming ideas and needs into a tangible, physical form, starting as solution concepts and then evolving into a specific shape or arrangement of elements, materials, and components. Textile design can be described as "the application of human creativity to the design of textiles," as it encompasses all potential situations involved in design. It can also be defined as the creative planning of patterns, motifs, and colors on the surface of fabrics, achieving functional, aesthetic, and marketing goals [3]

In this research, textile design refers to the design of fabrics used in home furnishings, including printed sheets and bed covers. Although the specific design features of textiles may evolve over time, every design implementation must create value embedded in the consumer's memory. The design of printed home furnishings (the subject of this research) is not just a matter of designing a specific textile; it goes beyond that to include the creation of intrinsic qualities that provide a lasting consumer experience. Textile design refers to a set of core elements that enhance the benefits of textiles as a product, which consumers perceive and organize as a multidimensional construct that includes three dimensions. Their importance to the consumer depends on their culture, motivations, knowledge, needs, and other factors making the study of the design's target market imperative. Textile design refers to a set of core elements that enhance the benefits of textiles as a product, which consumers perceive and organize as a multidimensional construct that includes three dimensions. Their importance to the consumer depends on their culture, motivations, knowledge, needs, and other factors, [4].

2.3. Design Processes:
Defined as the set of steps that must be practiced by all organizational activities to accomplish various programs [5].

2.4. Design Management:
Design management refers to an organization's approach of integrating design into its decisions for the benefit of market customers, just as in the organization's operations. It is a continuous, long-term process within activities at all levels of business performance. Design management is the link between management and design, within the interconnected performance of technology, design, design thinking, and design management [**6**].
Torsten Dahlin, the head of the Swedish Industrial Design Foundation, views design management as a profession that strives to initiate and design strategies that deal with management boards in making and following up on decisions. It also seeks to create understanding and awareness among employees at all levels, where even the smallest basic decisions are among the axes and tasks of design management in all parts of the organization,

through its structure, products, employees, and decision-making regarding customers, services, and product quality [7].

2.5. Competitive Advantage:

Philip Kotler defined competitive advantage as "the ability of an organization to perform its business in a way that is difficult for its competitors to imitate. imitate [8]. Willie defined it as achieving progress over other competitors and widening this gap from them, through the difference between the value realized by the customer and the monetary value they pay for obtaining that product that product [9].Tim Girvin, head of the Tim Girvin Design Institute, believes that design management is the practice of giving definition and prominence to a brand and its dimensions in any way. Design within an organization expresses its ideology, culture, products, and services, and these assets are carefully directed to form a clear and coordinated message. The consistency of the message provides the power to facilitate organizational strategic tasks such as marketing, sales, and operations [*10*].

The Importance of Design

Design is an activity that aims to create a multidimensional quality for objectives, processes, services, and their systems throughout their life cycles. Therefore, design is considered an important factor in technological innovation and has a crucial role in cultural and economic exchange. The importance of design lies in its pursuit to discover and evaluate the structural, organizational, functional, and economic relationships of an organization, which aims to:

Promote global support and environmental protection (global ethics).

Grant benefit and freedom to all human beings (social ethics).

Support diverse and different cultures despite the impact of globalization.

Give products, services, and systems appropriate aesthetic forms.

3. Design as a Managerial Process

The design process is a process of affirming the legal personality of the organization, its customers, and all partners and investors, as well as distinguishing it from its competitors, and it may be the basis of its success. Design provides users with information about the company, and for this reason, it is essential for design managers to have an active position in managing the design process. Within this context, design becomes a managerial process within integrated internal administrative functions (planning, implementation, control, feedback) for the functions of marketing, production, human resources, branding, new product development, production planning, distribution, and policies together. Finally, the design process is also a process of acquiring information to know what type of design should be acquired, integrated, transformed, and embodied. Thus, the creative process must apply technologies, ideas, and production methods, and meet the desires of the largest number of consumers and users [11].

3.1. The Importance of Design Management

According to Earl Powell, President of The Design Management Institute (DMI, Boston), the importance of design management will be greater in the future than ever before through four key ways:

First: Deepening business understanding of the role of design in innovation in all fields, considering design management as a powerful source of innovations that distinguish their businesses and work to grow a strong competitive advantage.

Second: Customers continuing to search for more options in the market to satisfy their desires for the best design resulting from effective design management.

Third: Shifting from managing design to managing for design, thereby unleashing wide design options.

Fourth: The increasing importance of the role of design will play a role in building a bridge between the economic foundations and cultural aspects of nations, opening the door for design to make a significant contribution to societies around the world.

From the above, design management can be defined as "organizing and directing design processes within an organization in line with strategic objectives, including managing design teams, resources, processes, and communications to achieve innovation, quality, and market distinctiveness."

4. Levels of Design Management

Design is considered an effective tool in managing an organization at the strategic, tactical (planning), and operational levels, as shown in Figure (1). It plays an important role in setting long-term goals and in making daily decisions. Design is considered a function, a resource, and a way of thinking within organizations, and it can have a significant impact on strategic thinking and development processes. It is effective in implementing projects, systems, and services, and it shapes the way organizations interact with customers, investors, and capital owners. Design aligns with commercial pressures in the industry and understands how to use it more effectively.
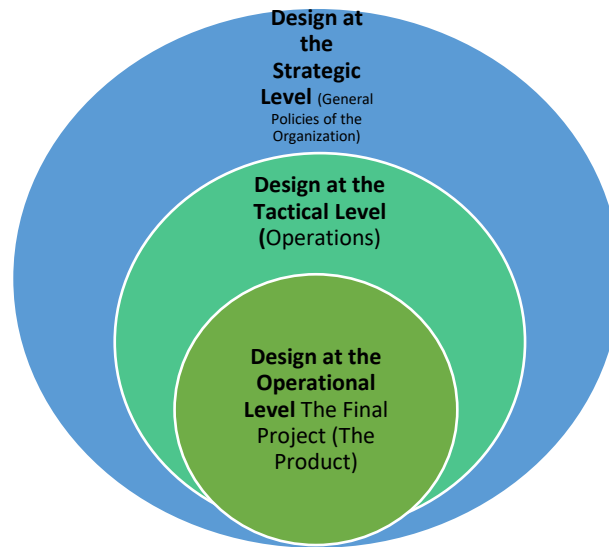
Figure (1): Managerial Levels of Design [12]

4.1. Design Management at the Strategic Level:

At this level of design management, the mission, general policies, and agendas are clear and defined, where design is considered part of the agendas. Design can operate at the strategic level (as a comprehensive strategy) if it's focused on as a source of competitive advantage, enabling it to change goals and guide the organization. Strategic design projects influence the company's direction in terms of structure, financing, and

The function of textile printing design management at the strategic level:

Design management at the strategic level aims to support and enhance the organization's overall strategy at the senior management level, in addition to establishing an integrated relationship between design, strategy, and the organization's identity and culture. Especially in creative sectors like the textile and home furnishings industry, design is a central element in

human resources. The strategic design leader plays an important role in every comprehensive strategic process of the organization. A design leader's responsibilities include building relationships between design and strategy, and the company's identity and culture. The goal is to achieve harmony between the company's design work and its integration into strategy formulation processes, which makes the design leader an expert consultant in the field of strategy.

enhancing institutional strategies. Design contributes to achieving a competitive advantage, meeting changing market needs, and forming a unique visual identity for the brand. This management aims to ensure design stability within the organization, allowing it to interact with the needs and requirements of senior management, with a focus on long-term design capabilities. This can be illustrated by integrating design into different institutional functions at the strategic level as follows:

Table (1): Elements that Design Management deals with at the Strategic Level [13]

Function	Level	Application
Strategic Level	Strategy	**Design and Project Management Responsibilities** **Define and develop design strategies** that align with project strategies, such as directing home furnishing product lines toward environmental sustainability or cultural distinction.
	Planning	**Manage design projects** and define project timelines. **Establish technical specifications**, including selecting materials, design criteria, and decorative motifs, or designing seasonal collections that suit the market.
	Structure	**Cultivate an internal environment that stimulates creativity** within design teams.
	Finances	**Support the overall corporate strategy** at a senior management level through the use of design tools.
	Human resource	**Allocate a sufficient budget for material experimentation** to effectively implement the design strategy.

Information	**Recruit and attract specialized textile print designers**, and manage, develop, and train designers to enhance their skills.
R & D	**Serve as a link between the development of new technology and materials,** such as developing smart or antibacterial fabrics for furnishings, which gives the product innovative functional and aesthetic properties.
Communications	**Plan, introduce, and improve communication methods.** Design plays an essential role in shaping visual media to express the brand to customers and reflect the company's identity.

4.2. Design Management at the Tactical (Business) Level

At this level, the role of design teams, processes, and systems within business units becomes clear. Design can be managed professionally to create unique products or services, which helps in discovering new market opportunities. Tactical design is implemented at this stage, but it remains connected to design management at the overall strategic level. The tactical design manager must focus on the possibility of developing concepts for creating new products that meet the needs of future customers.

At the tactical level, design management undertakes executive and organizational tasks aimed at translating major strategies into practical action plans that can be implemented within the organization. It transforms them into an operational plan that details how to execute a specific strategy by answering the questions "when" and "where" the strategy can be put into actual practice based on its nature. Therefore, tactics can be considered procedural policies that form a link between strategy formulation and its implementation. [14]

The Function of Design Management at the Tactical **(Business) Level**

The main role of design management at the tactical level is to establish an organizational structure for design within the company. This includes managing design departments and bridging the gap between operational and strategic design management tasks.

Tactical-level design management is branched into:

Systems:

This refers to operational processes and workflows that detail how work is executed within the organization and its regular sequence for various activities and processes. This includes information systems, capital budgeting systems, production and operations systems, as well as quality control systems and performance metrics.

Processes:

After preparing the necessary programs and budgets for implementation, operational procedures are established. These represent the steps that must be followed by all institutional activities to achieve the various programs.

It is essential to continuously update these procedures to reflect technological and strategic developments and the programs that follow.

Design is a precise and iterative process aimed at exploring a specific topic, and it also includes a creative aspect. Design processes consist of a set of methods that have been coordinated to suit the nature of each problem or design project. These processes have evolved through experimentation and testing of recurring problem-solving methods by designers or design teams by applying them to real projects related to clients. Most design processes are an embodiment of the steps designers take as they seek to solve problems and detail designs. Ultimately, the solution (design) is tested and implemented, as shown in Figure (2). It is worth noting that design processes are not long, as they include many feedback loops that clarify the nature of the design and its analysis at each operational stage. They have been specially designed to meet the needs 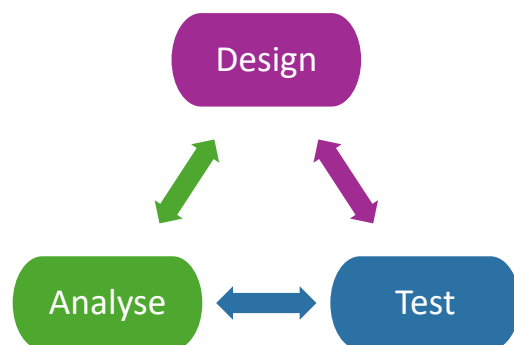of the specific client or project. that clarify the nature of the design and its analysis at each operational stage. They have been specially designed to meet the needs of the specific client or project.

Figure (2): Effective Design Processes [15]

This level includes the coordination between production, marketing, communication, and innovation departments, while considering market requirements and variables. The following is a presentation of the most important institutional functions that design management deals with at this level, within the textile industry sector:

Procedures should be simple to facilitate the implementation of the required programs, and employees must be trained on how to use them.

Table (2): Elements that Design Management deals with at the Planning Level [16]

Function	Level	Application
Planning Level (Business)	Strategy	**Coordinate the design strategy** with marketing, innovation, and communication departments. For example, developing furnishings that reflect the brand's identity and suit modern consumer trends.
	Planning	**Define design quality policy** (e.g., sustainability standards for materials). **Establish the design management structure** (administration) and tools (e.g., modelling and printing software). **Present and develop general design concepts. Align design processes with the institution's innovation processes.**
	Structure	**Apply design services internally**, such as designing samples or prototypes. **Integrate design into the corporate innovation culture** and activate its role in product development.
	Finances	**Adhere to the financial plan** and control experimentation and development costs within the budge
	Human resource	**Raise awareness about the importance of design** among work teams and partners through workshops and training courses.
	Information	**Create marketing, design, and production plans. Standardize design language** through design training.
	R & D	**Make conscious design decisions** across all stages of product development (e.g., market testing colours and designs before mass production).
	Communications	**Translate design theories into scientific research tools**, such as market research and designing questionnaires based on aesthetic concepts.

4.3. Design Management at the Operational Level

Design is notably effective in the field of home furnishings, especially through the **printed designs** on items like curtain fabrics, bed covers, and pillows. It serves as a tangible sensory experience for the customer, allowing them to appreciate the aesthetic and functional values of the product. Therefore, the actual implementation of the printed design represents the meeting point between the creative vision of the institution and the expectations of the end-user.

Design becomes evident through the products, services, or experiences associated with product implementation, enabling the customer to truly feel the design. At the operational stage of projects, the designer should focus on the effectiveness of the design processes, the design team, and independent design projects. The operational design manager, meanwhile, focuses on how design contributes to both the tactical (planning) and strategic levels of design management. A successful business strategy relies on the decisions made and activities carried out at the operational level. [17]

Regarding textile print design at this operational stage, the focus should be on the effectiveness of the design process itself, including the repetition pattern, colour selection, and the integration of decorative motifs with the fabric type. It also involves the efficiency of the design team responsible for producing print designs in line with current market trends. Encouraging independent design projects within the team is also a crucial element in developing innovative and fresh solutions in the furnishings sector.

In this context, the role of the operational design manager is to ensure that design contributes to achieving goals at both the tactical (planning) and strategic levels. This is done by coordinating daily design operations with the long-term vision of the institution. The success of a business strategy depends on the decisions and activities implemented at the operational level, which include determining printing methods, cost control, and ensuring the aesthetic and technical quality of the final printed product.

Responsibilities of Design Management at the Operational Level

At this level, design management focuses on implementing strategies, achieving their goals, and translating them into practical decisions and outputs. This includes product development, quality improvement, and applying visual identity elements. This level is the closest to daily operations and the creation of actual value. The following table illustrates the elements that design management deals with in the textile and home furnishings sector at this level:

Table (3): Elements that Design Management deals with at the Operational Level [18]

| Function	Level	Application
Planning Level (Business)	Strategy	**Translate corporate vision into clear design strategies,** defining the role that design plays in the brand.
	Planning	**Formulate a Design Brief** that guides the design process. **Make decisions regarding product quality and consumer experience** (e.g., creating products that combine aesthetics and function). **Establish clear policies for design, visual communication, and the brand's appearance on products.**
	Structure	**Implement design teams and follow up on collaboration** between designers and other departments, such as production and marketing. **Create a suitable environment for leadership and creativity.**
	Finances	**Manage design project budgets.** **Evaluate design costs, including prototypes and printing.** **Reduce design costs without compromising quality.**
	Human resource	**Develop designers' skills** and train them on new software.
	Information	**Provide information to production and implementation managers** to help them transform design concepts into products.
	R & D	**Set organizational goals that are understandable to designers.**
	Communications	**Establish specifications and metrics for evaluating design standards.**

4.4. Responsibilities of the Design Team at Each Level

The Design Leader is the person who defines the vision for how design will be used within the organisation, ensuring this vision is clear to investors and decision-makers.

The Design Manager, on the other hand, focuses on the processes, procedures, and functions related to design that add value to the organisation. This is achieved by defining the design team and providing internal resources, in addition to fostering design thinking across a range of business units and projects.

Meanwhile, **the Designer** identifies the necessary capabilities and resources to propose a design. They provide solutions within the design brief, on time, and within the allocated budget to meet customer needs.
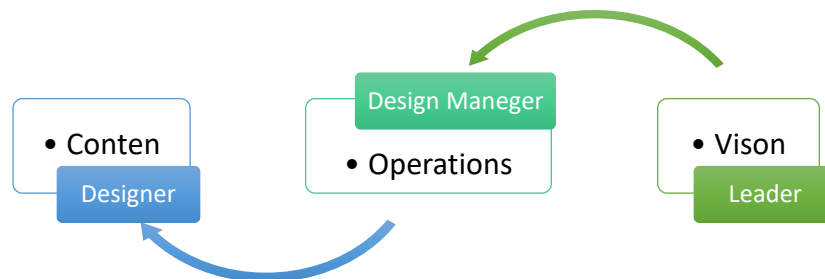
Figure (3): Responsibilities and Tasks for Each Level [19]

5. The Role of Design Management in Achieving Competitive Advantage

In a world of accelerating market changes and increasing competition, competitive advantage has become the cornerstone of success for any organization. Design is no longer just an aesthetic element; it's a strategic tool that helps build a brand's identity, improves user experience, and enables innovation.

Design management plays a pivotal role in building an organization's competitive advantage, especially in creative industries like the printed textile design for home furnishings. Today's consumer looks for products that combine good functional performance with beauty and reflect their identity and environmental awareness.

Employing design as a strategic tool is one of the most effective ways to achieve this market differentiation.

This part of the research explores the fundamental relationship between design management and competitive advantage, reviewing key concepts, aspects of building and enhancing competitive advantage, and the impact of design as a strategic tool for creating added value.

5.1 The Concept of Competitive Advantage

Michael Porter [20] defined it as "an organization's ability to offer unique value to customers that competitors cannot easily imitate, which allows it to achieve superior and sustainable performance." Competitive advantage

can be achieved through either low cost, differentiation, or focusing on a specific market.

The Importance of Competitive Advantage in the Contemporary Business Environment

Competitive advantage is no longer a luxury but a necessity for organizations to survive in the market. Its main feature is that it creates added value for the customer by:

Offering unique value or a distinguished service better than competitors.

Enhancing market share by attracting and retaining customers.

Driving innovation, as staying ahead requires continuous renewal.

Boosting growth and profitability opportunities, as differentiation allows for higher pricing and cost reduction.

Dimensions of Creating Competitive Advantage

According to the **Resource-Based View (RBV)**, competitive advantage is based on resources that are rare, valuable, difficult to imitate, and organizable.

According to Barney (1991), competitive advantage is achieved through a firm's resources that are:

Rarity, Value, Inimitability and Organizational support Design, as a resource, can meet these conditions, especially when built on a visual identity or user experience that is hard to copy. **When design is employed within this framework, it can be a resource that is difficult to replicate, making it a key element of competitive advantage** [21].

6. Design as a Tool for Enhancing Competitive Advantage

6.1 Aesthetic and Functional Differentiation

Design, in general, contributes to creating a unique user experience and expresses the brand's identity visually and functionally. Examples include companies like **Apple** and **Dyson**, which have made design a core part of their added value.

In the **home furnishings** sector (such as curtains, bed covers, pillows, and tablecloths), printed design contributes to creating a sensory and visual experience within the home space. It gives home furnishings a visual and functional distinction through colours, patterns, and specialized materials [22].

Design can also express a **cultural identity, artistic taste, or contemporary trends**, making the product more appealing and personal for the customer.

6.2 The Relationship Between Design as an Innovative Process and Printing and Finishing Technologies

Textile design increasingly relies on digital and smart printing technologies, which support innovation, reduce waste, and provide production flexibility. [23]

Design management plays a role in introducing new technologies in textile printing, such as:

Digital printing, which allows for design customization, waste reduction, and the execution of designs that are difficult to print using traditional methods.

Eco-friendly printing using water-based or plant-based dyes.

Integrating aesthetic design with additional functions, such as stain resistance or antibacterial properties through various finishing processes.

6.3 Responding to Social and Environmental Trends

With rising consumer awareness of sustainability, **sustainable design** has become one of the most important elements of competitive advantage in furnishings. The modern consumer prefers textiles that are:

Made from **organic or recycled materials**.

Produced with **sustainable printing** that has a low environmental impact.

Express a local flavour and cultural heritage in a modern way.

Kirsi Niinimäki's research confirms that linking design with ethical and sustainability principles leads to a symbolic and moral value that resonates with a broader and more conscious audience. This leads us to **emotional design** and **human-centered design**, defined as follows:

Emotional Design: designing furnishings with customized or cultural prints that enhance the consumer's emotional connection, making the product a part of their lifestyle. [24]

Human-Centered Design: making products more suitable for consumer needs, which increases loyalty and trust.

Supporting Brand Visual Identity

Patterns and prints can become a unique visual signature for a brand, enhancing differentiation and quick product recognition in the market. [25]

In the printed furnishings sector, design can give a product its unique brand identity. Companies like **IKEA**, for example, use textile design as a core element in building their brand through simple, colourful, and functional patterns that reflect their core values.

For local or emerging brands, differentiation in printing and design can compensate for limited marketing resources, as the product itself becomes a marketing tool.

6.4 Design Management and the Product Life Cycle

Design management plays a role at every stage of home furnishings design:

Research Stage: Analyzing trends and consumer needs.

Design Stage: Translating aesthetic and cultural values into visual elements (such as decorative motifs, colour schemes, and compositions).

Development Stage: Selecting the most suitable techniques and materials for implementation.

Marketing Stage: Highlighting the design idea within the brand's identity.

6.5 Design as a Strategic Tool

Design research indicates that strategic design is not only about product aesthetics but also extends to:

Eco-Design
Emotional Design
User Experience (UX) Design
Design for Sustainability

All of these create new contexts for differentiation and support the provision of added value that drives the organization toward a sustainable competitive advantage. Design sustainability is part of the competitive advantage for home furnishings. The integration of design and sustainability can be achieved by using organic materials or natural dyes, which provides an ethical advantage that attracts a segment of conscious consumers. [26]

6.6 Achieving Competitive Advantage through Textile Print Design

Printed textile design for home furnishings represents a unique meeting point between art, industry, and culture. By employing design management in a strategic manner, organizations can produce products that go beyond being mere utilitarian items to become tools of expression, comfort, and a visual identity that speaks to a specific audience.

Consequently, organizations that invest in design as a strategic resource will be able to:

Offer distinctive aesthetic and functional value.
Enhance the consumer's connection with the product.
Adapt to environmental and social changes.
Build a strong and sustainable brand.

6.7 The most prominent challenges in linking design with competitive advantage are:

The absence of a design culture within organizations.

The separation between design teams and strategic management.

The lack of clear metrics for measuring the impact of design on financial performance.

Insufficient investment in training, research, and development.

Design management is no longer just an executive tool; it has become a strategic driver that supports the achievement of competitive advantage for organizations. As markets move toward more development and innovation, investment in design in all its human, environmental, and technological dimensions will remain one of the keys to future leadership and superiority.

7. The Practical Framework: "Design Experiments"

Following modern global trends is a necessity in design in general, and consequently in the field of printed textile design for home furnishings, so that the design acquires a quality of contemporaneity and keeping up with global tastes.

7.1. Design (1) Technical Analysis:
First: Decorative Motifs Used

Primary Motif: The flower, which is the main repeated decorative element in the design. The flowers consist of multiple layers of transparent or semi-transparent petals that show subtle colour gradations. The flower petals are large and soft-edged, giving the design a delicate and calm character.

Secondary Motifs: Small plant leaves distributed at the edges of the design to fill spaces and support the composition, while thin branches connect some flowers to add fluidity to the overall form.

Second: Colour Analysis

Colores: Pastel shades and watercolour gradients, which give a sense of calm and softness.

Main Colour Groups: Sky blue and purplish-blue, light pink and dark orange, and shades of yellow and light brown with touches of gold.

Colour Techniques: Blending colours in a watercolour effect creates a sense of transparency and fluidity. The use of colour gradients within a single unit (e.g., a flower that contains a gradient from blue to pink to yellow).

Third: Structural Design

General Distribution: The design relies on a diagonal composition that starts from the bottom-left corner and moves toward the top-right, creating a visual flow.

Repetition and Variation: There is no symmetrical repetition. Instead, the units (flowers) are repeated freely with variations in size, colour, and direction, which enhances the aesthetic, flexibility, and visual movement.

Balance: Achieved through the distribution of different and harmonious colours throughout the design, with the large flowers centered between the edges and the middle, which provides a sense of balance with the background spaces without monotony.

Fourth: General Artistic Characteristics of the Design

Transparency and Softness: One of the most prominent features of the design, where the flowers appear to be made of soft, transparent fabrics. The variation in transparency and the overlapping of units add visual depth to the design, making it look three-dimensional. There's also a strong colour integration and harmony between the colours.

Eye Movement: The delicate curved lines that form the stems and leaves give a sense of movement and fluidity.

Modernity: The design blends natural elements with colour abstraction to give a contemporary character.

Suggested Uses for the Design: Printing on home textiles (such as curtains and bed covers).

Suggested Material: Printing on soft cotton fabrics using digital printing technology.

| **Design (1)** | **Symmetrical Design (1-A)** | Recruitment (1) |

Figure (4): Design (1)

7.2. Design (2)

First: Formative Units Used

Primary Flowers: Large roses in a light blue hue, featuring internal gradients that evoke a transparent, watercolour-like feel, suggesting movement and softness.

Buds and Small Flowers: Used to fill the spaces between the large roses, these elements are repeated in a balanced manner to add visual rhythm.

Leaves: Varying in shapes and sizes, with shades of olive green, pistachio, and dark green. They are dynamically distributed to create a natural colour contrast with the blue.

Complementary Units (e.g., Clusters): Small green spheres that add intricate details.

Second: Arrangement of Elements

Seamless Repeating Pattern: The design is built as a decorative unit that can be repeated without obvious breaks, creating a natural flow. The elements on the edges merge with their counterparts to form an uninterrupted pattern.

Balance Between Large and Supporting Units: No single element overpowers the design; there is harmony in the distribution density among the roses, leaves, and smaller elements.

Third: Colour Palette

Primary Colores: Light blue in various shades (from light cyan to ice blue), and natural green in contrasting tones.

Secondary Colores: Neutral Gray touches, particularly in the shading of some flowers and leaves.

Fourth: Colouring Technique

Watercolour Style: This style is evident in the colour gradients, the transparency of the layers, and the fluid transition of shades within a single element. The borders of the elements are soft, without clear outlines.

Visual Integration of Elements: Some flowers and leaves overlap and intersect, creating layers that suggest depth.

Fifth: Key Design Features

Perfect Repeatability: A precise and ideal design for repetition on large surfaces, such as bed linens.

Colour Harmony: The light blue provides visual comfort, and the colour gradient is enhanced by the watercolour technique.

Proper Density: Despite the space being filled with elements, the distribution does not cause visual clutter, thanks to the balance between sizes and spacing.
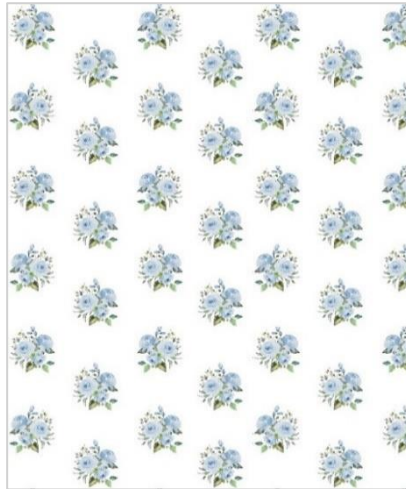
| **Design (2)** | **Symmetrical Design (2-A)** | Recruitment (2) |

Figure (5): Design (2)

7.3. Design (3)

First: Formative Units and Their Distribution

Decorative Units: The design relies on a mix of diverse geometric units, such as triangular and rhomboid shapes, intersecting lines, and curved waves.

Types of Units:

Wavy linear units that add a dynamic movement.

Repeated geometric units with a traditional character (like triangles and rhombuses).

Complex decorative units resembling ancient engravings or symbols.

Unit Distribution: The units are distributed in a regular grid-like pattern, but with a variety of content within each square or rectangle. This gives the design a harmonious and balanced visual rhythm. A divided circular shape is centered in the design, creating a focal point.

Second: Artistic Style

The overall style can be classified as modern-contemporary, inspired by traditional arts. It is characterized by the use of contrast between light and shadow to add depth to the shapes. Black and white with their shades are used to highlight details and textures, in a simulation resembling intaglio printing. Straight and curved lines provide a visual balance between rigidity and fluidity.

Third: Key Design Features

Harmony between geometric and fluid shapes.

Varied repetition that gives a sense of visual richness without monotony.

Visual centrality created by the intersecting circular shapes.

Apparent three-dimensional texture that gives a feeling of handcrafted artistry or tactile printing.

The monochrome colour makes the design flexible for use in multiple interior environments, with the possibility of easily introducing secondary colours.
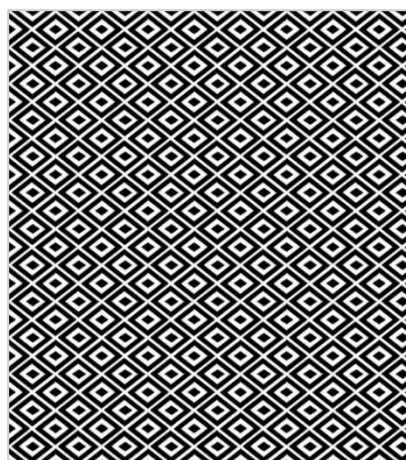
| **Design (3)** | **Symmetrical Design (3-A)** | Recruitment (3) |

Figure (6): Design (3)

7.4. Design (4)
First: Primary Formative Elements

Shapes: Stars of multiple sizes (solid and outlined), simple circles, and small hearts.

Repetition: The shapes repeat in a regular random pattern (Distributed Pattern) which creates visual movement and balance.

Size Variation: The different sizes of the shapes add depth and variety and prevent monotony.

Second: Colour Analysis

A **light beige/gold colour** gives the design a warm, natural feel.

A **textural effect** appears in some shapes (especially the circles), which enhances the feeling of material and warmth.

Third: Design Structure

The design relies on a free yet organized distribution:

Although the distribution appears free, the spacing is well-planned to give a sense of harmony.

There is no central or main focal point, which makes it suitable for furnishings that need to cover an entire area. The presence of wide white spaces between the units makes the design comfortable and not cluttered.

Fourth: General Character and Impression

A playful, childlike feel with a touch of elegance: The hearts and stars add a friendly and simple touch.

The neutral colour makes the design suitable for contemporary decor.

Ideal for printing on furnishings, pillows, and curtains, and suitable for bedrooms and children's rooms.

Fifth: Aesthetic and Functional Values

Aesthetic Value: Thanks to the simplicity of the elements and their irregular repetition, the design is not distracting and achieves a good harmony and balance between fullness and emptiness.

Functional Value: It is very flexible and can be enlarged or reduced without losing the clarity of its details.
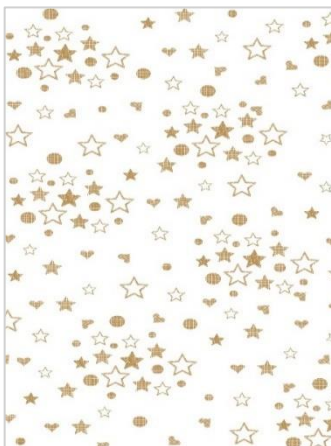
| Design (4) | Symmetrical Design (4-A) | Recruitment (4) | Recruitment (4-A) |

Figure (7): Design (4)

7.5. Design (5) Technical Analysis
First: Formative Units

The design includes a variety of botanical elements drawn in a soft and transparent watercolour style:

Flowers in multiple shapes: Flowers with five to six petals in various sizes and colours (purple, pink, blue, orange, yellow), and small closed flower buds in light colours (pink, peach).

Simple leaves: Long, narrow, oval-shaped leaves in light green or greyish tones, some paired (two leaves together), and others single. There are also non-botanical decorative elements, giving the design a natural and light character.

Second: Colour Analysis

The design is based on a calm and harmonious colour palette with a spring feel:

Pink and peach tones: These dominate the larger flowers.

Purple and violet: Add a cool and comfortable colour balance.

Pale sky blue: Used in small and medium flowers.

Calm yellow: Appears in limited proportions to add visual warmth.

Light olive green: Used for the leaves, providing a light botanical background.

White background: Highlights the softness of the colour gradients and makes the design feel airy and balanced.

Third: Design Structure

Free, regular repetition: The floral units are distributed in a balanced way without a symmetrical pattern or axial lines.

The varying size and orientation of the flowers create visual movement and flow.

No central point or frame: The design is suitable as a repeating background without obvious breaks.

Alternating botanical elements: The flowers and leaves complement each other without visual clutter.

Fourth: Artistic Characteristics of the Design

Colour Transparency: The use of watercolour enhances a sense of delicacy and purity, adding a poetic quality.

Visual Calmness: The soft colours and balanced distribution make the design comfortable and serene.

Unit Diversity with Overall Consistency: Despite the different flowers, the harmony of colours and style maintains the design's unity.

Childlike/Romantic Character: The design suggests simplicity and innocence, making it suitable for home products or children's products.

Ease of Repetition and Application: The unrestricted structure allows the design to be applied to large areas, making it suitable for furnishing fabrics (bed sheets, pillowcases, bed covers).
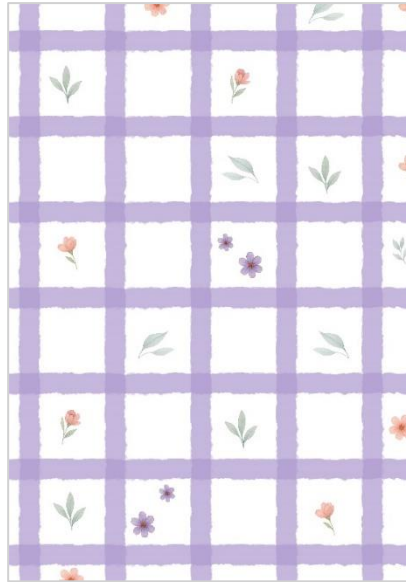
| **Design (5)** | **Symmetrical Design (5-A)** | **Recruitment (5)** |

Figure (8): Design (1)

8. Conclusion:

The study's findings are as follows:

The innovation process in textile print design can be utilized to increase the added value of the final product. This contributes to highlighting the product's aesthetic identity and boosting its competitiveness in the market.

Relying on modern design techniques, which combine a systematic approach with creative methods, leads to a high level of aesthetics in the final product's appearance. This, in turn, positively impacts its marketing and competitive potential.

Five main designs and five coordinated designs were created for textile printing, following modern design trends.

These designs and their coordinated versions were virtually applied to contemporary home furnishings, resulting in six applications.

9. Research Recommendations:

Integrate design teams into strategic decision-making.

Invest in education and training related to design management.

Develop measurement indicators to show the impact of design on profitability and loyalty.

Adopt a participatory design approach with consumers and stakeholders.

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