

Maya and Aztec Civilizations as an Inspiration Source for Textile Printing and Clothing Design

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Abstract

There are many cultural and artistic variations in ancient civilizations that gave humans a breeding ground for beauty and fashion. Among these civilizations are those that arose in Mesoamerica, including the Maya and Aztec civilizations. The purposes of this study are: 1) focusing a spotlight on the civilizations of the Aztec and Maya, putting into consideration that they developed great art and architecture; moreover, they produced woven fabrics and clothes; 2) creating a collection of textile printing designs inspired by these two civilizations using Adobe Illustrator and Adobe Photoshop programs; and incorporating these print designs into apparel designs. The researcher employed a descriptive analytical approach, which involved describing and analyzing the elements and units of Maya and Aztec civilizations, along with an experimental approach to create design collections suitable for women's clothing. A questionnaire was conducted to measure the success of these proposed designs and their clothing applications by specialists. According to specialists' opinions, the questionnaire's results revealed that the average evaluation relative weights for all the textile printing designs and their related apparel designs were between high and very high acceptance degrees.

Keywords

Maya, Aztec,
textile design,
apparel design.

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Introduction

Mesoamerica is a region containing diverse ancient cultures that were distinguished in the Americas for three millennia, from approximately 1500 B.C. to A.D. 1521, when Europeans arrived. These societies shared common religious beliefs, art, architecture, and technology (27). Figure1 illustrates Mesoamerican civilizations timeline (33).

Mesoamerica is a cultural and geographic region in the Americas that extended from central Mexico to Belize, Guatemala, El Salvador, Honduras, Nicaragua, and northern

Costa Rica. It was the site of the flourishing of several pre-Columbian societies, including the Maya and Aztec, prior to the Spanish colonization of the Americas in the 15th and 16th centuries. (11, 39, 49).

Archaeologists categorize the history of Mesoamerican civilizations into three main time periods: The Pre-Classic or Formative period, which lasted from 1500 B.C. to A.D. 300, the Classic period, which lasted from A.D. 300 to 950, and the Post-Classic period, which lasted from A.D. 950 to 1521 (33).

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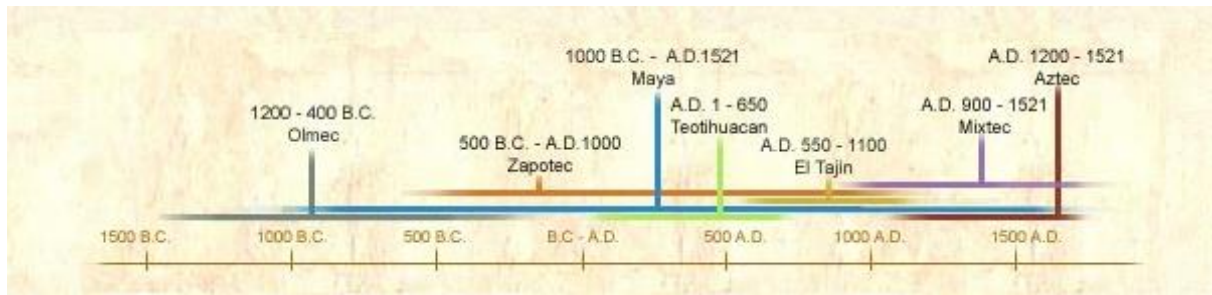


Fig. (1): Mesoamerican civilizations timeline

The Maya civilization reached its highest development from 250 AD until 900 AD. Extensive development took place, leading to the growth of major cities. Long-distance commerce was established, and the renowned Maya pyramids, sometimes known as temples, were constructed. The ancient Maya civilization made significant advancements in the fields of art, mathematics, and science. The empire saw a fall during the 8th and 9th centuries.

The Aztec population migrated southward toward Lake Texcoco during the Post-Classic era, which spanned the ninth to the thirteenth centuries. In the end, they were able to affect the power balance in the region (12). The people who built the Aztec Empire called themselves the Mexica (meh-SHEE-kah). They may have come from Aztlan, so scholars called them Aztecs. They arrived in what is now central Mexico. The Aztecs lived on uninhabited islands in Lake Texcoco. In 1325, they built their capital, Tenochtitlan (today it is known as Mexico City), on an island. The Tepanec, the dominant group in the region, governed the Aztec for the next one hundred years. The Aztecs paid taxes and participated in their military. In 1428, the Aztecs united with two other city-states to overthrow the Tepanec. The Aztecs promptly assumed control of the alliance and established themselves as the region's overlords (34). The Aztecs, situated in Central Mexico, established a vast empire that encompassed the majority of central Mesoamerica (49).

The Maya civilization eventually became subject to the Aztec kingdom and were required to pay tribute. The Maya culture had a significant impact on the Aztecs in various ways (12).

The unique Mesoamerica cultural tradition came to an end with the Spanish conquest in the 16th century (49). Their country, religion, and people were targets for the Spanish. The Spanish murdered and enslaved the others. Spanish trade goods spread smallpox, killing many of them (6).

Problem of the study

Mesoamerica is a rich civilization with historical events, great art, and architecture, in addition to their woven fabrics and clothes, it doesn't have enough study and research in textile and clothing design trends in order to benefit from the aesthetic values of this old civilization. So, the problem can be expressed as how the designer can use different components and inputs from this civilization to create new stylish textile and clothing designs from the symbols of this era.

Significance of the study

First, a study of an old civilization is one of the key approaches to study art and costume history that provides an essential 'databank' through which we can develop the future of textile art and clothes. Second, opening new contributions that may develop a future consciousness for researchers and art activity practitioners by using these historical data, and finally, applying this view to courses in art, costume history, textiles, and fashion design.

Objectives of the study

- 1- Focusing a spot light on the civilizations of the Aztec and Maya putting into consideration that they developed great art and architecture, moreover they produced woven fabrics and clothes.
- 2- Creating some textile printing designs that are inspired by the two civilizations.
- 3- Suggesting applications for these designs inspired from the two civilizations on some women's clothing.

Hypothesis of the study

- 1- The research assumes that the created textile printing designs are inspired by and express the Aztec and Maya civilizations and will be accepted by specialists.
- 2- The research assumes compatibility and harmony in the principles and structural elements of design, as well as the achievement of a modern formative formulation for the created designs inspired by the Aztec and Maya civilizations.
- 3- The research assumes the designer's success in using different filters for graphics programs to add effects and a variety of materials to the created designs.
- 4- The research assumes that the employment of the created designs and their suitability for the proposed apparel designs is generally accepted by specialists in the field of clothing.
- 5- The research assumes the designer's success in the compatibility and harmony of color groups, lines, and textures and adding shadow and light to show the created designs with the appropriate space and size for the proposed apparel designs.

Methodology of the study

The researcher employed a descriptive analytical approach, which involved describing and analyzing the elements and units of Aztec and Maya civilizations, along with an experimental approach, to create design collections suitable for women's clothing.

limitations of the study

The objective limits:

- 1- A theoretical study on the specific characteristics of the Aztec and Maya civilizations.
- 2- Utilization of software programs to create textile printing designs for women's apparel, inspired from the cultural elements of two civilizations.
- 3- Suggesting applications for the created designs into women's apparel.
- 4- Assess the artistic and aesthetic aspects of the textile printing designs and their proposed applications.

Location limits:

Mesoamerica in where Maya and Aztec civilizations built.

Time limits:

Classic and Post-Classic periods of Mesoamerica civilization.

Tools of the study

The sources used include books, scientific research, the Internet, Adobe graphic applications such as Photoshop and Illustrator, and an evaluation sheet in the form of a questionnaire.

Theoretical Framework:

1- What's civilization?

According to Webster's Encyclopedic Dictionary, "civilization" is characterized as an advanced stage of human society, when there is a significant level of culture, science, industry, and government. Another definition provided by the same source defines civilization as "the modern comforts and conveniences that are made possible by science and technology (41). However, archaeologists agree that primitive societies can evolve into complex societies and civilizations for several reasons. The reasons are debatable, but ancient civilizations' complex features include social class and ranking, trading networks, luxury and exotic, craft specialty, food control as in agriculture, massive population density, architecture, writing method, religious specialists such as priests and shamans, calendar, centralist rule, and military force (36).

2- Some characteristics of civilization that were found in the societies of the Mayas and the Aztecs

It is noteworthy that both the Mayas and the Aztecs resided in permanent urban centers. They created exquisite artwork and constructed elegant architectures, as depicted in the figure 2. They created objects made of clay, wood, metal, stone, and made woven cloth. Both civilizations observed and quantified the movements of celestial bodies such as the sun and moon, and possessed highly precise calendars (2). They wrote down their languages and used the same base-20 mathematical system (12). They had a high level of social organization, possessed knowledge of several cultures, and traded products over extended distances (2).



2.a. A Maya Pyramid



2.b. An Aztec pyramid

Figure (2): Maya & Aztec pyramids

3- The different social classes and occupations that existed in the Maya and Aztec civilizations

In both societies, there was a ruling class led by a king-like person who was in authority over everything. However, the Aztecs built a single kingdom, while the Mayas lived in many separate city-states, each with its own king, known as a "True Man". The Maya kings were from the high priests. Aztec priests also had a lot of power, but they had to share it with military and government leaders. In both societies, there were different groups of people: builders, craftsmen, traders, and regular people (2).

4- The calendar of Mesoamerica

All calendars used by Mesoamerican cultures are based on the Maya calendar, which is the dating method of the ancient Mayas (10). The ancient Mesoamerican civilizations employed a 260-day short or ceremonial calendar in conjunction with a 365-day solar year calendar (46). The solar year had 18 months, every month had 20 days, and 5 extra days were

added for each year to complete 365 days (2, 27, 49). Their moon cycle, which alternated between 29 and 30 days, was nearly identical to the lunar month.

Most of the names for the days, months, and years on the Mesoamerican calendar came from animals, flowers, celestial bodies, and cultural ideas that carried a significant symbolic meaning in their culture (49).

The Aztec calendar, dating system is an adaptation of the Maya calendar. It retained the mechanisms of the calendar, but it altered the names of the days of the week and the months (14). The well-known "sun stone" is actually a huge Aztec calendar. It's not just one sign, but a group of symbols that people would have recognized. The marks on the stone are actually pictures of gods. The rabbit (tochtli), for instance, refers to the goddess of fertility. The flower (xochitl) stands for the god of dance and stories. Also, the numbers on the calendar refer to gods. For instance, the number 7 stands for the god of corn, or maize (20, 39), as shown in figure 3.



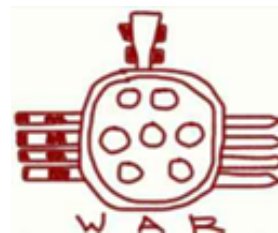
Maya calendar



Aztec calendar



The rabbit (tochtli)



symbol of war



The flower (xochitl)

Figure (3): Maya and Aztec calendars and some of their symbols

5- Some form of written language Mesoamerica civilizations

Mesoamerican civilizations utilized written languages. The characters were small figures of everyday objects from the Indian people's lives. Wood and stone were carved to write on. Additionally, they utilized folding books, named "codices," which were usually constructed from the bark of the fig tree (2). In reality, there were three distinct methods:

5-1- Pictograms

This basically means that the picture meant exactly what it looked like. For example, this snake picture would just mean "snake" (5).

5-2- Ideograms

These would show what the sign refers to. Therefore, it is possible that a snake could symbolize a ruler, or footprints could symbolize a journey or the passage of time in a specific direction. Alternatively, a warrior brandishing a weapon while standing over a



kneeling unarmed warrior could serve as a symbol of conquest (5, 20).

5-3- Phonogram

The closest thing to the Aztec script is a phonogram in which the sound is represented by an image. The word "be" could, for instance, be symbolized by an image of a bee. By combining the word that the image

represents, you can form words and sentences that are entirely irrelevant to the objects illustrated in the images. The phrase 'I can be hospitable' can be represented as a sequence of phonetic symbols as follows: an eye, a tin can, a bee, a horse, a pit or hole, and a table (5). Some Maya and Aztec writings are illustrated in figures 4 & 5.

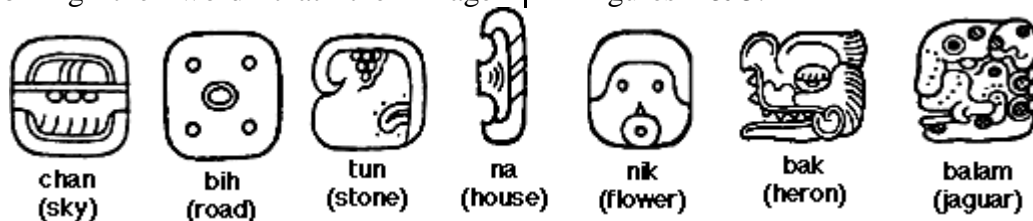


Figure (4): Some Maya logograms (44)

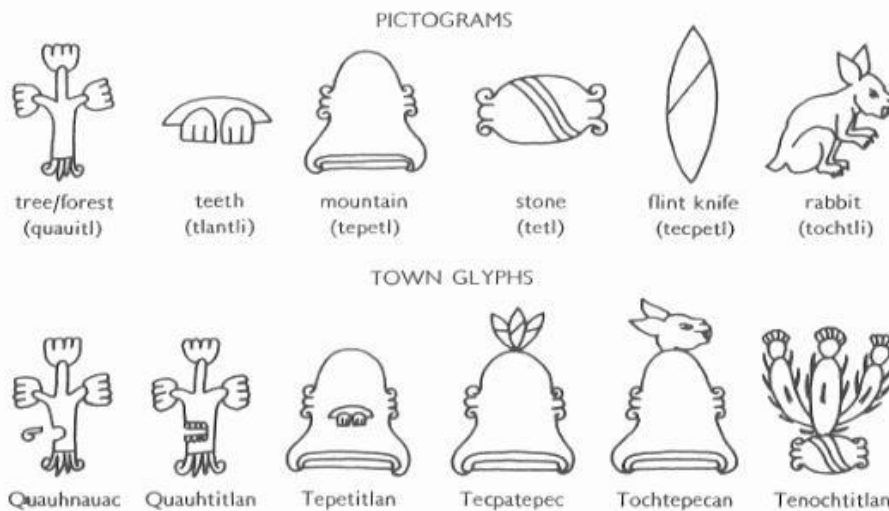


Figure (5): Aztec writing: Pictograms & town glyphs formed from pairs of pictograms (5)

Within the pre-Columbian Americas, the Maya script stands out as the most advanced and extensively refined writing system. So yet, only this writing system from Mesoamerica has been deciphered to a large extent (37). About 550 logograms, which express entire words, and 150 syllabograms expressing speech sounds, make up the Maya writing system. In addition, there were about a hundred signs for places and names of the gods. They also utilized over 300 glyphs (44). They established a number system as well. They employed a dot, a line, and an image as their three symbols. One was represented by the dot. Five was indicated by the bar. The image, which was frequently an oval shell, represented zero. Among the first people to employ the notion of 0 were the Maya (38).

The Aztecs lacked a comprehensive writing system comparable to that of the Maya. Their proto-writing system consisted of pictograms and ideograms, which were used in conjunction

with phonetic rebuses. Moreover, it included syllabic symbols and logograms (37).

Glyphs were occasionally employed to represent the sound value of a word, instead of its meaning. Therefore, a representation of an eye may be classified as a pictogram (e.g., the eye as a component of the body), an ideogram (e.g., the concept of sight and vision), or a phonogram (e.g., the sound 'I') (5). Figure 4 illustrates some Maya logograms (44) and figure 5 illustrates some Aztec writing (5).

Color also played a significant role. The symbols representing grass, canes, and rushes appear identical in black and white, but there was no way to go wrong with color: in the Codices, Mendoza grass is yellow, canes are blue, and rushes are green. A monarch could be immediately identified by the form of their diadem and by the color, turquoise, which was exclusively designated for royal purposes (5, 29, 45).

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6- Common types of art

While there are similarities between Maya and Aztec art in terms of content, such as depictions of deities, animals, and geometric patterns, there are also notable differences in their styles (32). The Maya represented people in a realistic way, whereas Aztecs were able to create magnificent depictions of animals with a great deal of sensitivity (26). Maya art is known for its intricate and detailed carvings, particularly in stone and wood. Maya art often features contoured lines and curves, as well as intricate geometric patterns and glyphs. Maya artists also used a wider range of colors, particularly blues and greens. On the other hand, Aztec art is known for its bold and vibrant style. Aztec artists often used bright colors, such as red and yellow, and their artwork frequently features thick, bold lines (32).

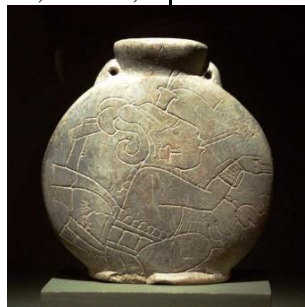
6-1- Maya art

Early Maya artists focused on religion. The Mayas depicted human sacrifice, battle, daily life, and religious ceremonies with shocking reality. The great Maya cities all made beautiful sculptures. Maya temples, stela,

monuments, and buildings had sculpture. Mythological creatures, deities, and supernatural animals were sculpted beautifully. Lords and rulers wore lavish headdresses, clothes, and jewels. Mayas preferred limestone for sculpture. They also used trachyte, sandstone, wood, and clay. They used only stone tools and wooden mallets. The Maya were interested in pottery. They made animal-shaped whistles, cooking pots, and drinking vessels. They made different kinds of bowls, jars, and plates. Their potteries are regarded as the most beautiful pottery produced in ancient Mesoamerica. They were predominantly adorned with animal deities, grotesque monsters, nobles and priests, and scenes of human sacrifice, colored with orange, yellow, and red. Numerous jade jewelry, effigies, plaques, and mosaics have been discovered during the excavation of graves. Some golden cups, jewels, and statues were found in the excavation locations, but they mostly used copper, as shown in their tools, bells, rings, disks, and small masks (9). Some examples of Maya art are shown in figure 6.



A Maya maize god statue carved from stone



a whistle with this three-dimensional figure of a Maya ball player was carved from a ceramic base.



an ancient Maya plate displaying a woman grinding cocoa

Figure (6): Some examples of Maya art (8)

6-2- Aztec art

Many Aztec everyday goods and constructions show Aztec art. Aztec clothes, pottery, jewelry, temples, and weapons were artistic. More specifically, the Aztecs used bright colors and expressive artwork to convey their culture and religion on these things (25). The term "tolteca" was used to refer to the exceptional artisans of the Aztec Empire. This was due to the fact that the skills they were practicing were derived from the ancient Toltec civilization (4).

Aztecs were skilled in producing objects from shells, glass beads, feather work (especially from the quetzal bird), and in gemstone carving, jewelry making, and silver and gold smithing (1, 4). Aztec art also often features representations of their military conquests and sacrifices (32). An important part of Aztec art was the use of symbols. For example, different kinds of Aztec art put a lot of emphasis on the nature world. They use Jaguars, eagles, shells, reptiles, and other familiar things (25). Some examples of Aztec art are shown in figure 7.



Double-Headed Serpent
(British Museum) (25)



Frog Altar from
Tenochtitlan (25)



an Aztec ruler " Tizoc " Gold Idol
(Front and Back) (4)

Figure (7): Some examples of Aztec art

7- Textile and clothing

In Maya civilization, textiles were used to determine origin, whereas in Aztec society they served as a status symbol. Aztecs and Mayas each had their own style that showed their beliefs, morals, and way of life. Both had different styles depending on where they lived. They had many similarities, like the fabrics, stitches, and colors of their clothes. Every culture had white and brown cotton clothes. Many societies wove on backstrap looms. Gauze, tapestry, supplemental warp, supplementary weft and complimentary warp were used by all societies. Different eco-friendly products were used to dye garments. Ancient Mexicans got purple from snail secretions (47). Generally, insects, mollusks (shellfish), indigo, and plants were utilized to produce dyes.

7-1- Maya clothing

The ancient Maya were famed for their unique features and remarkable body alterations. They used tropical materials to make colorful fabrics and decorations. They made costly apparel for huge public events, bright dancing costumes, defensive armor for fights, sporting attire, and simpler, yet no less sophisticated, clothing for everyday settings (23). Maya textiles use agave and cotton threads. Maya clothing was brightly colored and patterned (22). An illustration of some Maya clothes is presented in figure 8.

7-1-1- Maya men's clothes

Generally, men wore vibrant loincloths. Single men dressed brighter than married. Men carry spiritual bags instead of jewels. Some men's belts included pompons or fringe at the end and were woven and adorned on a blue or crimson

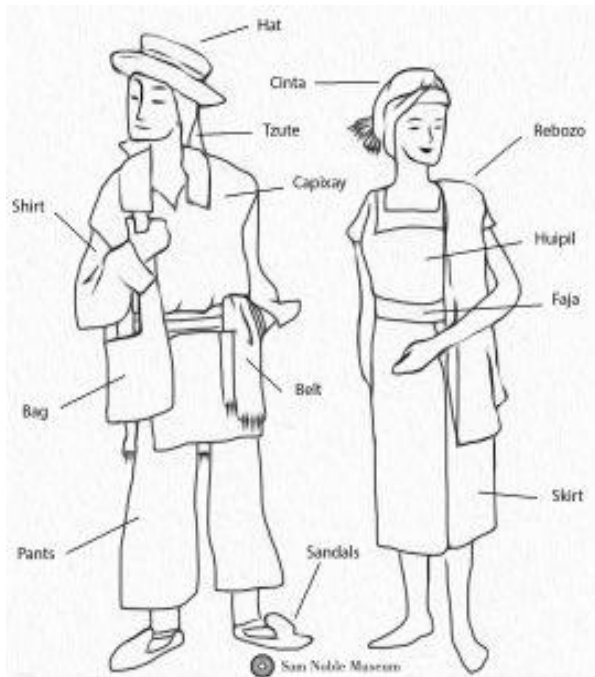
background. Men wore an embroidered "tzute" over their shoulder. On ceremonial occasions, they wore various hats associated with their respective regions (48). Mayas dressed in cotton cloaks and capes. These clothes came in a variety of hues and included vibrant stitching. The ruling elite used capes and cloaks made of more exotic materials, which helped them strengthen their status in society. The most prevalent footwear styles were moccasins or sandals made from deer hide (22).

7-1-2 Maya women's clothes

The term "trajé" was used to refer to the typical garment that a Maya woman would wear. This garment consisted of a corte, a woven fabric skirt that wrapped around the waist and was secured with a "faja," a waist sash, and a blouse called "huipil" (22). In addition, there were supplementary wraps and scarves adorning the upper body and around the hips. Cloaks and shawls were worn during cooler seasons. The loose-fitting garments used by women usually extended to their ankles (3).

7-1-3- Maya warrior's clothes

Some types of protective garments were created as a means of defense. The main components of Maya costume for warriors and combatants consisted of a padded cloak predominantly crafted from twisted cotton or thick leaves, animal skin, and expansive shields adorned with feathers and animal leather. Additionally, Maya warriors usually used elaborated headdresses and jewels, although their clothing was less ornate and decorated compared to the attire of subsequent Aztec warriors (42).



Identification of parts of Maya clothing (47)



Maya warrior clothes (43)

Figure (8): An illustration of some Maya clothes

7-2- Aztec clothing

Aztec clothing reflected their religion, social class, gender, lifestyle, and societal position. They used cotton fibers, which were imported,

and ayate fibers from local Maguey Cactus. Cotton was reportedly designated for the nobles or higher class (38).

7-2-1 Aztec men's clothes



On the left, a woman wears the triangular-shaped quechquemil over her cueitl. The first man is a peasant dressed only in a simple maxtlatl (loincloth). The nobleman to the right wears a headband, a mantle knotted over his left shoulder, maxtlatl and high-backed sandals.' (30)



The Texcoco ruler (Nezahualpilli) wearing xiuhtimatli (blue cape), maxtlatl (loincloth), and cactli (sandals). From the Codex Ixtlilxochitl (24)

Figure (9): An illustration of some Aztec men's clothes

The simplest Aztec clothing was worn by the lowest class of society. The clothing of Aztec peasantry and slaves consisted of a "loincloth" called "Maxtl", which was a long cloth band tied in front of the waist (18, 21, 48). If the man belonged to a higher social class, this might feature more embroidery and fringes to give it more style and indicate his rank (38). Aztec men wore triangular "Tilmahtle" or "Tilma" capes. Over the Maxtl, the Tilma was worn as a cloak or bag. As with many Aztec items, the Tilma's design shows the wearer's

social rank. A more intricate and colorful pattern indicates a noble or religious leaders (38, 48).

Aztec emperors, nobility, and religious leaders wore luxurious clothes. Commoners couldn't utilize certain materials and colors reserved for the ruling classes. Other than the loincloth, Aztec rulers and nobility wore skirts and tilmas. The exquisite Quetzal feather headdress of the Aztec rulers was a key element of their attire. They wore rich colors, gold, feathers, furs, pedants, and other accessories (18, 48).



With regards to footwear, the Aztec nobility frequently used sandals known as "cactli" (38), but the bulk of the population went for barefoot (48).

As in other areas of life, Aztec religion and gods affected clothing. Aztec priests and rulers were depicted as gods in various artworks, wearing particular clothes. These disguises were worn during religious rites, along with religiously significant masks (18). Figure 9 presents an illustration of some Aztec men's clothing.

7-2-2- Aztec women's clothing

Like everything else in Aztec society, women's

dress details indicated their social rank. Most Aztec ladies wore "Cueitl" skirts fixed with sashes. "Huipilli", a sleeveless top pulled over the head, was decorated with patterns and decorations (38). For the style, two long braids were wrapped around the front of the head and stood up on the sides like horns. All classes of Aztec women wore bracelets, rings, and ear plugs made of green stone beads and other things. Most people didn't cover their heads (30). Aztec women also wore fancy jewelry, but only if they could afford or make them (19). An illustration of some Aztec women's clothes is presented in figure 10.



a woman wears the triangular-shaped quechqué mitl (shawl) over her cueitl (skirt) (30)



Aztec women wear typical short-sleeved shirts and skirts.

Figure (10): An illustration of some Aztec women's clothes

7-2-3- Aztec warrior's clothes



Aztec Jaguar Warrior (8)



Group of Aztec warriors



Aztec warriors (from codex)

Figure (11): An illustration of some Aztec warrior's clothes

Costumes for Aztec warriors indicated bravery or their fighting group (38). Based on their military group, eagle or jaguar, the soldiers wore different attire. Eagle knights wore stylized eagle helmets. Quilted clothes protected them against opposing spears and arrows. The knights' warriors had jaguar heads and skin. The elaborate clothing of Aztec warriors showed a hierarchy; war heroes got more jewelry and luxurious clothes, and some chiefs wore gold. Warriors carried basic shields. They used arrows, spears, and the maquahuitl (a wooden club with several embedded obsidian blades) (21).

Aztec warrior clothing was closely tied to religion. They believed that wearing costumes of supernatural animals would give them

energy and strength to fight. They also adorned their outfits with furs that they traded or killed (6). An illustration of some Aztec warrior's clothes is presented in figure 11.

8- Maya and Aztec jewelry

8-1- Maya jewelry

Jade was of more importance to the Mayas than gold. The noblemen loved jade that wore them as jewelry and even had some chips inserted in their teeth. A majestic green gemstone represents fertility, water, and life. The Mayas thought that jade was worth more than gold. Noblemen wore jewelry made of jade and had chips put in their teeth. A lovely green gem stands for life, water, and fertility. Nobles wore ear flares and other accessories into significant ceremonies to represent their gods,

communicate with them, and use their power (8).

The Mayas were highly skilled at making jewelry. At first, they used stones, bones, and shells because gems and valuable metals were hard to get by. After some time, there were more natural supplies to choose from (13). The Mayas also made beautiful jewelry out of bronze, gold, silver, copper, jade, and silver. Except lip and nose plugs, a lot of the jewelry that men and women wore was the same. Men

with a lot of social standing were the only ones who could wear nose plugs and nose ornaments (13, 28).

Some other interesting pieces were narigueras, which were hung at the base of the nose, besotes, which adorned the lower lip, and pectorales, which were worn on the chest. Each one was carefully made and had a deep symbolic meaning in Maya society (16). An illustration of some Maya jewelry is presented in figure 12.



Maya metal bracelet (13)



Maya ear jewelry (16)



Ancient Maya Jade (17)

Figure (12): An illustration of some Maya jewelry

8.2. Aztec Jewelry

The elite of Aztec society considered jewelry to be a fundamental component of their clothing. Aztec jewelry might also display religious elements. A big variety of birds and reptiles, together with organic forms, were frequently fashioned into jewelry. The Aztecs also enjoyed wearing little bells that jingled and resembled flowers (18). Necklaces, earrings, rings, and bracelets were adorning the upper classes (18, 21). A higher-status Aztec person would wear more and better quality jewelry than a lower-status Aztec. Headdresses adorned with gold and quetzal feathers were exclusively

reserved for royalty. Soldiers who achieved high levels frequently received leather earplugs, while merchants who participated in a conquest were often given green earrings adorned with bells. A wealthy Aztec might wear gold or turquoise earplugs but a lower-class Aztec would wear obsidian earplugs. Both men and women in their society would decorate themselves in bagels, chokers, and necklaces. Overall, though, Aztec jewelry had such variety and the Aztecs really perfected the art of metalworking (28). An illustration of some Aztec jewelry is presented in figure 13.



A gold Aztec labret lip plug (28)



An Aztec Gold Jewelry (4)



Aztec eagle golden earrings



An Aztec gold nose ornament (7)

Figure (13): An illustration of some Aztec jewelry

9- Maya and Aztec masks

Religious rituals festivals, and other cultural occasions involve Maya masks fashioned of wood, clay, or other materials. Mayas employ masks in religious rites for spirituality. Maya masks commonly feature symbols and designs of the gods or spirits they respect. Festivals and cultural activities use masks. Dancers and

other performers wear them to portray Maya culture or history. Maya warriors wore masks in battle to intimidate and protect themselves (15).

Aztec masks were worn by some people in the Empire, which were used in ceremonies to show different gods. Typically, Aztec masks were designed for exhibition rather than for

personal use. Therefore, it is common to find masks without eyeholes, as well as masks affixed to stone or skulls (35). A lot of people also had different tattoos, hairstyles, and face paints to make their bodies



A jade Maya funeral mask (8, 28)

look cool. These are important symbols in the culture of the Aztecs (19). Figure 14 presents an illustration of a Maya mask and an Aztec mask.



Aztec Turquoise Mosaic Mask in the Mexico Museum of Archaeology (4)

Figure (14): An illustration of a Maya mask and an Aztec mask.

10- Research Procedure:

10-1- Textile printing designs inspired from Aztecs and Maya symbols

Creating appropriate textile printing designs using a set of symbols (motifs) from the Mayas and Aztecs that reflect some aesthetic features in their civilizations. The collected motifs are shown in table 1. They are used as inputs in the process of textile printing designs, then organized in different ways in terms of a structural design in order to create six different textile printing designs for women's clothing. The Adobe Illustrator program was used to draw the motifs and create the designs that

inspired from these civilizations. The Adobe Photoshop program was used to recreate the original designs using different filters to coordinate groups of textile printing designs with different textures and colors. Sets of apparel applications are prepared in different kinds of garments, such as abayas, skirts, pants, vests, jumpsuits, blouses, a short, and dresses, for testing the use of original and recreated designs as actual garments by using pictures of female mannequins to get a realistic 3-D outlook. Apparel designs are drawn and painted using the Photoshop program.

Table (1): Motifs that used in the textile printing design

Motif 1	Motif 2	Motif 3	Motif 4	Motif 5	Motif 6
An Aztec person with traditional dress making a ritual to the god	Fish as an important symbol in Aztec art.	Maya hieroglyphs (glyphs)	Maya logograms	Maya weaving patterns always tells a story	The shapes of birds often have a religious significance in Aztec art.

Evaluating of the created textile printing designs and their related filters and apparel designs

An electronic questionnaire using "five-point Likert scale" with 13 questions was built using Google Form to define the opinions of specialists in the "textile printing" and "textile and clothing" fields about the textile printing

designs and their applications. A group of 18 specialists had determined the acceptance level of the designs, their related filters, and apparel applications. The results were analyzed by identifying the acceptance degree on the five-point scale as follows: Very High (5:4.20), High (4.19:3.40), Medium (3.39:2.60), Low (2.59:1.80), and Very Low (1.79:1).

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3. Results and Discussion

3.1. Inspired created textile design (1)



Design (1)



Design (1.a)



Design (1.b)

Figure (15): textile design (1) and its filters

The structure of the original design presented in figure 15 depends on repetition of the motif 1 in different sizes, directions, colors, lines, and textures. In this textile design, different types of lines were used, creating a feeling of movement and variety. A triadic complementary color scheme (red, yellow, and blue) with different hues and values was used to soften the contrast of cold and hot colors as well as the brown color, providing the color balance and harmony (31, 40). The most important characteristic of this created design is the scenery radiation rhythm that was obtained by starting the artistic elements of the motives from a center and flowing out through the whole design in different sizes and directions, achieving asymmetrical/informal balance. The relationship between the parts of the motif repetition and the whole textile design conveys a feeling of unity and supports harmony in the created design. Designs 1.a and 1.b were recreated from the original one. They are the outputs of the filter processing operations in the computer program to get

different textures and colors. The output recreations are as follows: Design 1.a used stylize filter/emboss (angle 135°, height 40 pixels, amount 155%). Design 1.b using stylize filter/find edges.

3.1.1. Apparel application set of textile design (1)

This group of garments in figure 16 alternates between long dresses, skinny pants, blouses, headdresses, and a short. Bright colors draw attention and create a vivid and exciting look; combining them with dull colors like black and navy blue creates a dramatic contrast and controls the wearer's size and shape. The entire set of suggested apparel designs maintains a symmetrical balance, with the exception of the long dress proposed on the left. Vertical, horizontal, and diagonal lines in the proposed apparel designs work together to give a sense of freedom, movement, and rhythm. In addition, adding decorative belts in red attracts attention and creates a sense of distinction and elegance.



Figure (16): Apparel application set of textile design (1) and its filters

3.2. Inspired created textile design (2)

The original design's structure in figure 17 relies on repeating the motif 2 within circular shapes of varying sizes. The basic lines are curved and wavy, suggesting continuity and following a rhythm of motion. Placing the motif inside a circle shape demonstrated unity, achieving harmony and adding a sense of wholeness. Additionally, the use of geometric circle shapes added variety and maintained the viewers' attention.

The arrangement of the front and back positions, along with the use of light colors and spotlights, creates the illusion that these circles

are swimming in water. Large areas of the transparent violet color, with its tints and shades, rest the eyes and create a royal, rich, wise, and dramatic outlook. The curved lines evoke a soft, gentle, and youthful feeling (31, 40). Designs 2.a and 2.b are the results of filter processing operations in the computer program, which produce different textures and colors. The output recreations are as follows: Design 2.a used artistic filter/poster edges, then noise filter/add noise, finally stylize/sponge. Design 2.b artistic filter/ Plastic Warp, then texture filter/mosaic tiles.



Design (2)



Design (2.a)



Design (2.b)

Figure (17): textile design (2) and its filters

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3.2.1. Apparel application set of textile design (2)



Figure (18): Apparel application set of textile design (2) and its filters

This group of garments in figure 18 alternates between a blouse with convertible collar, a mididress, a Jumpsuit and palazzo pants. Bright colors contrast with dull colors, creating a dramatic feeling and control over the wearer's size and shape, attracting attention and creating a lively and exciting look. All proposed apparel designs are characterized by a symmetrical balance except the suggested long-sleeve wrap blouses with convertible collars on the left. The vertical and diagonal lines common in the proposed apparel designs work together, giving a sense of dignity, strength, freedom, and movement. Additionally, the rhythmic space relationships between the decorative and plain textile designs prevent the proposed apparel designs from becoming monotonous.

The original design's structure figure 19 relies on repeating the motif 3 in two sizes: a large size, visible in the background, and a small size, visible in the shape, using different harmonic colors. The spaces between the small motifs create an informal balance. An analogous color harmony scheme achieved by combining different tints and shades of amber, yellow-orange, and red-orange conveys warmth, a sense of harmony, relaxation, and a soothing effect. The variety of size, color, and texture, as well as placing the components close together by repetition, gives unity to the whole design (31, 40). The output recreations are as follows: Design 3.a used artistic filter/poster edges (twice). Design 3.b used artistic filter/poster edges, then artistic filter/plastic wrap.

3.3. Inspired created textile design (3)



Design (3)

Design (3.a)

Design (3.b)

Figure (19): textile design (3) and its filters

3.3.1. Apparel application set of textile design (3)



Figure (20): Apparel application set of textile design (3) and its filters

This group of garments in figure 20 alternates between abayas, a skirt, a vest, a shawl, and headdresses. Multi-colored designs with bright, large patterns and prints attract attention, create a lively and exciting look, and add volume to slim wearers. Vertical, horizontal, diagonal, and curved lines work together, giving a sense

of freedom and movement; hence, rhythm is accomplished. The repetition of the same printing design in more than one part of the proposed apparel designs gives them a well-related quality feeling of oneness and completes the harmony.

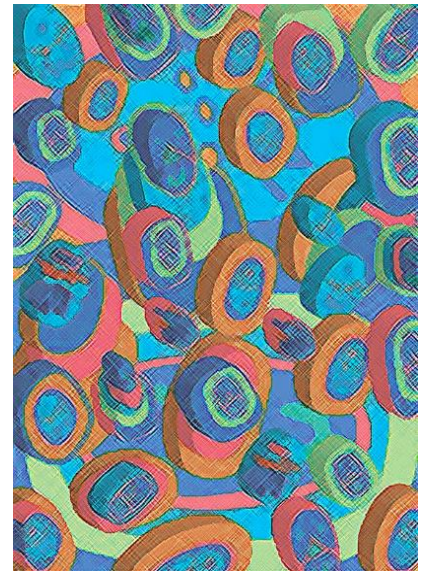
3.4. Inspired created textile design (4)



Design (4)



Design (4.a)



Design (4.b)

Figure (21): textile design (4) and its filters

The structure of the original design as presented in figure 21 depends on repetition of the motif 4 in different sizes, directions, and colors give informal balance with unity and harmony feelings. 3-D forms with different grading of a double complementary color scheme balance cold and warm colors made attraction, movement, and the contrast of colors

that look brighter. Curved lines of the closed areas give a soft, gentle, and youthful feeling (31, 40). Designs 4.a and 4.b are recreated from the original one. The output recreations are as follows: Design 4.a used texture filter/mosaic tiles, then brush strokes/accented edges. Design 4.b used brush strokes/crosshatch.

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3.4.1. Apparel application set of textile design (4)



Figure (22): Apparel application set of textile design (4) and its filters

This group of garments in figure 22 alternates between a jacket, a skirt, and draped blouses. Multicolored outfits with bright, large patterns and prints get attention, giving a vivid and exciting look. These designs incorporate various types of lines and evoke a sense of movement. All the suggested apparel designs

feature varying lengths and asymmetrical balance, with the exception of the proposed jacket from original design 4, which maintains a symmetrical balance. Some of the proposed designs use dyed fabrics with printed designs to create a sense of diversity.

3.5. Inspired created textile design (5)



Design (5)



Design (5.a)



Design (5.b)

Figure (23): textile design (5) and its filters

Figure 23 illustrates the original design structure, which relies on the recurrence of motif 5 in a single size, and the combination of light colors in the basic motifs with dark colors in the background. Using a blue-green color with a red-orange tint creates contrast and adds various values to the textile printed design. The relationship between the parts of the motif repetition and the basic curved and wavy lines through the whole textile design conveys a feeling of unity and supports harmony in the created design. These wavy lines suggest continuity or flowing motion and create an

emphasis on the basic motif and achieve the progressive rhythm. Designs 5.a and 5.b are recreated from the original one. The output recreations are as follows: Design 5.a used texture filter/mosaic tiles. Design 5.b using artistic filter/plastic wrap, then texture filter/mosaic tiles.

3.5.1. Apparel application set of textile design (5)

This group of garments in figure 24 alternates between a sleeveless jacket, a tail dress, and a wide-leg Jumpsuit. Accented dark colors tend to have a more serious connotation while

conveying a sense of sophistication and elegance in designs. Additionally, they can convey a sense of authority and reliability, making the wearer appear slimmer, heavier, and substantial. Incorporating dark colors into the design with lighter or brighter accents can mitigate their potentially negative emotional effects. This combination can create a sense of striking balance, contrast, harmony, and visual

interest. Vertical, horizontal, diagonal, and curved lines in parts of suggested apparel designs work together to give a sense of freedom and movement. The suggested apparel designs exhibit a symmetrical balance, with the exception of the proposed tail dress for the created printing design 5.b, which exhibits an asymmetrical balance.



Figure (24): Apparel application set of textile design (4) and its filters

3.6. Apparel application set of textile design (6)



Design (6)



Design (6.a)



Design (6.b)

Figure (25): textile design (6) and its filters

The structure of the original design in figure 25 depends on repetition of the motif 6 in different sizes, directions, colors, lines, and textures. Different types of lines, both vertical and curved, occur in this textile design, creating a sense of movement. The use of monochromatic red color grading added a variety of values to the textile printing design. The variety of sizes,

colors, and textures, as well as placing the components close together by repetition in the front and background in different directions and decorations, give unity and harmony to the whole design (31, 40). The computer program's filter processing operations produce designs 6.a and 6.b, which result in different textures and colors. The output recreations are as follows:

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Design 6.a used stylize filter/emboss (angle 135° - height 100 pixels- amount 100%).Design 2.b) used cracks brush with lighten mode.

3.6.1. Apparel application set of textile design (6)

This group of garments in figure 26 alternates between a mini-length dress, wide-leg jumpsuits with spaghetti shoulder straps, and a skirt. Multicolored outfits with vertical lines in parts of suggested apparel designs get attention; a vivid and exciting look with a feeling of movement. Vertical, horizontal, and

diagonal lines common to proposed fashion designs work together, give a sense of freedom, movement, and rhythm. In addition, adding decorative belts attracts attention and creates a sense of distinction. The entire set of suggested apparel designs exhibits a symmetrical balance. Most of the proposed designs are dominated by the use of dyed fabrics with the created print design, which gives a great sense of elegance and sophistication however design 6 covers the whole area of the mini-length dress.



Figure (26): Apparel application set of textile design (4) and its filters

3.7. Evaluating of the six created textile printing designs using evaluating scale.

In the specialists’ questionnaire, thirteen statements addressed two main axes: The first axis (8 questions) expresses the artistic and aesthetic values of the created textile printing

designs, and the second axis (5 questions) expresses the aesthetics of employing these textile printing designs in the proposed apparel designs, and the results are shown in table 2 and figure 27.

Table (2): average evaluation relative weights of the designs

Questionnaire items		Design number		Design 1		Design 2		Design 3	
		RW	D	RW	D	RW	D		
The first axis									
1	The design expresses the symbols of the Aztec/Maya civilization	4.663	VH	4.402	VH	4.461	VH		
2	Compatibility in the Principles and structural elements in the design	4.289	VH	4.551	VH	4.216	VH		
3	Harmony and compatibility between color palette and textural values in the design	4.41	VH	4.659	VH	4.139	H		
4	The extent of creating a novel plastic formulation	4.166	H	4.605	VH	4.098	H		
5	Achieving rhythm in the relationship between lines and spaces in design	4.525	VH	4.765	VH	4.307	VH		
6	Achieving Fantastically balance and its role in creating a state of dynamic within the design	4.41	VH	4.686	VH	4.222	VH		
7	The extent of the designer's success in using computer capabilities in the design	4.468	VH	4.629	VH	4.564	VH		

Questionnaire items		Design number		Design 1		Design 2		Design 3	
8	The effect of different filters in giving a sense of the diversity of design materials	4.111	H	4.394	VH	4.323	VH		
The second axis									
9	The impression about the employment of the designs for the proposed apparels	4.41	VH	4.494	VH	4.27	VH		
10	Adaptation of fabric design to the proposed apparels	4.368	VH	4.659	VH	4.395	VH		
11	Harmony and compatibility of the proposed apparel designs, including their color combinations, lines and textures.	4.254	VH	4.659	VH	4.333	VH		
12	The role of shadow and light in the visual appearance of the proposed apparels	4.205	VH	4.494	VH	4.314	VH		
13	The extent of the designer's success in using computer capabilities to display designs in the appropriate space and size for the proposed apparels	4.436	VH	4.634	VH	4.48	VH		
Average relative weight of all the items for each design		4.363	VH	4.587	VH	4.317	VH		
Questionnaire items		Design number		Design 4		Design 5		Design 6	
The first axis									
		RW	D	RW	D	RW	D		
1	The design expresses the symbols of the Aztec/Maya civilization	4.519	VH	4.402	VH	4.605	VH		
2	Compatibility in the principles and structural elements in the design	4.377	VH	4.551	VH	4.544	VH		
3	Harmony and compatibility between color palette and textural values in the design	4.494	VH	4.659	VH	4.575	VH		
4	The extent of creating a novel plastic formulation	4.436	VH	4.605	VH	4.513	VH		
5	Achieving rhythm in the relationship between lines and spaces in design	4.436	VH	4.765	VH	4.686	VH		
6	Achieving fantastically balance and its role in creating a state of dynamic within the design	4.461	VH	4.686	VH	4.634	VH		
7	The extent of the designer's success in using computer capabilities in the design	4.454	VH	4.629	VH	4.629	VH		
8	The effect of different filters in giving a sense of the diversity of design materials	4.404	VH	4.394	VH	4.654	VH		
The second axis									
9	The impression about the employment of the designs for the proposed apparels	4.519	VH	4.494	VH	4.551	VH		
10	Adaptation of fabric design to the proposed apparels	4.634	VH	4.659	VH	4.575	VH		
11	Harmony and compatibility of the proposed apparel designs, including their color combinations, lines and textures.	4.359	VH	4.659	VH	4.575	VH		
12	The role of shadow and light in the visual appearance of the proposed apparels	4.513	VH	4.494	VH	4.48	VH		
13	The extent of the designer's success in using computer capabilities to display designs in the appropriate space and size for the proposed apparels	4.551	VH	4.634	VH	4.551	VH		
Average relative weight of all the items for each design		4.473	VH	4.587	VH	4.582	VH		

RW = Relative weight, D = Degree of Acceptance,

Relative weight: VH= Very High (5:4.20), H= High (4.19:3.40), M= Medium (3.39:2.60),

L= Low (2.59:1.80), VL= Very Low (1.79:1)

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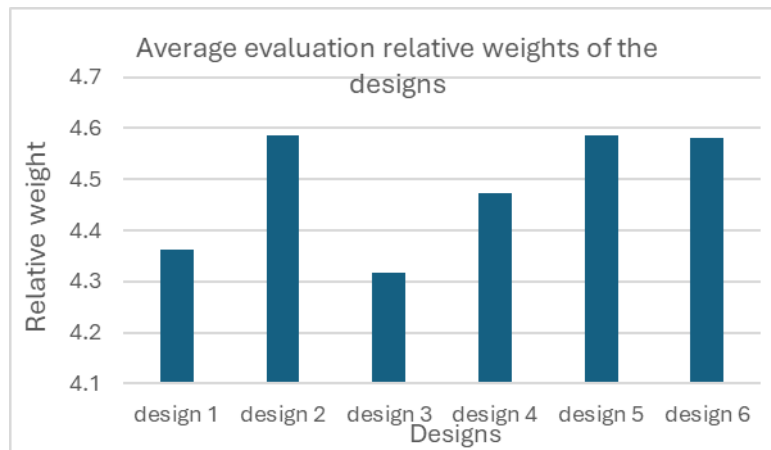


Figure 27: Average evaluation relative weights of the designs

The overall evaluation of the average relative weights of specialists' opinions, as illustrated in table 2 and figure 27, revealed that designs no. 2 and 5 ranked first regarding the two main axes, with an average evaluation relative weight of 4.587. Meanwhile, design no. 6 ranked second with an average evaluation relative weight of 4.582, design no. 4 ranked third with an average evaluation relative weight of 4.473, and design no. 1 ranked fourth with an average evaluation relative weight of 4.363. Finally, design no. 3 finished last with an average evaluation relative weight of 4.317. According to specialists' opinions, the average evaluation relative weights (RW) for all designs was between high (H) and very high (VH) acceptance degree.

4. Conclusion & Recommendations

4.1. Conclusions

The study has shown that Mesoamerican civilization is rich in artistic and ornamental elements, providing inspiration for the fields of fashion and textile design.

The electronic questionnaires proved that the study hypotheses have been met, and the most important results can be summarized as follows:

- 1- The created textile printing designs express the Aztec and Maya civilizations and specialists generally accepted the created designs, this fulfilled the first hypothesis.
- 2- The principles and structural elements of design exhibit compatibility and harmony, as well as the created designs inspired by the Aztec and Maya civilizations, achieve a modern formative formulation and this fulfilled the second hypothesis.
- 3- The designer successfully employed various filters in graphics programs to

incorporate diverse effects into the produced designs and this fulfilled the third hypothesis.

- 4- The employment of the created designs and their usage for the proposed apparel designs is generally accepted by specialists and this fulfilled the fourth hypothesis.
- 5- The compatibility and harmony of color groups, lines, and textures and adding shadow and light to show the created designs with the appropriate space and size for the proposed apparel designs were achieved and this fulfilled the fifth hypothesis.
- 6- The use of computer graphics programs develops the values of created designs to reach the degree of required quality and raise the aesthetic and functional values.

4.2. Recommendations

- 1- The study of an old civilization is one of the key approaches to study art and costume history, providing an essential 'databank' through which we can access and visualize the future of textiles and clothes.
- 2- Employing these historical data, researchers and art activity practitioners may gain a new perspective that could shape their future consciousness.
- 3- Applying this perspective to courses in textile and fashion design, art history, and fashion can help students to gain a better understanding of how the incorporation of artistic elements from previous eras results in artistic formations that can assist them in identifying future fashion trends.

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